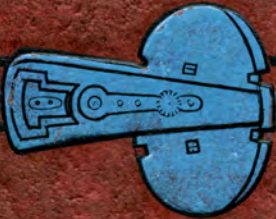


LUFKIN  
OIL FIELD  
EQUIPMENT



Catalogue No. 31

# LUFKIN UNITS

FOR  
ECONOMICAL  
OIL PRODUCTION

**PUMPING**  
*Rotary or Cable Tool*  
**DRILLING**

OVER 1700 RIGS IN SERVICE

**LUFKIN FOUNDRY & MACHINE CO.**  
**LUFKIN TEXAS**

*Houston Tulsa Los Angeles New York City*  
*Odessa, Tex. Eldorado, Ark. Seminole, Okla.*

# LUFKIN PERMANENT EQUIPMENT

***Telegraph and Cable Code  
for all Lufkin equipment  
Pages 82 and 83***

# LUFKIN PERMANENT EQUIPMENT

*T*HE SUCCESS of this company is due, in a large measure, to the assistance of its many friends in the Oil Industry.

Constructive criticism, the cooperation and help towards the improvement of our product has been of real assistance to us and has in turn been a contribution towards the advancement of Modern Production Equipment.

We acknowledge the assistance of our many friends and to those who have had a part in this development we express our keenest appreciation.

# LUFKIN PERMANENT EQUIPMENT

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# LUFKIN PERMANENT EQUIPMENT

## THE LUFKIN FOUNDRY & MACHINE COMPANY

*Executive Office and Factory*  
LUFKIN, TEXAS  
Phones 36 and 37—Long Distance L. D. 5  
*Cable Address—“LUFFO”*

### BRANCHES

#### *Gulf Coast Division*

806 Second National Bank Bldg.  
Phone Fairfax 5125  
Houston, Texas.

#### *Warehouses for Gulf Coast*

Luling, Texas                      Odessa, Texas

#### *Mid-Continent Division*

1901 Philtower Bldg.                      Phone 30204  
Tulsa, Oklahoma

#### *Warehouses for Oklahoma Division*

Tulsa, Oklahoma                      Seminole, Oklahoma

#### *Arkansas, Louisiana Division*

El Dorado, Arkansas  
Warehouse, Eldorado, Arkansas

#### *California Division*

801 Commercial Exchange Bldg.,  
Phone WE stmor-2146  
Los Angeles, Calif.  
Warehouses—Bakersfield and Los Angeles

#### *Export Department*

149 Broadway, New York, N. Y.  
Phone Barclay 7-4228  
Cable address New York & Lufkin “LUFFO”  
Lufkin's Private and A.B.C. 6th addition

# LUFKIN PERMANENT EQUIPMENT



## Home of Lufkin Units

The plant of the Lufkin Foundry & Machine Company is modern, with every facility for manufacturing first-class products. Only the highest quality of materials are used in the manufacture of Lufkin equipment. Modern production tools are used throughout the plant and all parts are made strictly to gauge and template insuring absolute duplication.

The engineering staff, designers of Lufkin Equipment, are not only technically trained but

have had actual experience in the fields where a practical working knowledge has been gained.

Interest in Lufkin Equipment does not cease with the manufacture of a first-class product. Experienced men, trained in the Lufkin plant, watch results in the field and are always ready to render assistance whenever and wherever necessary.

A most cordial invitation is extended interested oil men to visit the Lufkin plant.

# LUFKIN PERMANENT EQUIPMENT

## Foreword

*I*N PREPARING this catalogue we have tried to make it as completely descriptive of Lufkin Oil Field Equipment as possible. Wherever tables, and dimensions, together with engineering data were thought advantageous to the purchaser they have been included. Our engineering department, consisting of technically trained and experienced men, will gladly assist with any problem.

Our policy is to be continually on the alert to improve our own products and to bring new equipment for improved production to the oil business.

With our increased facilities, production tools etc., we are well prepared to take care of our trade both in this country and abroad. A staff of well trained service men are maintained in the fields to watch the performance of Lufkin equipment, make adjustments whenever necessary and be of general assistance to the trade.

### *Terms*

All quotations are F. O. B. our Lufkin factory unless otherwise specified. Our responsibility ceases upon delivery of goods to carrier.

All quotations are subject to change without notice.

All promises are estimated as closely as possible and our best efforts are used to ship within time specified but no responsibility is assumed for failure to ship when promised.

Special goods not subject to cancellation.

We guarantee workmanship and material when goods are used for purpose for which they were manufactured, but no claims for labor or damage will be allowed.

All agreements are subject to strikes, accidents and other causes beyond our control.

When purchasers have satisfactory rating, terms are thirty days net, unless otherwise provided for.

### *Export Business*

Orders for export should be accompanied by explicit instructions regarding marks on packages, routing, port of shipment and entry, etc.

In describing equipment wanted catalogue page numbers should be used whenever possible and all possible information should be given.

Export shipments will be insured only when expressly stipulated, and only then at purchasers' expense.

### *Code*

Our private Code is used for specifying our equipment whenever possible and reference to the Code in back of book will assist in describing types of drives, assemblies, etc. For transmitting instructions regarding prices, terms of payment, method of shipment, routing, etc., use A. B. C. Code, 6th Edition.



# LUFKIN PERMANENT EQUIPMENT

## INTRODUCTION

### *Some General Pertinent Facts Concerning Lufkin Pumping and Drilling Equipment*

#### UNIVERSAL ADAPTATION

Lufkin Units have had such a world wide distribution during the last seven years and have come into such general use in this country with many major companies standardizing on them, a comparison of their merits with the old Standard rig is no longer necessary.



*Lufkin Herringbone Gear and Pinion*

Lufkin Units in combination with Lufkin Hoists are doing any and all work that can be done with bull and calf wheels and in many instances doing better work and in less time. This is especially true in servicing a well with the loose drum type of hoists. Rod and tubing time is often cut in half. While "drilling in" is regularly accomplished with the Lufkin worm gear in equal time to a Standard rig, the Herringbone Gear is showing evidence in practical use of having a "better fall" and is making faster time drilling from the surface. See authoritative tests described on pages following.

#### COUNTER-BALANCING

The subject of correct counter-balancing has been very thoroughly discussed in the past few years so that through experience and tests, engineers are nearly of one accord; in that centrifugal counter-balancing in the crank, with simple adjustability is the settled and best practice. The greatest economy in well pumping is largely dependent on correct balancing of the well, elimination of rod trouble and undue strain on the entire mechanical apparatus; reducing the power required to the minimum and securing the lowest upkeep costs. The Trout Counter-balanced Crank, by test has been found to be the answer to this requirement. See detailed description on pages 11 and 12.

#### WORM AND HERRINGBONE GEARS

Seven years ago Lufkin pioneered the application of worm gearing to oil well pumping rigs. We were led to adopt the worm gear because of



*Lufkin Worm Gear and Pinion*

## LUFKIN PERMANENT EQUIPMENT

its dependability, its simplicity, its compactness, and its quietness due to its smoothness in action, all of which in turn insured absence of shocks and vibration. These characteristics likewise make for durability. The spiral or helical formation of the worm gear has the further advantage of inducing an oil film between the tooth surfaces, which makes for almost perfect lubrication and has a great influence in the relatively high load carrying capacity of the gear. The performance of more than sixteen hundred Lufkin worm geared units over an operating period of more than seven years has proved ample vindication of our judgment in its adoption.

Notwithstanding the success of our worm geared unit, we have been, and still are, alert to any possibility of improvement in our pumping units. Quite recently a new type of helical gear has become available, which has what are called herringbone teeth. These gears are actually worm gears, the teeth of the pinions being in all respects identical with worm threads of a relatively long lead. The essential difference, however, between the new herringbone gear which we have adopted and the worm gear is that the shafts of both wheel and pinion are parallel to each other instead of at right angles, as in the worm gear.

A further difference, which is possibly due to the shafts being parallel, is that the pinion, or worm, can be arranged with right and left hand threads, or teeth. This has the great advantage of eliminating all end thrust and therefore no thrust bearing is needed and, consequently, expense is saved. In addition, there are less number of parts and therefore less possibility of trouble and a tendency toward reducing maintenance expense.

An additional advantage is that the sliding action of the teeth in motion is less than in the worm gear, while at the same time, due to the relatively large helix angle which can be used, the smoothness of operation and the property of efficient lubrication is maintained. The mechanical

efficiency, therefore, of the herringbone gear is slightly better than that of the worm gear, especially at loads much less than the normal load. It must be understood, however, that the herringbone gear does not afford much advantage in efficiency compared with the high grade worm gear which we have used. Nevertheless there is a slight advantage which is worth consideration.

Another advantage of the herringbone gear is that due to the reduced sliding motion it is possible to use a wheel made in steel instead of one having a phosphor bronze rim, as in the worm gear.

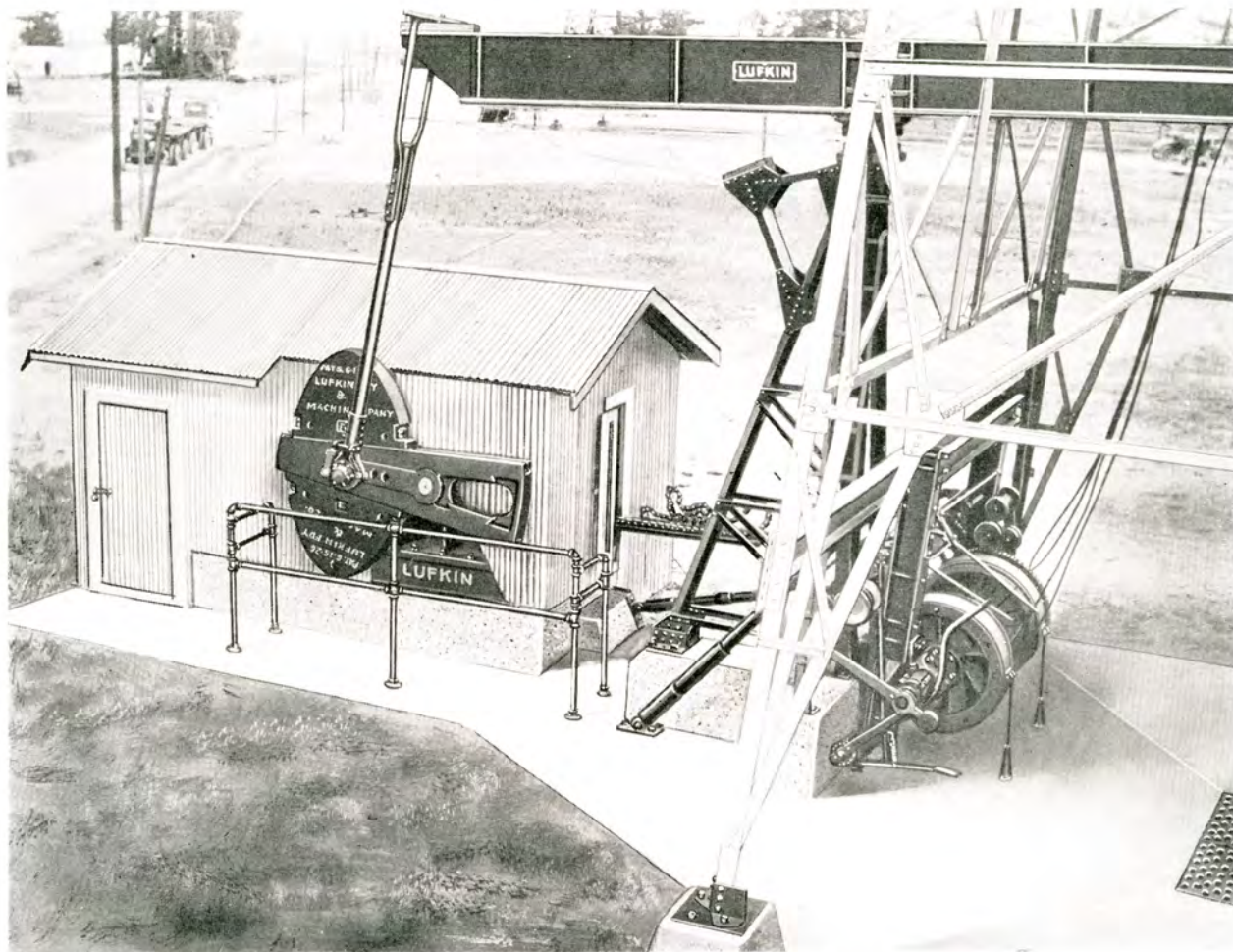
We have placed a great number of these herringbone geared units in service and they have proved very satisfactory and are preferred by many of our customers.

While it is customary to drill in wells with the worm gear units, and some wells have been completely drilled with cable tools in at least equal time as the standard rig, we believe the herringbone gear will give a better "fall" to cable tools than is possible with the worm gear due to its self locking nature, an especially valuable feature in pumping, another reason that led us to conclude to manufacture both types.

Before standardizing on these herringbone gears we made careful investigations to determine the best proportions of gears, both as regards diameters, face width and tooth proportions. We have adopted a specially strong tooth, which is desirable, not only on account of its strength, but also because it gives the best possible tooth action, the highest mechanical efficiency, and the utmost durability. We have also made careful investigations into the best materials to use, with a result that we have adopted a special alloy steel, heat treated to a definite hardness.

It will interest many of our friends to know that we have installed complete equipment at considerable cost for manufacturing these new herringbone gears in our own factory.

# LUFKIN PERMANENT EQUIPMENT



Typical Gulf Coast installation of Lufkin Herringbone Unit, including Lufkin No. 52 Hoist with steel jack posts and Lufkin No. 1 Samson Post assembly. Unit is Lufkin Herringbone No. 6½—Well depth 4650 feet.

## **Lufkin Units Are Used on the Deepest Wells of the World**

Lufkin Herringbone Gear Units are built in three sizes. Worm Gear Units are built in four sizes. Lufkin Central Powers are built in two sizes.

## LUFKIN PERMANENT EQUIPMENT

# The Trout Counter-Balanced Crank



Adjustable Counter-Balanced Crank—Note: Safety lugs, weights can not slide off. This feature with fly-wheel brake allows weights to be shifted in five minutes

The counter-balanced crank for oil well pumping has been accepted by oil producers and manufacturers of oil field equipment as the most desirable means of balancing wells, but only after exhaustive tests and comparisons with every other conceivable method of balancing a pumping well.

The Trout counter-balanced crank (see illustration) is the most effective and flexible counter-balance that has been placed at the disposal of the oil industry. It is compact and made up of a few simple parts which are "fool proof." The counterweights can be moved along the ways of the crank, so that any desired effective counter-balance can be easily obtained.

Studying the pump cycle of a well we find that all of the useful work is done during half the cycle, or in other words, on the upstroke of the rods. At the start and finish of the stroke the power required is theoretically zero as the rods are stationary. During the center portion of the upstroke of the rods, the velocity in feet per minute at which the rods travel is a maximum. Power required is the product of force times velocity. Therefore, from a power input standpoint the counter-balance should be most effective during the center portion of the upstroke which is the case with the Trout-Crank.

Whether the center of gravity of a rotary counter-balance should lead or lag the crank pin has

been a much mooted question. But it has been definitely determined by experiment that the counter-balance cannot economically lead or lag over five degrees. It has never been shown that either a leading or lagging counter-balance has any advantage over a counter-balance with its center of mass in line with crank shaft and crank pin.

Theoretically the greatest force should be found at the point of maximum acceleration since

$$\text{Force} = \text{Mass} \times \text{Acceleration}$$

The point of maximum acceleration is at the start of the upstroke, but dynamometer cards indicate that during the lift half of the stroke the force varies throughout and reaches a peak about the center of the stroke depending upon pumping conditions.

With more complete knowledge of what happens during the pumping cycle it is generally accepted that there is no advantage in leading or lagging the counterweights.

Counter-balanced cranks aided by high speed fly wheels cut down the strain on pumping equipment, aid economical operation by permitting the use of smaller electrical equipment and lets the driving power operate at a higher efficiency.

The accompanying chart gives the various effective static weights for the different sizes and models of Lufkin Units.

# LUFKIN PERMANENT EQUIPMENT

## *Effective Static Weights of* **Trout Counter-Balanced Cranks**

FOR 6-1/2" WORM OR HERRINGBONE GEAR UNITS:

Stroke—	32"	42"	52"	62"	72"
	Pounds	Pounds	Pounds	Pounds	Pounds
Regular Crank No. 1158 W and Weights.....	14,400	11,000	8,900	7,400	6,400
With Auxiliary Weights (extra price).....	17,800	13,500	10,900	9,200	7,900
With lead Weights 9" thick (extra price).....	23,800	18,150	14,700	12,300	10,600

FOR 5-1/2" WORM OR HERRINGBONE GEAR UNITS:

Stroke—	32"	42"	52"	62"	72"
Regular Crank No. 1157 W and Weights.....	10,400	8,000	6,400	5,400	4,600
With Auxiliary Weights (extra price).....	13,100	10,000	8,100	6,800	5,800
With lead Weights 8 1/2" thick (extra price).....	18,400	14,000	11,300	9,500	8,200

FOR 4-1/2" WORM OR JUNIOR HERRINGBONE GEAR UNITS:

Stroke—	21"	30"	39"	48"
Regular Crank No. 1001 W and Weights.....	10,800	7,550	5,800	4,720
With Auxiliary Wts. (extra price).....	13,400	9,400	7,200	5,900

FOR BABY WORM GEAR UNIT:

Stroke—	16"	26"	36"
Regular Crank No. 1209 W and Weights.....	10,300	6,300	4,560

**Note:** Tabulated weights, as listed are equivalent to a much greater weight attached to the end of beam due to dynamic force. Weights as listed are effective only when crank is horizontal and counter weights are at end of long end of crank.

<b>SUCKER ROD</b>				
<b>Weight in Pounds Per 1000'</b>				
Type—	Section Length Feet	Size Rod		
		5/8"	3/4"	7/8"
Box and Pin . . . . .	20	1140	1650	2320
Box and Pin . . . . .	25	1120	1620	2200
Box and Pin . . . . .	20	1110	1590	2200
DBL. Pin and {	}	25	1160	1670
coupling . . . }		30	1140	1630
			2390	2250

# LUFKIN PERMANENT EQUIPMENT

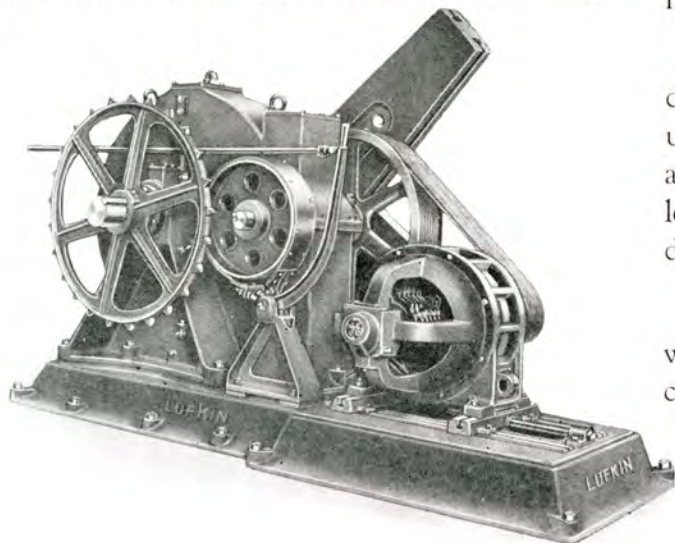
## Comparison of Lufkin Worm Gear Units and Lufkin Herringbone Gear Units with respect to class of service

There are two classes of Lufkin Units, the Worm Gear and the Herringbone Gear types.

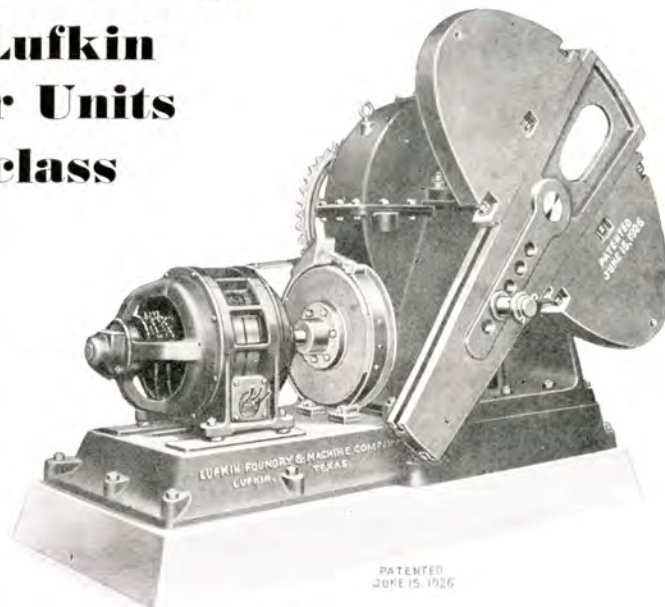
The Heavy Duty or 6-1/2" Worm Gear and the Heavy Duty or 6-1/2" Herringbone Gear Units are designed for the same class of service and each use the same Trout Counter-balanced Crank.

The Intermediate or 5-1/2" Worm Gear and the Standard or 5-1/2" Herringbone Gear Units are designed for the same class of service and each use the same Trout Counter-balanced Crank.

The Standard or 4-1/2" Worm Gear and the Junior or 5" Herringbone Gear Units are designed for the same class of service. The regular pattern 4-1/2" Worm Gear, however, has a shaft



Lufkin Herringbone Unit



Lufkin Worm Gear Unit

extension and outboard bearing to apply pulling sprocket 6'2" from center of well which can drive any of our hoists with or without line shaft.

The Junior Herringbone Unit also has a sprocket 545/8" from well center line and a line shaft hoist would be necessary to use the sprocket drive.

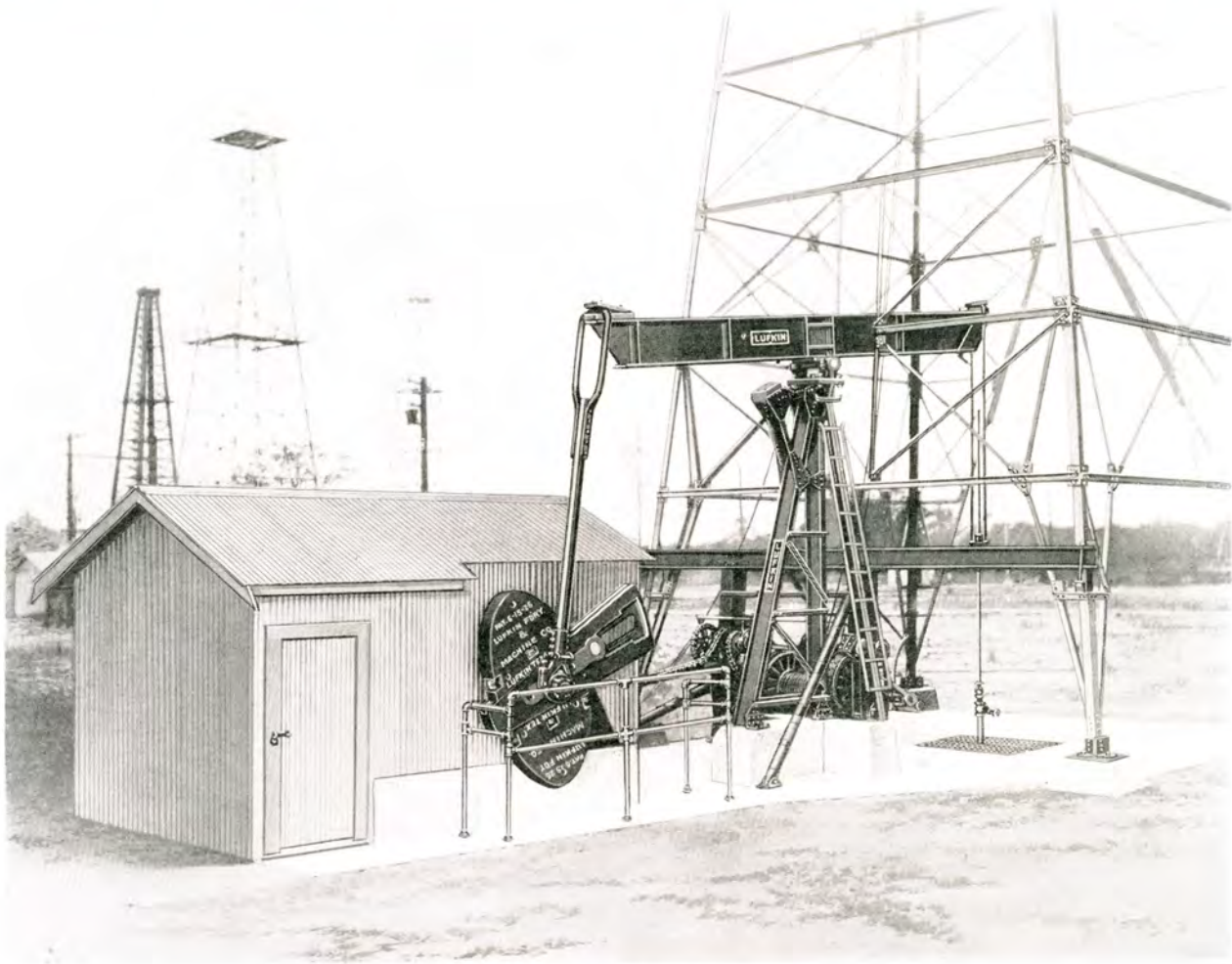
The new Lufkin Baby Unit is designed for pumping only and is of the Worm Gear type having a 4 1/2" crank shaft.

This gear gives us a large reduction at one "step down" and, with the "V" Belt drive, allows the use of high speed plain induction motors, also allowing large motor drive pulley. The greatest leverage being in the gear, makes for an easy belt drive and a very compact efficient unit.

To accomplish this with the Herringbone Gear would require double gearing which is complicated and costly to keep up and with double gearing it is not as efficient as the worm gear.

The compactness and adaptability of the Worm Gear is appreciated in this unit which we believe to be ideal for this service.

# LUFKIN PERMANENT EQUIPMENT



Typical Herringbone Gear Installation

Lufkin Herringbone Units Mean Greater production—Lower power cost—Longer lasting service—Low upkeep cost—Elimination of fire hazard

—High salvage value—Time servicing wells greatly reduced over any other type of unit or Standard Rig . . . Claims that are realized in actual practice.

## GENERAL CONSTRUCTION

### *Lufkin Herringbone Units*

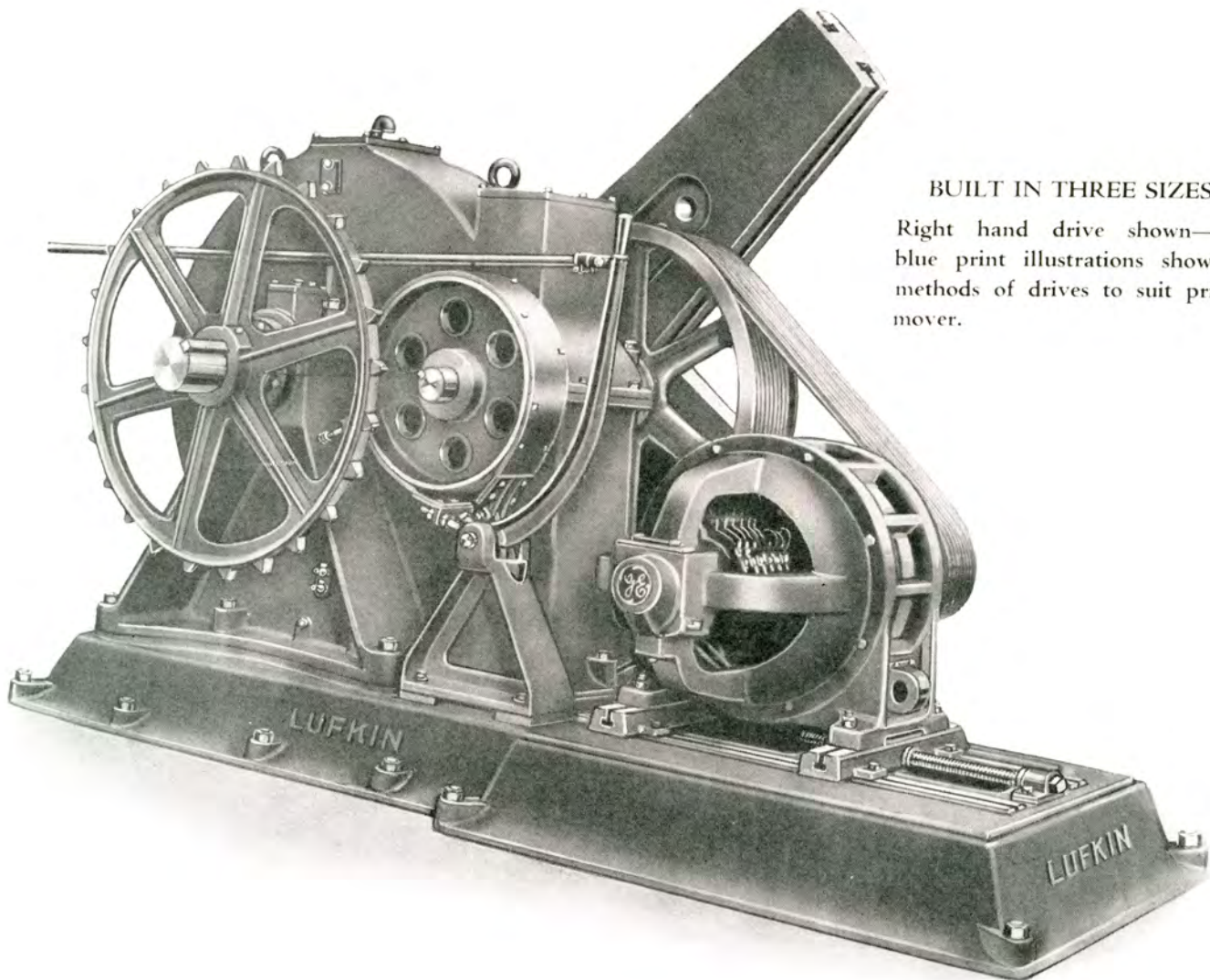
Lufkin Herringbone Units are especially designed for oil field service, is strongly built, of heavy construction and of few parts with practically no adjustments to make. They are almost "fool proof." Outside of adjusting weights a roughneck would not know where to use a wrench on them, a good reason for their increasing popularity. The following points of mechanical construction will be of interest:

*The base is of heavy ribbed construction box section with ample bolts to the gear housing and motor which are securely fastened to always insure proper alignment. While some of our smaller units set on concrete without a base, we do not recommend this practice especially with larger units.*

*The gear housing is rugged and well ribbed to*

## LUFKIN PERMANENT EQUIPMENT

# Lufkin Sykes-Herringbone Gear Unit



### BUILT IN THREE SIZES

Right hand drive shown—see blue print illustrations showing methods of drives to suit prime mover.

Regular Pattern—Built in 6½" and 5½" sizes—Both 72" Stroke  
(Cut Shows Right-Hand Drive)

hold the gears and stand the sudden strains of pumping or pulling and is securely bolted and doweled to base. Base plate and gear housings for both 5½" and 6½" Units are interchangeable.

The gear shaft is of alloy steel, forged, turned and ground, running in Bronze Bearings duplicate in size, as are our worm gears, where they have been so satisfactory.

The master gear is of high carbon Cast Steel while the pinion (generated integral with shaft) is forged alloy, heat treated, hardened steel, both generated on gear cutting machines in our own plant.

Lufkin Herringbone gears are amply large in diameter and width of face so that tooth pressures are reduced to a minimum, resulting in

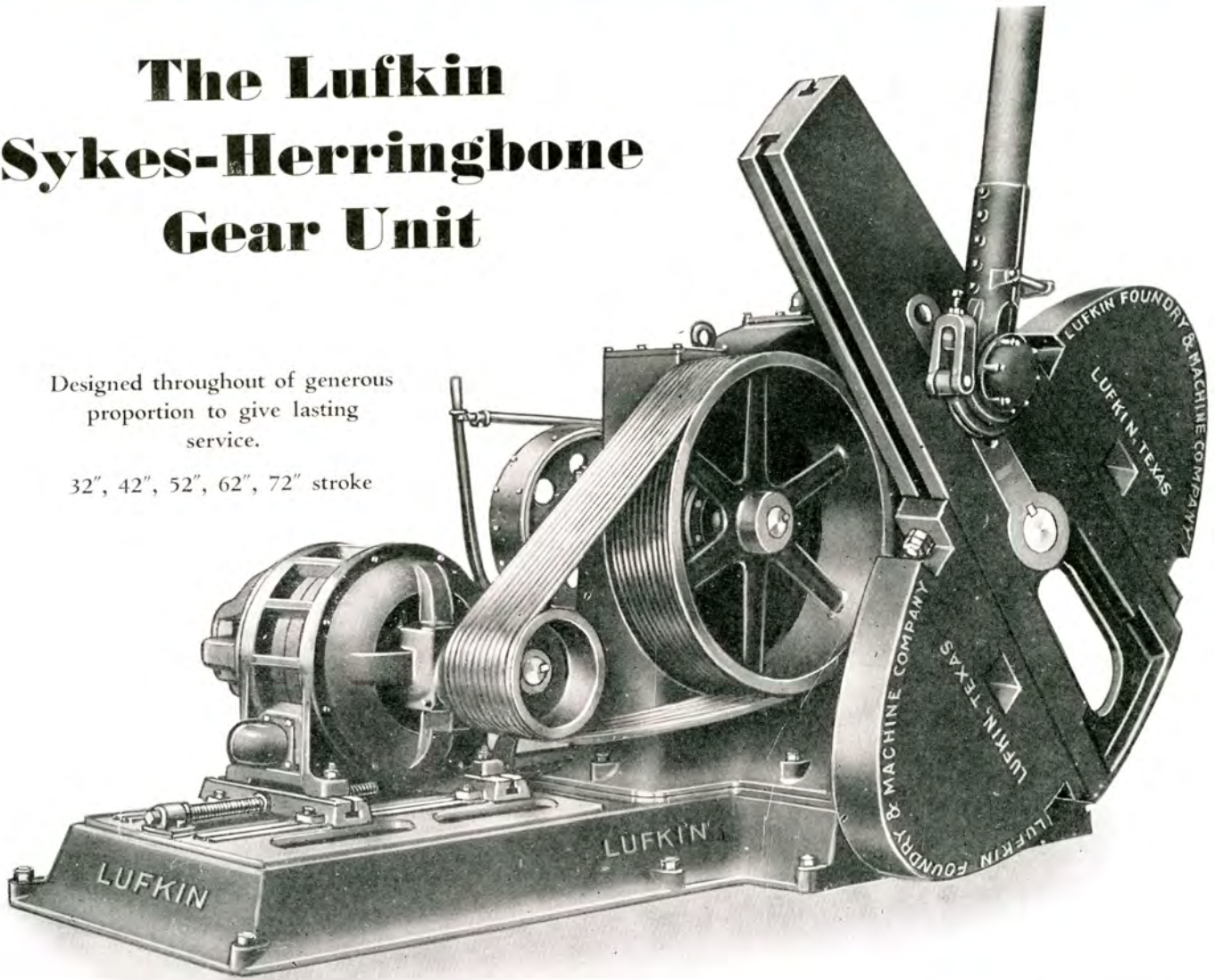


# LUFKIN PERMANENT EQUIPMENT

## The Lufkin Sykes-Herringbone Gear Unit

Designed throughout of generous proportion to give lasting service.

32", 42", 52", 62", 72" stroke



Standard type showing "V" Belt drive arrangement

### SPECIFICATIONS:

#### 6 1/2" Heavy Duty Herringbone Unit

SHAFT: Gear shaft 6-7/16" in crank and bearings, 7-7/16" in gear.  
PINION SHAFT: 3-15/16" in bearings, pinion 5.6" P.D. (pinion generated integral with shaft).  
GEAR: 54" dia. 10" face, 136-T.  
PINION: 5.6" P.D. 10" face, 14-T.  
RATIO: 9.7 to 1.  
WEIGHT: 22,300 lbs.

#### 5 1/2" Standard Herringbone Unit

SHAFT: Gear shaft 5-7/16" in crank and bearings, 6-7/16" in gear.  
PINION SHAFT: 3-7/16" in bearings, pinion 5" P.D. (pinion generated integral with shaft).  
GEAR: 47" dia. 8" face, 141-T.  
PINION: 5" P.D. 8" face, 15-T.  
RATIO: 9.4 to 1.  
WEIGHT: 16,500 lbs.

long wear and lasting service. They are superior in strength, efficiency, and silent in operation.

The Trout counter-balanced crank is too well known for comment; its ease of adjustment in balancing the well; the speed with which the weights can be centralized on crank for pulling, has made it increasingly popular with the oil industry.

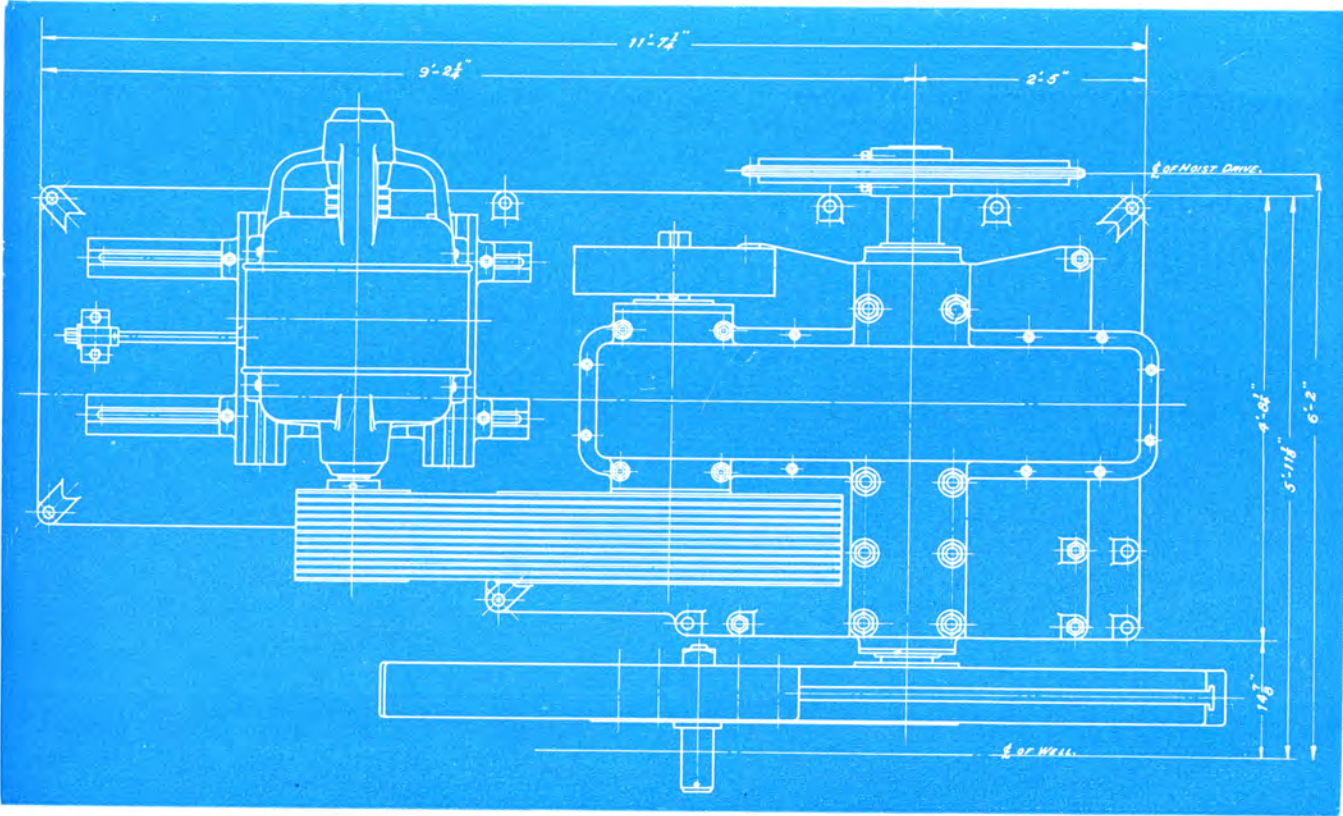
The unit has a suitable brake for not only holding crank for adjusting weights but the entire rig as well.

The "V" belt drives have been designed with a large factor of safety to easily handle an overload when necessary. Sheaves are amply large with suitable size belts to insure long service.

A solid sprocket is provided of suitable size to drive hoist, clutch sprockets can be provided at extra cost.

Blue print setting plans and necessary wrenches go with each unit. Foundation bolts are extra.

# LUFKIN PERMANENT EQUIPMENT

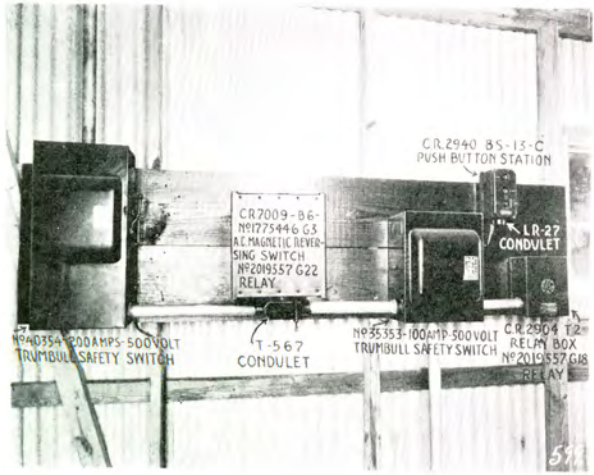


Regular layout for Lufkin 6½" and 5½" Herringbone Units. An ideal arrangement for motor with take-up slide rails.

Code for this arrangement:  $\left\{ \begin{array}{l} 6\frac{1}{2}" - \text{FAADS} \\ 5\frac{1}{2}" - \text{FAAFT} \end{array} \right.$

The base for these units, also Gulf Coast pattern units, are interchangeable—either size gear box will fit the base without drilling additional holes. This is found advantageous in the event well conditions change requiring a heavier unit or the replacement with a lighter unit when found economical.

FOR CABLE TOOL DRILLING SEE PAGE 28



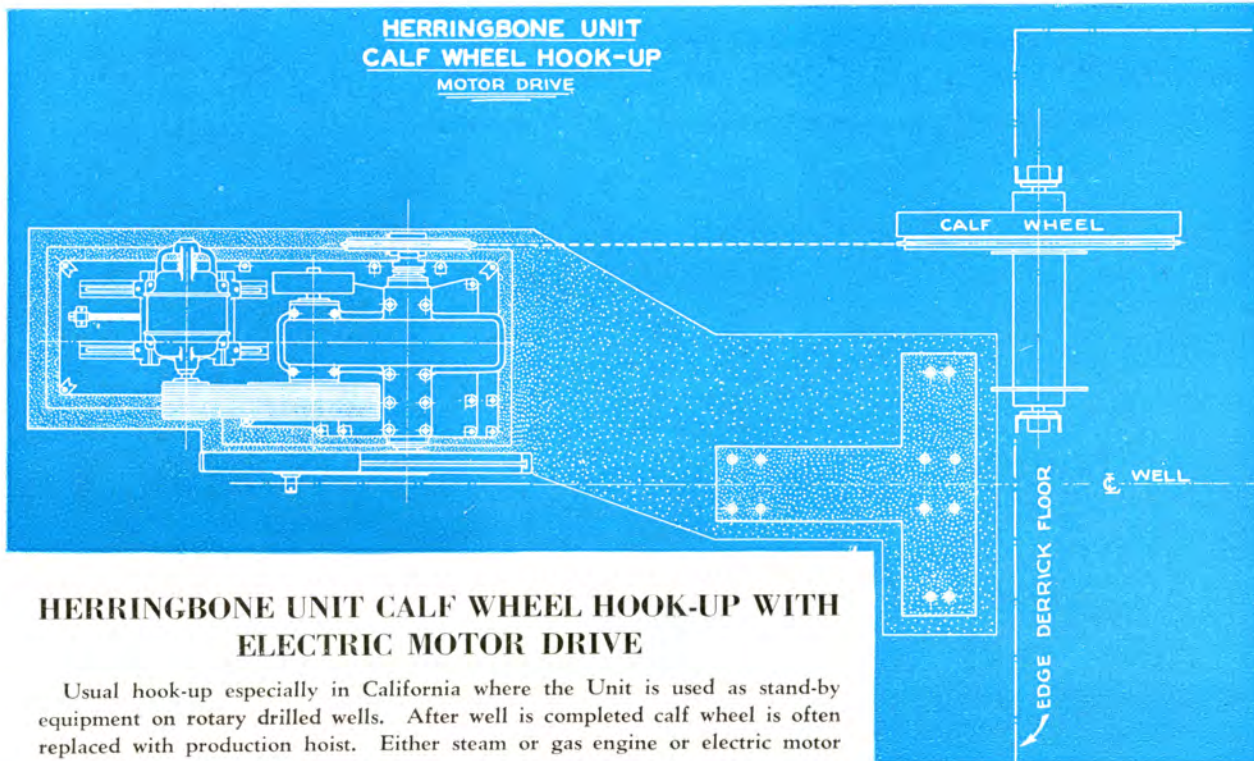
Layout of switch board panel used with equipment shown to right. Wiring diagram and full information furnished upon request.



Inside motor house. There is ample room to take off or put on belts on V drive not evident in picture.

# LUFKIN PERMANENT EQUIPMENT

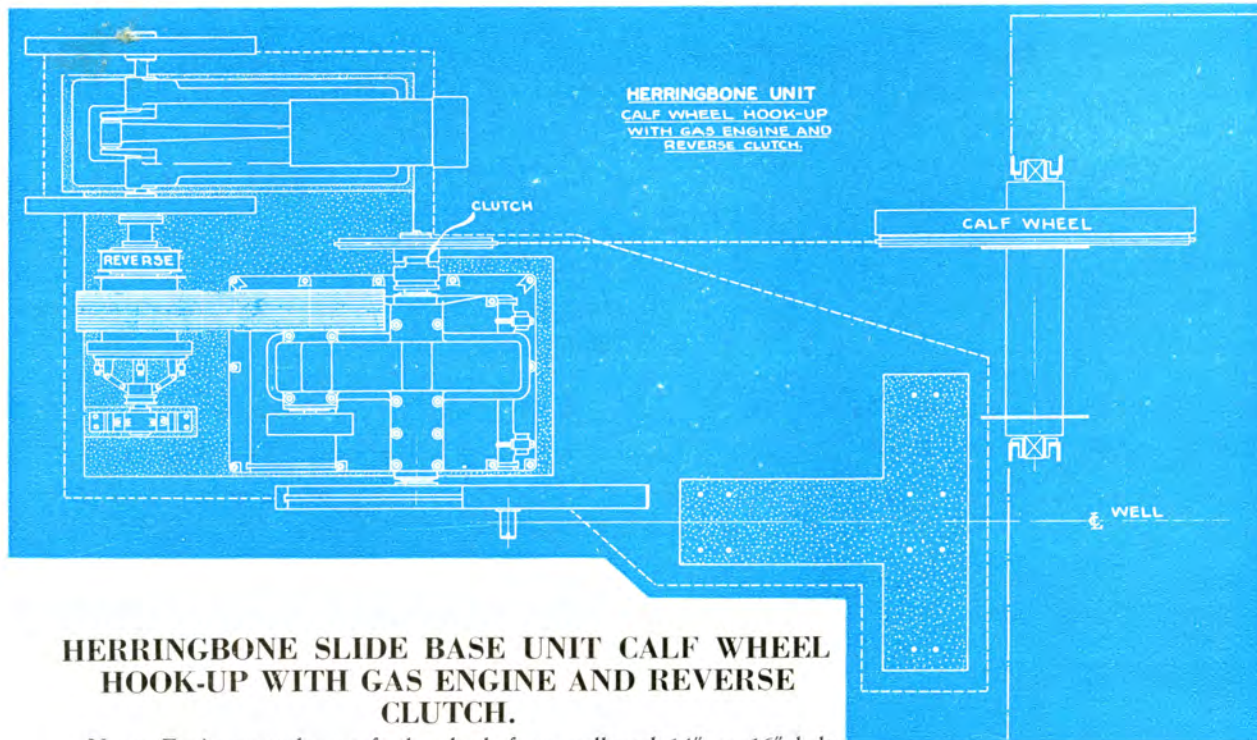
## Calf Wheel Hook-Up to Lufkin Herringbone Units



### HERRINGBONE UNIT CALF WHEEL HOOK-UP WITH ELECTRIC MOTOR DRIVE

Usual hook-up especially in California where the Unit is used as stand-by equipment on rotary drilled wells. After well is completed calf wheel is often replaced with production hoist. Either steam or gas engine or electric motor is used for motive power.

Code for this arrangement:  $\left\{ \begin{array}{l} 6\frac{1}{2}'' - \text{FAADS-FECUZ} \\ 5\frac{3}{2}'' - \text{FAAFT-FECUZ} \end{array} \right.$

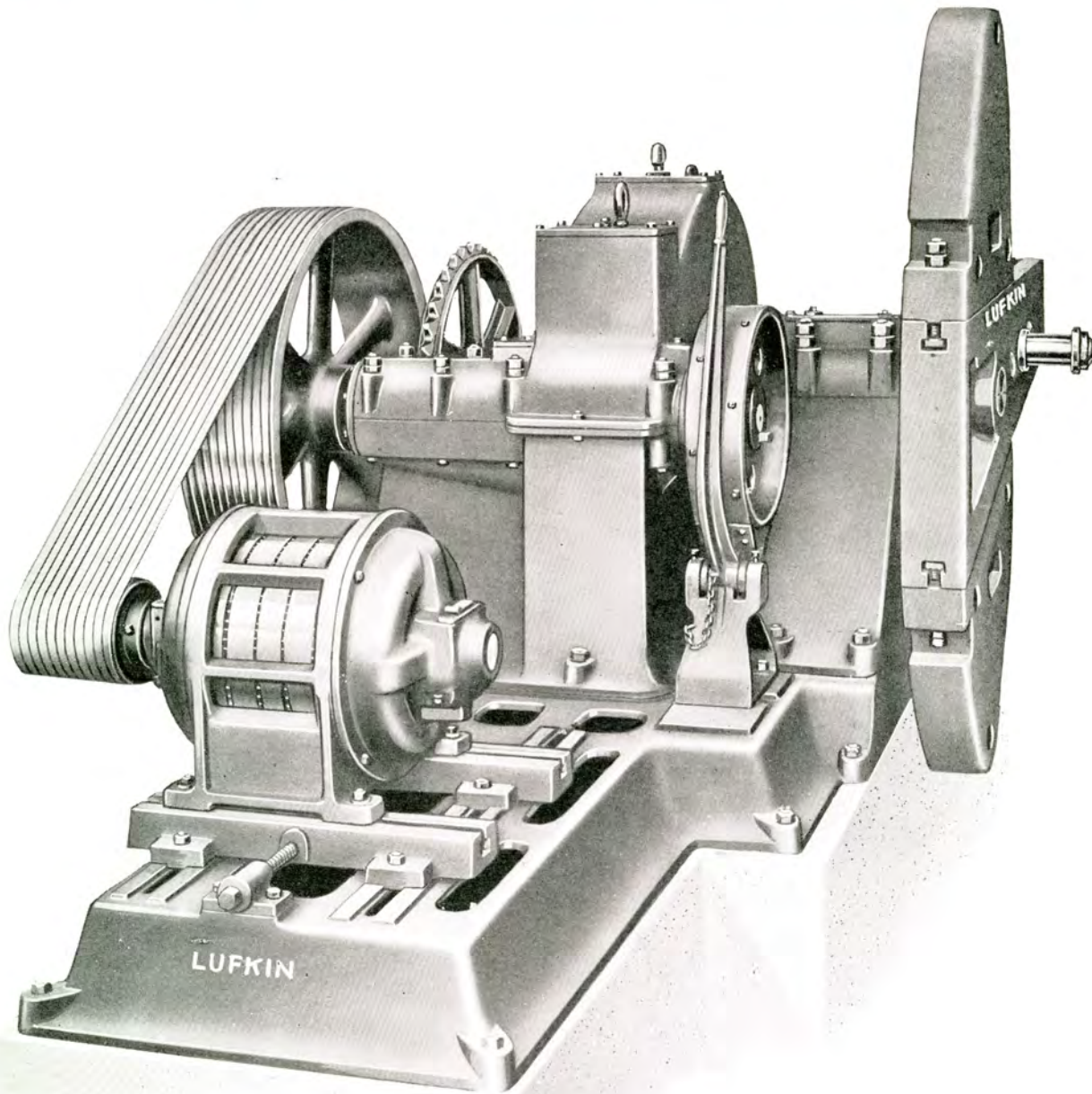


### HERRINGBONE SLIDE BASE UNIT CALF WHEEL HOOK-UP WITH GAS ENGINE AND REVERSE CLUTCH.

Note: Engine may be set farther back from well and 14" or 16" belt used in place of "V" belts.

Code for this arrangement:  $\left\{ \begin{array}{l} 6\frac{1}{2}'' - \text{FAAMB-FECUZ} \\ 5\frac{3}{2}'' - \text{FAANC-FECUZ} \end{array} \right.$

# LUFKIN PERMANENT EQUIPMENT



## *Gulf Coast Pattern* **Lufkin Herringbone Unit**

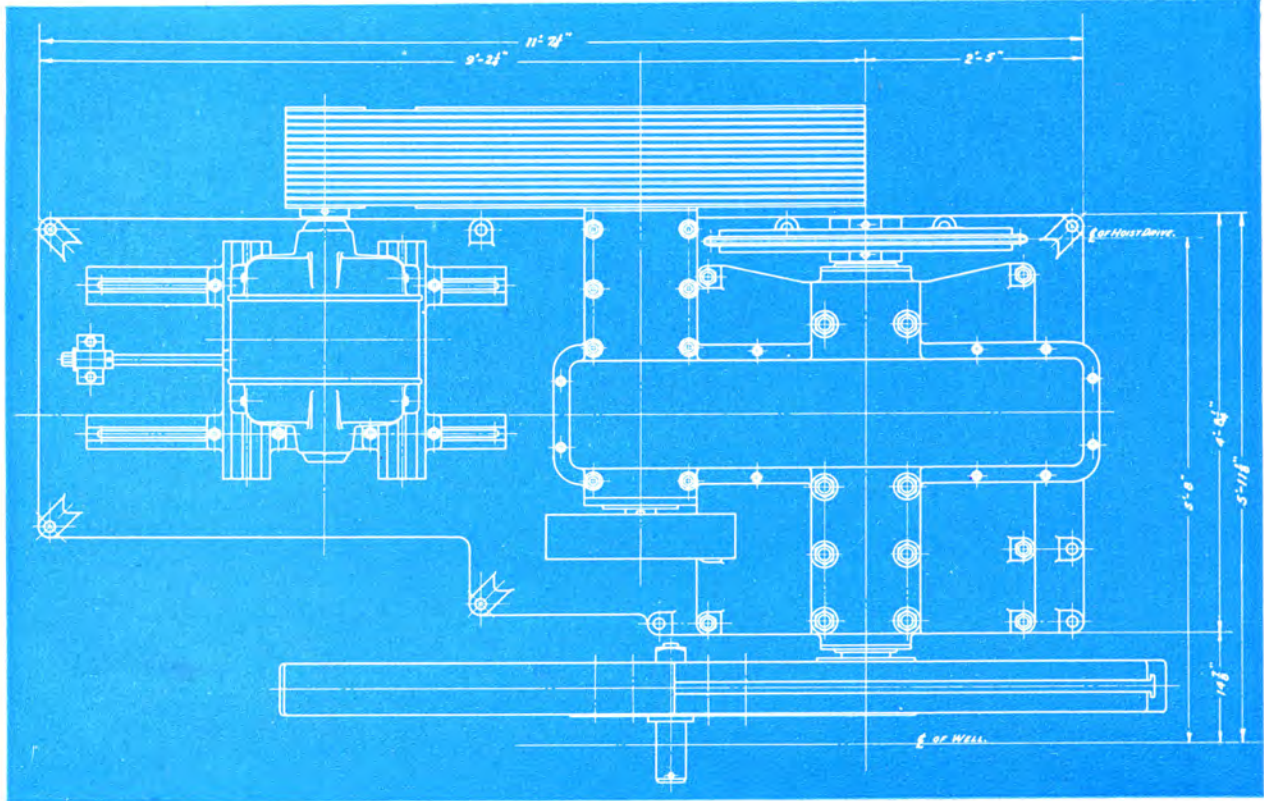
This Unit is especially designed for use with constant, high speed motors and where tractors are used for pulling. This design permits the use of larger sheaves than the regular unit shown on previous pages so that 1200 speed motors may be used.

While a sprocket is shown for pulling, its size is

limited and it is not as large as is necessary for fast cleaning out work such as is obtained with the regular unit.

General specifications are the same as  $5\frac{1}{2}$ " and  $6\frac{1}{2}$ " units, also Universal Bed Plate is used same as regular units shown on page 15.

# LUFKIN PERMANENT EQUIPMENT



Constant Speed Squirrel Cage Motor adaptation, Gulf Coast Pattern, left hand drive. This drive especially for constant speed motor where pulling is done by tractor. Left hand drive merely to permit use of larger sheaves

Code:  $\left\{ \begin{array}{l} 6\frac{1}{2}'' \text{ FAARF} \\ 5\frac{1}{2}'' \text{ FAATH} \end{array} \right.$

## Information Usually Required in Ordering Units in This Catalog

*FOR ELECTRIC MOTOR DRIVES:*

Number of strokes per minute the well is to pump----- Note: By changing small motor pulley number of strokes can be changed as desired.

Make of motor----- Type----- H. P.----- Speed-----

*GAS ENGINE DRIVE:*

Number of strokes per minute the well is to pump----- Make of engine-----  
 Type----- Speed-----

NOTE: Buda engines are recommended to operate at about 700 to 800 R. P. M. for economical pumping and long service.

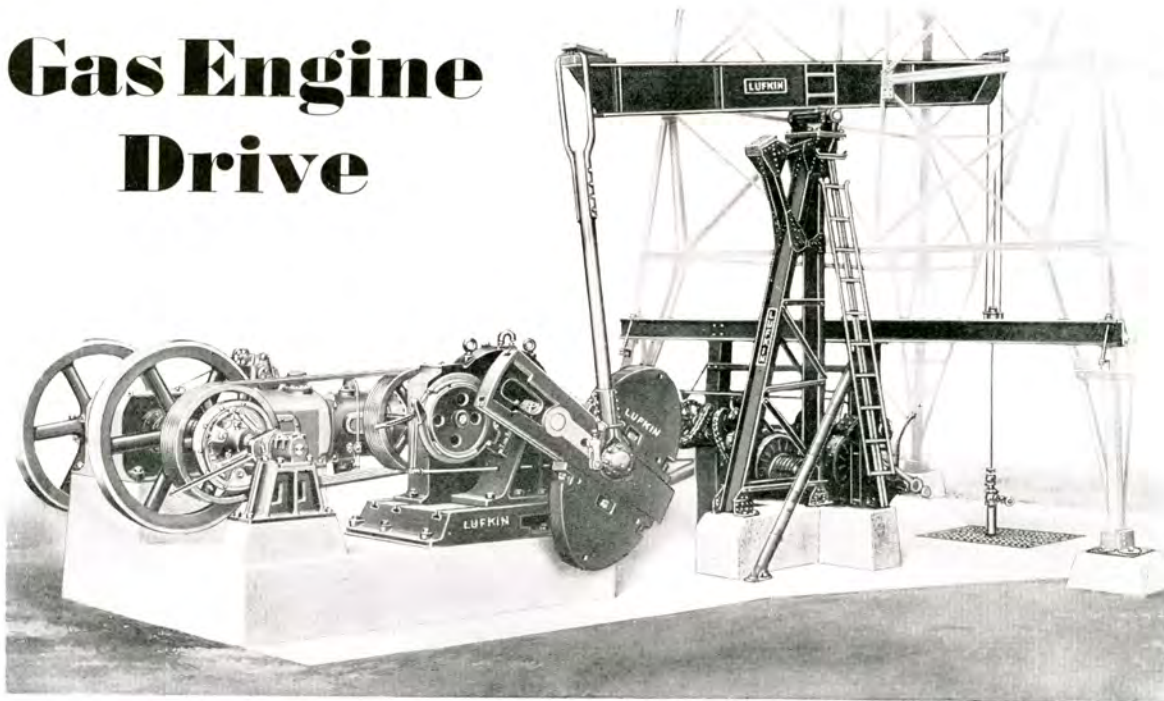
Single cylinder engines are recommended to operate at about 200 R. P. M. to 225 R. P. M. depending on conditions. It is desirable that the engine have good regulations, regular impulses (no coasting).

## LUFKIN PERMANENT EQUIPMENT

# Lufkin Herringbone Gear Unit

*On Sliding Base for Single Cylinder*

## Gas Engine Drive

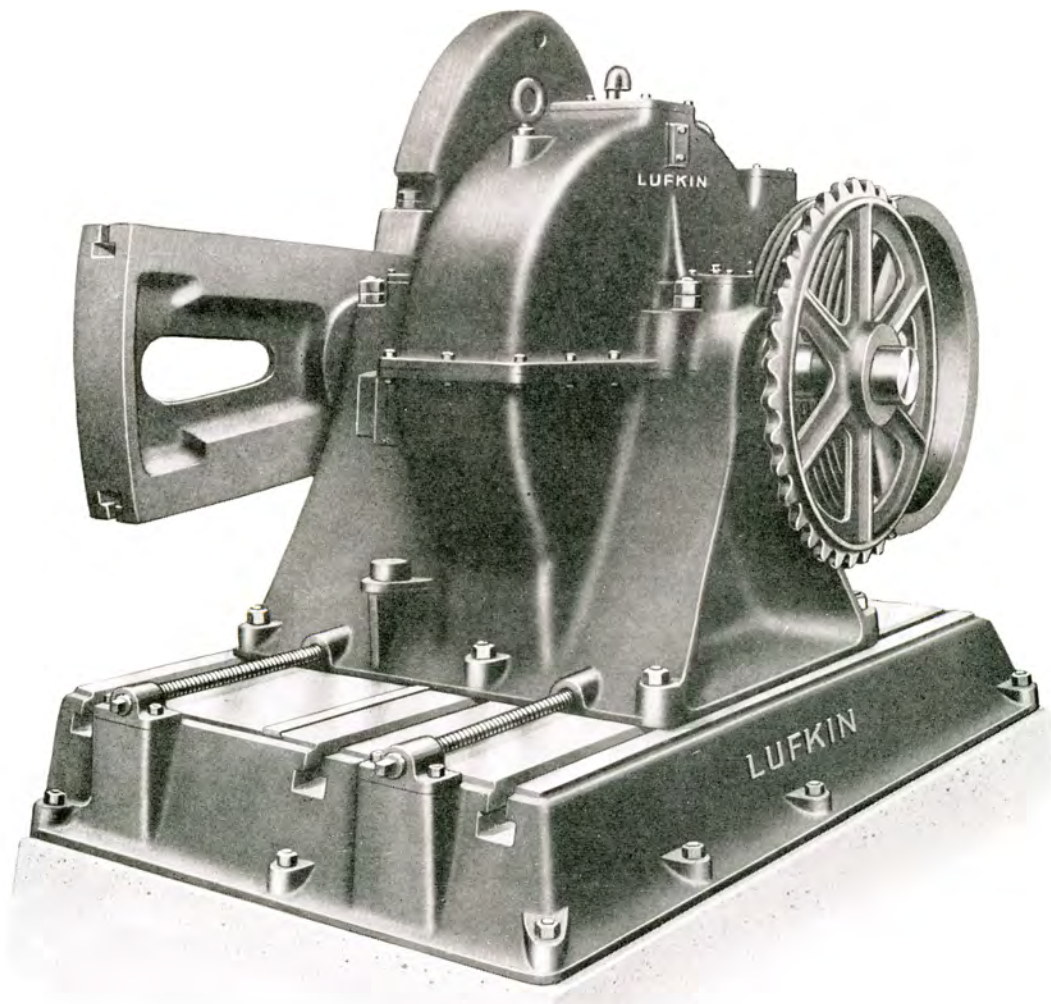


Lufkin Herringbone Gear Units are nicely adapted to the single cylinder engine drive. With the use of the "V" belt drive, shock and pulsation, commonly the source of trouble when direct connected, is entirely eliminated.

Note: Unit is on sliding base. On some original installations, (see page 29), a tightener on the inside of the belts was used very successfully. The slide base, however, is found more practical and is now furnished as standard equipment for

this type of installation. (It has also been found that a slight advantage is gained by setting the Unit 10 to 16 inches back of the usual center in that a better operating angle is obtained between the walking beam and the Pitman, when lifting.) About the same advantage is obtained by pumping anti-clockwise, as many are pumping where electric power is used. All reverse clutches are eliminated on this type of drive. "V" pulley and belts with clutch and extension shaft are furnished to fit any size or make of gas engine.

## LUFKIN PERMANENT EQUIPMENT



### **Lufkin Herringbone Unit, Left Hand Drive on Slide Base, Particularly for Gas or Steam Engine Drive**

This is the regular Lufkin Herringbone Unit, specifications of which can be found on page 16 fitted to slide base for steam or gas engine drive.

Blue print installations showing types of this installation are found on page 23.

The gear box of this Unit is interchangeable with the regular unit and if found desirable to use electric power this may be done by setting the motor on concrete behind the Unit in the usual manner.

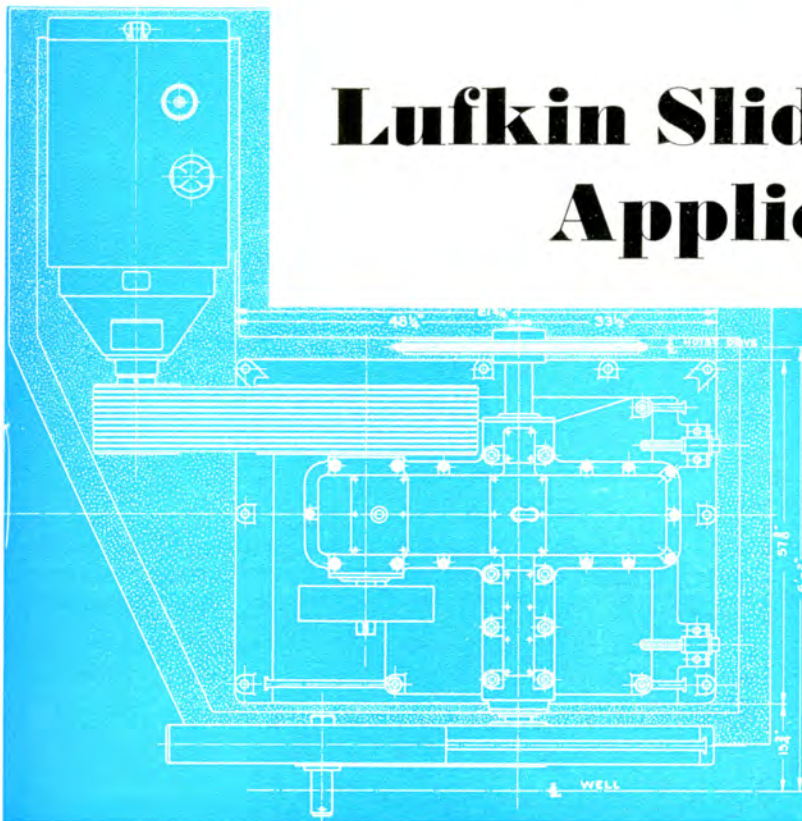
# LUFKIN PERMANENT EQUIPMENT

## Lufkin Slide Base Unit Applications

### Application Buda-Multi- Cylinder Engine to Herringbone Unit With Slide Base

See descriptive matter pages  
21 and 22

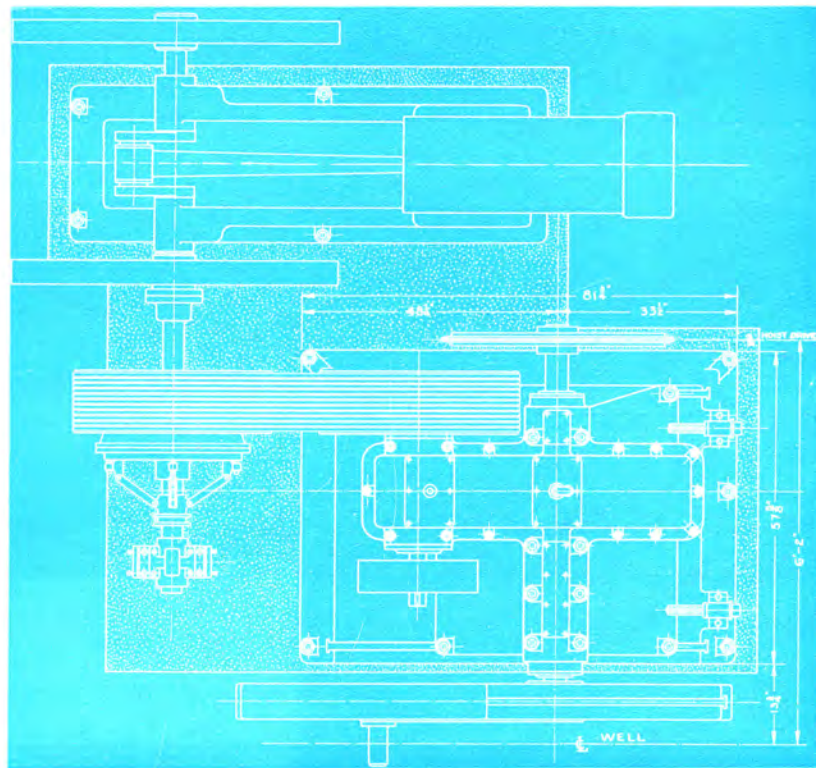
Code:  $\left\{ \begin{array}{l} 6\frac{1}{2}'' \text{ FAAKY} \\ 5\frac{1}{2}'' \text{ FAALZ} \end{array} \right.$



### Application Single Cylinder Engine to Her- ringbone Unit with Slide Base Unit

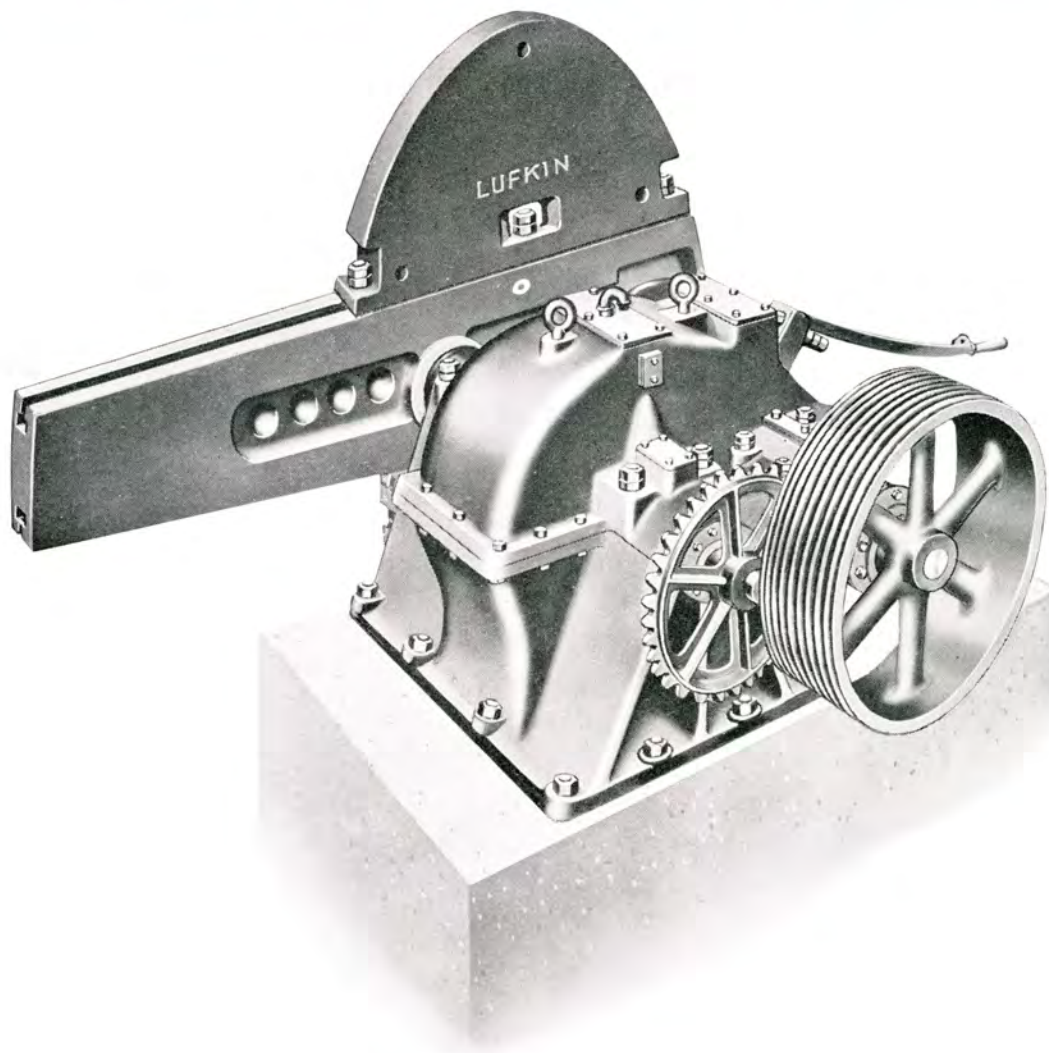
See descriptive matter pages  
21 and 22

Code:  $\left\{ \begin{array}{l} 6\frac{1}{2}'' \text{ FAAMB} \\ 5\frac{1}{2}'' \text{ FAANC} \end{array} \right.$





# LUFKIN PERMANENT EQUIPMENT



## Lufkin Junior (5-in.) Herringbone Unit--- 48-in. Stroke

Made as illustrated, also with slide base for gas engine as on page 26

### SPECIFICATIONS

Stroke—21"-30"-39"-48".

Gear Shaft—5-15/16" gear fit, 4-15/16" in bearings.

Pinion—3-11/16" in bearings, 2-15/16" pulley fit.

Bronze bearings on gear shaft.

Hyatt Bearings on pinion shaft.

Master Gear 34" P. D. 119-T 8" face.

Pinion—4" P. D. 14-T 8" face.

Ratio—8.5 to 1.

"V" Belt Pulleys to suit motive power.

We recommend 15-H.P. plain induction motor 900 or 1200 speed, or a 15/40 Y-Delta motor if hoist is used.

### GENERAL

This unit uses the same crank as our standard 4 1/2" worm gear unit especially to meet a demand for a medium herringbone gear unit for high speed electric motors, also 25-H. P. single cylinder gas engines to use in fields where wells are generally pulled with tractors.

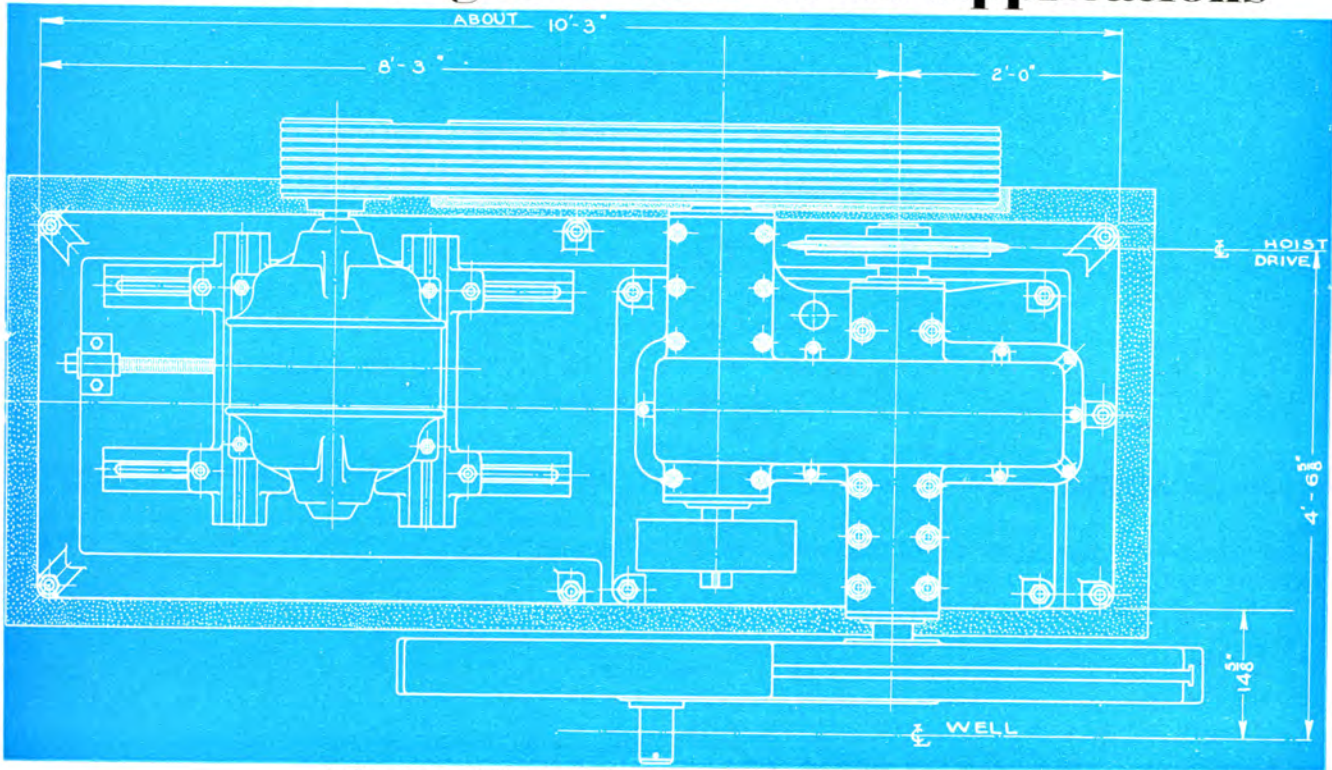
While a hoist sprocket is furnished, it is only suitable to drive a line shaft hoist where driven sprocket is located in middle of line shaft.

This unit is designed like our larger units in every way except smaller in size.

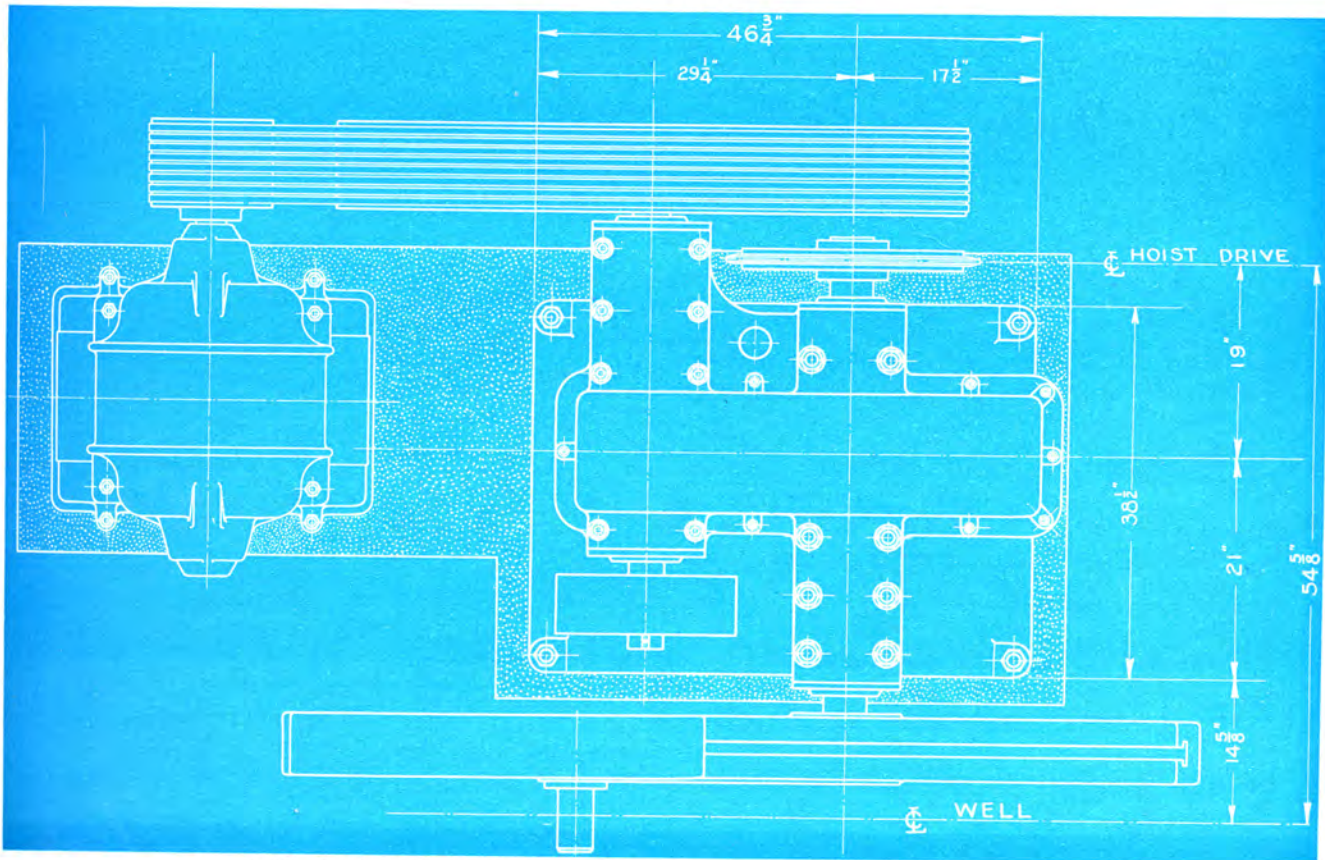
The gear box can be set directly on concrete for electric motor drive, or we will furnish a bed plate also, as shown on page 25.

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Herringbone Unit Drive Applications

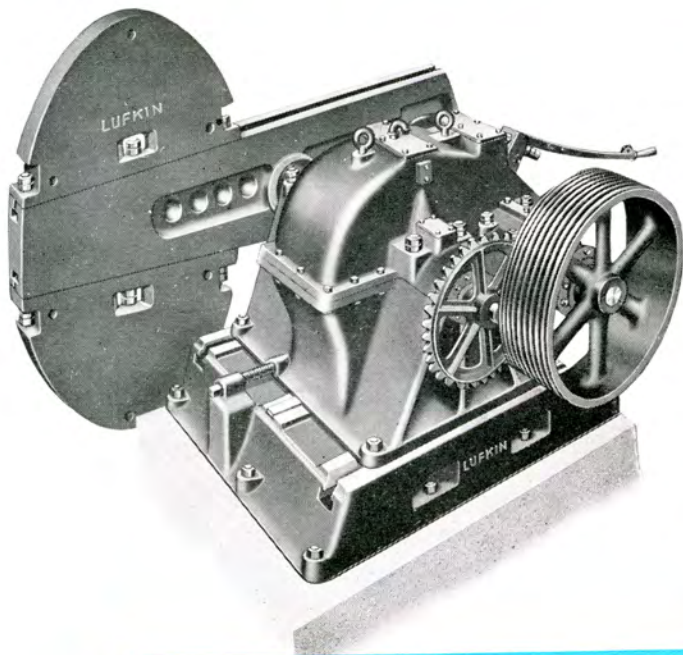


Lufkin Junior (5") Herringbone Unit with base for Electric Motor  
Code: FABAH



Lufkin Junior (5") Herringbone Unit without base for use with Electric Motor  
Code: FABUM

# LUFKIN PERMANENT EQUIPMENT

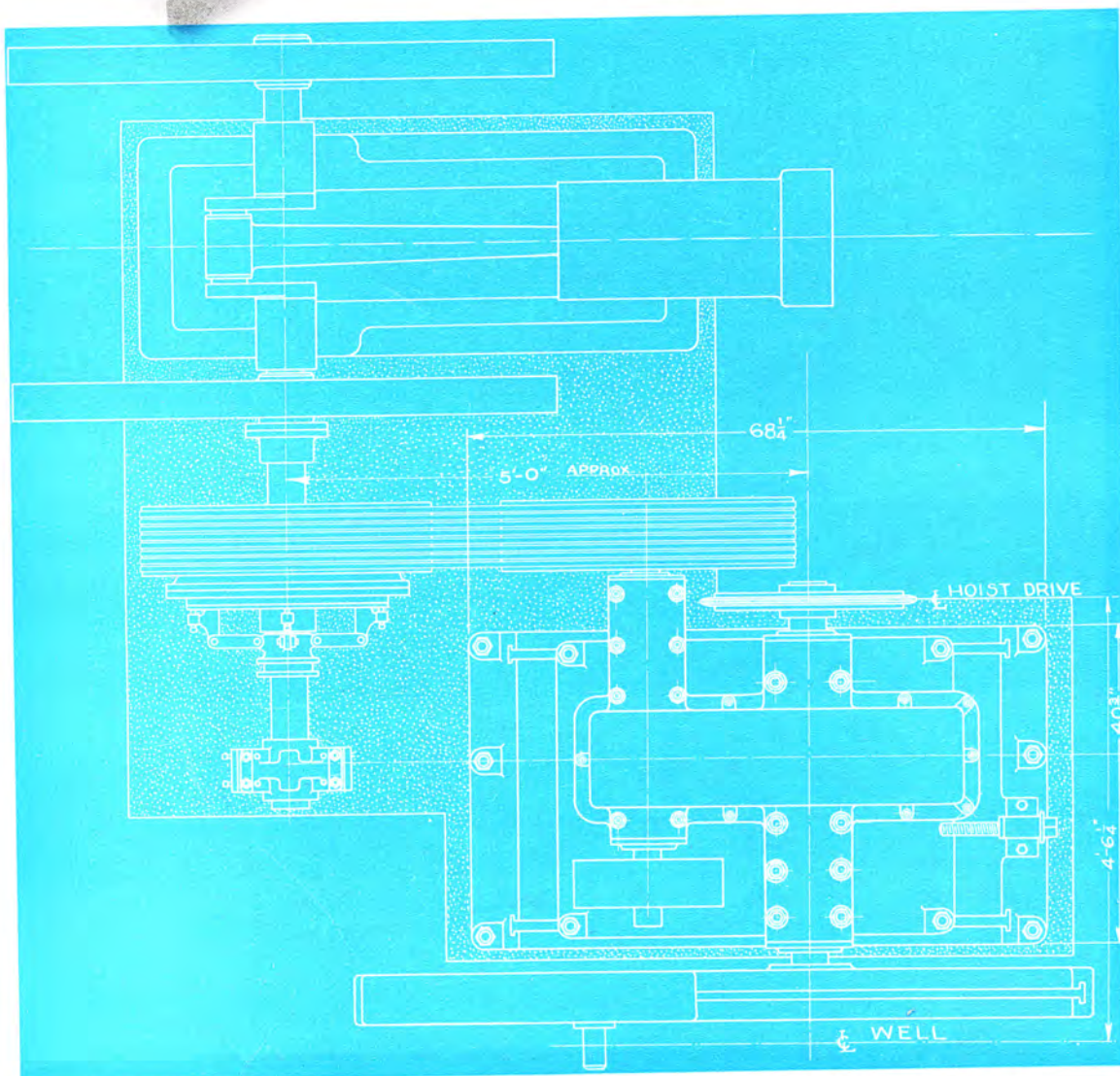


## LUFKIN JUNIOR HERRINGBONE UNIT 5-in. Shaft 48-in. Stroke SLIDE BASE

### LUFKIN JUNIOR HERRINGBONE UNIT WITH "SLIDE BASE" FOR GAS ENGINES

This is the same unit shown on the two preceding pages except provided with a slide base to use with single cylinder or Buda gas engines.

25 to 30 H.P. single cylinder engines are recommended running at 200 R. P. M. or a YR-4 Buda multi-cylinder engine, operating at 700 R. P. M.



Lufkin Junior (5") Herringbone Unit with slide base for use with Multi-Cylinder or Single Cylinder Engine — Code: *FABOL*

# LUFKIN PERMANENT EQUIPMENT

## Drilling With Cable Tools *and* Lufkin Herringbone Units

*Simms Oil Company, in August 1930, set new drilling record with Lufkin Herringbone Unit*

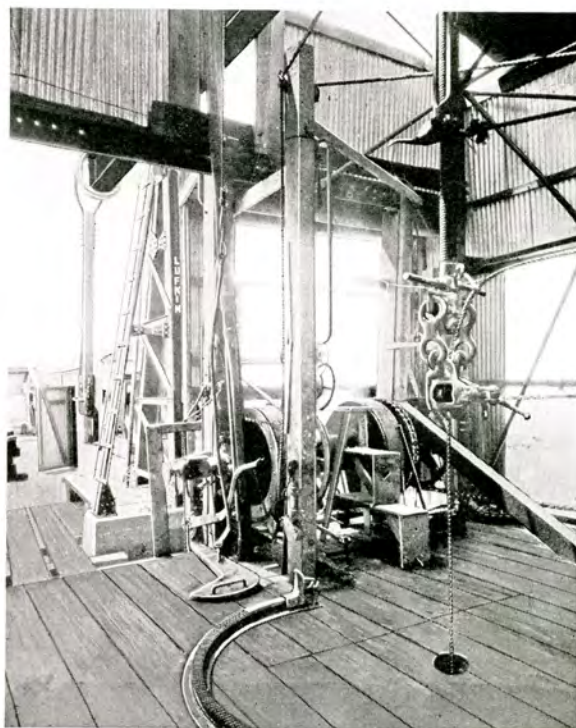
### 3650-foot Well Completed in 37 Days

What is believed to be a record in cable tool drilling is that established by the Simms Oil Company on their Simms-Phillips U. No. 3 in the Ector County pool in West Texas in August, 1930.

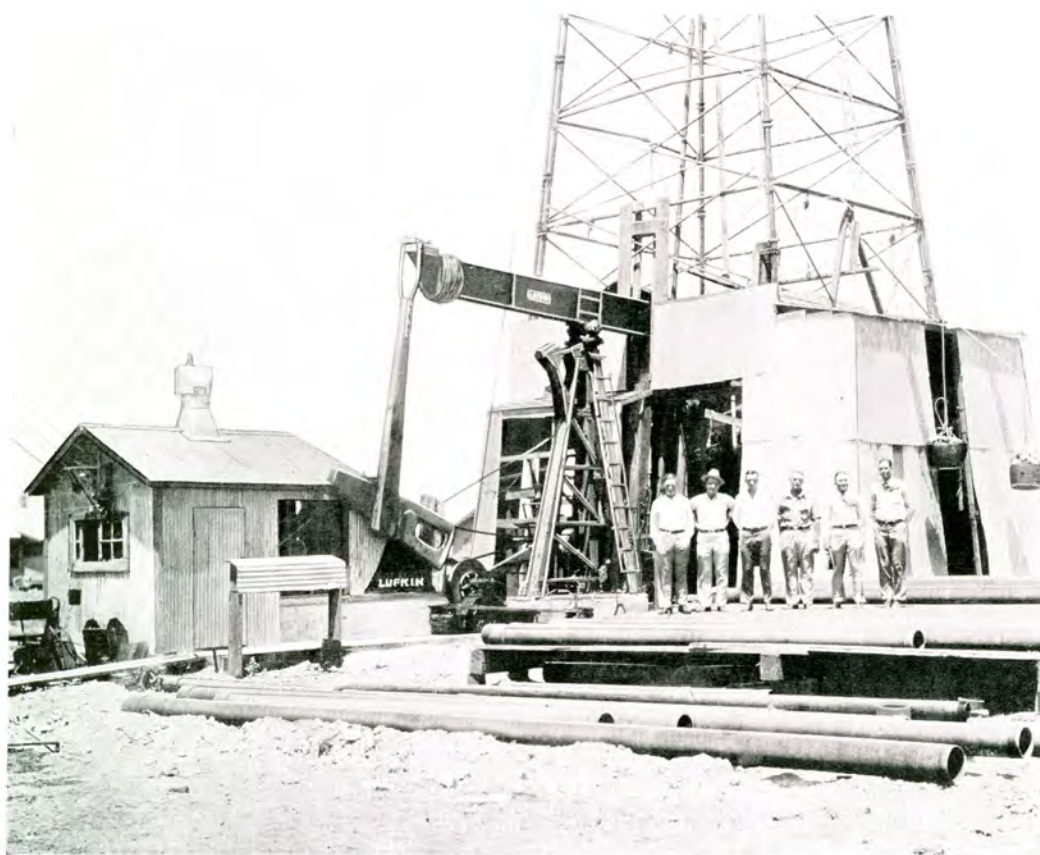
This well was equipped with a Lufkin 6½-inch Heavy Duty Herringbone Unit, which was driven by a 55/25 G. E. Motor. The casing was run off of a Lufkin No. 522 Hoist and the tools were handled by a chain driven bull wheel from the Unit.

This well was completed in thirty-seven days to a depth of 3650 feet, which is understood to be the fastest time in which this company has ever completed a well with cable tools from the top of the ground to this depth. From information we have a well on a nearby lease required forty-seven days to complete.

A complete report showing a detailed account of the expense of drilling this well, including labor, power consumed in spudding, drilling and setting pipe, together with a log of the Simms-Phillips U. No. 3 will be gladly sent to interested oil men upon request.



On the floor of Simms-Phillips U. No. 3 showing Lufkin equipment which set a new record for cable tool drilling.



Lufkin equipment and drilling crew that set a new record for cable tool drilling in Ector County, West Texas. Reading from left to right: T. J. Saugher, tool dresser; E. D. Ruse, driller; E. T. Barnes, tool dresser; A. T. Nuttall, driller; J. D. Best, Lufkin representative; S. P. Todd, tool pusher.

# LUFKIN PERMANENT EQUIPMENT

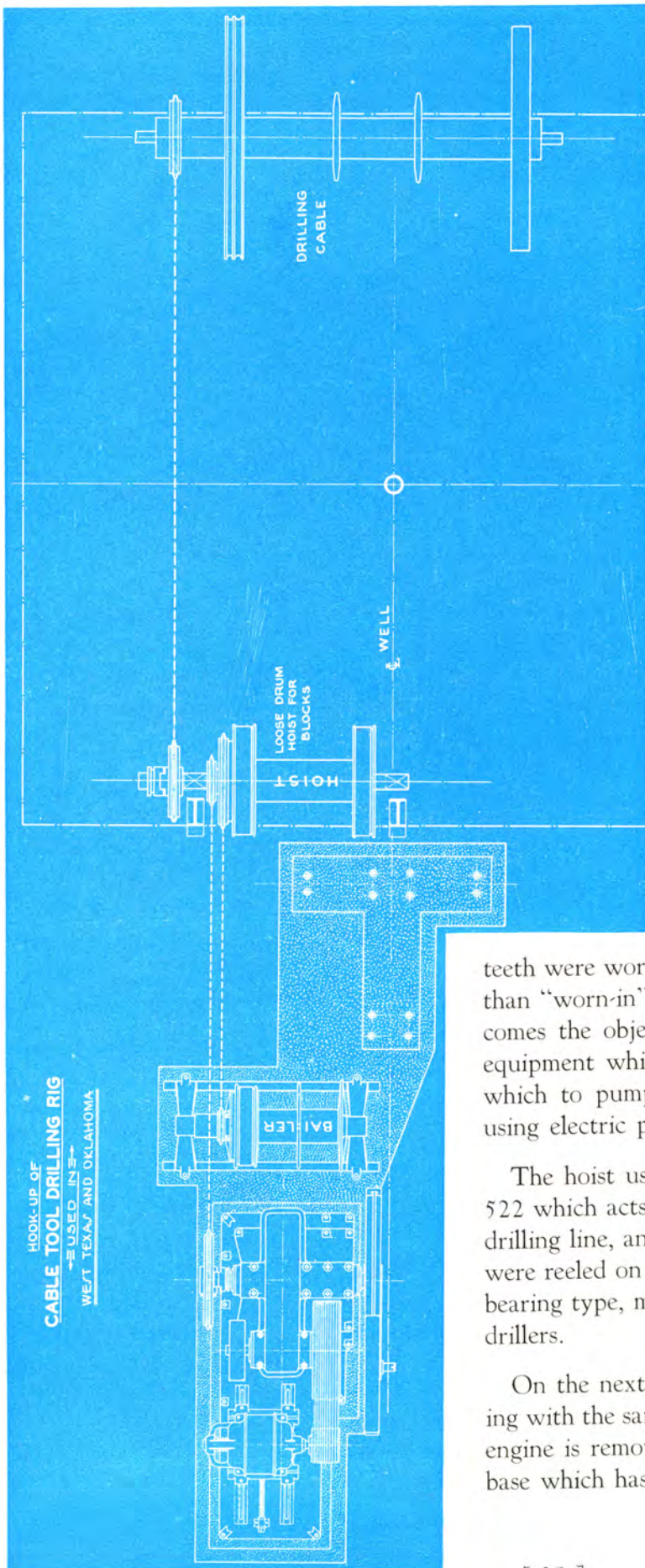
## Drilling With Lufkin Units

While operators have often "drilled in" with cable tools and Lufkin Worm Gear Units (two wells drilled from the surface) the Lufkin Herringbone Units have shown, in actual practice, to give a "complete fall" to the tools. As a result of this "complete fall," Lufkin Units are found to be ideal for cable tool drilling; are very economical in the use of power and wells are completed in less time than is possible with present day cable tool drilling methods.

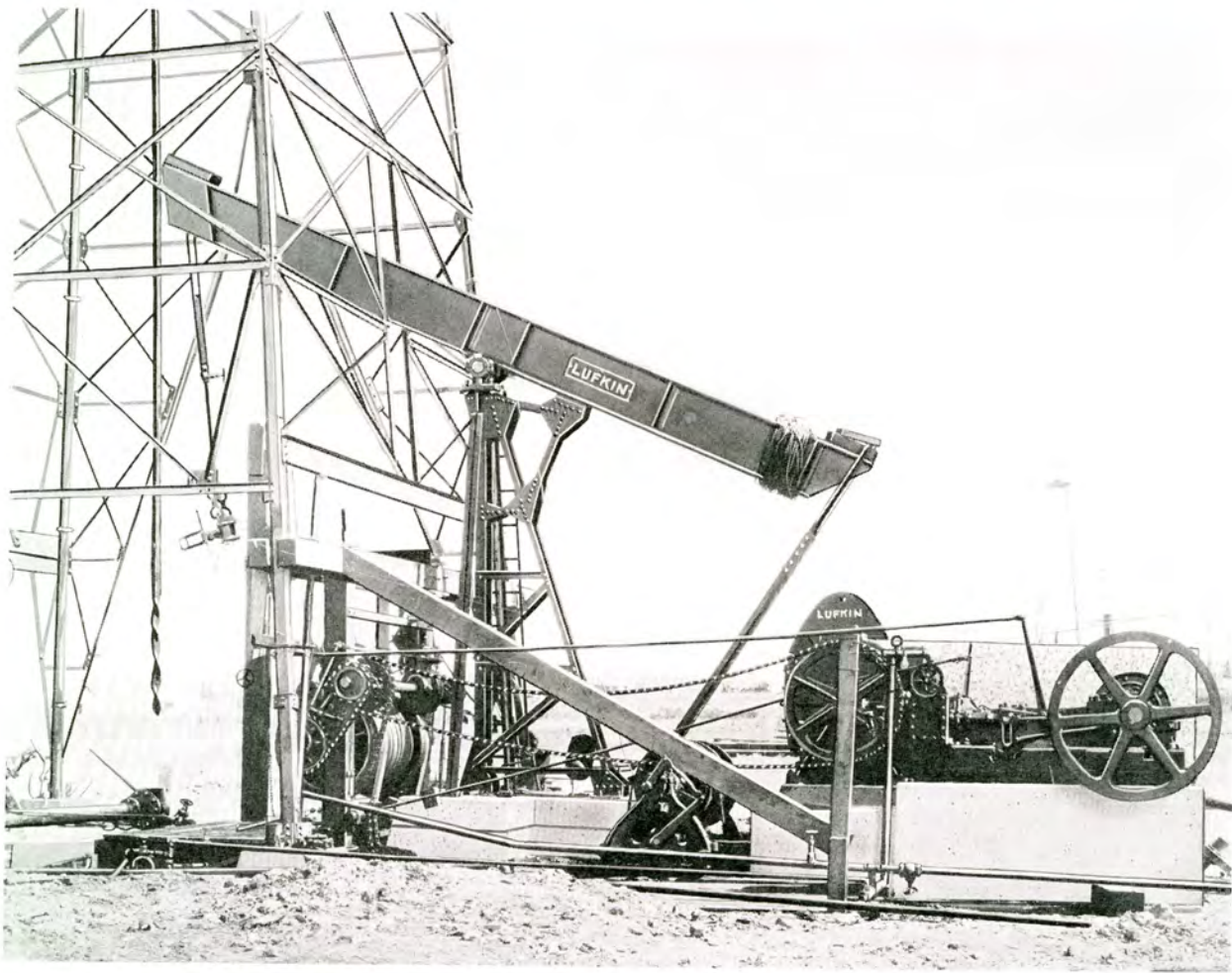
After drilling the well shown on the opposite page, a close inspection of the gear teeth was made and most of the tool or cutter marks were still in evidence. On the load side of the gear, measurements were taken with a vernier caliper and it was found that the teeth were worn .0095" so that the gears were hardly more than "worn-in" when the well was completed. This overcomes the objection of some operators to "wearing out" equipment while drilling, leaving an inefficient unit with which to pump the well during its life, especially when using electric power.

The hoist used on this particular well was our number 522 which acts as a countershaft, driving bull wheels with drilling line, and bailer, (as shown). Traveling block lines were reeled on hoist proper, being of the loose drum roller bearing type, making a handy, speedy rig well liked by the drillers.

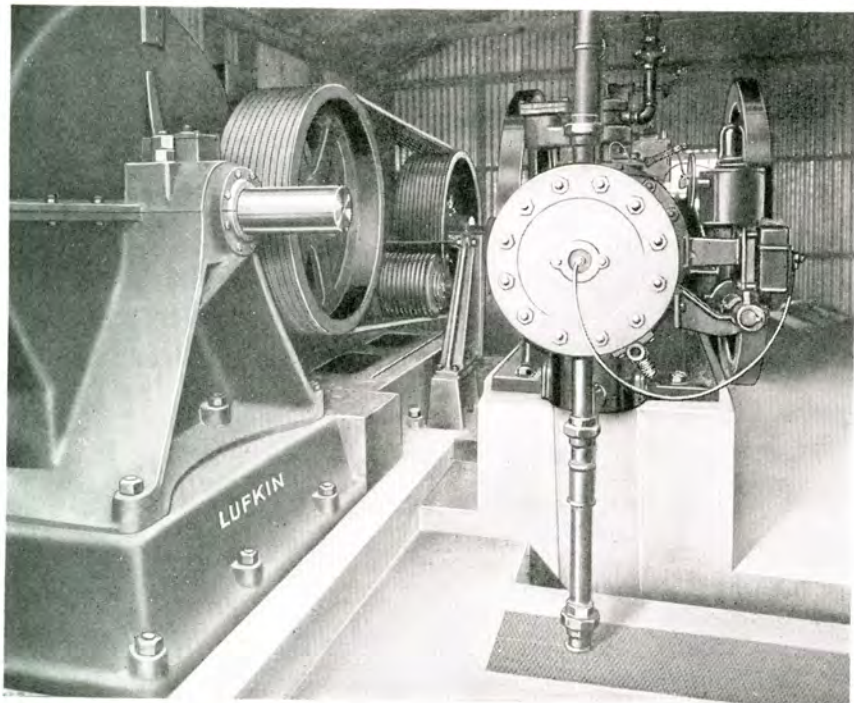
On the next page we illustrate a steam engine for drilling with the same hook-up. After well is completed, steam engine is removed and gas engine set directly on concrete base which has previously been prepared.



# LUFKIN PERMANENT EQUIPMENT



Drilling (Cable Tool) with steam engine. Later steam engine is replaced with gas engine on foundation prepared. This installation in Pampa district.



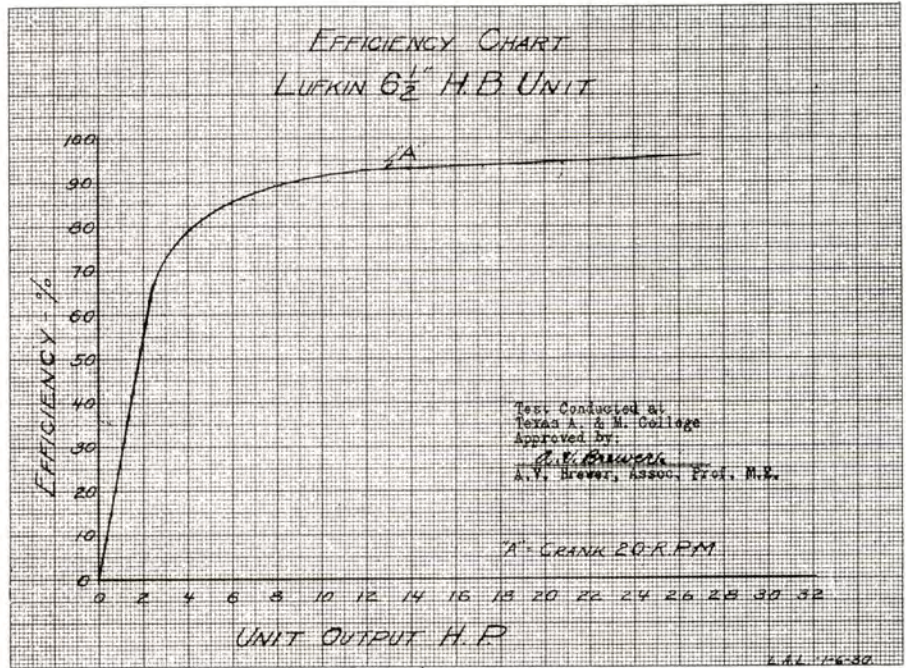
Typical Herringbone Unit Installation with Single Cylinder Engine Drive

# LUFKIN PERMANENT EQUIPMENT

## University Test Shows Lufkin Sykes-Herringbone Unit High in Efficiency



Under the supervision of Mr. A. V. Brewer, Associate Professor of Mechanical Engineering, Agricultural and Mechanical College of Texas, College Station, Texas, and in co-operation with Lufkin Engineers in efficiency test of the new Lufkin Sykes-Herringbone gear was conducted, using the 6½" Heavy Duty size.

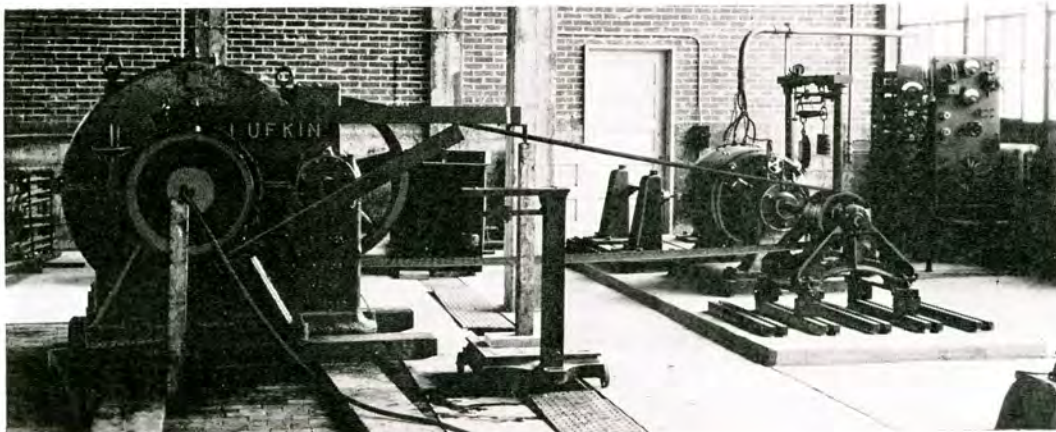


Efficiency chart Lufkin 6½" Herringbone Unit, result of test conducted at A. & M. College of Texas, under supervision of A. V. Brewer, Associate Professor of Engineering

The chart, approved by Professor Brewer, is submitted with this brief mention and tells the whole story. The input load to the Unit was measured by means of a General Electric dynamometer and the output load by means of a Prony Brake on the crank shaft of the Unit. The photograph below shows the details of the testing set-up.

Curve "A" is the characteristic efficiency curve obtained from this test with the crank shaft running approximately 20 R.P.M. and the dynamometer motoring at approximately 610 R.P.M.

One will readily recognize, by analyzing the chart, the high efficiency of the new Lufkin Unit.



Lufkin Sykes-Herringbone Unit on the test block at A. & M. College

# LUFKIN PERMANENT EQUIPMENT

## Guide for Selecting Lufkin Units

We are especially anxious to have our equipment give satisfaction and lasting service over a period of years as this class of machinery should.

Our units are all designed with large factors of safety. They will stand tremendous overloads, yet, being designed for their main job of pumping and to secure long service and retain high efficiency it is very essential they be selected on a horse power input basis with ample leeway or reserve strength, that the wearing surface may have long life.

Most important also is having a unit with counter-weight heavy enough to balance the well. An unbalanced well results in a tremendous loss of power, and an unnecessary strain and wear on the pumping equipment.

If there are any Lufkin Units in service that are not satisfactory, 98% of the complaints are where too small a unit has been purchased. This we are well aware of, and are almost powerless to overcome, for in spite of our protests, the customer too often takes a chance to keep down initial costs, and specifies the unit he believes he can "get by" with.

The selection of the correct size unit to pump a particular well, or of a group of units for the pumping of a number of wells, is a very difficult problem. First of all, the operating conditions should be diagnosed from a standpoint of what the well may develop into; mainly as to pumping depth, fluid to be handled and horse power required.

From a standardization standpoint, the pumping unit should be purchased large enough to efficiently, and economically handle the heaviest

pumping that it is possible to estimate, for the particular problem in hand, or for the heaviest pumping to which it may be necessary to move the unit due to later developments.

In order to assist in selecting a unit, we have devised a chart (shown on next page) which gives the size of unit which will operate satisfactorily under average well conditions, at various pumping depths, and varying production in barrels per 24-hours. This chart has been arrived at on a theoretical basis and the assumption that we are pumping fluid equivalent to the weight of water; as the average United States Crude Oil has a gravity of about 32 degrees A. P. I. and is about 13% lighter than water. This is a conservative figure. Well friction due to moving parts and internal friction of the oil and friction of the oil against the tubing is a difficult item to compute and makes the chart only an approximation at best. Viscosity varies with temperatures and different viscosity oils have widely different friction head losses. For this reason the unit selection chart should be used as a guide and, before the size of the unit is decided upon, all of the well conditions should be considered.

In using this chart, consideration should be given to the possibility of deepening the well to lower producing sands, also the practicability of moving the unit to other locations. In considering the fluid to be lifted, always consider the volume of water that may encroach and create the necessity for handling larger volumes of fluid as the well gets older.

Lufkin maintains an engineering department, trained and experienced in this particular work, and will gladly co-operate with you in the selection of suitable equipment for your individual requirements.



# LUFKIN PERMANENT EQUIPMENT

## Unit Selection Guide

See text matter on page 31

BARRELS FLUID PER DAY	WELL DEPTH IN FEET						LOWER
	2000	2500	3000	3500	4000	4500	
50	BABY 4½ WORM GEAR * RATED H.P.=10						
100							
150							
200							
250							
300	STD. 4½ WORM GEAR ; JUNIOR 5" HERRINGBONE - RATED H.P.-17*						
350							
400							
450							
500							
550	5½ INTERMEDIATE WORM 5½ HERRINGBONE GEAR * RATED H.P. 25						
600							
650							
700							
750							
800	6½ HEAVY DUTY WORM GEAR 6½ HEAVY DUTY HERRINGBONE GEAR * RATED H.P. 35						
850							
900							
950							
1000							
PRODUCTION GREATER THAN 100	* RATINGS AS GIVEN ABOVE ARE THE H.P. LOADS FOR WHICH THE UNITS HAVE BEEN DESIGNED TO GIVE LONG CONTINUOUS SERVICE THEY HAVE, OF COURSE, LARGE FACTORS OF SAFETY TO HANDLE THE HEAVY LOADS NECESSARY TO SERVICE THE WELL, BUT PUMPING LOADS FOR 24 HRS. SERVICE SHOULD NOT EXCEED RATED H.P. IF UNITS ARE EXPECTED TO LAST.						

In using this chart, consideration should be given to the possibility of deepening the well to lower producing sands, also the practicability of moving the unit to other locations. In considering the fluid to be lifted, always consider the volume of water that may encroach and create the necessity for handling larger volumes of fluid as the well gets older.

# LUFKIN PERMANENT EQUIPMENT

## Selecting Type of Electric Motor for Use With Lufkin Units

Lufkin Units were originally designed to be driven by oil field type (G. E. type OMT) motors. At the present three distinct classes of motors are used, dependent upon the class of service to be performed by the pumping unit and the motors as follows:

**FIRST CLASS**—The oil field type motor (G. E. type OMT) a slip ring induction motor should be used for pumping, pulling and the performance



Type OMT-536, 35/15-hp., Two-speed Oil Well Motor, with Both Speeds Variable, for Pumping, Pulling, and Cleaning

of all of the operations necessary in maintaining a producing well. This motor offers the greatest flexibility for oil field use and is designed for the rough usage accorded a motor in the oil fields.

All of the oil field type motors are 3-phase, 440-volt machines for operation on either 60 or 50 cycles, and all are 6/12 pole motors with synchronous or no load speeds of 1200/600 R.P.M. on 60-cycles and 1000/500 R.P.M. on 50-cycles. The standard ratings on either frequency are 35/15 H.P. 55/25 H.P. and 75/35 H.P. The low side of motor is used for pumping and the high side is used for pulling and servicing. The speed is variable on both high and low side.

**SECOND CLASS**—Y-Delta motors (G. E. type



Type K Single Speed Y-Delta Motor



Assembled and Wired Control Unit for 35/15-hp. Two-speed Oil Well Motor

K) are used for pumping and a certain class of pulling.

The Y-Delta motor is usually a standard delta connected motor with the Y-connections brought out. It is constant speed with two horsepower ratings. High torque motors may also be used as Y-Delta motors.

**THIRD CLASS**—Standard constant speed motors started directly across the line may be used for pumping only. This type of motors are usually used with the Lufkin Baby Units. Either G. E. type K or type FTR motors are used for this class of service. The type K has a better running torque but lower starting torque than the FTR motor.

### MOTOR SIZES AVAILABLE FROM STOCK

Type—Speed—	Sizes—H. P.
OMT—(Oilfield two speed) 1200/600	35/15—55/25—75/35
K—(Y-Delta) 900	40/15—50/20
FTR—(General Purpose) 1200/900	5—7½—10—15—25

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Worm Gear Units



### TYPICAL WORM GEAR INSTALLATION

This installation on the lease of one of the larger operators includes Lufkin 6 $\frac{1}{2}$ " Worm Gear Unit driven by 15/40 Y-Delta Motor with "V" Belt Drive. Lufkin equipment includes Lufkin No. 522 Hoist with steel Jack Posts, Lufkin Self-Supporting Samson Post, Lufkin "I" Beam type beam and Lufkin-Trout Oil-Bath Self-aligning Pitman.

### DESCRIPTION LUFKIN WORM GEAR UNIT

Lufkin worm geared units are now in use in all fields of the world and are so generally known that an extensive description is unnecessary.

This equipment is installed while drilling the well and is ready when well stops flowing.

Users find total installation cost of Lufkin Equipment is no more than Standard Rig Equipment and the saving in operating and maintenance cost is a well known and established fact.

They are built in four sizes and listed on the following pages as 6 $\frac{1}{2}$ " Heavy Duty, 5 $\frac{1}{2}$ " Intermediate, 4 $\frac{1}{2}$ " Standard and 4 $\frac{1}{2}$ " Baby Unit.

# LUFKIN PERMANENT EQUIPMENT

Also two sizes of worm driven central powers that are recognized as very efficient, practical and having many advantages over old style band wheel powers. Ultimate installation costs are lower.

While, as stated in our introduction, worm gears, especially in the larger sizes, are not quite

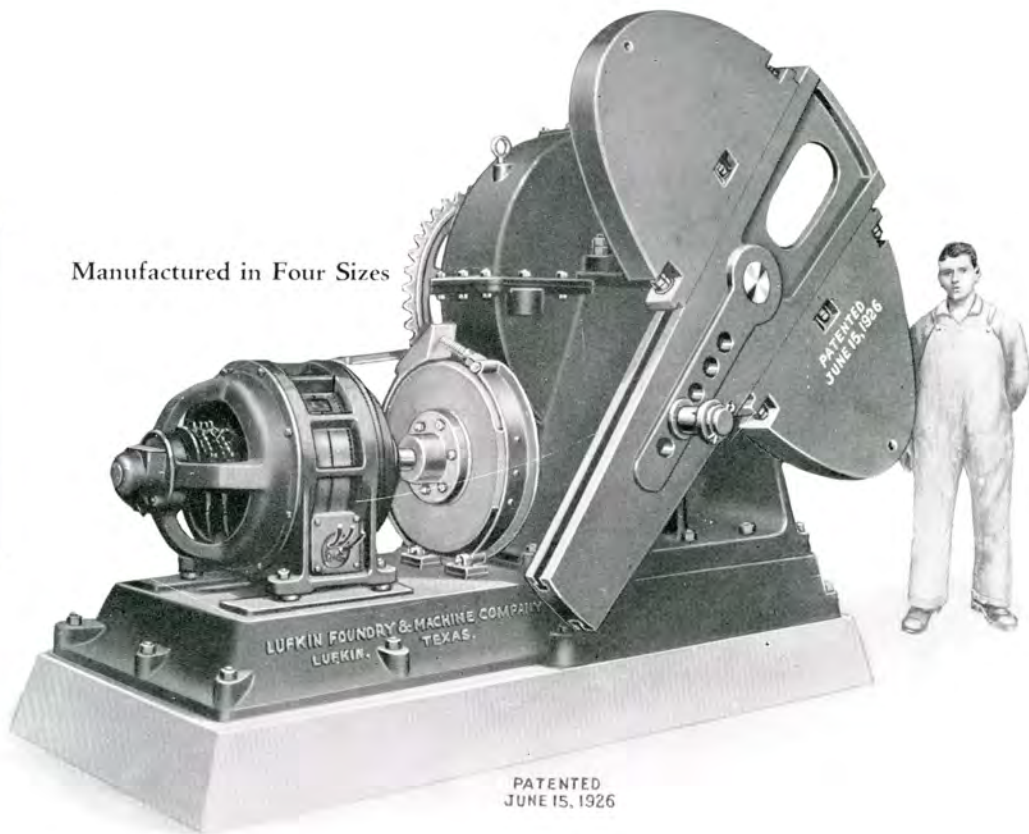
have been purchased, and we believe they will be giving real daily service for many, many years to come.

Originally made for the two speed double powered oil field type motors direct connected as shown, we have hundreds of Y-Delta motors in



*Cross Section Lufkin Worm Gear Unit. Note generous size of bearings, Alloy Steel shaft and efficient lubrication.*

Manufactured in Four Sizes



as efficient as the herringbone gears, it is somewhat of a question if not in the long run it is the more economical gear of the two. It has many advantages and for pumping service only cannot be equaled.

The longer it runs the more efficient it becomes, and after years of service the ring gear and worm are easily replaced.

Being naturally a self-locking gear it handles the uneven, unbalanced load of the heaviest oil wells in absolute steady motion with seeming ease and quietness.

After nearly seven years experience we can safely state that our claims for long wear and service have been fully justified where proper size units

use direct connected, also with "V" belt drives as shown on page 44.

The smaller Units—known as "Standard" and "Baby" are usually driven with plain induction motors.

As stated on page 13, these units pair up size for size with the herringbone gears—except the Baby Unit is not duplicated in the herringbone line, due to the fact that to secure the reduction double gears would be necessary which would not be as efficient as our worm gear with its step-down (20 to 1 and 30 to 1 ratios) making it a most practical unit with few parts to wear, all of these easily renewable.

The following pages show detailed construction sizes and applications of any Power Unit.

# LUFKIN PERMANENT EQUIPMENT

## Mechanical Construction

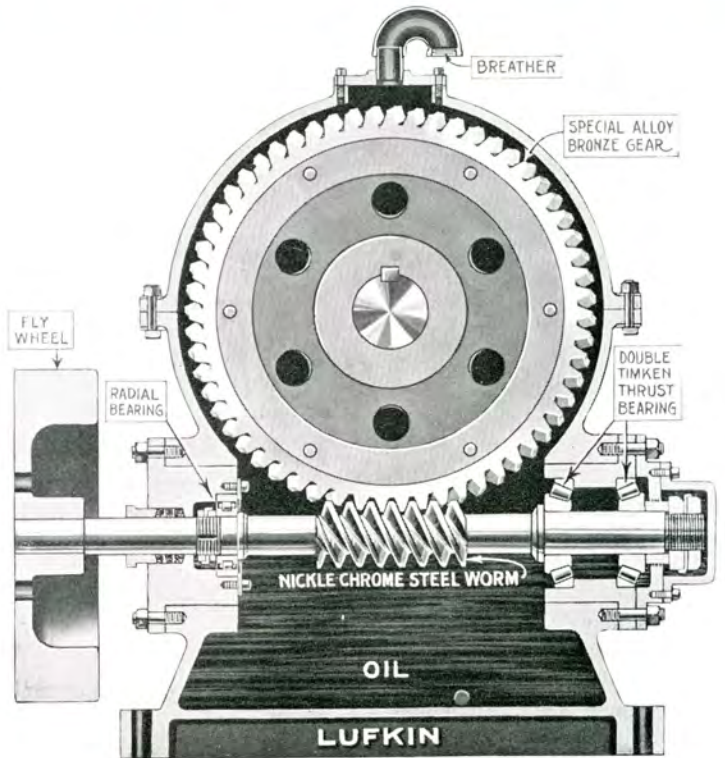
Lufkin Worm Gear Units are substantially built in a modern plant with up-to-date tools, of the best materials, and good workmanship.

All parts subject to wear are easily renewable.

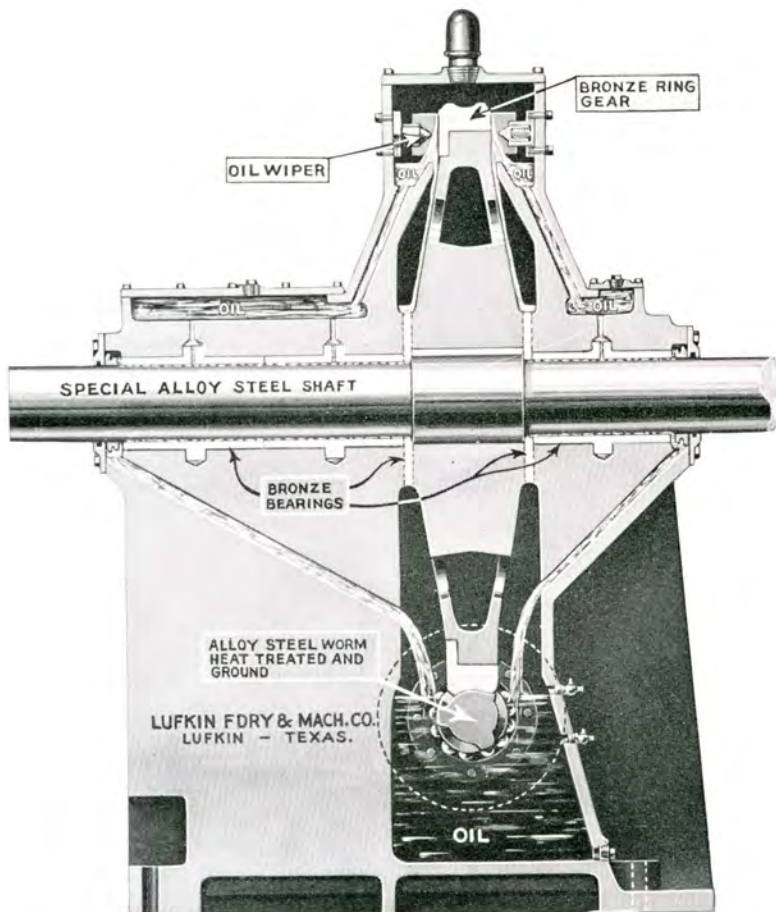
Absolutely automatic lubrication.

Crank Gear Shaft has interchangeable bronze bearings.

Worm Shaft has Timken Thrust and Roller Radial bearings.



Cross Section Lufkin Worm Gear



Across Shaft Section

Thrust Bearing is adjustable without changing the oil.

A. P. I. sizes as far as possible.

Tobin Bronze Gear Ring with alloy steel worm shaft, insures long life and real service.

Units are "run in" and thoroughly tested and adjusted before shipping.

Made strictly to gauges and templates.

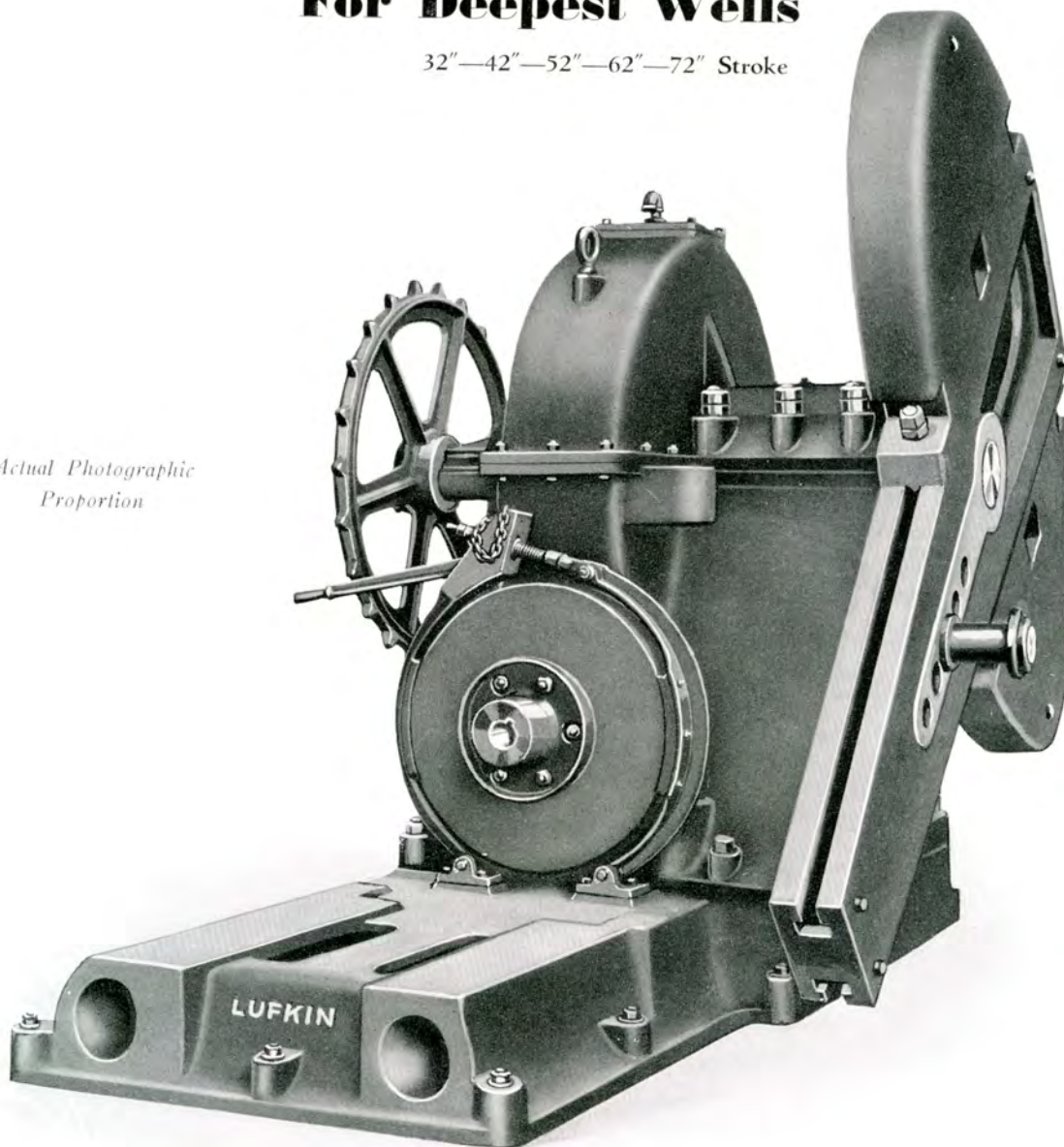
Shaft  
Bear  
Cran  
Gear  
Rati

# LUFKIN PERMANENT EQUIPMENT

## Heavy Duty Lufkin Worm Gear Pumping Unit For Deepest Wells

32"—42"—52"—62"—72" Stroke

*Actual Photographic  
Proportion*



### SPECIFICATIONS

**Shaft:** 6-7/16" diameter in bearings and crank; 7-7/16" diameter in gear.

**Bearing:** Crank side, 24" long, sprocket side, 12" long.

**Crank Pin:** 4" diameter, 6" pitman bearing length.

**Gear:** 49 1/2" pitch diameter, 4 1/2" face, 1 3/4" circular pitch.

**Ratios:** 29-2/3 to 1 triple thread, 22 1/4 to 1 quadruple thread.

**Worm:** 5-7/16" pitch diameter.

**Flywheel:** 30" diameter, 6" face, 3-7/16" bore.

Center of worm shaft to motor base, 17".

Center of crank shaft to top of foundation, 4' 7 3/4".

Center of well to center of hoist sprocket, 6' 2".

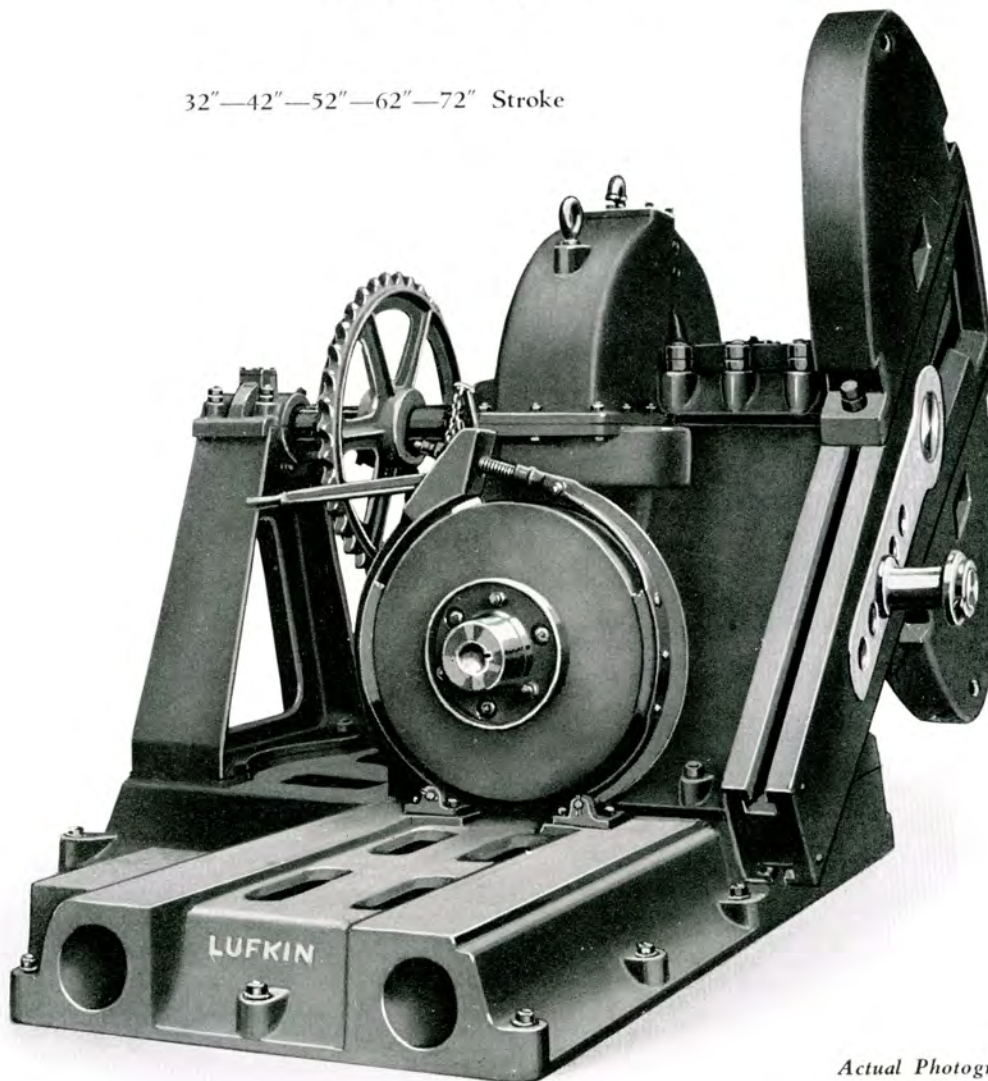
Power recommended: 55/25 or 75/35 horsepower electric motor, or No. 85 Buda gas engine.

*Note:* Calf wheel clutch sprocket applied, if desired, at extra cost. Center of well to sprocket 6'-8"

# LUFKIN PERMANENT EQUIPMENT

## Intermediate Lufkin Worm Gear Pumping Unit

32"—42"—52"—62"—72" Stroke



*Actual Photographic  
Proportion*

### SPECIFICATIONS:

**Shaft:** 5-7/16" diameter in bearings and crank; 6-7/16" diameter in gear.

**Bearings:** Crank side 20" long, sprocket side 10" long with Hyatt outboard bearing.

**Crank Pin:** 4" diameter, 6" pitman bearing length.

**Gear:** 40-7/8" pitch diameter, 3 3/4" face, 1 5/8" circular pitch.

**Ratios:** 26-1/3" to 1 triple thread, 19 3/4" to 1 quadruple thread.

**Worm:** 4-7/8" pitch diameter.

**Flywheel:** 30" diameter, 6" face, 3-7/16" bore.

Center of worm shaft to motor base 17".

Center of crank shaft to top of foundation 4' 2-3/8".

Center of well to center of hoist sprocket 6' 2".

Power recommended: (To suit conditions), 35/15, 55/25 horsepower electric motors, or No. 85 Buda gas engines.

**NOTE:** This unit was originally designed for a limit stroke of 62" and later to meet a demand for longer stroke on light production the additional hole (72") was added—really out of proportion to gear diameters.

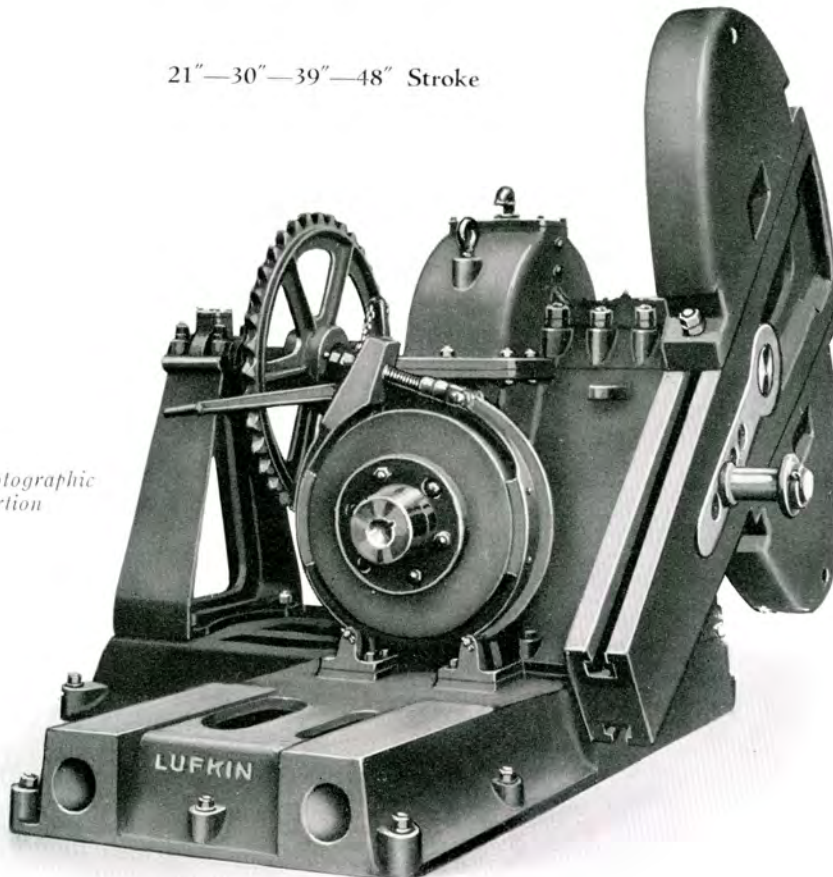
The Heavy Duty Unit should be used when 72" stroke is desired on heavy wells.

# LUFKIN PERMANENT EQUIPMENT

## Standard Lufkin Worm Gear Pumping Unit

21"—30"—39"—48" Stroke

*Actual Photographic  
Proportion*



### SPECIFICATIONS:

**Shaft:** 4 7/16" diameter in crank and bearings; 5 7/16" diameter in gear.

**Bearings:** Crank side, 16" long, sprocket side, 8" long, with Hyatt outboard bearing.

**Crank Pin:** 3/4" diameter, 6" pitman bearing length.

**Gear:** 28 3/16" pitch diameter, 3 1/2" face, 1 1/2" circular pitch.

**Ratios:** 19 2/3 to 1 triple thread; 29 1/2 to 1 double thread.

**Worm:** 3 15/16" Pitch diameter.

**Flywheel:** 24" diameter, 6" face, 2 7/16" bore.

Center of worm shaft to motor base 16".

Center of crank shaft to top of foundation 41 9/16".

Center of well to center of hoist sprocket, 6' 2".

Power recommended: 35/15 horsepower electric motor or No. 60 Buda gas engine.

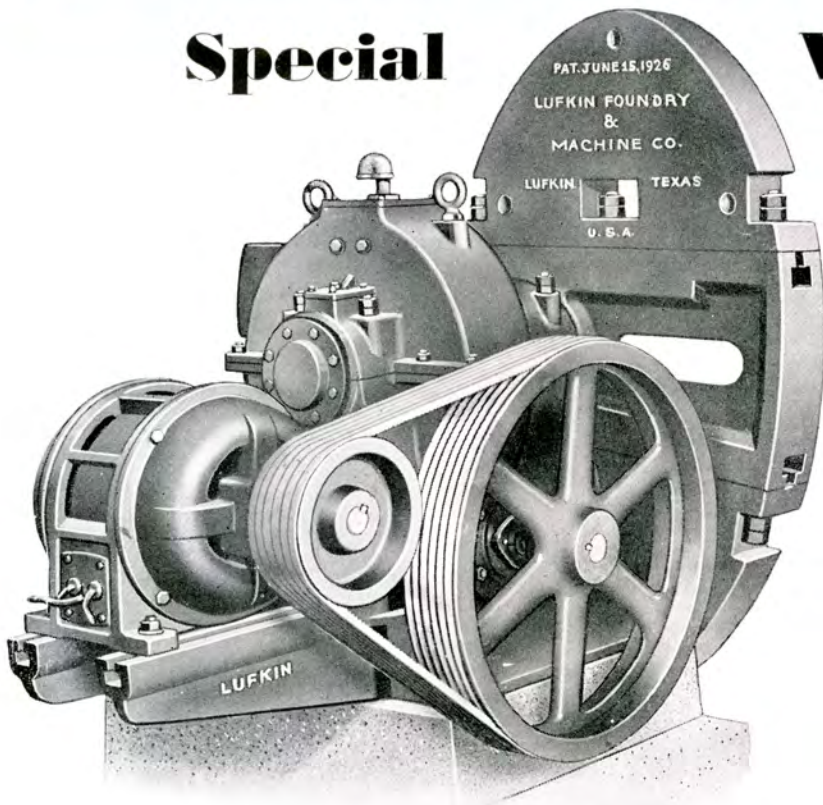


# LUFKIN PERMANENT EQUIPMENT

## Special

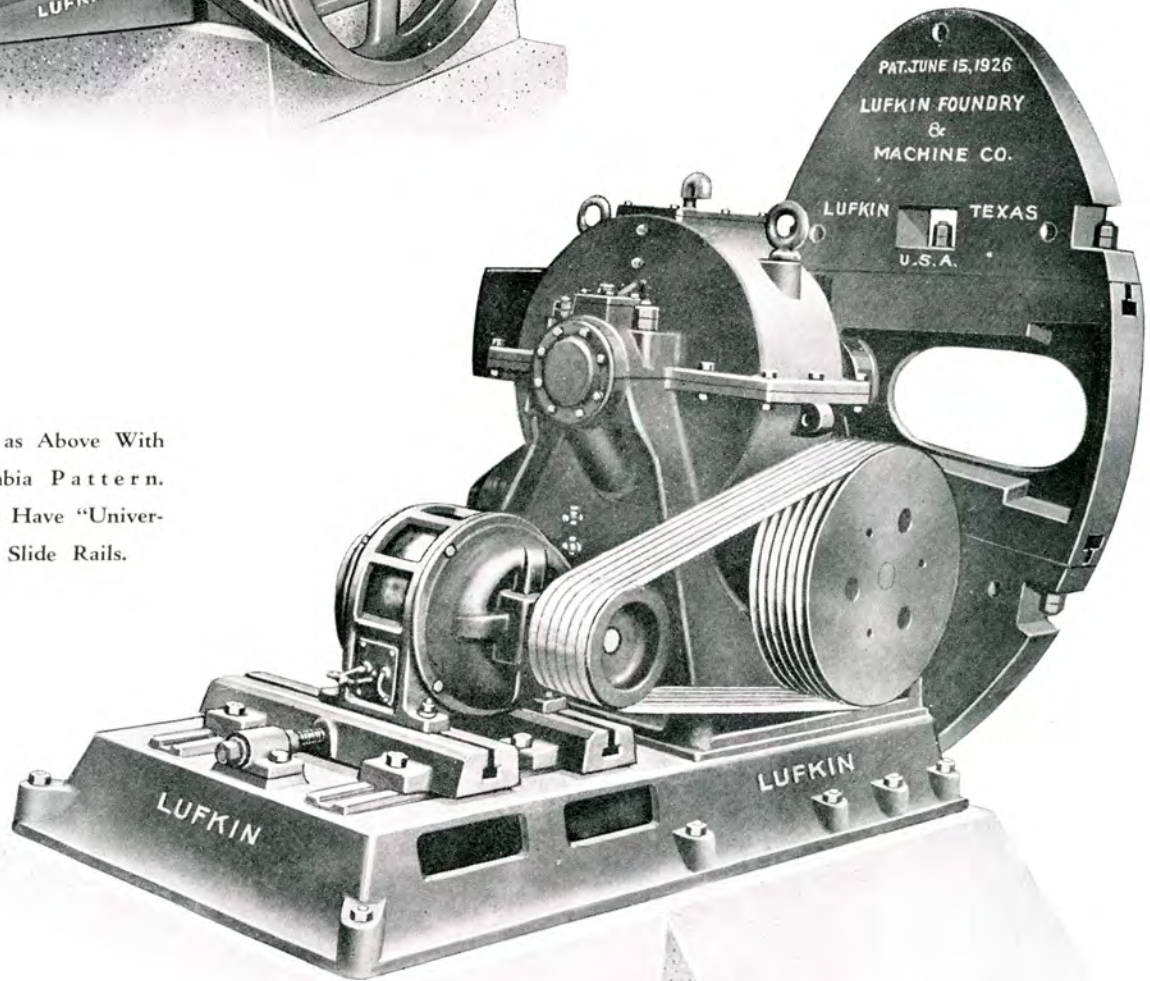
## Worm Gear

## Applications



Stripped Standard (4½) Unit — With "V" Type Drive Used with Plain Induction Motors where Tractors do the Pulling.

Same Unit as Above With Base Columbia Pattern. These Units Have "Universal" Motor Slide Rails.



# LUFKIN PERMANENT EQUIPMENT



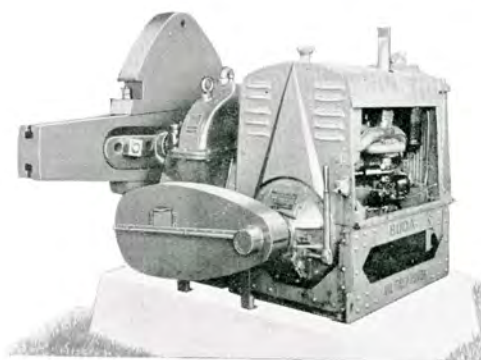
## Lufkin Baby Unit Complete Assembly



Lufkin Worm Gear Baby Units are extensively used for light wells 2500' and under where not over 10 H. P. is required to pump. They are very efficient in the use of power, run noiselessly and require very little attention. This unit was designed to serve individual wells in place of powers especially in rough country, making a great saving in power over pull rods, etc., that a central power requires.

NOTE: The Buda drive Unit at right shows arrangement for a small high speed engine WTU. We rather prefer to furnish a larger engine YR4 with direct connection as shown on page 46.

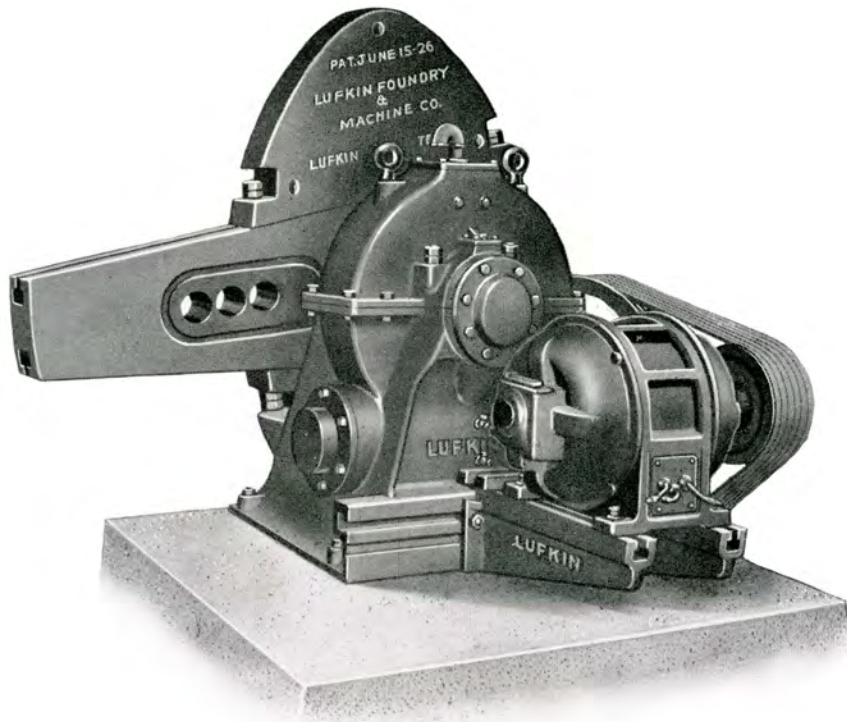
### *Buda Installation Lufkin Baby Unit*



Buda engines with silent chain or "V" belt drive, see note at left.

# LUFKIN PERMANENT EQUIPMENT

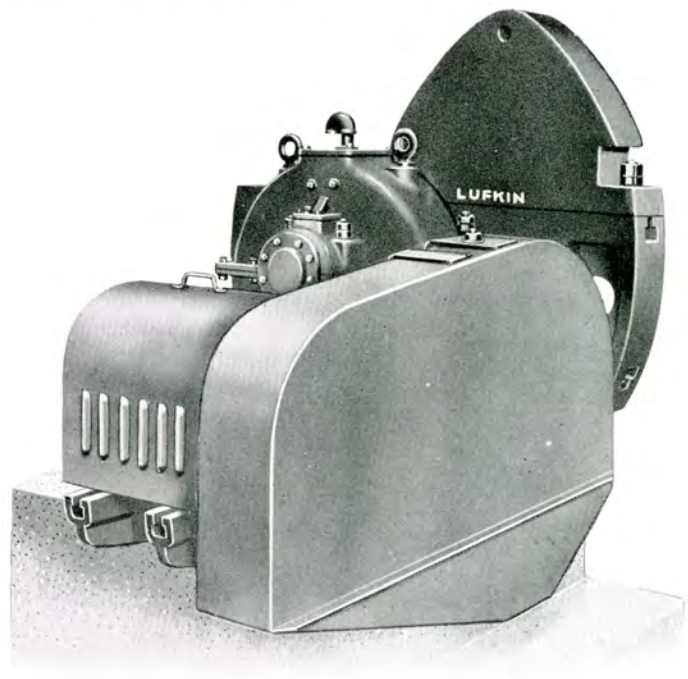
## Lufkin Baby Units



Lufkin Baby Unit, with Motor and Drive Cover Removed

### SPECIFICATIONS

- Strokes 16", 26", 36", 3-hole Crank.
- Crank Shaft 4-1/2" dia.
- Worm Shaft 2-15/16" dia.
- Gears are 23 1/2" P. D. 3" face.
- Regular ratio 20 to 1.
- Special ratio 30 to 1, on order.
- When ordering state make and size of motor and number strokes desired.
- Universal motor brackets provided.
- Samson Post base to center of saddle trunnion 8'-2 1/2".
- Walking Beam 7' working points.

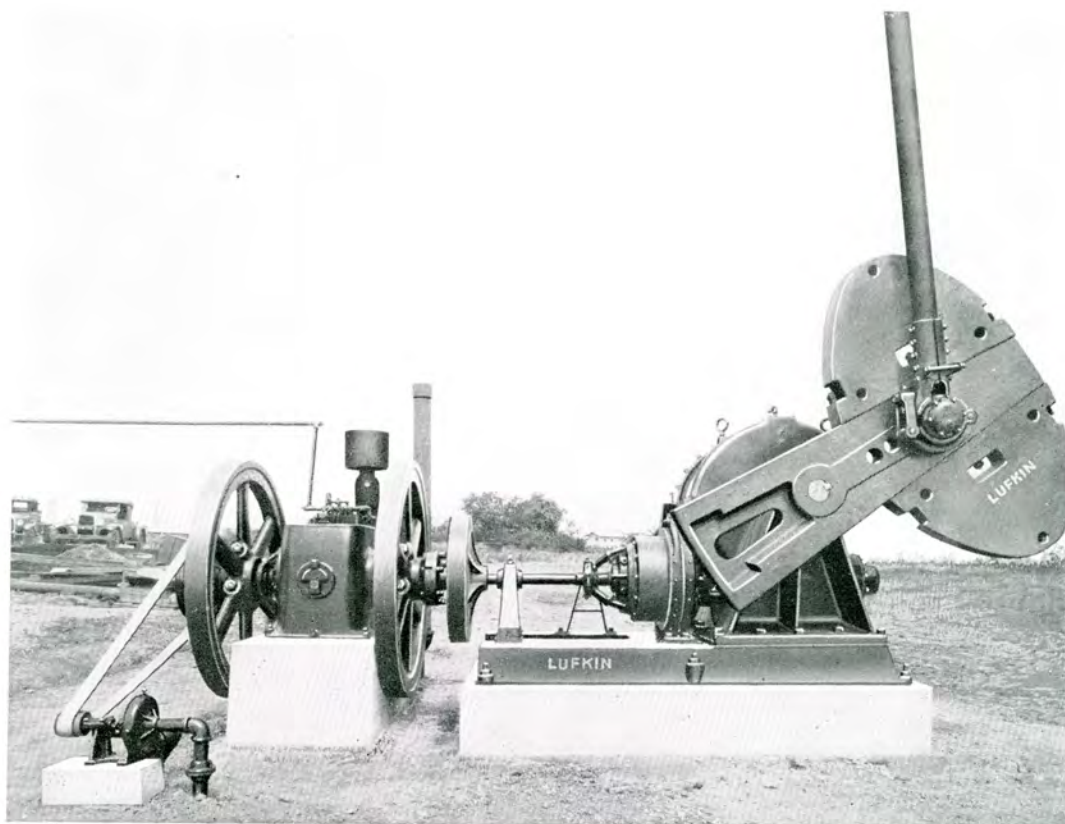
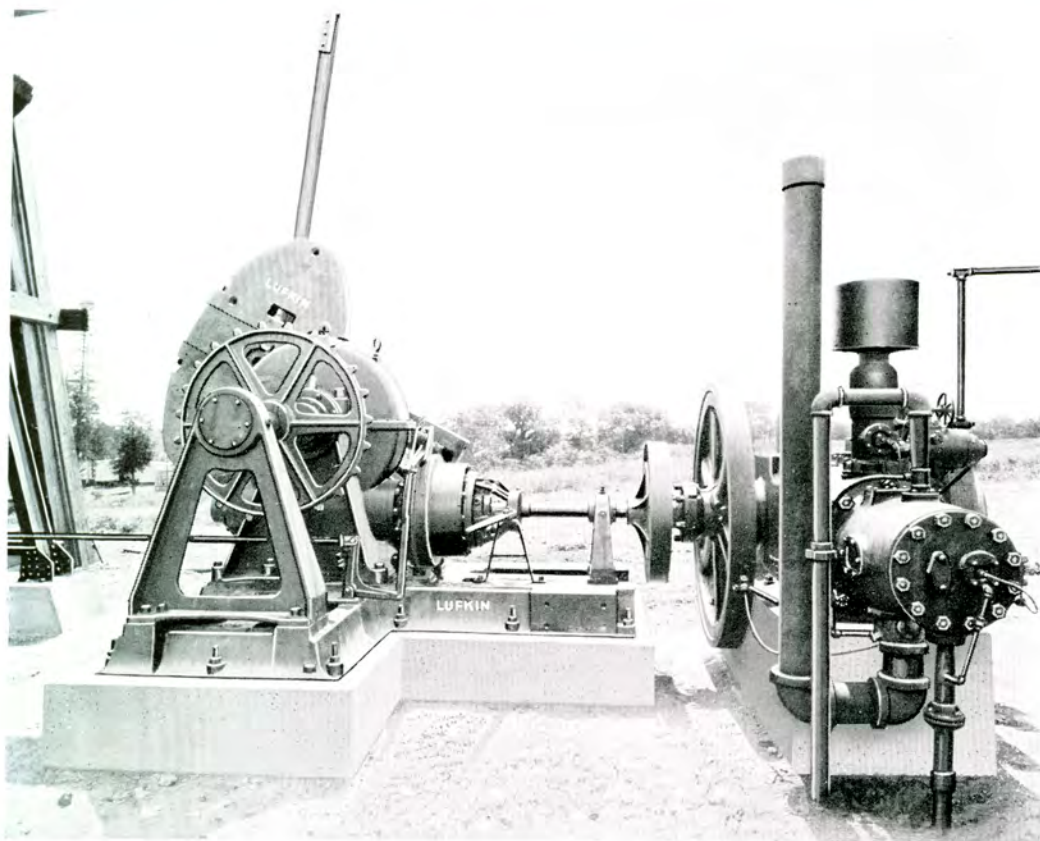


Rear view of Lufkin Baby Unit, showing cover over drive

# LUFKIN PERMANENT EQUIPMENT

## Direct Con- nected Worm Gears

Lufkin Worm Gear in stallion with single cylinder engine direct connected drive using twin-disc clutch attached to unit. A convenient and efficient arrangement with single cylinder engine drive.



Same installation as above showing shock absorbing coupling.

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Worm Gear Direct Drive

### *Opposite Page*

For a number of years we have been trying to adapt the Single Cylinder engine direct connected to the Worm Gear. The difficulty largely laid in the coupling connection transmitting every impulse of the engine through the gear and to the well rods that caused frequent breakage.

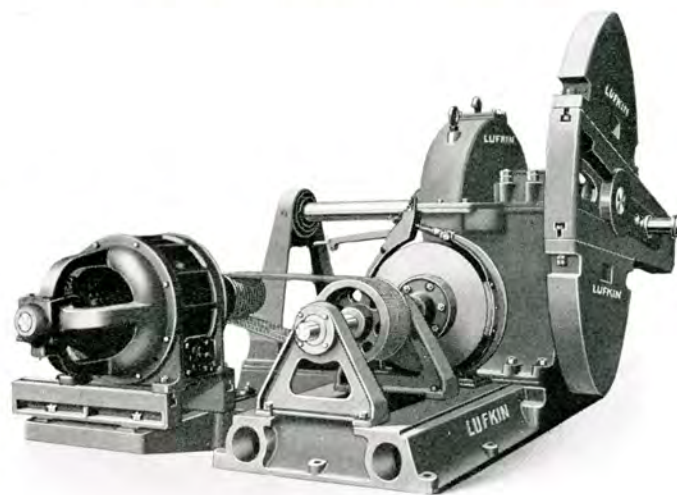
Recently with the help of one of the industries leading production engineers a shock absorbing coupling has been designed, tested and is giving very satisfactory service.

This shock absorbing coupling together with a well governed engine having good heavy fly wheels and a good friction clutch on a very husky well, has solved our problem. After months of trial then through tests with the most approved recording instruments, absolute steady motion is realized with no pulsations transmitted to the rods.

We consider the installation a most successful one, that has many advantages.

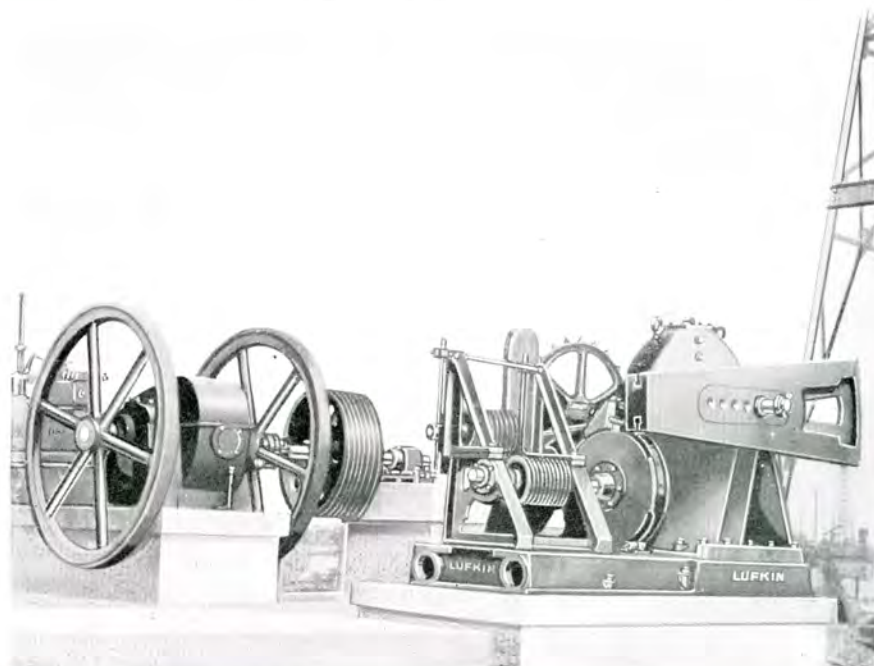
### **Single Cylinder Engine Drive With "V" Belts To Worm Gear**

The installation shows method of driving our worm gears with a single cylinder gas engine ("V" belts are not shown). It will be seen that engine and unit being stationary, a tightener is necessary which is placed on the inside of the drive and is a most satisfactory arrangement. We have over sixty of these installations in operation. The drive can be applied to any of our Worm Gears as desired.

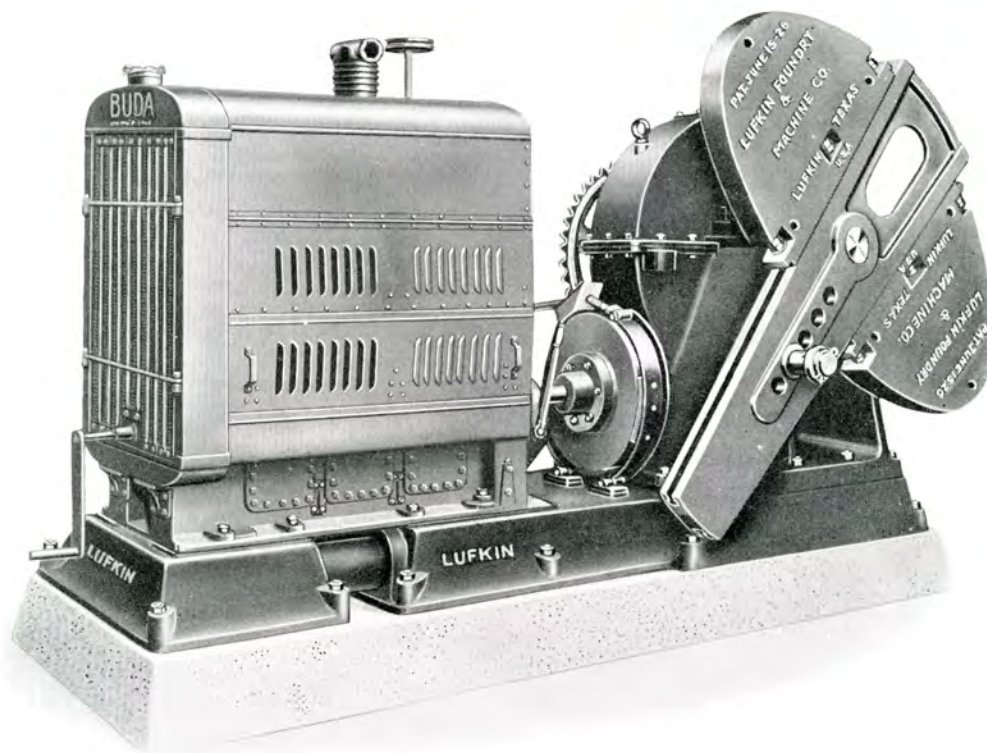


### **Constant Speed Motor and "V" Belt Drive As Extensively Applied to Lufkin Worm Gears**

Where units are used for pumping only, the Y-Delta double power constant speed motor is used extensively and using the "V" Belt Drive as shown allows the use of a higher speed motor (lower cost) and has the advantage of changing speed of the Unit by changing small motor pulley at slight expense.



# LUFKIN PERMANENT EQUIPMENT



## Heavy Duty BUDA Engines

*Dependable, Economical, Power*

A number of features added to the new Buda power units assure ruggedness and give ideal power for oil field service. The engine crankcase and upper half of bell housing bolts directly on to a ledge of the cast iron base. This gives support for the engine throughout its entire length and makes weaving or vibration between the engine and base an impossibility. The cast iron base serves as an oil pan and is fitted with large hand hole plates on each side providing accessibility for inspection or adjustment of the main and connecting rod bearings.

The heavy-duty Twin Disc clutch is a new development brought out to meet the severe conditions encountered in oil field service. It has an extra large friction surface for the transmission of power. Contact between the friction plates and the drive plate bolted to the flywheel is through gear teeth. This gives more contact thus reducing wear and eliminating the use of drive pins. The shaft is of large diameter and is carried on heavy bearings in the outer clutch housing and the flywheel. The clutch housing is of large diameter giving ample support. The clutch is so mounted that the upper half is bolted to the engine bell housing which is a part of the crankcase and the lower half directly on to the cast iron frame. This ties the rear end of the unit together so that weaving is impossible.

The radiator is supported on a cast bracket attached to the engine base and is provided with heavy bars at the front to prevent damage to the cores. Another feature of importance is the fact that the radiator core is made in sections. In case of damage to a section, it can be removed and replaced. The radi-

ator has sufficient water capacity and frontal area to cool the engine under the most adverse conditions met in oil field work.

A large diameter fan is driven from the engine crankshaft by two "V" belts. The fan is braced solidly to the engine crankcase and is provided with an adjustment for tightening the belt.

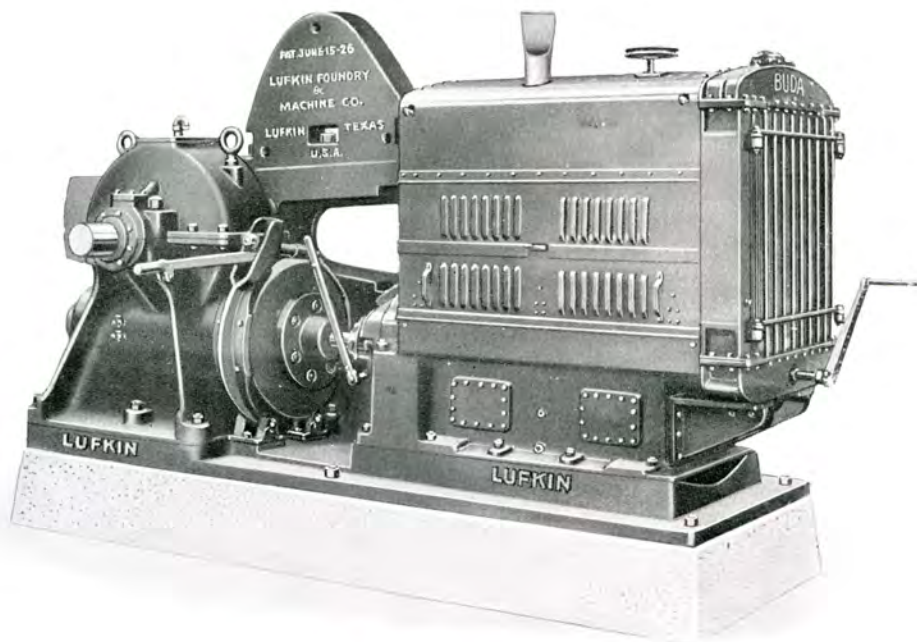
The engines operate on either natural gas or gasoline fuel—the carburetor being arranged so that by a simple adjustment either fuel can be burned efficiently. The combustion chambers in the cylinder heads are designed especially for burning natural gas and because of these features smooth and flexible operation can be obtained on natural gas fuel.

The oiling system is kept clean by an efficient oil filter mounted on the engine crankcase. This gives the oil longer usability and protects the engine.

The fully enclosed built-in governor is provided with an adjustment for two ranges in speed—one for pumping and the other for pulling when a higher speed is required.

The housing over the unit is of heavy-gauge material, braced so that vibration is eliminated. The side doors are of the hinged type which open upward and are provided with a fastener. When closed, they can be locked. The engine is fitted with special balanced pistons. The crankshaft, flywheel and connecting rods are carefully balanced. These operations insure smooth running of the engine and minimize vibration.

# LUFKIN PERMANENT EQUIPMENT



## Buda Power

Special low base for 4½" Stripped Standard Unit

### SPECIFICATIONS

The adaptation of a Buda engine to our worm gear units is shown on opposite page by adding an extension base rigidly to our regular units 6½", 5½" and 4½".

When applied to a Stripped Standard (See page 40), where no well pulling is required we can apply the base above at some saving in price.

The table herewith gives sizes, weights and horse powers. If desired they can be furnished less radiators and housing when tank circulation is used.

### DISCUSSION OF CHART

The brake horse powers a slisted to the right were the maximum obtainable by constant loading with a dynamometer and with the engine operating under ideal conditions and adjustment. In order to take care of the peak loads and for economical, continuous pumping service the ENGINE HORSE POWER OUTPUT SHOULD NOT EXCEED 50% OF CHART RATING.

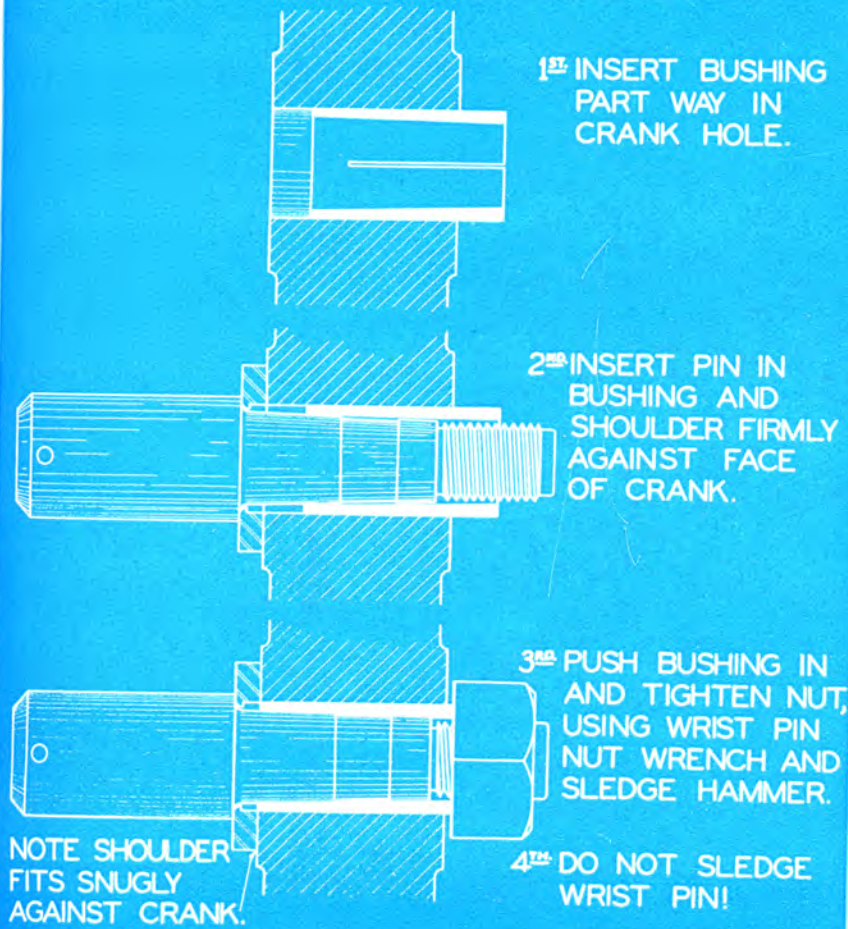
### Maximum Brake Horse Power of Buda Gas Engines at Various Speeds

TYPE	BORE	STROKE	FUEL	SPEED IN R.P.M.							
				500	600	†700	†800	900	1000	1200	
YR-4	4¾"	6"	GASOLINE	23	29	34	39	43	46	50	
			NAT GAS *	19	24	28	32	35	37	40	
WT.-2300 LBS.											
FR-4	5½"	6½"	GASOLINE	33	44	50	56	62	67	70	
			NAT GAS *	29	36	42	47	51	54	56	
WT.-2950 LBS.											
JH-4	6"	7⅞"	GASOLINE	45	56	66	75	81	86	90	
			NAT GAS *	38	47	55	61	66	69	72	
WT.-4000 LBS.											
JH-6	6"	7¼"	GASOLINE	74	87	100	112	124	136	155	
			NAT GAS *	63	73	83	92	101	110	124	
WT.-5500 LBS.											
* NATURAL GAS B.T.U. CONTENT= 1000 PER CU.FT.											
† RECOMMENDED PUMPING SPEED. PULLING SPEED MAY BE AS HIGH AS 1200 R.P.M.											

Luf  
oiling  
worm  
  
For  
weath  
unit e  
gives c  
  
For  
E. 40  
of oil  
  
Too  
waste.

# LUFKIN PERMANENT EQUIPMENT

## INSTRUCTIONS FOR WRIST PIN ASSEMBLY



**“Easy Change”**

**Crank Pins**

**for**

**LUFKIN UNITS**

The Lufkin “easy change” taper bushing crank pin has many outstanding advantages.

*First:* It is loosened by one blow of the sledge and easily removed by hand.

*Second:* It is pulled tight by the wrist pin nut and does not have to be driven in. This permits an oil bath bearing to remain intact on the crank pin when changing crank holes.

*Third:* The crank hole cannot wear or wallow out, if the bushing wears it is readily and cheaply replaceable.

*Fourth:* Crank pin and Crank weight wrenches are furnished with Lufkin units.



***Crank Pins, Pinions, Shafts Are All Heat Treated***

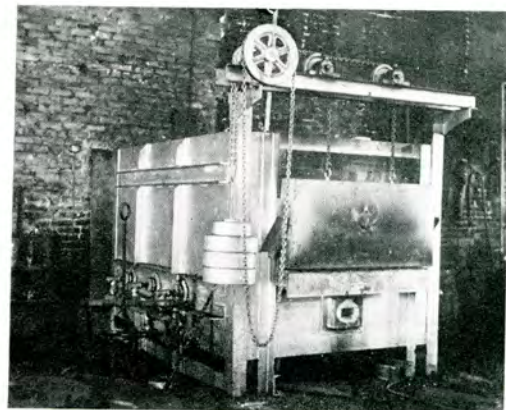
### LUBRICATION OF LUFKIN UNITS

Lufkin Pumping Units operate in a bath of oil and are wholly self oiling with the exception of the outboard bearing of the 4½" and 5½" worm gear units which are lubricated by Alemites.

For worm gear units use a good grade of steam cylinder oil; in cold weather it may be necessary to dilute this oil with motor oil. Fill the unit even with the top oil pet cock; the plate fastened to the pet cock gives quantity of oil required.

For herringbone gear units use S. A. E. 50 in the Summer and S. A. E. 40 in the winter. Fill the unit even with top oil pet cock; quantity of oil required is given on plate fastened to oil level pet cock.

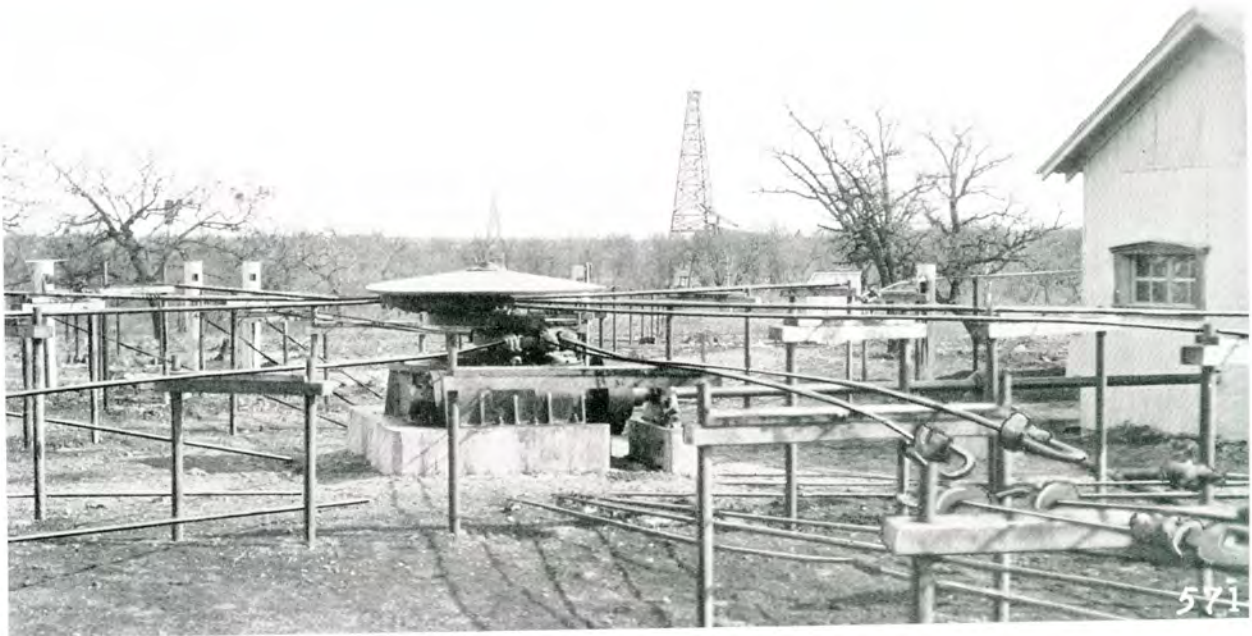
Too much creates heating, foaming and leakage as well as undue waste.



*Heat Treating Furnace*



## LUFKIN PERMANENT EQUIPMENT



General View Lufkin Standard Power. Typical Installation

# Lufkin Central Powers

## BUILT IN TWO SIZES

It is the opinion of many successful operators as well as ourselves that, generally speaking, central Powers are not economical in use of power, are expensive to keep up and resulting production in oil does not approach what may be secured by efficient individual Units. They are generally considered more economical in first costs, installation, etc., which is true in many cases, yet we have seen a number of recent power installations that cost upward of twenty thousand dollars where individual Units would have cost no more, especially is this true where electric power is used.

However, due to the success of our Worm Geared Units some of our customers suggested the design of our Worm Geared Power to replace the large band wheels so commonly known; to eliminate the long costly quarter twist belts (a most abnormally inefficient drive) with high speed tighteners, heavy friction load eccentrics, necessarily large buildings with the subsequent fire hazard, all of which are done away with in the use of the Geared Power.

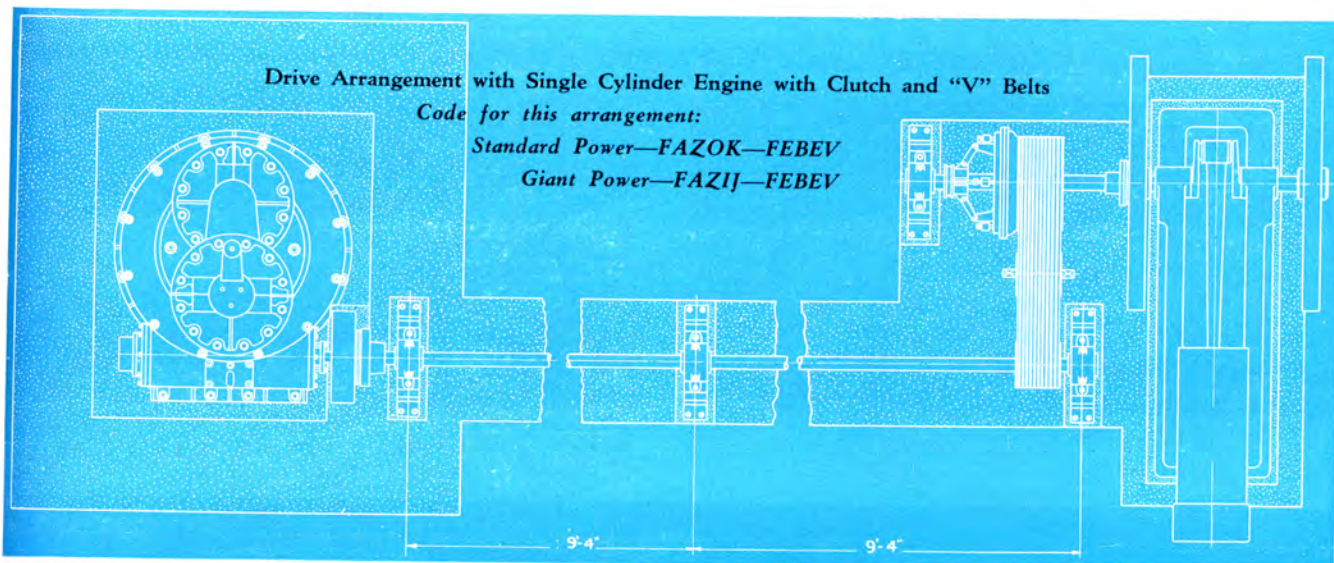
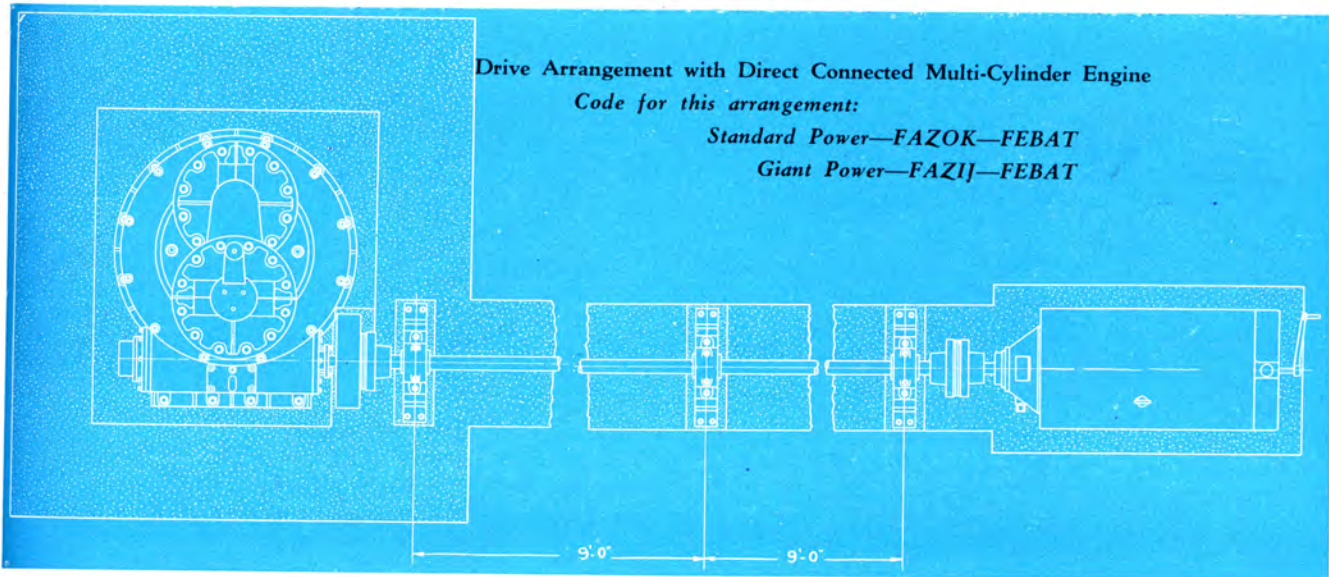
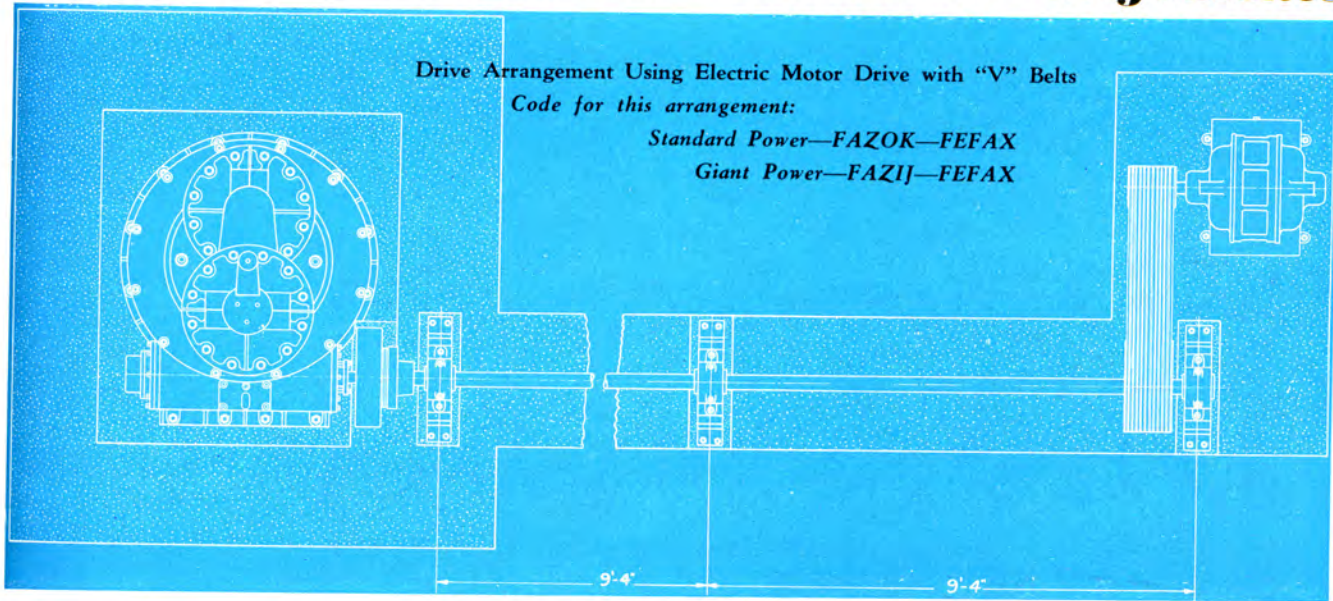
As this catalogue goes to press we have over fourteen of these Powers in successful operation, some of the large companies purchasing their fourth and fifth machines realizing their many advantages, experienced in one installation after another.

*Users Find by Experience That  
Lufkin Powers:*

- Run without noise.
- Are automatically lubricated.
- Require practically no attention.
- Are oil and dust tight.
- Are highly efficient in use of power.
- Installation costs are less than band wheels.
- Easily adapted to any type of motive power.
- Users after three years experience say they will outlast two to three band wheel powers, with practically no repairs.
- Any user will verify these statements.

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Central Powers -- Drive Arrangements



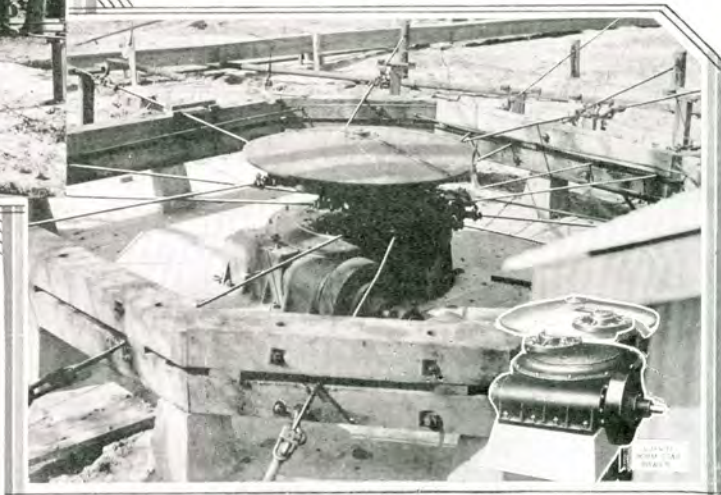
# LUFKIN PERMANENT EQUIPMENT

## What May Be Expected of **LUFKIN Powers**



SUN COMPANY INSTALLATION  
 LIBERTY, TEXAS

Power is handling fifteen wells 1800 feet deep



The Standard Lufkin Power gear 52" dia. is the same size as used in our 6 1/2" Heavy Duty Worm Gear Units with which the trade is familiar. The gear will of course, handle temporarily 100 to 150 H.P. as it has in pumping heavy wells. It is however, as in the Units, designed to handle 40 to 50 H.P. and give long lasting service. Experience proves our statement in this respect.

The Giant Power gear 71" dia. will handle 250 H.P. loads safely, but is intended to be operated at 100 to 125 H.P. continuously to give lasting service.

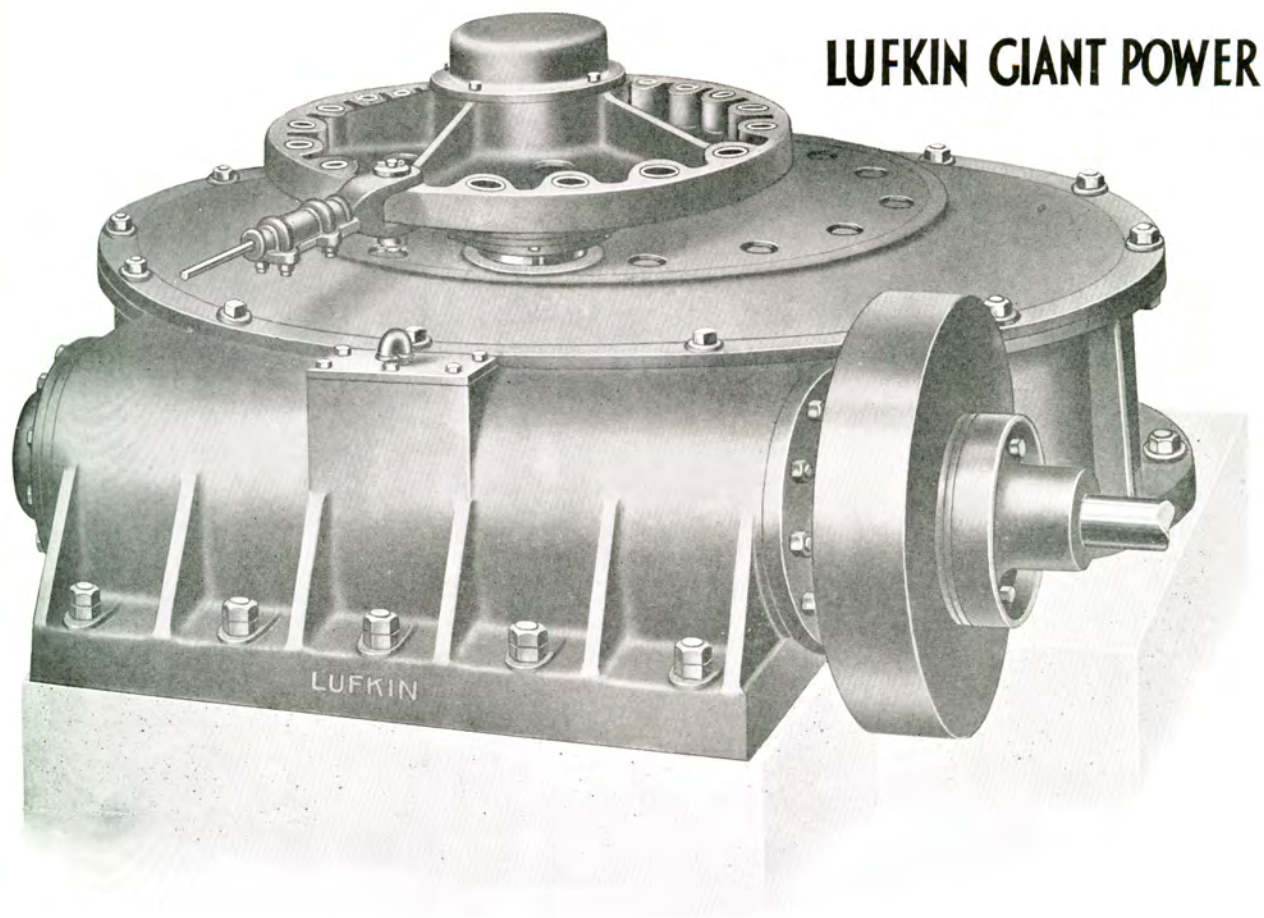
The table following has been estimated, first from experience (wear on gears in actual pumping service for six years), and by engineers who have had a life time experience in worm gear operation:

Estimated Service in Years Based on Input Horse Power  
 At Nominal Speed 18-Strokes Per Minute.

Horse-power	25	30	35	40	50	60	70	80	100
Standard Pwr.	25	20	15	12	10	5	3		
Giant Power					30	25	20	18	12

***Lufkin Powers Are Designed For Severe Service***

# LUFKIN PERMANENT EQUIPMENT



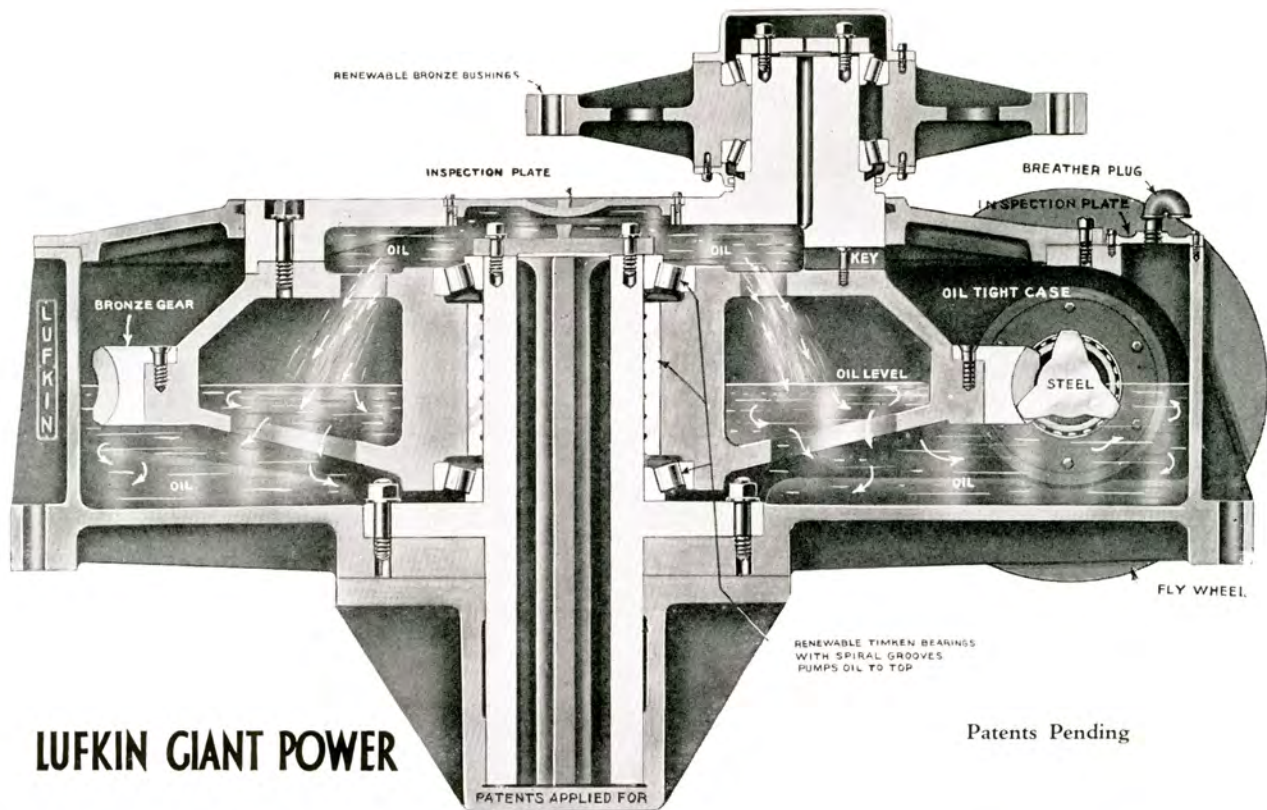
## LUFKIN GIANT POWER

# LUFKIN

*Giant Power*

The success of our Standard Power has been so pronounced; meeting with general satisfaction wherever used that we have, at the suggestion of our customers, designed this Giant Power for extra heavy service. They will be found to be efficient, require very little attention and will be satisfactory in every respect.

# LUFKIN PERMANENT EQUIPMENT



**LUFKIN GIANT POWER**

Patents Pending

## Lufkin "GIANT" Central Pumping Power

### SPECIFICATIONS

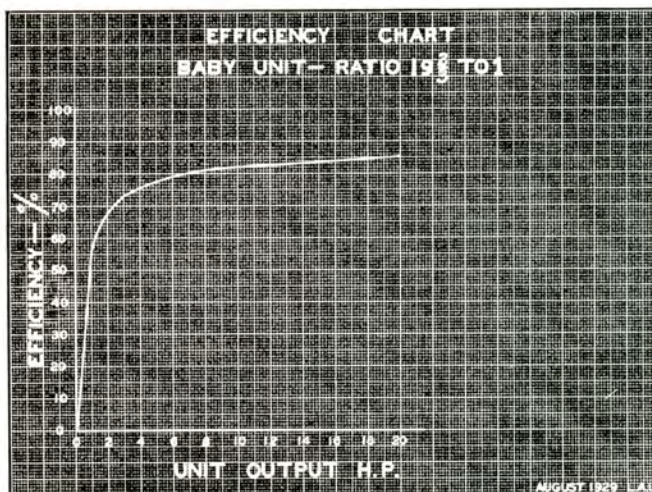
- Center Trunnion, Nickel Chrome Steel 12" diameter.
- Center Bearings, Timken Tapered Rollers.
- Gear, 71" diameter, 6" face, 2-7/16" circular pitch.
- Gear Ratio, 29-2/3 to 1, 44 1/2 to 1.
- Worm, 6-11/16" pitch diameter.
- Worm Bearings, double Timken thrust, Hyatt radial.
- Crank, 36" Stroke.
- Crank Pin, 8" diameter.
- Crank Pin Bearings, Timken Rollers.
- Crank Ring, for 20-well connections.
- Crank Pin Bearings are automatically oiled by pump from gear box.
- Gear Bearings are oiled by pump from base.
- Load Capacity, 100 to 125 H.P.

# LUFKIN PERMANENT EQUIPMENT

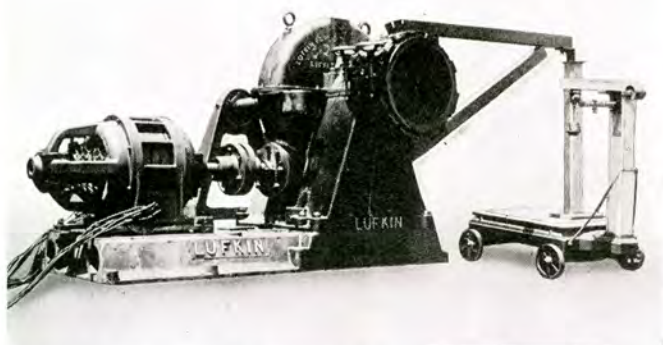
## Pony Brake Tests Show Lufkin Worm Gears High In Efficiency

All of the various models of Lufkin Worm Gear Units have been tested in our shop with pony brake and indicating wattmeter. The photograph illustrates the set up used.

Efficiency charts on any of the worm gear units may be had upon request. The efficiency chart on this page was made on a Baby Lufkin Unit and illustrates the characteristic curve of the class of worms and gears used in the Lufkin Units.

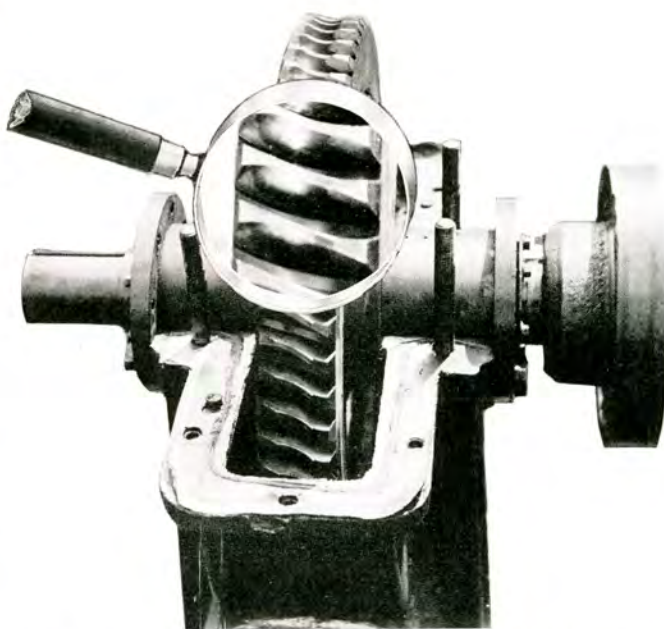


Efficiency Chart—Lufkin Baby Worm Gear



Pony Brake Method of Testing Efficiency of Lufkin Units

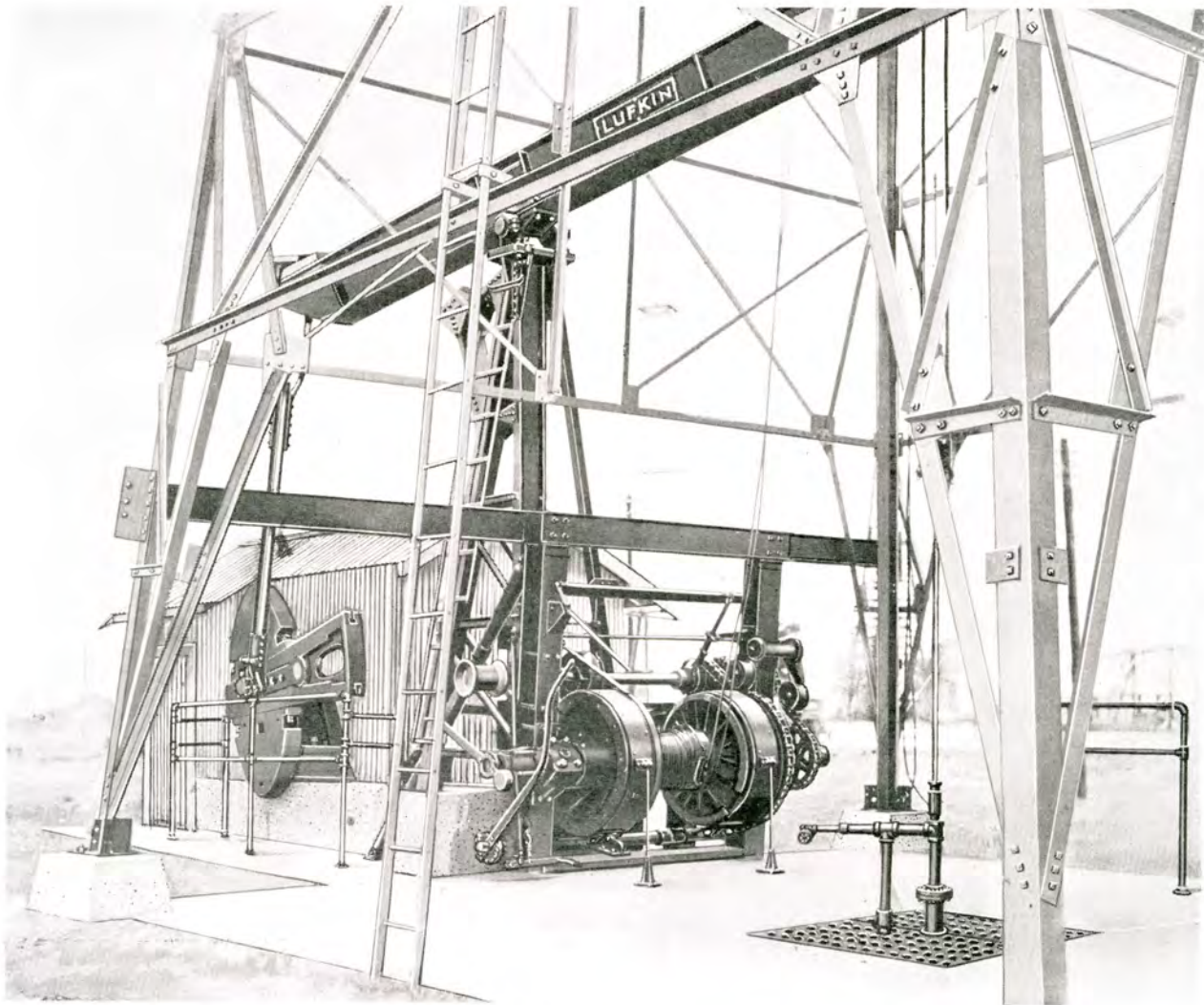
In addition to testing new units several of the old style units have been brought in after five years of hard service and placed on the test block. The old units without exception operated at a higher efficiency than the new units. These tests prove conclusively that the worm gear reduction maintains its efficiency of power transmission throughout its entire life.



Close-up of Worm Gear Teeth in Lufkin Unit After Five Years of Continuous Service Showing Practically no Wear.

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Hoists



Lufkin No. 52 hoist with steel Jack Post. This is a typical "Lufkin completely equipped" installation including 5 $\frac{1}{2}$ " Herringbone Geared Unit, Lufkin Post, Beam and Oil Bath Pitman

### LOOSE DRUM TYPE HOISTS *Special Features and Advantages*

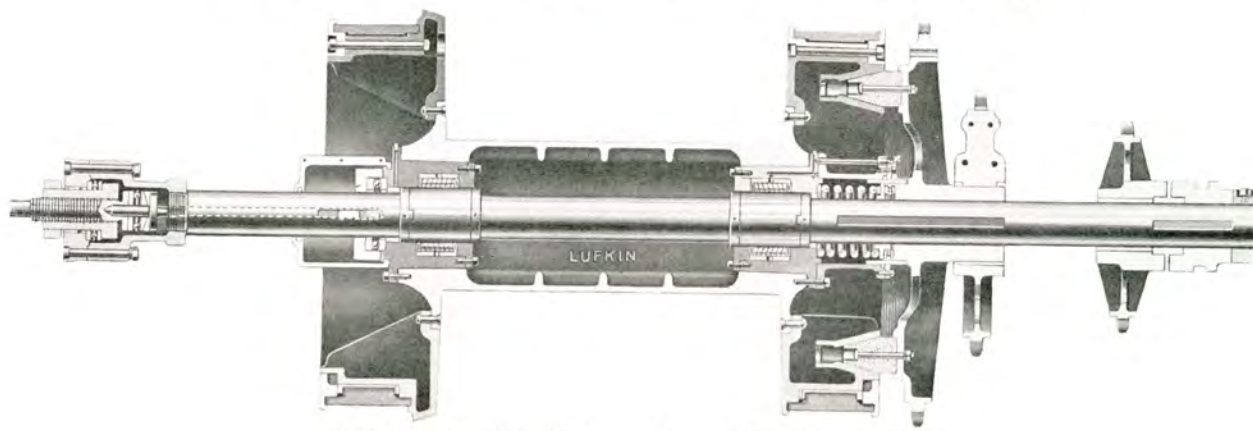
LARGE SHAFTS AND BEARINGS.  
MOST POWERFUL WEDGE CLUTCH.  
LARGE BRAKE DRUM SURFACE.  
TROUT EXPANSION DRUM HEADS  
NOT AFFECTED BY EXPANSION.  
ROLLER DRUM SHAFT BEARINGS.  
BALL THRUST BEARINGS.

LARGE WIRE LINE CAPACITY.  
ALEMITE LUBRICATION.  
J. M. ASBESTOS BRAKE LINING.  
ALL STEEL SPROCKETS FOR 1030 CHAIN.  
These Hoists extensively used on Standard Rigs.  
Drive Sprockets line up with Calf Wheel Drive  
Sprocket.

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Production and Drilling Hoists Have Outstanding Advantages

*Used With Geared Units and Standard Rigs*



Sectional view of Lufkin Loose Drum Roller Bearing Hoist

Seven years experience in the field has definitely proved the many advantages of the Lufkin Loose Drum, Roller Bearing Hoists. The loose drum feature permits hoist to reverse without use of power which is a big advantage when using multi-cylinder or single cylinder gas engine drive.

This experience has led us to adopt certain standards and a hoist has been designed to meet every field condition from shallow production requiring seldom use of hoist to one well in California said to be the deepest well in the world.

The Trout Expansion Drum is used on all hoists which is absolute insurance against breaking of drum head from brake band heating.

Hyatt Roller Bearings are used in the drum and a double thrust bearing is also provided.

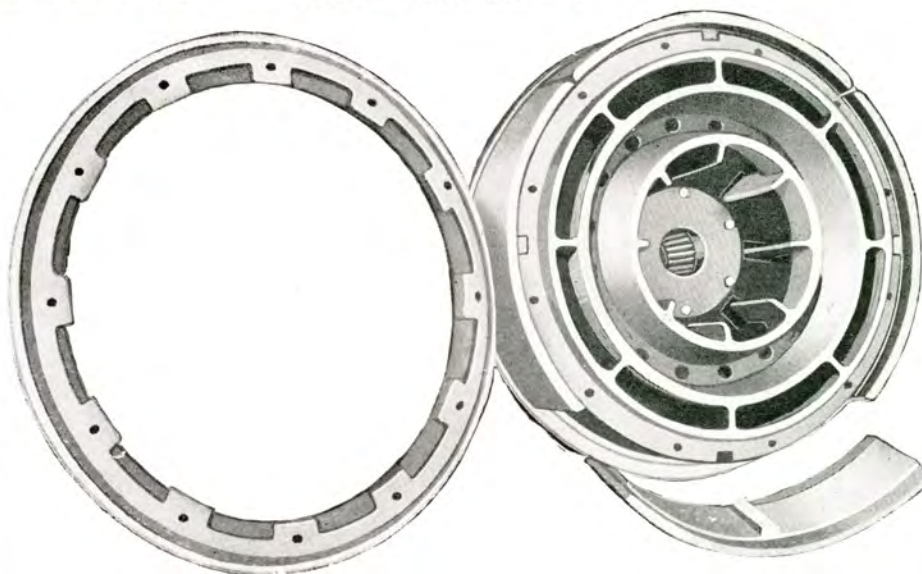
The clutches are of asbestos graphite block construction and the brake linings are of the Johns-Manville folded asbestos type. All line shafts have extension on right end for sprocket to drive rotary countershaft.

Lufkin Hoists, because of their many advantages over

bull and calf wheel for drilling are used regularly with Standard Rigs for drilling and pulling.

Designed in a number of sizes the Lufkin Line of Hoists have met with instant favor.

Lufkin Hoists are ruggedly constructed and are fast and powerful in pulling rods and tubing. Friction clutch starts load easily. Loose roller bearing drum allows load to go into well by gravity so that reverse power is not required. Time pulling rods and tubing is greatly reduced when Lufkin Hoists are used.

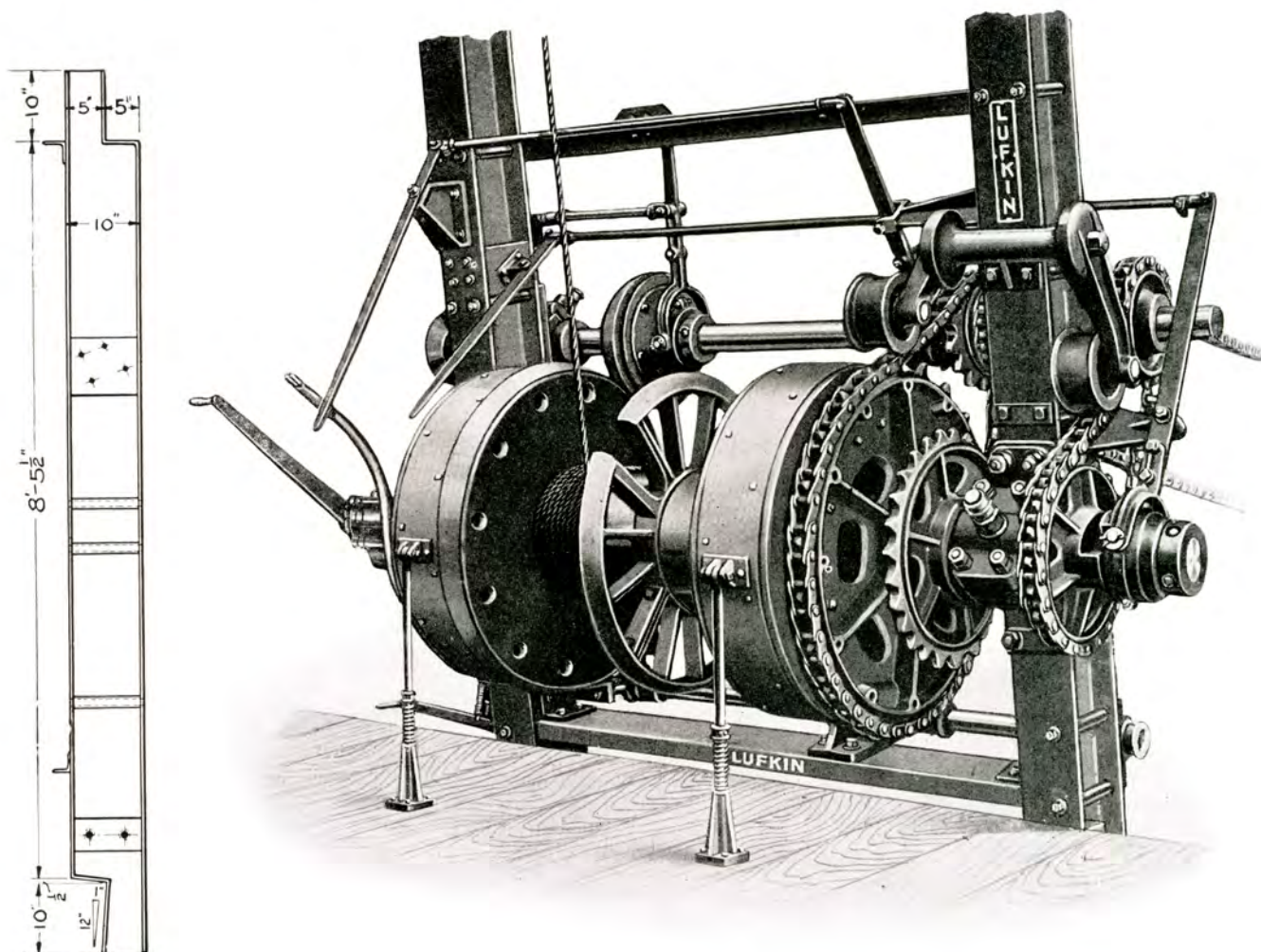


Trout's Expansion Brake Drum and Clutch. Fully patented. Absolutely proof against breaking of drum head from brake band heating



# LUFKIN PERMANENT EQUIPMENT

## Lufkin Hoists With Steel Posts



### HOIST WITH STEEL POSTS

Any of the Hoists shown in the following pages may be furnished with H-Beam steel posts at slight extra cost.

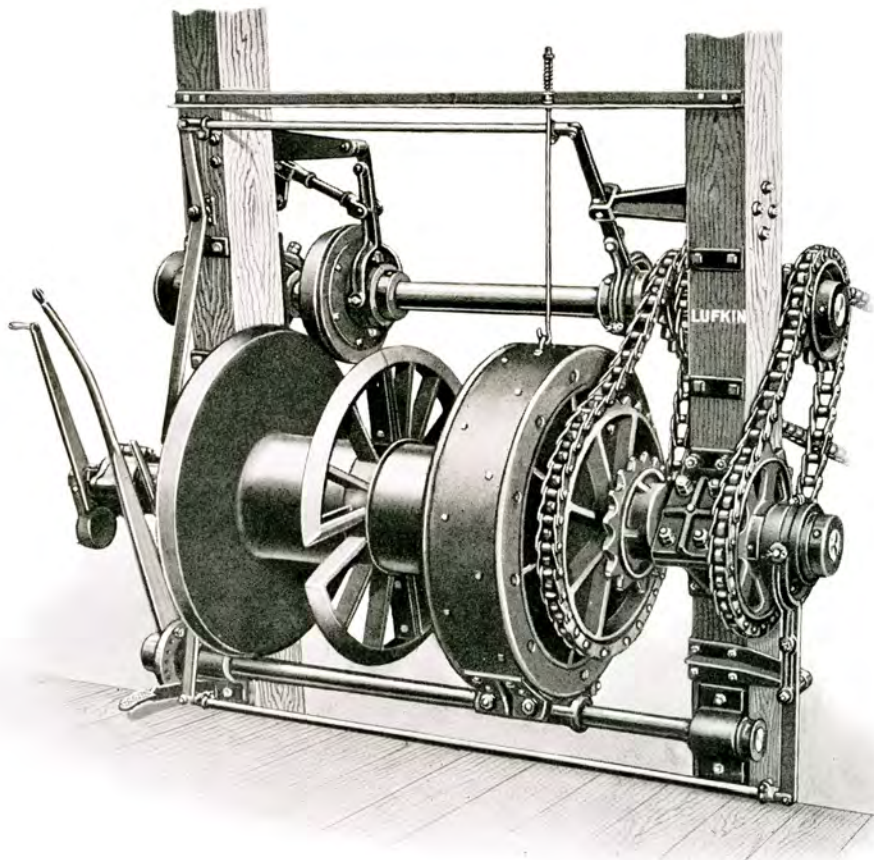
The post shown in line drawing is our standard and fits most derricks and will be furnished unless otherwise specified.

Longer and shorter posts will be furnished to

order without extra charge to suit derricks, on receipt of dimensions or manufacturers print of derrick openings.

Lufkin Steel H-Beam Posts are all welded and fitted ready for mounting Hoists in place. They will be found strong and durable, more rigid than wood, and barring accident almost everlasting.

# LUFKIN PERMANENT EQUIPMENT



## Lufkin No. 2 Hoist

### GENERAL DESCRIPTION

This hoist is extensively used in the Gulf Coast country on wells up to 3500' in depth. In construction they are in general as shown on page 57, except they have single brake and have a seamless tube drum barrel. Sprockets are for No. 1030 chain. The reverse friction is used to reel rope on or off as well as kick off if load is not heavy enough to bring the line down.

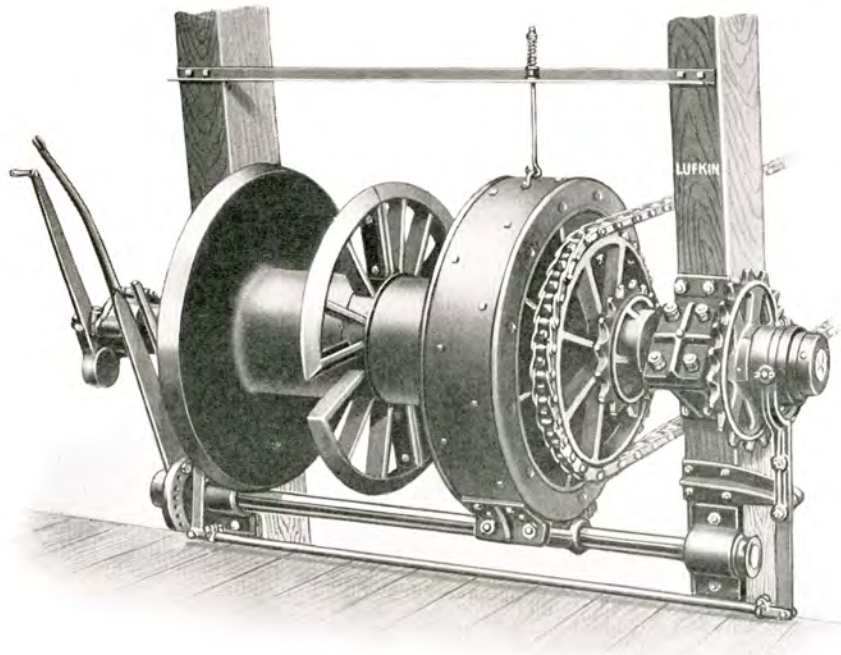
This hoist has two speeds and is very speedy handling rods and tubing and can be used for handling casing with more lines—as 12,000 pounds can be handled on a single line.

### SPECIFICATIONS

Line shaft 4", drum shaft 4", drum barrel diameter 16", drum length 35", expansion brake drum 42" diameter, 8" face, roller bearings in drum. Line capacity 3550 feet of 1" or 6000 feet of  $\frac{3}{4}$ " wire line. Weight 7400 pounds.

*Steel Posts furnished at Slight  
Additional Cost*

# LUFKIN PERMANENT EQUIPMENT



## Lufkin No. 6 Hoist

(Same as No. 2 Hoist Without Line Shaft)

### GENERAL DESCRIPTION

The same general specifications apply to this hoist as on the No. 2 except no line shaft is furnished. Two speeds from unit are provided by chain drive from unit to either sprocket. Where wells have to be pulled often a line shaft hoist will soon pay for its extra cost in time saving—yet this hoist is a very popular seller and gives the best of satisfaction.

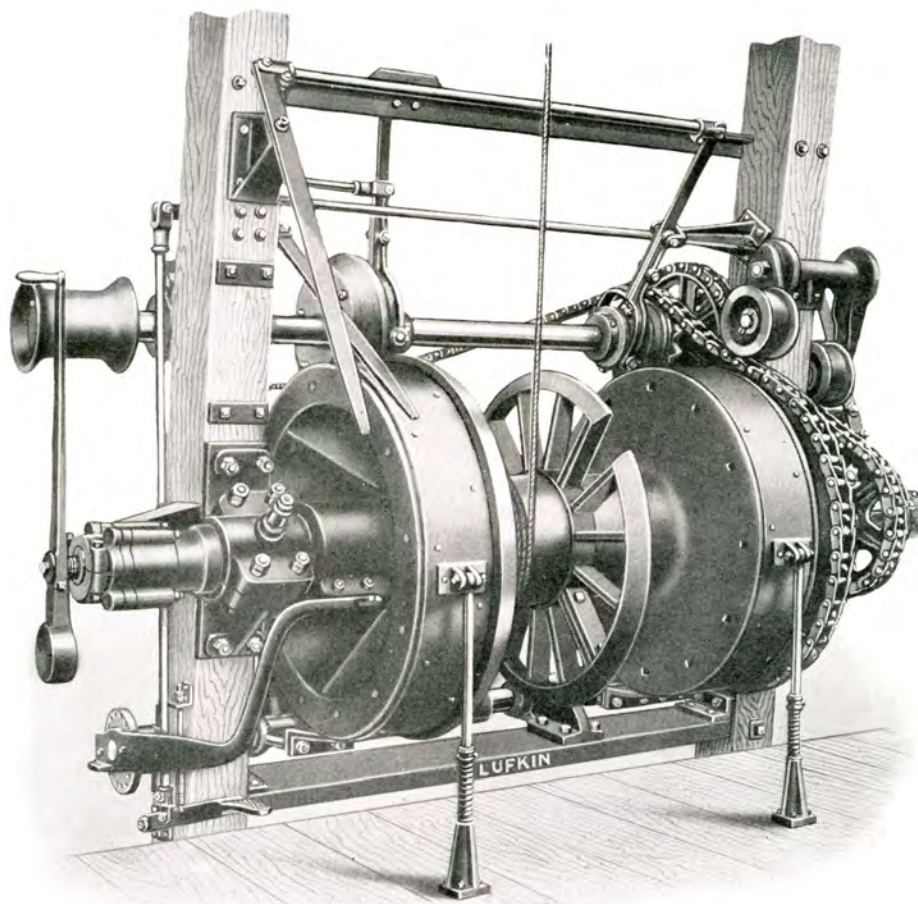
The clutch sprocket on end can be used to drive bull wheels in case of an extensive work-over job.

### SPECIFICATIONS

Drum shaft 4", drum barrel diameter 16", length 35", single expansion brake drum 42" diameter 8" face, with full roller bearings in drum, line capacity 3550 ft. of 1", 6000 ft. of  $\frac{3}{4}$ ", weight 6200 pounds.

*Steel Posts furnished at Slight  
Additional Cost*

# LUFKIN PERMANENT EQUIPMENT



## Lufkin No. 52 Line Shaft Hoist

### GENERAL DESCRIPTION

For all around work on heavy wells 3000' to 5000' this hoist will be found to give the best of satisfaction, being speedy and powerful, handling 20,000 pounds on a single line.

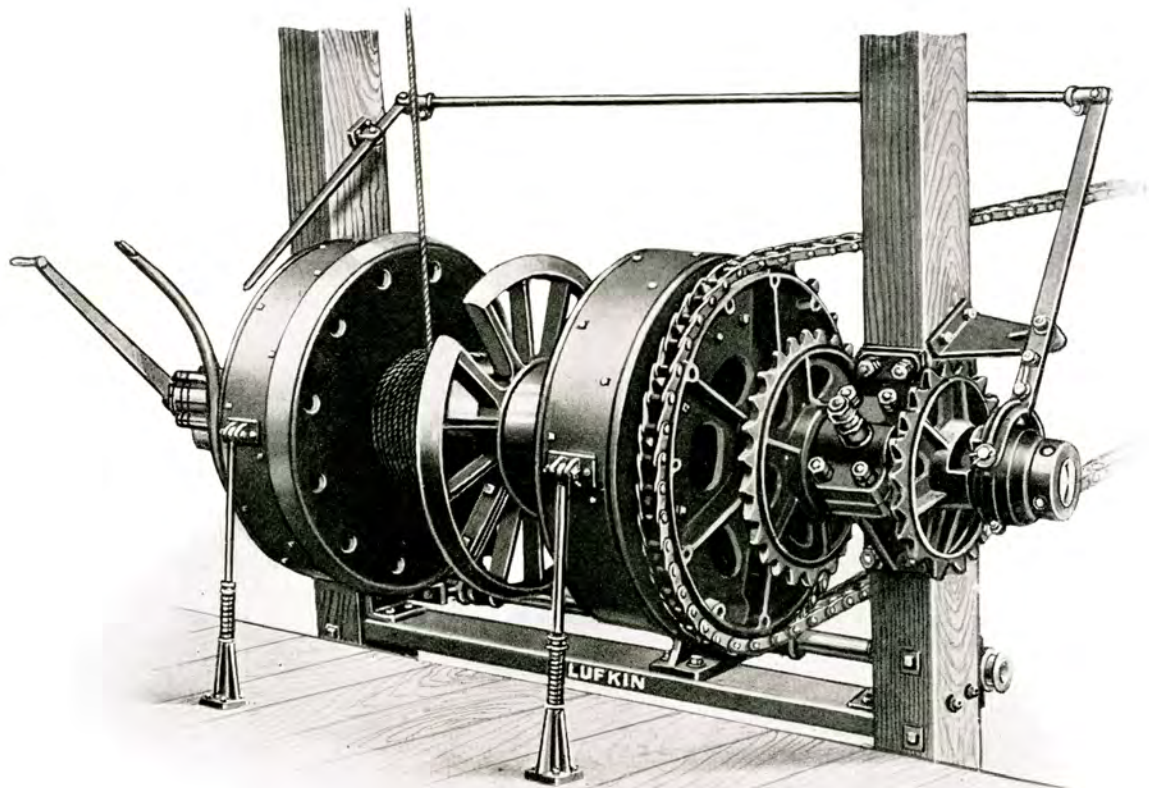
The drum barrel is of cast steel deeply ribbed with flanged ends to which are fastened the drum heads as shown on page 57. It has two speeds, reverse friction, and is provided with No. 1030 Chabelco chain.

### SPECIFICATIONS

Line shaft 4", drum shaft 5", drum barrel diameter 16", drum length 35½" double expansion brake drums 42" diameter, 8" face, full Hyatt roller and ball thrust bearings in drum. Line capacity 3600 ft. of 1" or 6400 ft. of ¾" wire line. Weight, 12,000 pounds.

*Steel Posts furnished at Slight Additional Cost. (See page 58)*

# LUFKIN PERMANENT EQUIPMENT



## No. 522 Lufkin Hoist

(Same as No. 52 Without Line Shaft)

### GENERAL DESCRIPTION

This is the same as the No. 52 Hoist except it is without line shaft—a very popular hoist with the trade, especially on heavy wells that require only occasional work-over.

Many of our customers have standardized on this hoist and have an extra line shaft that can be easily applied (holes are drilled in posts for boxes) when a special work-over job is required.

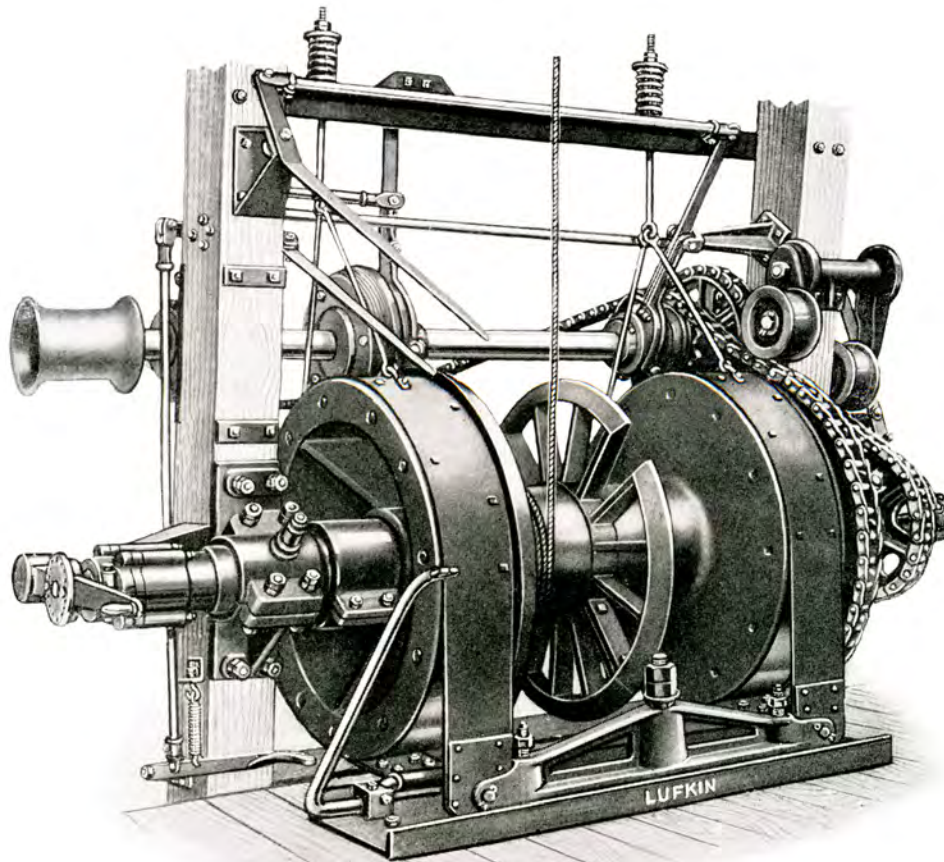
These Hoists will be found very satisfactory for swabbing or cleaning out.

### SPECIFICATIONS

Drum shaft 5", drum barrel 16" diameter, 35½" long, expansion brake drums (double) 42" diameter, 8" face, full Hyatt roller and ball thrust bearings in drum. Line capacity 3600 ft. 1" or 6400 ft. ¾" wire line. Weight 11,000 lbs.

*Steel Posts furnished at Slight  
Additional Cost*

# LUFKIN PERMANENT EQUIPMENT



## Lufkin No. 62 Line Shaft Hoist

### GENERAL DESCRIPTION

This is the same Hoist as No. 52 except it has the equalizer brake popular in California and elsewhere.

It is strictly a heavy duty hoist and will handle 20,000 pounds on a single line.

Many operators use this hoist as auxiliary stand-by equipment when drilling with rotary fastening dead line to drum and using this hoist should rotary hoist fail.

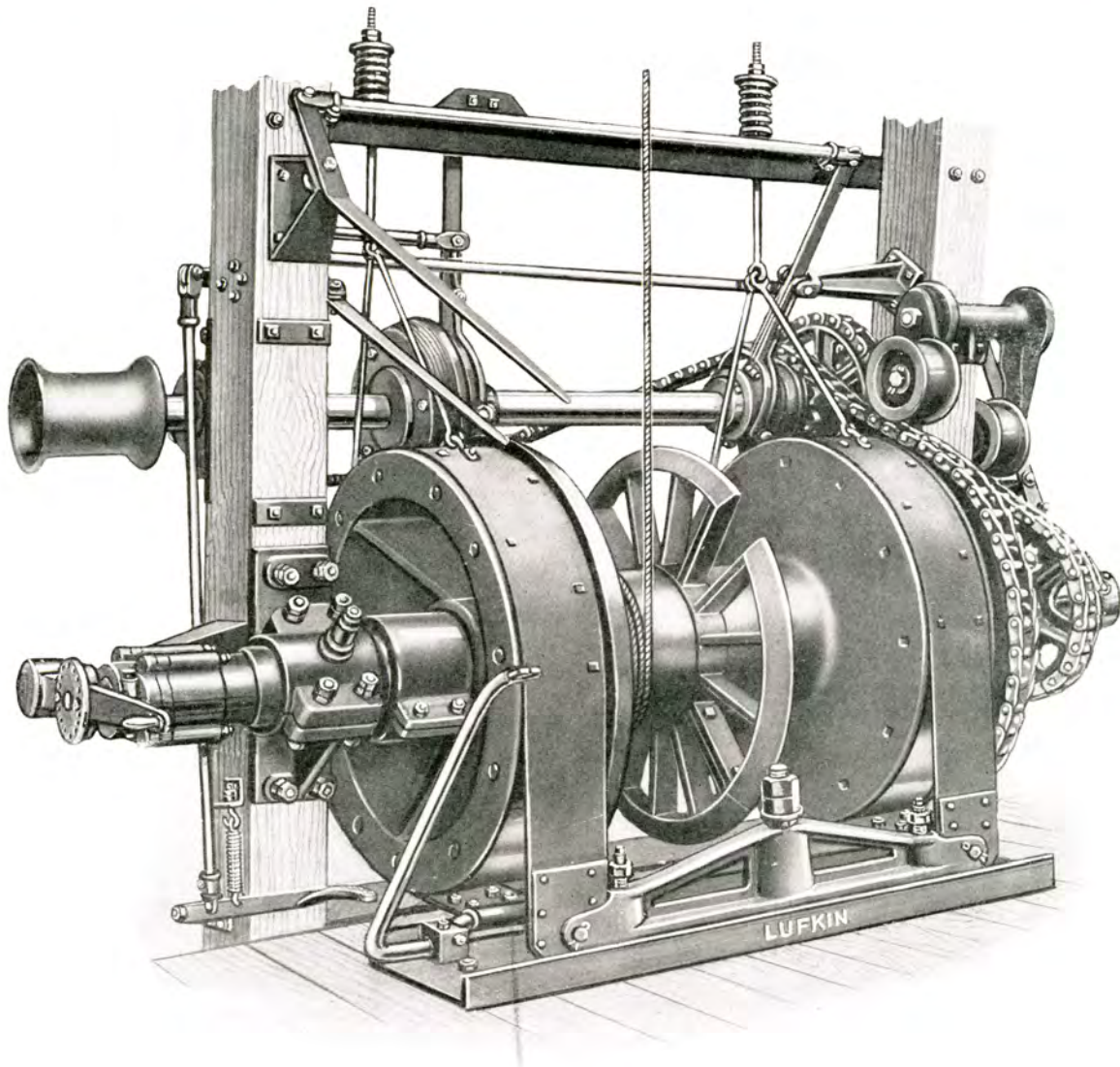
### SPECIFICATIONS

Line shaft 4", drum shaft 5", drum barrel diameter 16", drum length 35½". Double expansion brake drum 42" diameter, 8" face. Hyatt roller and ball thrust bearings in drum. Line capacity 3600 ft. 1" or 6400 ft. of ¾" wire line. Weight 12,500 lbs. Equipped with rugged well designed brake equalizer.

*This hoist also furnished without line shaft, and known as Lufkin No. 622.*

*Steel Posts furnished at Slight  
Additional Cost*

# LUFKIN PERMANENT EQUIPMENT



## No. 141 California Type Hoist

### GENERAL DESCRIPTION

Our most popular hoist handling 26,000 pounds to 30,000 pounds on a single line is frequently done on the heavy deep wells of California and Mid-Continent fields.

It has all the characteristics of the No. 62 Hoist except larger throughout.

Any or all of these Hoists can be used with standard rigs as well as Units, as the distance from well center line to center of sprocket drive is same as when using calf wheel.

### SPECIFICATIONS

Line shaft 5", drum shaft 5", expansion brake drums 48" diameter, 8" face, drum barrel 16" diameter, 35 $\frac{1}{2}$ " long. Hyatt roller and ball thrust bearings in drum. Floor anchored equalizer. Line capacity 4340 ft. of 1", 6960 ft. of  $\frac{7}{8}$ ", 9500 ft. of  $\frac{3}{4}$ " wire line.

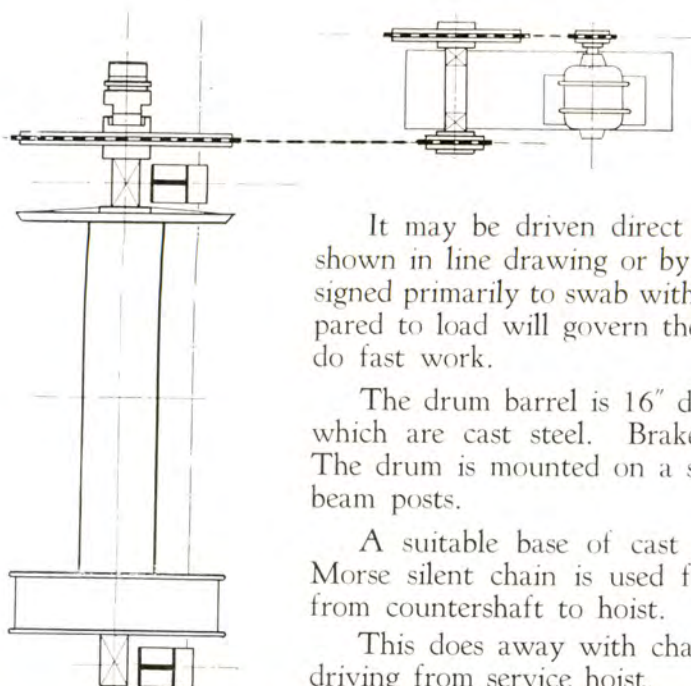
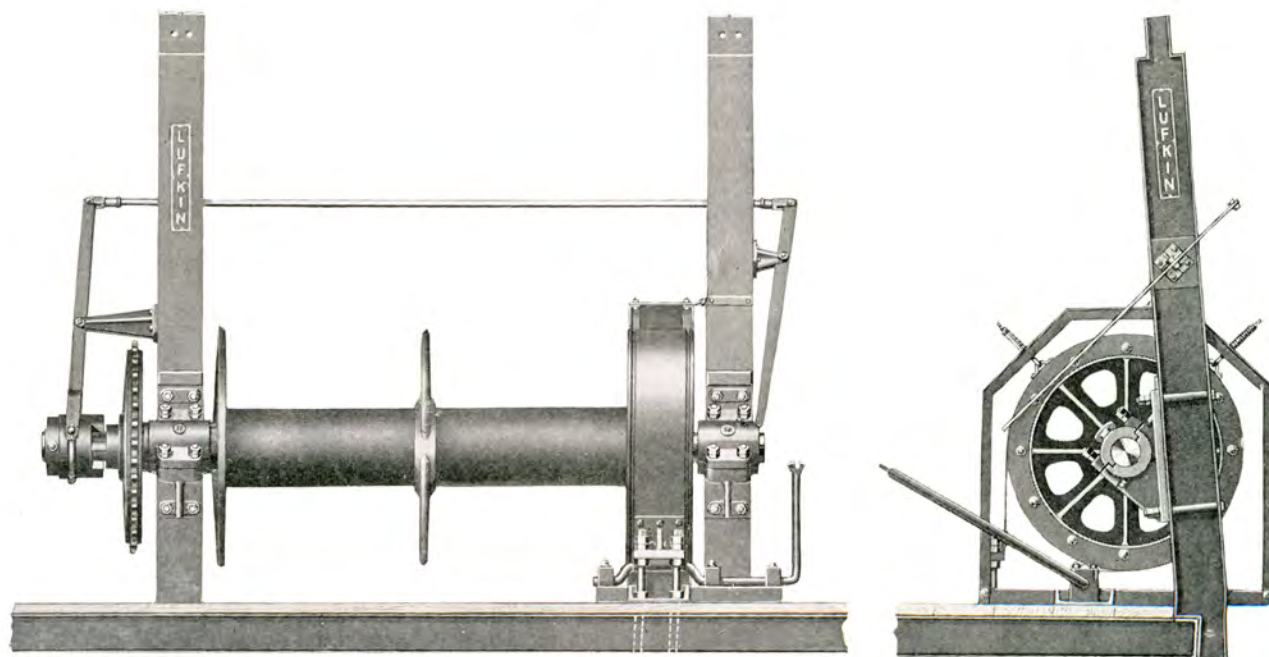
*Steel Posts furnished at Slight  
Additional Cost*

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Swabbing Hoist No. 76

(Placed in Bull Wheel Space)

*Driven By Independent Power or By Chain Across Derrick  
Floor from Hoist.*



Lufkin Swabbing Hoist illustrated above is a swabbing hoist we have designed to take the place of the bull wheels and to hold all line required, be faster and more powerful, being of more substantial construction.

It may be driven direct from service hoist or by an independent motor as shown in line drawing or by a steam or gas engine if desired. This hoist is designed primarily to swab with in Mid-Continent fields. The size of motor compared to load will govern the speed—some wells require 100 to 125-H. P. to do fast work.

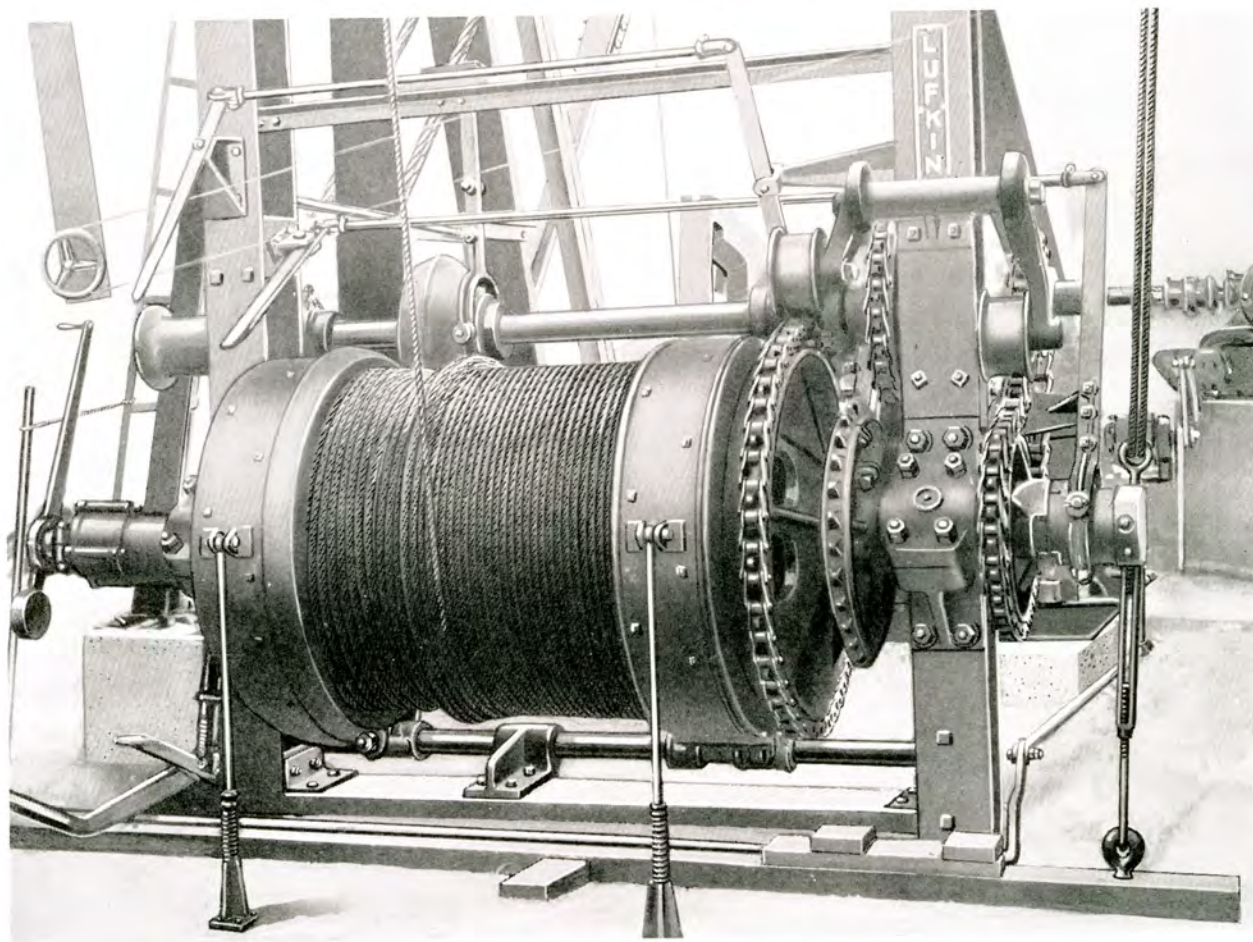
The drum barrel is 16" dia.  $\frac{3}{4}$ " thick, and 6'-6" between heads both of which are cast steel. Brake drum is 48" x 10" with Trout expansion rim. The drum is mounted on a six-inch shaft set in heavy boxes bolted to 10" H-beam posts.

A suitable base of cast iron for motor and counter shaft is furnished. Morse silent chain is used from motor to countershaft and No. 1030 chain from countershaft to hoist.

This does away with chain across derrick floor which is necessary when driving from service hoist.

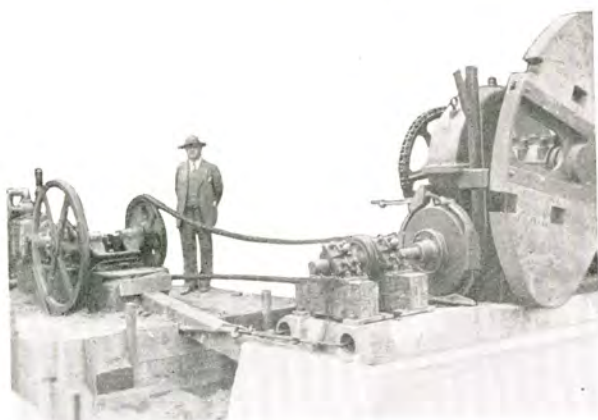


# LUFKIN PERMANENT EQUIPMENT



Swabbing with Lufkin Hoist No. 52

***Lufkin Hoists are Regularly Used for Swabbing  
They are Fast and Powerful***

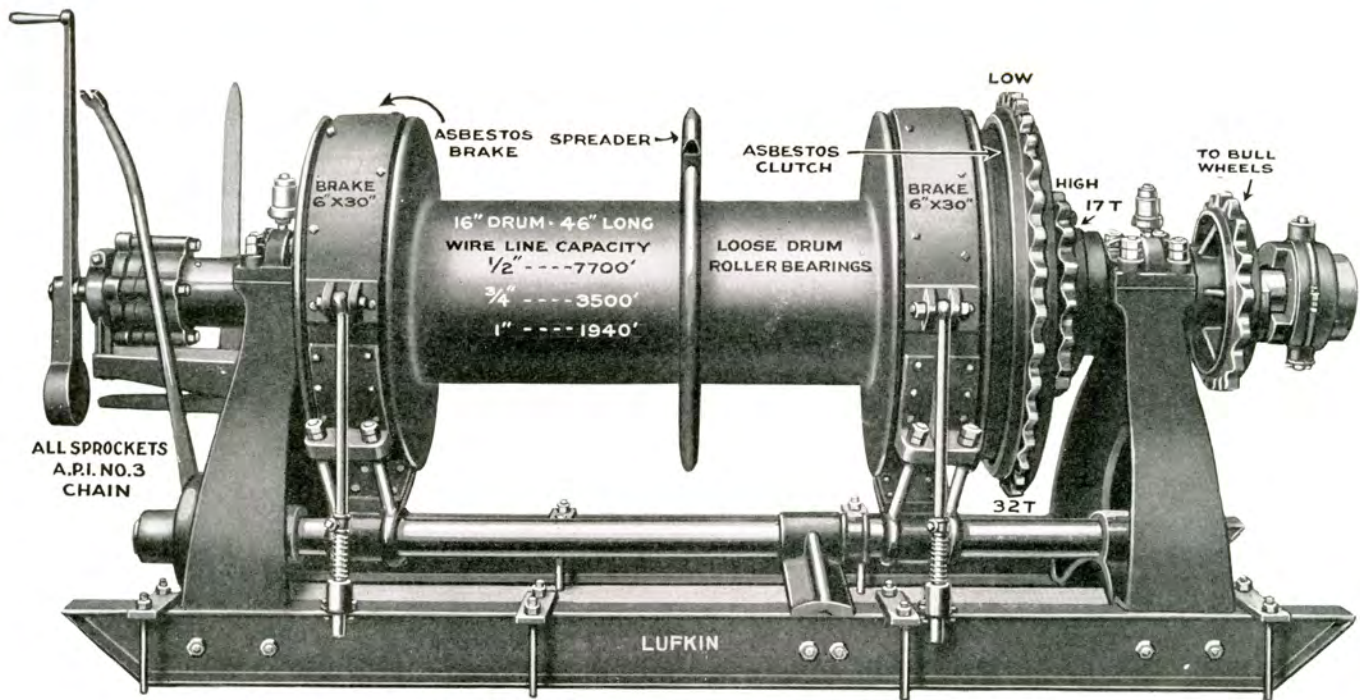


*Lufkin Unit Connected to Steam Engine*

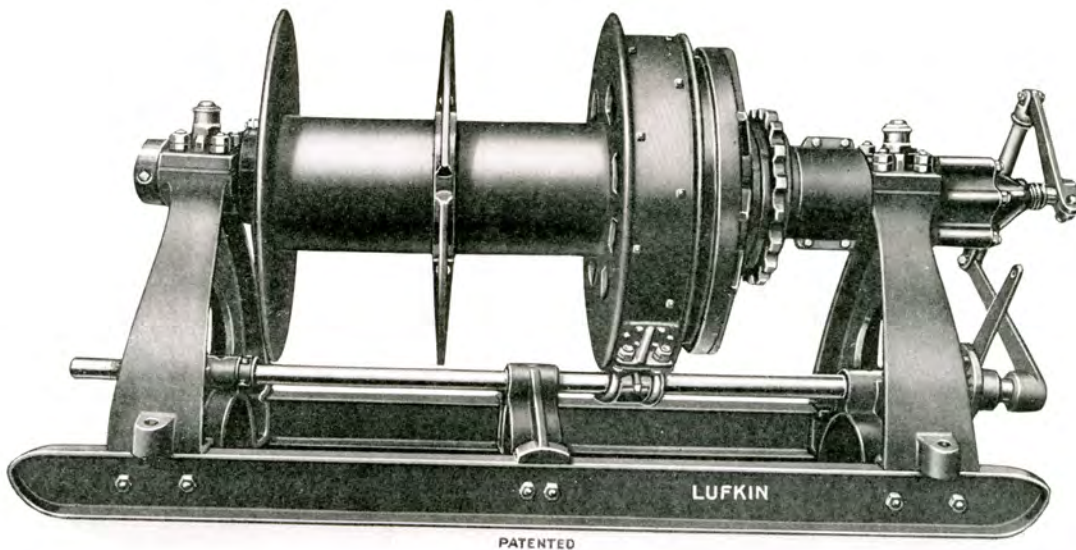
Lower left shows steam engine drive to Lufkin Unit and Hoist commonly used in California as stand-by equipment in event electric drilling rig fails or current goes off while drilling casing.

Later electric motor is mounted on Unit for pumping. Steam is obtained from auxiliary boilers used for heating, cleaning and other purposes around well.

# LUFKIN PERMANENT EQUIPMENT



No. 31—Oklahoma Type in Self-contained Frame



Lufkin No. 5—Sand Reel

## No. 31 Oklahoma Type Hoist

This type hoist is used in Oklahoma extensively, one of our original hoists intended strictly for rods and tubing has been greatly improved, having roller bearings in loose drum, also ball thrust bearings in place of bronze washers. Better thrust and shaft bearings are also provided. The hoist is driven from Unit or Standard rig and is used as a countershaft to bull wheels for drilling and cleaning out. We do not recommend it for over 3000-foot wells, it will however, give excellent, satisfactory service, being speedy and powerful. Shaft is 3-15/16", drum 16" diameter, brake drum 30" x 6", non-expandible. Alemite lubrication is provided.

## Lufkin Sand Reel No. 5

Built like our Oklahoma Hoist, except drum is keyed to shaft and sprocket clutch is loose, with long bronze bushing thoroughly lubricated. Otherwise this machine is the same type of construction as our Oklahoma Hoist, except lighter. The drum is 12" diameter with 36" flanges and will hold 6,000'-9/16" wire line. Shaft is 3-15/16" diameter. To those wanting a thoroughly built sand reel, this will be found to give satisfaction.

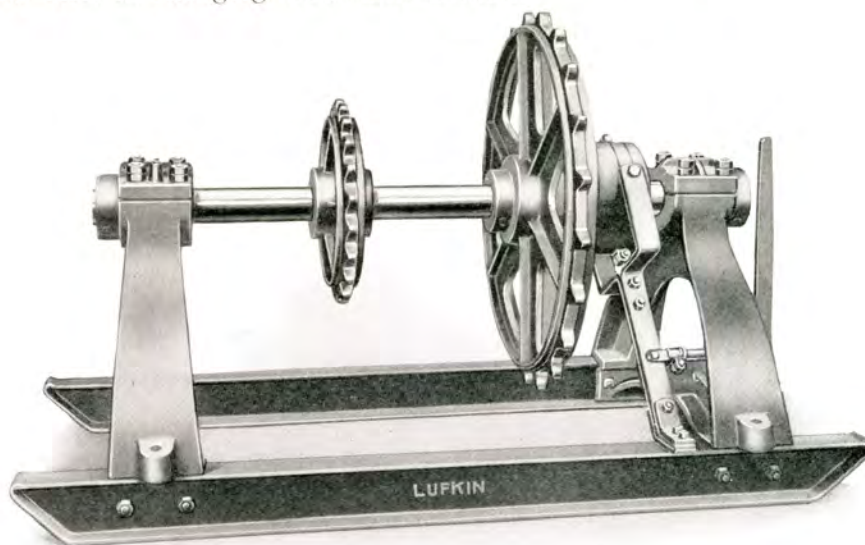
# LUFKIN PERMANENT EQUIPMENT

## *Lufkin Rod Line Weight*

We have designed the swivel rod line weight, as shown, to be used in place of the "C" link and to give just enough weight on line to come down fast, unspooling the drum. With roller bearings in drum, this weight will act surprisingly quick and be a big time saver, especially pulling rods. It is also much handier than a "C" link, more positive and safer in changing hooks and elevators.



*Patents Pending*



### COUNTERSHAFT FROM HOIST TO ROTARY

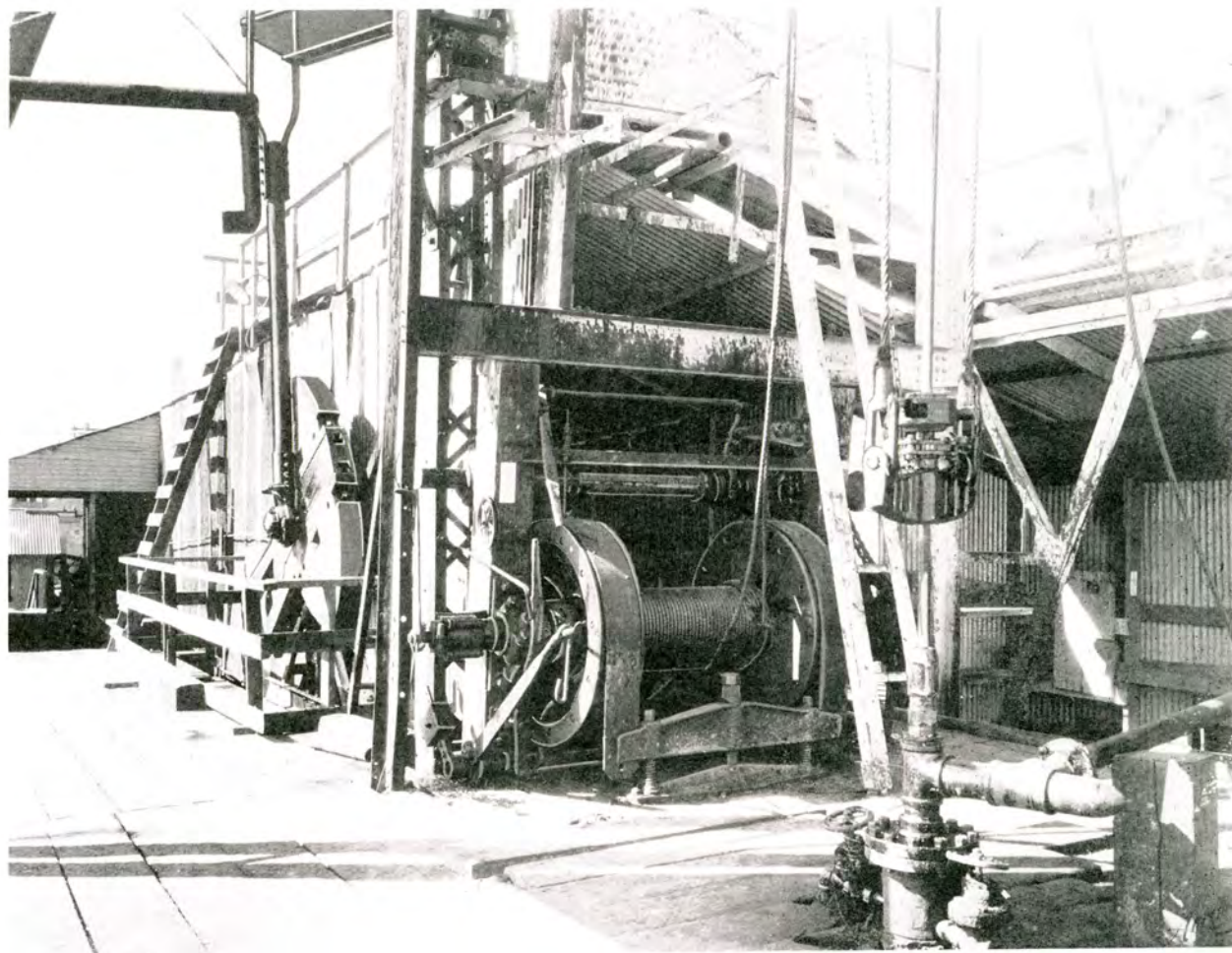
Usually a rotary can be run directly from our hoist for cleaning out etc., but for convenience and speed this self-contained countershaft will be found handy to have on the lease. It can be run from line shaft or drum shaft as may be desired. Shaft is key-seated between bearings allowing easy line up with rotary

## *Steel Sprocket for Bull Wheels*

This all-steel sprocket is designed to take the place of a cast iron split sprocket, that, owing to unevenness of pipe on bull wheels, correct pitch could not be maintained and many accidents followed. The new sprocket has solid rim and clamp hub with split bushing, sprocket being large enough to slip over rivet heads and clamp solidly on pipe. This sprocket can be furnished with 37 teeth for 18", 16" or 13" O. D. bull wheel drums.



# LUFKIN PERMANENT EQUIPMENT



Typical Standard Rig Using Lufkin Hoist, Beam, Pitman and Lufkin-Trout Counter-Balanced Crank

Trout Counter-Balanced Cranks, Lufkin Hoists, Samson Posts, Walking Beams and Pitmans are extensively used on Standard Rigs in the various fields of the world.

*See Article on Counter-balancing, page 11*

# LUFKIN PERMANENT EQUIPMENT

## *Samson Posts, Walking Beams, Pitmans and Auxiliary Equipment*

### **For LUFKIN Units and Standard Rigs**



Typical West Texas installation—Crank is balanced for pulling rods—Note the difference between the rig at the rear and the Lufkin in front. Note the grating around well—oil is drained off and saved.

# LUFKIN PERMANENT EQUIPMENT

## Lufkin Samson Posts

*Set Outside of Derrick—Clear of Production Hoist—  
Most Rigid Post Made*

**SAFETY  
BUMPER**



**N<sup>o</sup> 1-HEAVY DUTY POST**

**HEIGHT- BASE TO CENTER  
TRUNNION 15'3"  
SAME FOUNDATION SETTING  
FOR EITHER POST**



**N<sup>o</sup> 1-STANDARD POST**

These posts have stood the severest tests on the deepest wells, they are not only riveted but welded

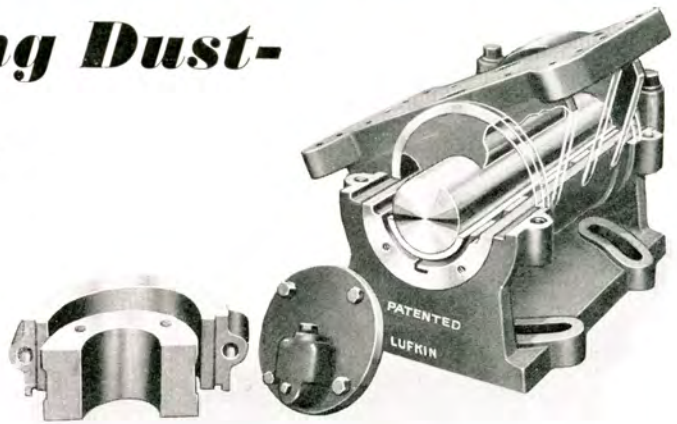
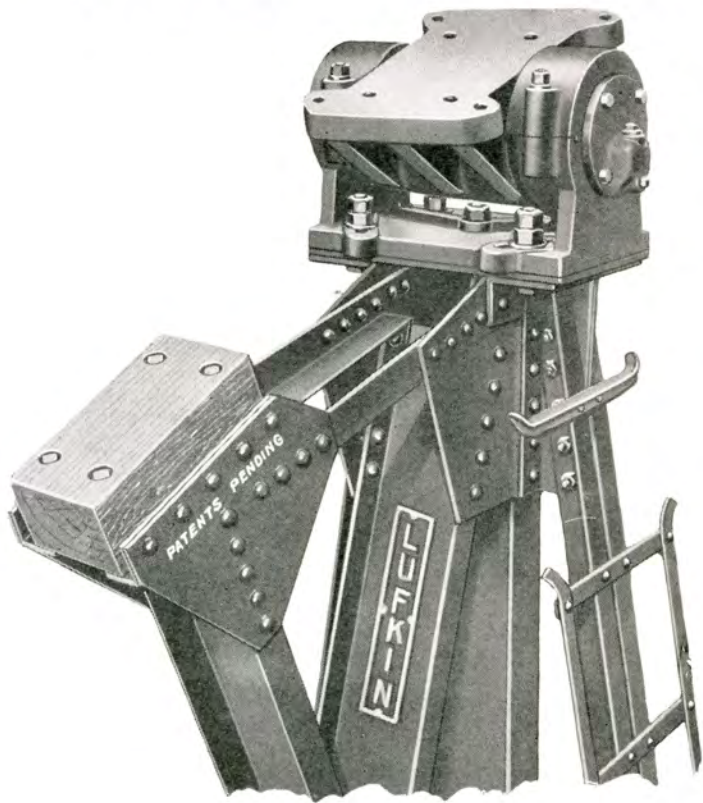
also—they will not loosen up if anywhere near proper alignment.

*See Page 74 for Nos. 2 and 3 Post Specifications*

*For Cable Code See pages 82-83.*

# LUFKIN PERMANENT EQUIPMENT

## LUFKIN *Self-Oiling Dust-Proof Center Iron*



### Lufkin Dust-Proof, Oil Bath Center Iron

*Bronze Bearing 24" Long*

*(Furnished When Specified at Extra Price.)*

The Lufkin self-oiling, dust-proof Center Iron meets the need for long life and strength where needed. This center iron requires practically no attention and is filled with oil about twice yearly under ordinary conditions. Renewable bronze bearings insure almost indefinite life. The view below also shows fine, heavy upper structure of the Lufkin Samson Post.

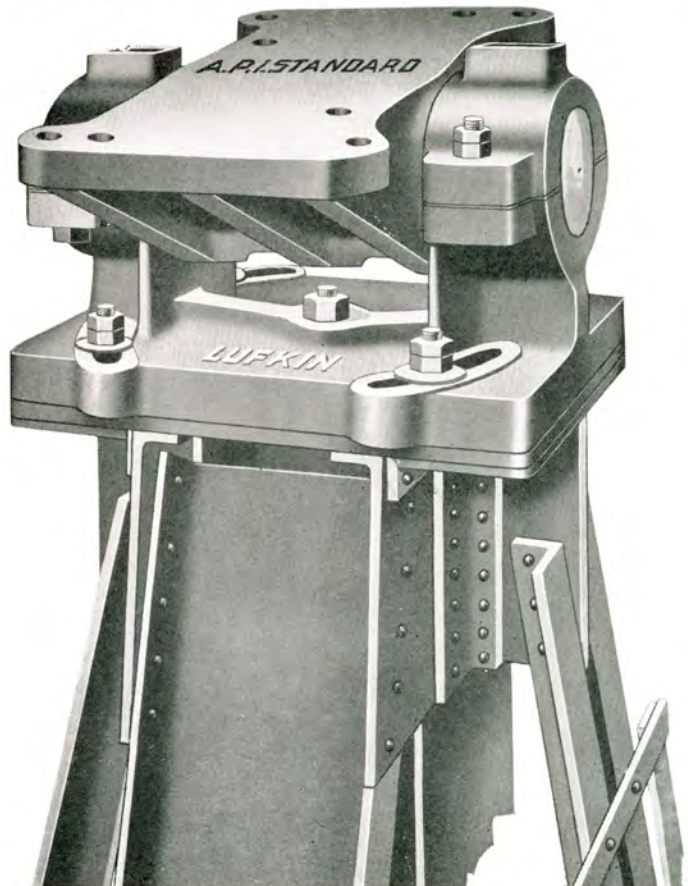
## A. P. I. Standard Center Iron

*Regularly Furnished With Lufkin  
Posts and Beams*

Bearings are bored straight with boring bar and in absolute alignment.

Saddle is planed and trunnions are turned on centers. Mis-alignment impossible.

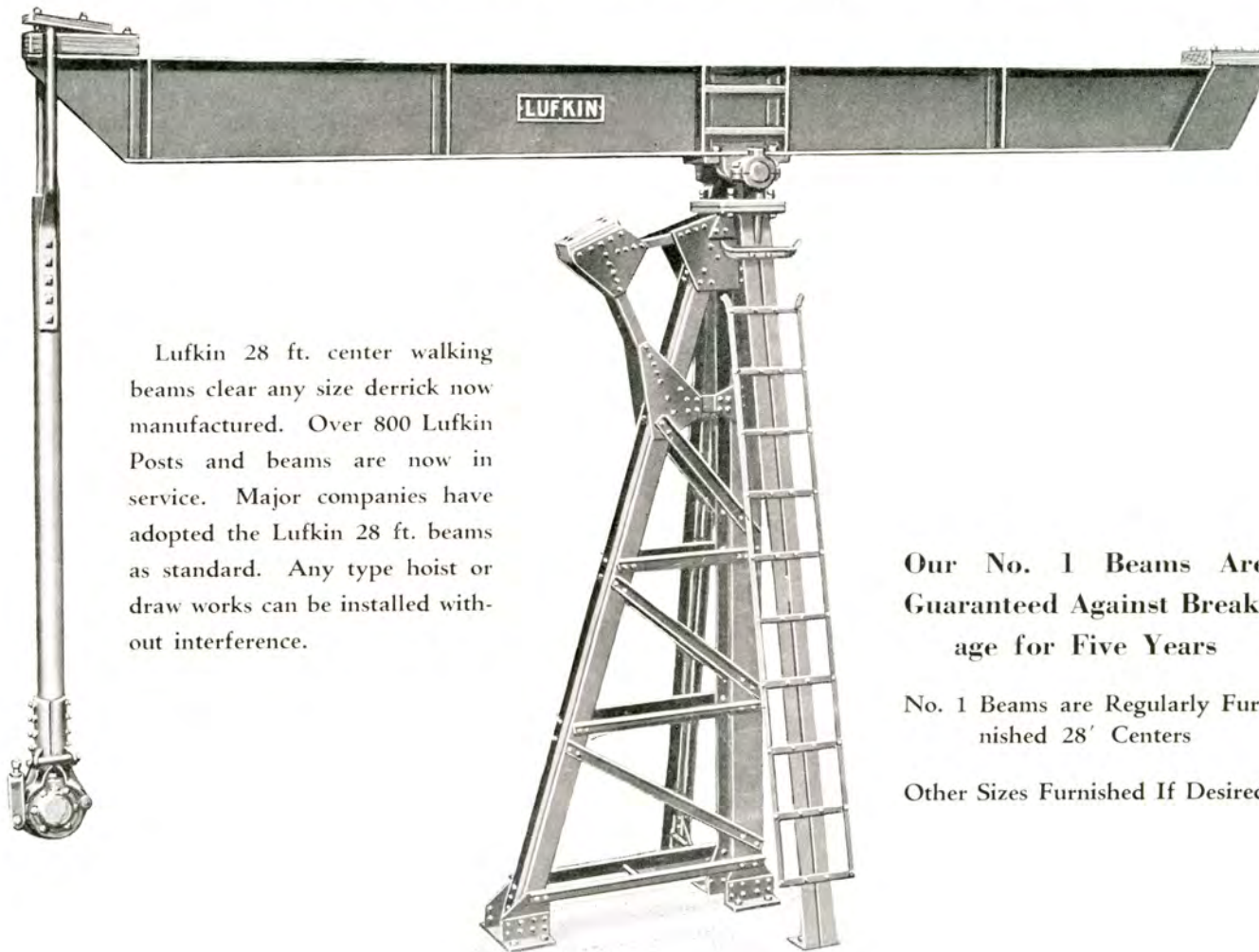
The Lufkin Center Iron has swivel base to allow beam to clear crank so hoist operator can "see clear" when pulling rods and tubing.



*Plain Center Iron and Saddle*

# LUFKIN PERMANENT EQUIPMENT

## No. 1 Lufkin Samson Post, Beam and Pitman Assembly



Lufkin 28 ft. center walking beams clear any size derrick now manufactured. Over 800 Lufkin Posts and beams are now in service. Major companies have adopted the Lufkin 28 ft. beams as standard. Any type hoist or draw works can be installed without interference.

**Our No. 1 Beams Are  
Guaranteed Against Break-  
age for Five Years**

No. 1 Beams are Regularly Fur-  
nished 28' Centers

Other Sizes Furnished If Desired

The Lufkin Post assembly, which includes Samson Post, Beam and Pitman, is manufactured in four sizes, designed to suit a particular unit and type of installation. The Lufkin "self-supporting" Samson Post is of heavy construction and designed to stand the most severe well conditions.

Lufkin Beams are all of the "I"-Beam type, electrically welded throughout.

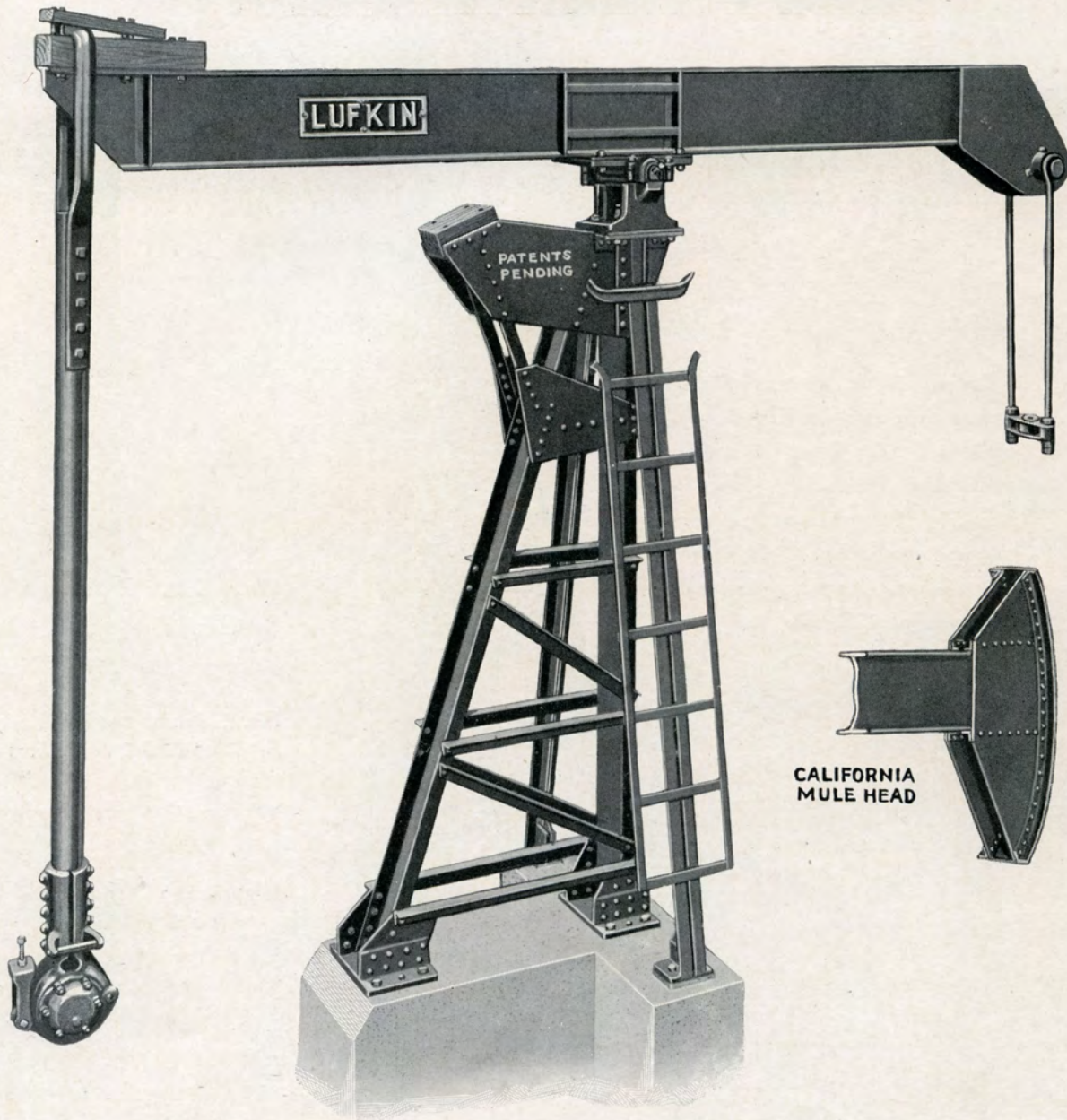
The Trout self-aligning, self-oiling, dust-proof pitman is a part of the Lufkin assembly. The Trout Pitman is universal, oil tight, and the box always stays on the pin.

The Lufkin Post assembly is designed as a unit and in balance and is most efficient when purchased as a whole.



# LUFKIN PERMANENT EQUIPMENT

## No. 2 and 3 Post Assembly



### NO. 2—BEAM AND POST ASSEMBLY

Height, Samson Post base to center of saddle trunnions, 12'.

Walking Beam Centers 8'.

Welded Beam—Section 16" 58-lb

### NO. 3—BEAM AND POST ASSEMBLY FOR BABY UNIT

Height, Samson Post base to center of saddle trunnions, 8' 2½".

Walking Beam Centers 7'.

Welded Beam—Section 12" 40-lb.

# LUFKIN PERMANENT EQUIPMENT



## **Lufkin Center Line Walking Beam, Pitman Beam Bearing and Full Universal Rod Hanger**

Several attempts have been made to design a center line beam—retaining the old fashioned friction producing stirrup and regular head connections, trying to fit every hanger made, which have met with little success.

Engineers are familiar with the inefficiency of the old stirrup type beam which shortens polish rod stroke, also the T-head which bends the rods at every stroke, and are demanding improvement.

We are pleased to offer our new center line beam with our pitman type rear bearing in the beam that is self lubricating and oil tight, our new oil bath center iron, see page 72, and our full universal rod hanger all in combination that judging by the reception it has received by the trade, we believe is a beam of exceptional merit.

The beam itself is the same section as our regular No. 1 beam with heavy plates welded on each end to take the bearings .

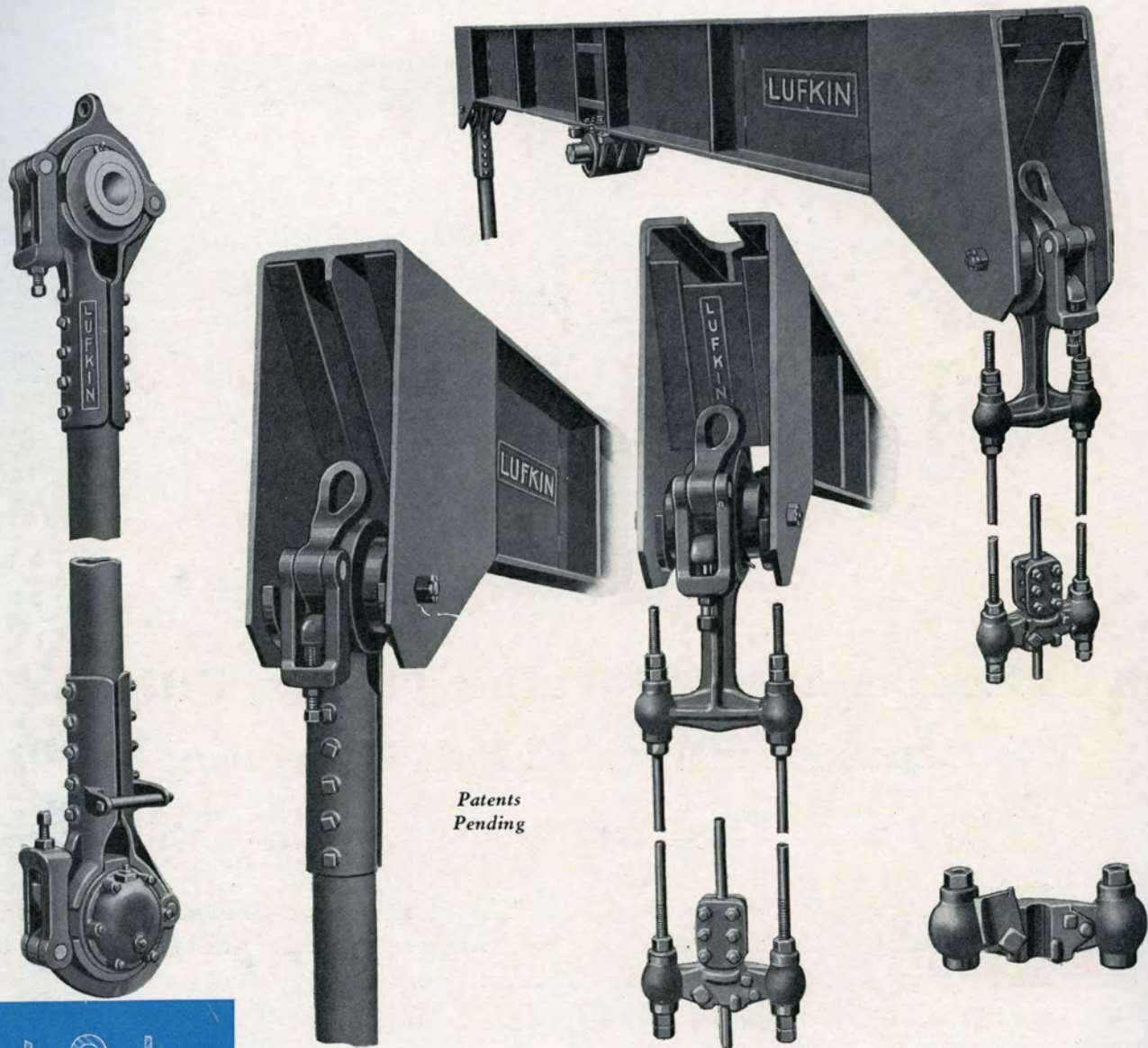
The oil bath center iron with 5" x 24" bearing is shown on page 72 and should be used with this beam.

The tail or rear bearing is 3-7/16" x 9" built on same principle as our pitman which is so favorably known and also with a shackle, can be removed in a few moments time. While there is only a slight movement of this bearing it is three inches longer than crank pin and with bronze liner should last indefinitely. It is oil tight and is lubricated by Alemite from the center of the beam at top of ladder. (Pipes are not shown).

The new beam hanger bearing is the same size bearing and is lubricated by the same method, from center of the beam at top of ladder.

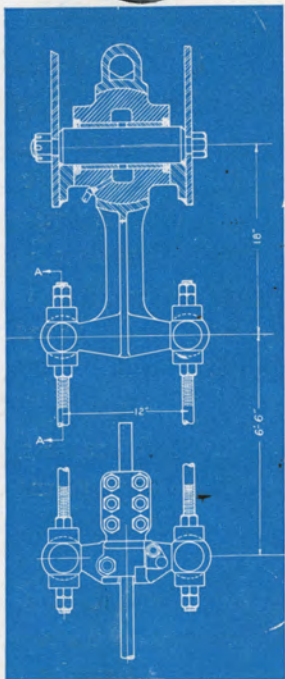
The new beam hanger is simplicity itself and illustrations show plainly its design and construction. We are retaining the T-head bearing for

# LUFKIN PERMANENT EQUIPMENT



Patents Pending

Lufkin Universal Pitman and Rear Beam Bearings for Lufkin Center Line Beam



Section "A-A"

SECTIONAL  
 DRAWING  
 LUFKIN  
 UNIVERSAL  
 PITMAN AND  
 ROD  
 HANGER  
 BEARING  
 CONNECTIONS

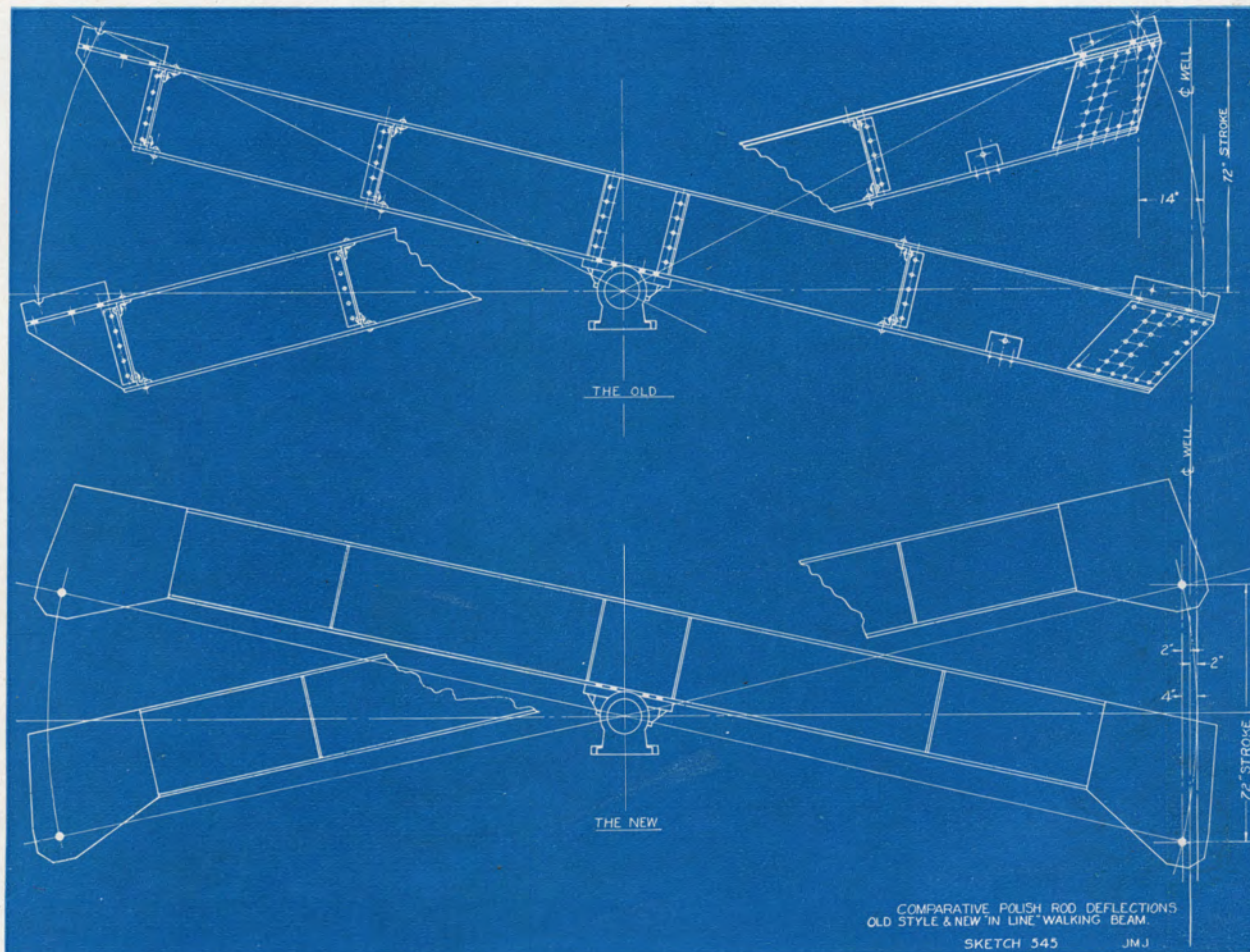
temper screw and by removing one bolt the whole hanger can be removed complete intact and temper screw used in the regular way.

The new hanger and bearing strap accommodate itself to any mis-alignment between polish rod and beam, yet there is no wear except on large bearing as shown.

All parts of rear bearing and rod hanger are steel. Our beams are 12" wide on top and if desired a guard rail full length of beam can be furnished at slight extra charge.

See diagram of beam working points on page 77.

# LUFKIN PERMANENT EQUIPMENT

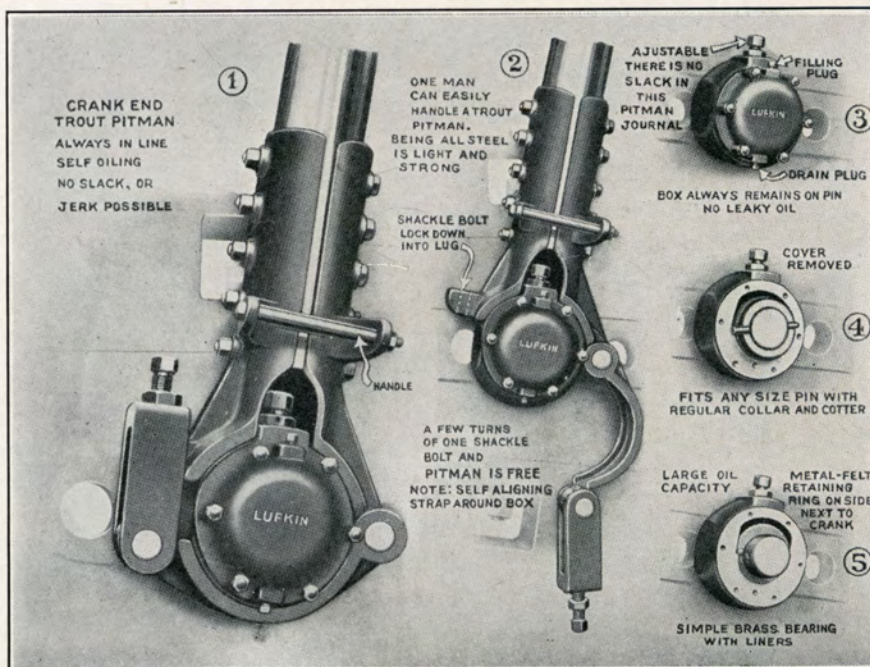
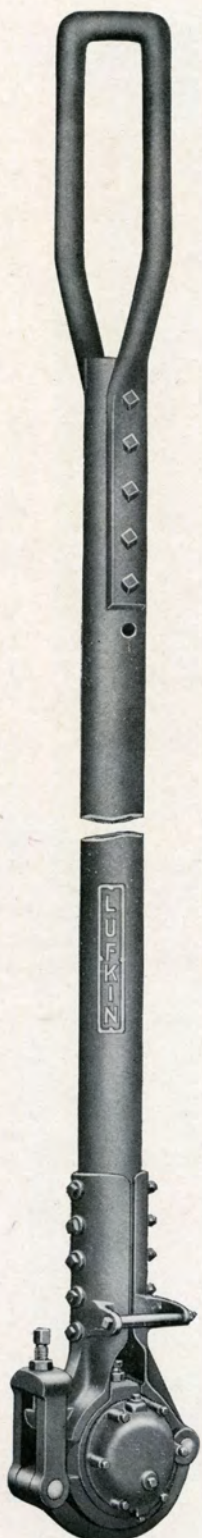


## Lufkin Center Line Beams

The old beam and the new beam. Note what the old beam does to the polish rod—14" bend. The center line of the new beam is only 2" each way from center of well at greatest bend. There is no loss in leverage and consequently a saving in power.

# LUFKIN PERMANENT EQUIPMENT

## Trout Universal Pitman



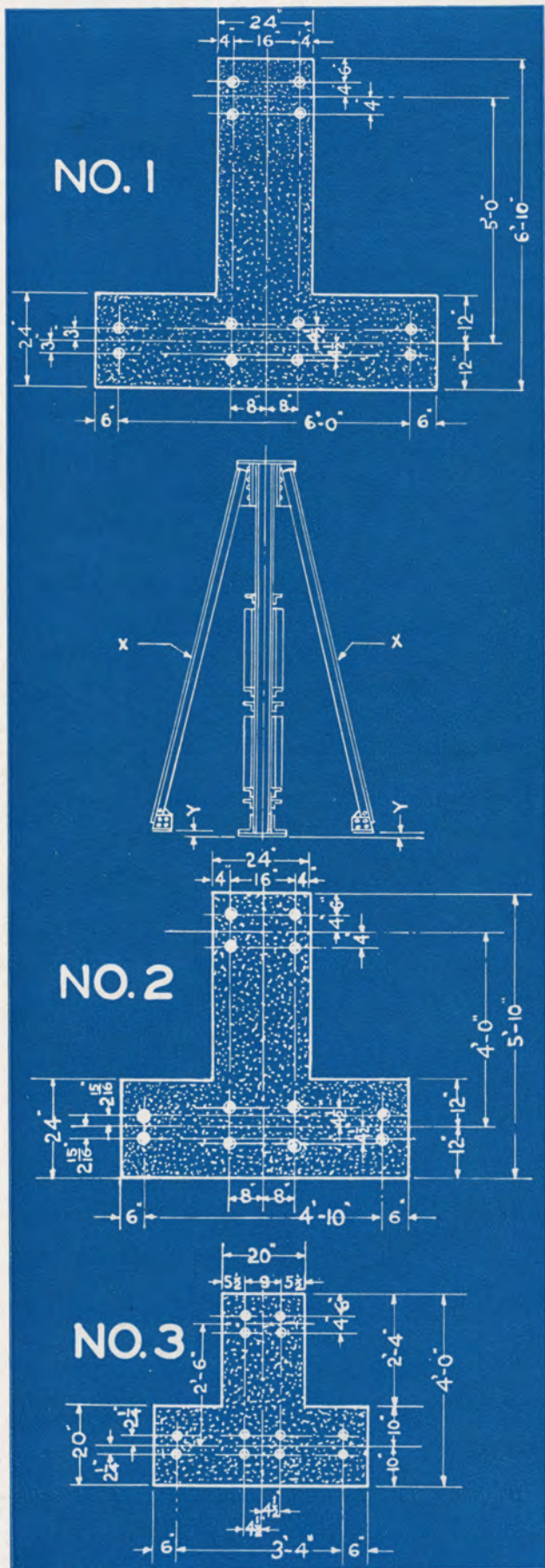
*Trout Universal Pitman (Patented)*

The Trout Universal Pitman is self-oiling — oil tight — dust proof — self-aligning and is always on the pin. Loosening shackle bolt unstraps Pitman from box and is easily adjusted. Handled easily by one man.

Carried in stock in A. P. I. sizes but can be furnished for any size pin.

**The Trout Universal Pitman Is Used As Standard  
Equipment by Most Large Operators.**

# LUFKIN PERMANENT EQUIPMENT



## *Directions for Setting* **Lufkin Samson Posts**

Experience has demonstrated that many cases of faulty operation of Lufkin Units are due to careless or incorrect alignment of walking beam and Samson Post. As an aid to correcting this trouble we offer the following suggestions:

(1) See that the foundation is built on the well center as our drawings specify.

(2) The main post or "A" frame should be leveled up by wedging before grouting; main post should be plumb.

(3) The "A" frame should then be plumbed crosswise of well center. Adjustment and fixing of frame in this position is obtained by means of the side braces (X). These are purposely made short so that when adjusted there is a gap (Y) between the brace foot and the concrete block. This gap is not to be grouted in until after the frame is properly plumbed and the brace bolt nuts are tightened down.

Observance of the foregoing points will result in better satisfaction.

# LUFKIN PERMANENT EQUIPMENT

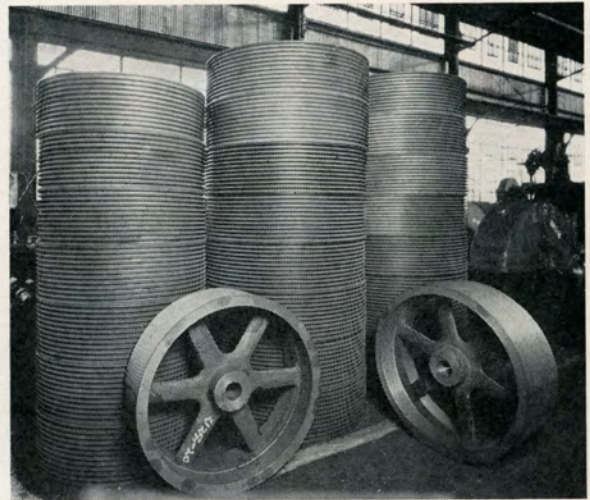
## “V” Belt Drives

The use of “V”-Belt Drives, in many instances, is the logical and most economical driving medium for Lufkin Units. This is particularly true of the LUFKIN HERRINGBONE UNIT.

Engineers have been quick to recognize and demand this type of drive.

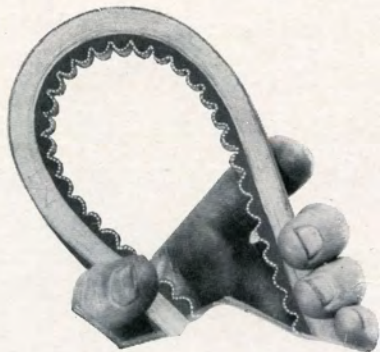
Sheaves up to 72" diameter inclusive and “V”-Belts suitable for any size drive are available from Lufkin stock. The sheaves are manufactured in our own plant while the “V”-Belts are purchased from the manufacturers. Several types are stocked in Lufkin but most any particular manufacturers' rope can be furnished. There are a number of good ropes or “V”-Belts on the market, two of which are illustrated below.

While each Manufacturer claims some particular exclusive construction feature the advantages of this type drive may be briefly set forth as: (a)



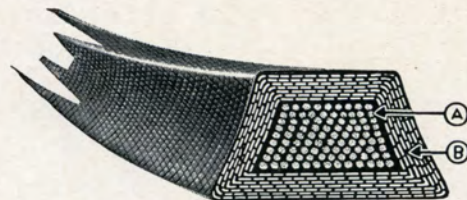
*Sheaves up to 72" Diameter inclusive furnished from Lufkin stock.*

Requiring minimum space, (b) Positive speed, (c) Lowered maintenance, (d) Easy on bearings, (e) Less adjustment and makes for a quiet, clean operation.



**DAYTON COG-BELT**

*Illustrating flexibility. A more detailed description will be furnished upon request.*



**GATES VULCO ROPE**

*Illustrating three principal construction points. Descriptive pamphlet upon request.*

# LUFKIN PERMANENT EQUIPMENT

ALLPAX comes in two forms — in flakes for general purposes, and in coil form for the hard-to-get-at stuffing box



# ALLPAX

THE PACKING THAT "PACKS ALL"

Reg. U. S. Pat. Off.

## the packing for every purpose

ALLPAX—The universal packing—consists of an intimate mixture of long, tough fibres of asbestos, thin flakes of the highest grade of anti-friction metal, minute scales of graphite, and a special non-liquid, heat-proof lubricant — compounded in proportions shown by experience to result in a long-wearing, leak-proof, non-scoring packing for severe service.

ALLPAX eliminates packing waste and saves time and labor in packing. When worn so that the gland is taken up entirely, it is not necessary to replace with new packing—simply back off the gland and add a sufficient amount to fill the stuffing box. ALLPAX conditions itself to a glassy, non-scratching surface. Whether freshly put in place or after long service, it is guaranteed not to score the shaft. Its low friction cuts down power losses and increases efficiency of the unit on which it is used.

## LUFKIN UNITS are packed with ALLPAX



# REX CHABELCO

STRENGTH—HARDNESS—PRECISION  
THE UNIT LINK—UNIFORMITY

NO. 1030 — Pitch, 3.075 inches.  
Average Ultimate strength, 28,000  
pounds, average weight, 6.8 pounds  
per foot.

**STRENGTH**—Rex Chabelco will pull its rated tensile strength and will handle its rated working loads.

**HARDNESS**—Rex Chabelco has hardness developed by special heat treating methods and most modern equipment so that it will resist wear.

**PRECISION**—Rex Chabelco is manufactured on precision machinery—it is accurate in every dimension. This means that its pitch is accurate—that every link will fit the sprocket which means longer life and also means that the pitch of the chain will be preserved.

**THE UNIT LINK**—Advanced manufacturing methods produce the unit link that stays a unit. Side bars will not back off the bushings. Accurate force fits in every part produce in every link of Rex Chabelco unity and rigidity that are maintained.

**Detachable**—An inexpensive chain for general service.

**Griplock**—With the Hidden Shoulders and wearing shoes; the most durable and highly developed malleable chain.

**Ley-Bushed**—For heavy duty elevators handling sand, gravel and cement.

**Durobar**—A better combination chain for the fertilizer and cement industries.

**Unicast**—A superior malleable roller chain with links cast integral with roller.

**Chabelco**—An all-steel roller chain for heavy duty drives and conveyors.

**Buckets**—For every type of elevator service.

**Rex Temperim Sprockets**—With teeth and rim-hardened. Other sprockets for every service.

## Manufactured by CHAIN BELT COMPANY, Milwaukee, Wis.



# LUFKIN PERMANENT EQUIPMENT

## *Telegraph and Cable Code*

Cable Word "LUFFO"

Our private Code is used for specifying our equipment whenever possible and reference to the Code following will assist in describing types of drives, assemblies, etc. For transmitting instructions regarding prices, terms of payment, method of shipment, routing, etc., use 6th edition A. B. C. Code.

Code Word	Translation	See Catalog Page	Code Word	Translation	See Catalog Page
<b>Herringbone Geared Units</b>					
FAADS—6½"	Lufkin Herringbone Pumping Unit with electric motor .....	16-17	FAZEH—4½"	Lufkin Baby Worm Gear Pumping Unit complete with Buda gas engine, walking beam, samson post and pitman.....	41
FAAKY—6½"	Lufkin Herringbone Pumping Unit with Buda gas engine .....	23	<b>Type of Drives for Worm Gear Units</b>		
FAAMB—6½"	Lufkin Herringbone Pumping Unit with single cylinder gas engine.....	23	FECEW—	Single Cylinder gas engine direct connected drive with shock absorbing coupling and disc type clutch .....	43
FAARF—6½"	Lufkin Herringbone Pumping Unit (Gulf Coast Pattern) with electric motor..	19-20	FECIX—"V"	belt drive for electric motor consisting of pedestals, shaft, sheaves, belts and motor bracket with rails .....	44
FAAFT—5½"	Lufkin Herringbone Pumping Unit with electric motor .....	16-17	FECOY—"V"	belt drive for single cylinder gas engine consisting of pedestals with tightener, engine shaft with sheave and clutch, unit shaft with sheave and coupling and belts..	44
FAALZ—5½"	Lufkin Herringbone Pumping Unit with Buda gas engine .....	23	<b>Central Pumping Power</b>		
FAANC—5½"	Lufkin Herringbone Pumping Unit with single cylinder gas engine .....	23	FAZOK—	Lufkin Standard Worm Gear Central Pumping Power .....	49
FAATH—5½"	Lufkin Herringbone Pumping Unit (Gulf Coast Pattern) with electric motor	19-20	FAZIJ—	Lufkin Giant Worm Gear Central Pumping Power .....	53
FABAH—	Lufkin Junior Herringbone Pumping Unit with base and electric motor.....	25	<b>Types of Drives for Central Pumping Powers</b>		
FABIK—	Lufkin Junior Herringbone Pumping Unit with Buda gas engine (Similar to FAALZ shown on page 23) .....	26	FEFAX—"V"	belt drive for electric motor consisting of extension shaft with bearings, sheaves and belts .....	51
FABOL—	Lufkin Junior Herringbone Pumping Unit with single cylinder gas engine.....	26	FEBAT—	Buda gas engine with shaft bearings and flexible couplings direct connected .....	51
FABUM—	Lufkin Junior Herringbone Pumping Unit with electric motor (no unit base included)	25	FEBEV—	Single Cylinder gas engine with extension shaft, bearings, sheaves, belts, tightener and clutch .....	51
<b>Worm Gear Units</b>					
FACAJ—6½"	Lufkin Heavy Duty Worm Gear Pumping Unit with electric motor (Same as shown on page 35) .....	37	<b>Lufkin Hoists</b>		
FLAYB—6½"	Lufkin Heavy Duty Worm Gear Pumping Unit with Buda gas engine (Same as shown on page 45) .....	37	GACEN—	No. 2 Hoist on wood posts.....	59
FACEK—5½"	Lufkin Intermediate Worm Gear Pumping Unit with electric motor (direct connected as shown on page 35).....	38	GACIP—	No. 2 Hoist on steel posts.....	59
FYEHN—5½"	Lufkin Intermediate Worm Gear Pumping Unit with Buda gas engine (direct connected as shown on page 45).....	38	GACOR—	No. 6 Hoist on wood posts.....	60
FACIL—4½"	Lufkin Standard Worm Gear Pumping unit with electric motor (direct connected as shown on page 35).....	39	GACUS—	No. 6 Hoist on steel posts.....	60
FECAY—4½"	Lufkin Standard Worm Gear Pumping Unit with Buda gas engine (direct connected as shown on page 45).....	39	GEULF—	No. 52 Hoist on wood posts.....	61
FACOM—4½"	Lufkin Stripped Standard Worm Gear Pumping Unit with plain induction motor	40	GEURK—	No. 52 Hoist on steel posts.....	61
FAYOJ—4½"	Lufkin Stripped Standard Worm Gear Pumping Unit on Colombia base with plain induction motor .....	40	GEVAR—	No. 522 Hoist on wood posts.....	62
FAYUK—4½"	Lufkin Stripped Standard Worm Gear Pumping Unit on low base with Buda gas engine .....	46	GEVES—	No. 522 Hoist on steel posts.....	62
FAWUL—4½"	Lufkin Baby Worm Gear Pumping Unit complete with electric motor, walking beam, samson post and pitman.....	41	GIMUZ—	No. 62 Hoist on wood posts.....	63
			GINAV—	No. 62 Hoist on steel posts.....	63
			GINEX—	No. 622 Hoist on wood posts (Same hoist as No. 62 except no line shaft).....	63
			GINOZ—	No. 622 Hoist on steel posts.....	63
			GOARD—	No. 141 Hoist on wood posts.....	64
			GOBAY—	No. 141 Hoist on steel posts.....	64
			GOZIZ—	No. 31 Hoist .....	67
			GOZOB—	No. 5 Sand Reel .....	67
			GYOND—	Swabbing Hoist No. 76.....	65
			GYOPF—	Countershaft for Rotary Drive.....	68
			HEYIB—	Sprocket with bushing for 13" bull wheel....	68
			HEYOC—	Sprocket with bushing for 16" bull wheel..	68
			HEYUD—	Sprocket with bushing for 18" bull wheel..	68
			HEZAB—	Bushing only for 13" Bullwheel sprocket....	68
			HEZEB—	Bushing only for 16" Bullwheel sprocket....	68
			HEZIC—	Bushing only for 18" Bullwheel sprocket....	68
			HEZOD—	Rod line weight .....	68

# LUFKIN PERMANENT EQUIPMENT

## Telegraph and Cable Code--Continued

Code Word	Translation	See Catalog Page
<b>Number One Post, Beam and Pitman Assemblies</b>		
FEBOX—No. 1 Assembly (No. 1 Standard Post with Plain Irons, Regular Beam and Pitman with stirrup) . . . . .		72-73
FEBUY—No. 1 Assembly (No. 1 Standard Post with Oil Bath Irons, Regular Beam and Pitman with stirrup) . . . . .		72-73
FUCEF—No. 1 Assembly (No. 1 Standard Post with Plain Irons, Center Line Beam, Rod Hanger and Pitman) . . . . .		72-76
FYCOX—No. 1 Assembly (No. 1 Standard Post with Oil Bath Irons, Center Line Beam, Rod Hanger and Pitman) . . . . .		72-76
FYCUF—No. 1 Assembly (No. 1 Heavy Post with Plain Irons, Regular Beam and Pitman with stirrup) . . . . .		72-73
FYDEW—No. 1 Assembly (No. 1 Heavy Post with Oil Bath Irons, Regular Beam and Pitman with stirrup) . . . . .		72-73
FYDIX—No. 1 Assembly (No. 1 Heavy Post with Plain Irons, Center Line Beam, Rod Hanger and Pitman) . . . . .		72-76
IFKOY—No. 1 Assembly (No. 1 Heavy Post with Oil Bath Irons, Center Line Beam, Rod Hanger and Pitman) . . . . .		72-76
FLEHL—No. 1 Heavy Duty Samson Post without irons		71
FLEJM—No. 1 Standard Samson Post without irons..		71
FLEPT—No. 1 Heavy Duty Samson Post with plain irons . . . . .		71-72
FLERV—No. 1 Standard Samson Post with plain irons		71-72
FLEYC—No. 1 Heavy Duty Samson Post with Oil Bath Irons . . . . .		71-72
FLICH—No. Standard Samson Post with Oil Bath Irons		71-72
FUBED—No. 1 Plain Center Iron . . . . .		72
FUBIF—No. 1 Plain Saddle . . . . .		72
FUCIG—No. 1 Oil Bath Center Iron and Saddle . . . . .		72
FUCUJ—No. 1 Regular Beam . . . . .		73
FUDAF—No. 1 Center Line Beam with rod hanger..		75-76
FLEWZ—No. 1 Pitman for center line Beam . . . . .		76
FYDAV—No. 1 Pitman with Stirrup . . . . .		78
FYDUZ—No. 2 Post, Beam and Pitman assembly . . . . .		74
FLELP—No. 2 Samson Post less irons . . . . .		74
FLEVY—No. 2 Samson Post with plain irons . . . . .		72-74
FUBAC—No. 2 Samson Post with Oil Bath Irons . . . . .		72-74
FUBOG—No. 2 Plain Center Iron . . . . .		72
FUBUH—No. 2 Plain Saddle . . . . .		72
FUCOH—No. 2 Oil Bath Center Iron and Saddle . . . . .		72
FYCAT—No. 2 Beam with rod hanger . . . . .		74
FYCEV—No. 2 Beam with mule head . . . . .		74
FYDOY—No. 2 Pitman with stirrup . . . . .		78
FLENS—No. 3 Post, Beam, and Pitman assembly . . . . .		74

### Electric Motors

ICACK—35/75, 600/1200 G. E. Motor.
ICAFP—25/55, 600/1200 G. E. Motor.
ICAJR—15/35, 600/1200 G. E. Motor.
IDCIL—50 H.P. 1200 G. E. Motor.
IDCOM—50 H.P. 900 G. E. Motor.
IDCUN—50 H.P. 720 G. E. Motor..
IDDAK—40 H.P. 1200 G. E. Motor.
IFAYN—40 H.P. 900 G. E. Motor.
IFBAL—25 H.P. 1200 G. E. Motor.
IFBEM—25 H.P. 900 G. E. Motor.
IFBOP—20 H.P. 1200 G. E. Motor.
IFFOT—15 H.P. 1200 G. E. Motor.
IFFUV—10 H.P. 1200 G. E. Motor.
IFGAR—7½ H.P. 1200 G. E. Motor.
IFGES—5 H.P. 1200 G. E. Motor.

Code Word	Translation	See Catalog Page
IFHAS—25/65 H.P. 600/1200 W. H. Motor.		
IFHET—20/50 H.P. 600/1200 W. H. Motor.		
IFHIV—15/35 H.P. 600/1200 W. H. Motor.		
IFHOW—50 H.P. 1200 W. H. Motor.		
IFHUX—50 H.P. 900 W. H. Motor.		
IFIGX—50 H.P. 720 W. H. Motor.		
IFILD—40 H.P. 1200 W. H. Motor.		
IFING—40 H.P. 900 W. H. Motor.		
IFIPH—25 H.P. 1200 W. H. Motor.		
IFISK—25 H.P. 900 W. H. Motor.		
IFJAT—20 H.P. 1200 W. H. Motor.		
IFJEV—15 H.P. 1200 W. H. Motor.		
IFJOX—10 H.P. 1200 W. H. Motor.		
IFJUY—7½ H.P. 1200 W. H. Motor.		
IFKAV—5 H.P. 1200 W. H. Motor.		

### Multi-cylinder Gas Engine

IFLAW—J. H. 6 Buda . . . . .	46
IFLEX—J. H. 4 Buda . . . . .	46
IFLOZ—F. R. 4 Buda . . . . .	46
IFLUB—Y. R. 4 Buda . . . . .	46

### Single Cylinder Gas Engine (Give name of engine)

IFMAX—40 H.P. 2 Cycle.
IFMEY—40 H.P. 4 Cycle.
IFMIZ—30 H.P. 2 Cycle.
IFMOB—30 H.P. 4 Cycle.
IFMUC—25 H.P. 2 Cycle.

### Miscellaneous Information that May Be Used When Ordering Units

FEDAW—Sprocket for driving hoist not required.	
FEDEX—Motor Bracket for "V" belt drive not required.	
FEDOZ—Include sprocket for driving Sand Reel.	
FEDUB—Include Derrick control for Flywheel Brake.	
FEFAX—Include extra sheave for motor to secure (—) strokes per min.	
FLAHK—Include auxiliary weights for crank.	
FLALN—Include foundation bolts for Unit.	
FLAMP—Include foundation bolts for Samson Post.	
FLAPS—Include (—) pull rod clevises for Power.	
FLART—Include sufficient chain for driving hoist.	
FLAWY—Include sufficient chain for driving Sand Reel.	
FECUZ—Include Calf. wheel drive sprocket with clutch.	18
IFGIT—Strokes per minute.	
IFGOV—Depth of well in feet.	
IFGUW—Gravity of oil.	
IFKEW—Size of tubing.	
IFKIK—Barrels of fluid per day.	
IFKUZ—Electric motor not required.	
IFNAY—Buda gas engine not required.	
IFNEZ—Single Cylinder gas engine not required.	
IFNIB—6'0" walking beam working centers desired.	
IFNUD—7'0" walking beam working centers desired.	
IFOFY—8'0" walking beam working centers desired.	
IFOHB—12'6" walking beam working centers desired.	
IFOLF—13'0" walking beam working centers desired.	
IFORK—14'0" walking beam working centers desired.	
IFOWP—No walking beam, post or pitman required.	
HOASP—11-1/3 to 1 Worm Gear Ratio.	
HOBAC—19-2/3 to 1 Worm Gear Ratio.	
HOBED—22-1/4 to 1 Worm Gear Ratio.	
HOBOG—26-1/3 to 1 Worm Gear Ratio.	
HUCUR—29-2/3 to 1 Worm Gear Ratio.	
HUDAM—44-1/2 to 1 Worm Gear Ratio.	

When ordering electric motor give make, speed, type and specifications of electric current.

# LUFKIN PERMANENT EQUIPMENT

***Free  
for the  
Asking***



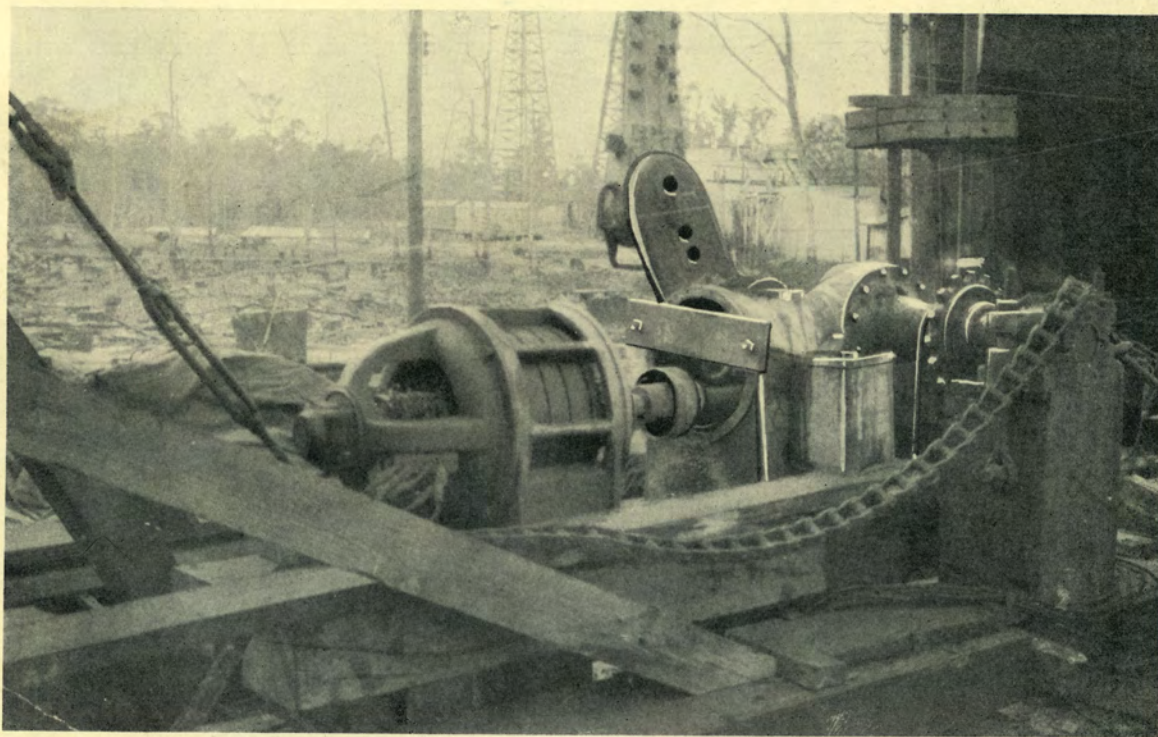
"Published to promote friendship and good will with its customers and to advance the interest of its products by the Lufkin Foundry and Machine Company and mailed free of charge to interested oil men anywhere."



The "LUFKIN LINE" contains interesting oil news and is also a digest of new equipment for the oil industry. The complete "up-to-the-minute" details of Lufkin equipment is always available when the "Lufkin Line" is preserved with our catalogue. A folder for preserving this catalogue with ample space for future issues of the Lufkin Line will be gladly mailed free for the asking.

ASK US TO PUT YOUR NAME ON OUR MAILING LIST.

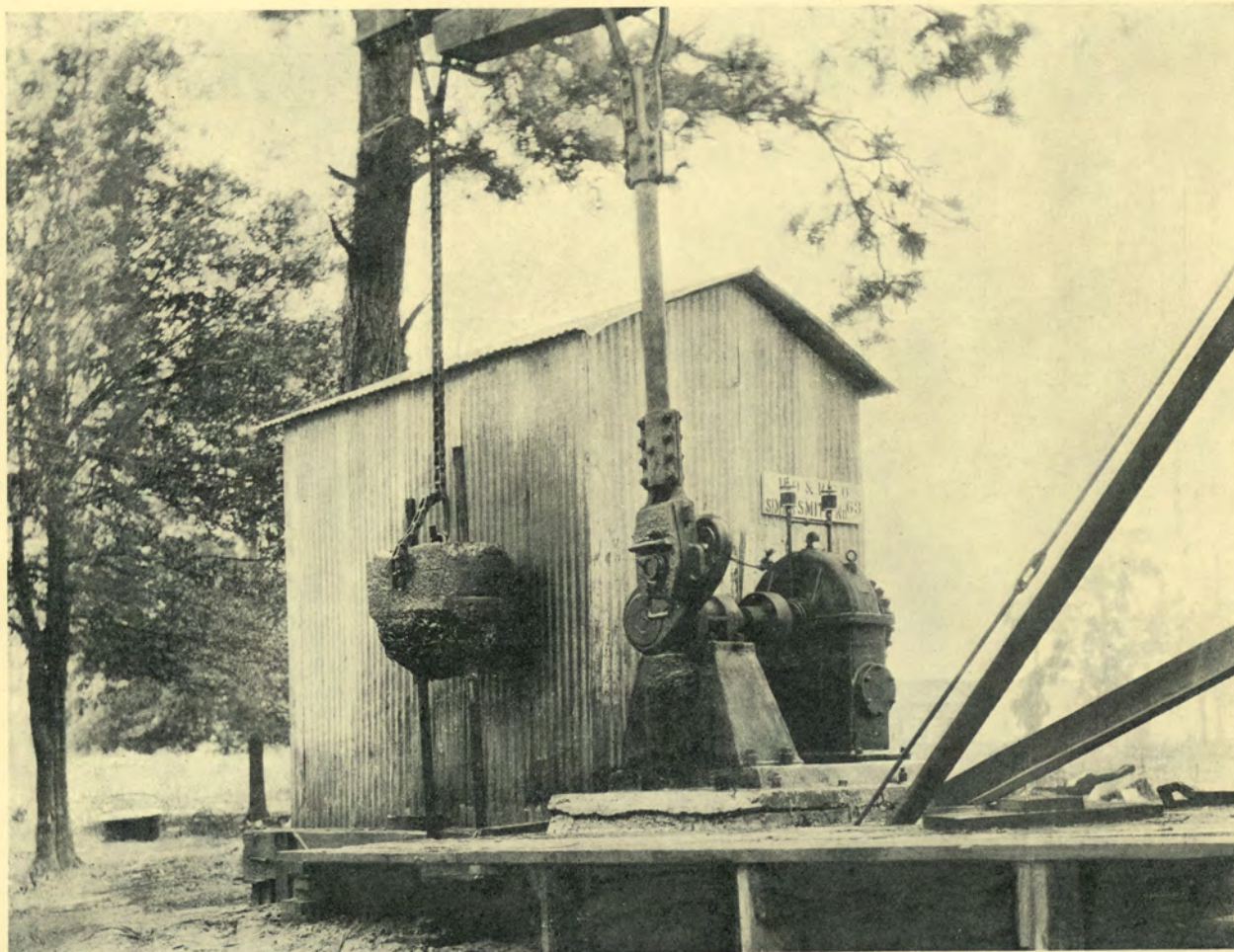
# *A Pictorial History* *of* **LUFKIN UNITS**



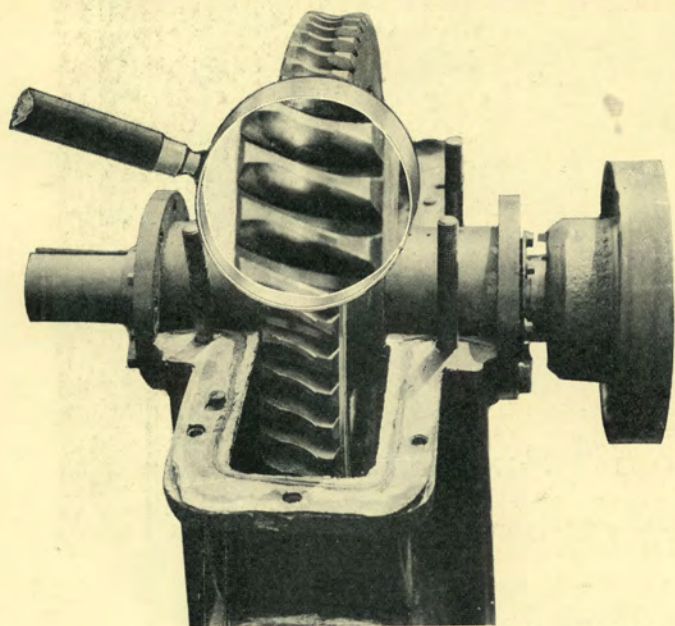
The Idea out of Which Grew the Present Lufkin Unit

①

*This Section Attempts to Set Forth Briefly the  
Development of the Lufkin Unit From Its Earliest  
Conception to the Present Time in Pictorial Form*



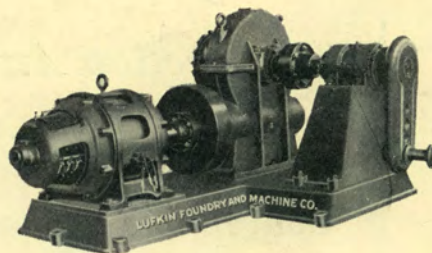
## The First *LUFKIN* Worm Gear Unit



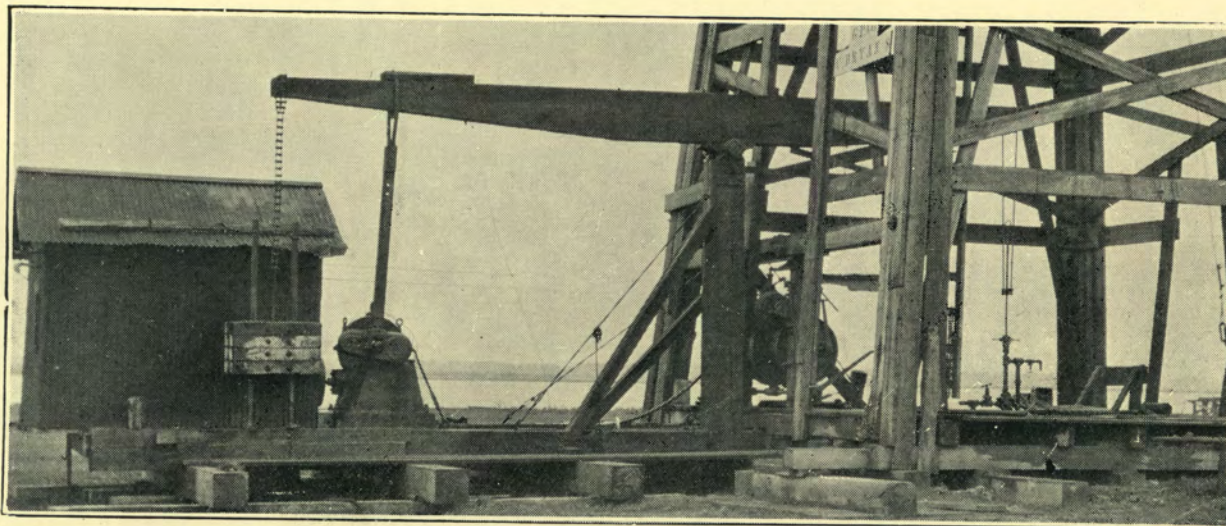
Close-up of Worm Gear Teeth in Lufkin Unit After Five Years of Continuous Service Showing Practically No Wear.

The first Lufkin Unit was installed by the Humble Oil & Refining Co. at Goose Creek, Texas, in January, 1924. This Unit was later moved to another location and is still in operation.

Recently a Lufkin Worm Gear Unit, after five years continuous operation was brought into our plant to be tested for efficiency, wear, etc., for our own information. This unit showed practically no wear, and 89% efficient on test.



Design of First Lufkin Unit



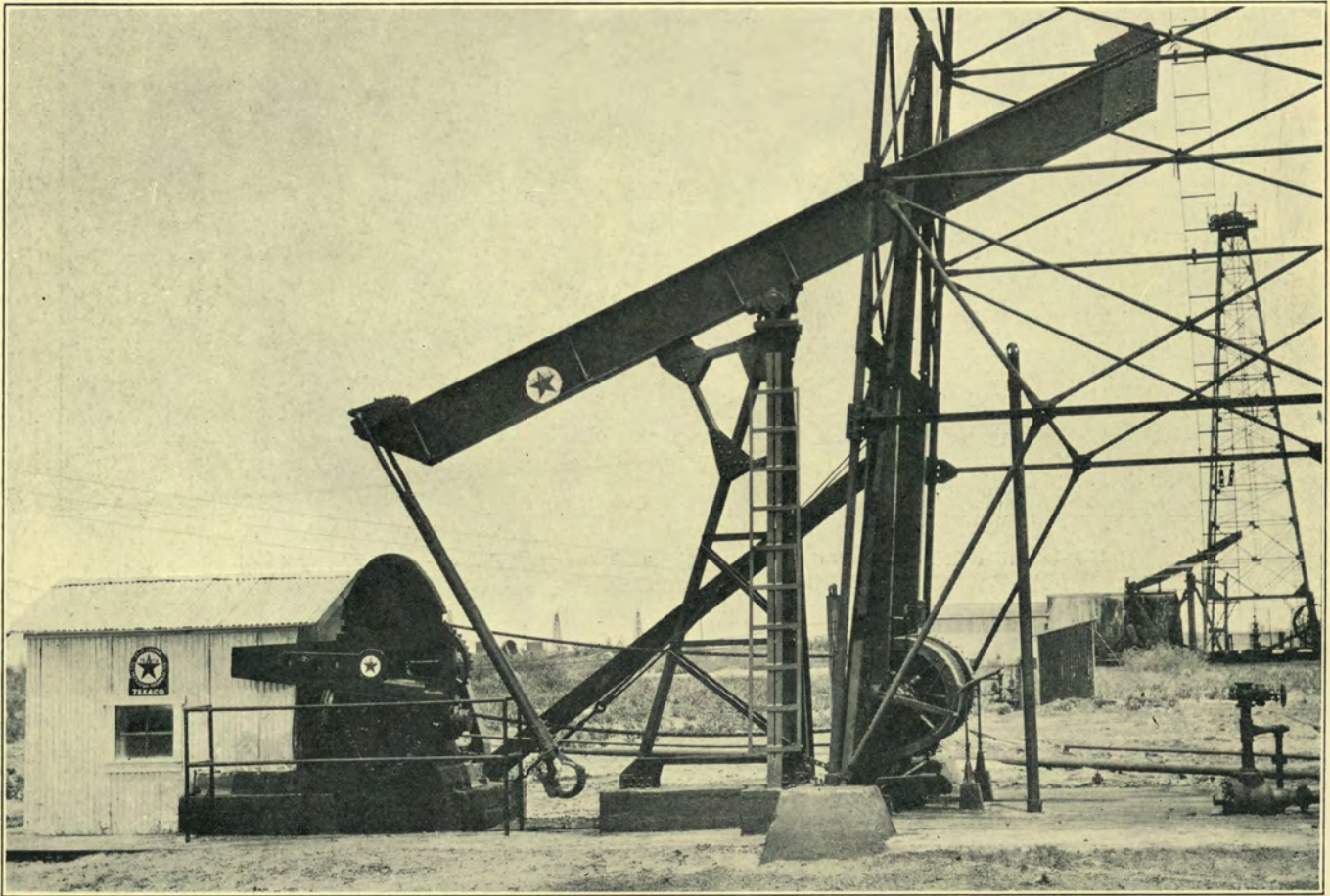
Gulf Production Co., C. Bryan 8, Goose Creek, 4200 feet deep—One of our early installations.

## Original *LUFKIN* Installations



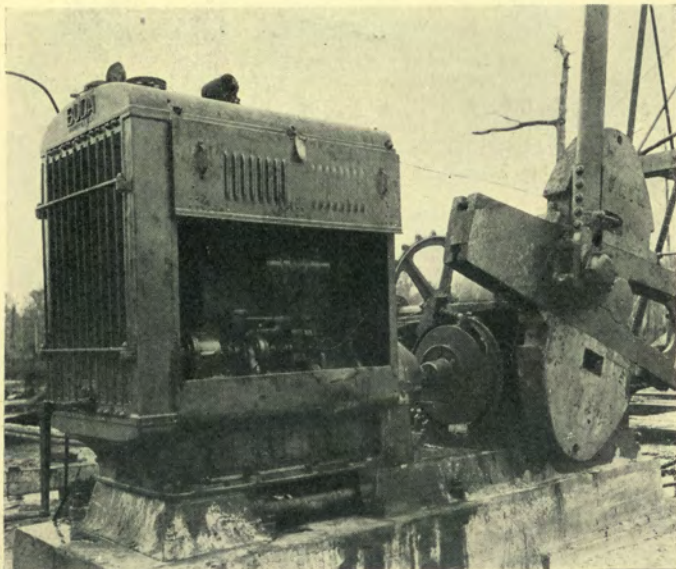
Vacuum Lease, Liberty, 3500 feet—One of our original units installed with beam balance making 28 strokes, as fast as rig could go, without "whipping" balance weights. Later, when rig was equipped with Trout counter-balanced crank, strokes were increased to 36 in out hole.

# A Modern **LUFKIN** Installation



Texas Company Cowden Anderson State No. 14—well flowing—all set for beam, Lufkin 5½" Unit, No. 22 Hoist, Lufkin Self-supporting Samson Post, Beam, and Trout Universal Pitman. Lufkin Unit is driven by 15/35 G. E. Motor. Fire hazard was not the least item considered in arriving at the decision to use Lufkin Units.

The Texas Company is a big user of LUFKIN EQUIPMENT.

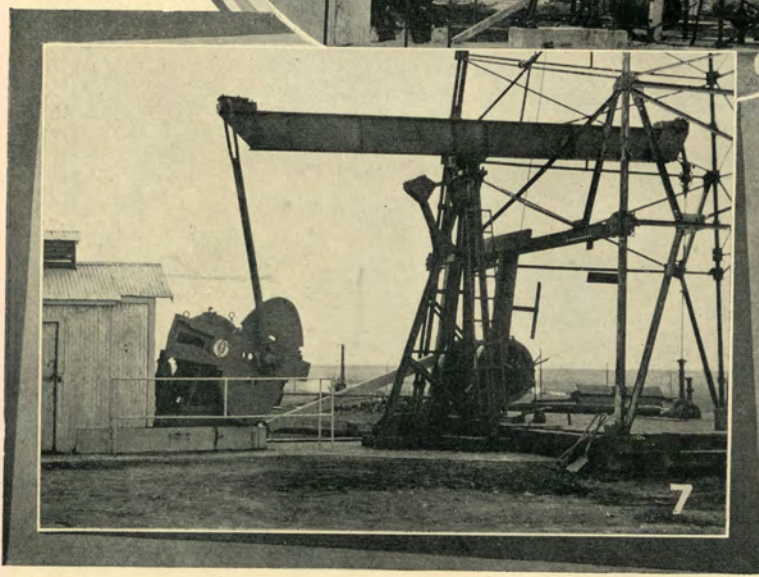


Left—Buda Power Unit J.H.-4 and Lufkin Standard Worm Gear Unit, Trout Pitman and Lufkin No. 522 Rod and Tubing Hoist. Simms Oil Company Effie Johnson No. 4, El Dorado district. Total depth 1988 feet, 2" tubing, 5/8" rods. Total production 115 bbls., well pumping at 1975 feet in third hole, 28" stroke, 22 strokes per minute.



Bull Wheels salvaged when Lufkins replaced Standard Rigs on Shell Lease in Winkler County. One of the Lufkin Units in background.

# With **LUFKIN** EQUIPMENT IN THE FIELD



Lufkin equipment in service in Howard, Crane, Winkler, Oxford, Kansas,

No. 1, Marland Production Company, Chalk E-4, Howard County near Big Spring, Baby Unit and No. 2 Samson Post. No. 2, Tidal Oil Co., University No. 3, Crane County, Standard unit with complete Lufkin equipment which replaced Standard Rig. No. 3, typical Oxford Kansas installation. This unit is one of the large number purchased by one of the largest operators in Kansas who decided on Lufkin Units after running a number of tests on several makes of pumping units over a period of several weeks. Men in the picture are: *Left:* I. D. Jones, Assistant Superintendent of the Shell Petroleum Corporation. *Right:* Jess Pyle, Construction Superintendent of the Shell Petroleum Corpn., at Oxford, Kansas. No. 4, Shell-Tex C No. 2, Winkler, County, Intermediate unit and auxiliary equipment. No. 5, *Extreme right top:* Shell Co., E No. 1, Yates Pool, Pecos County, ideal Baby Unit Installation. No. 6,

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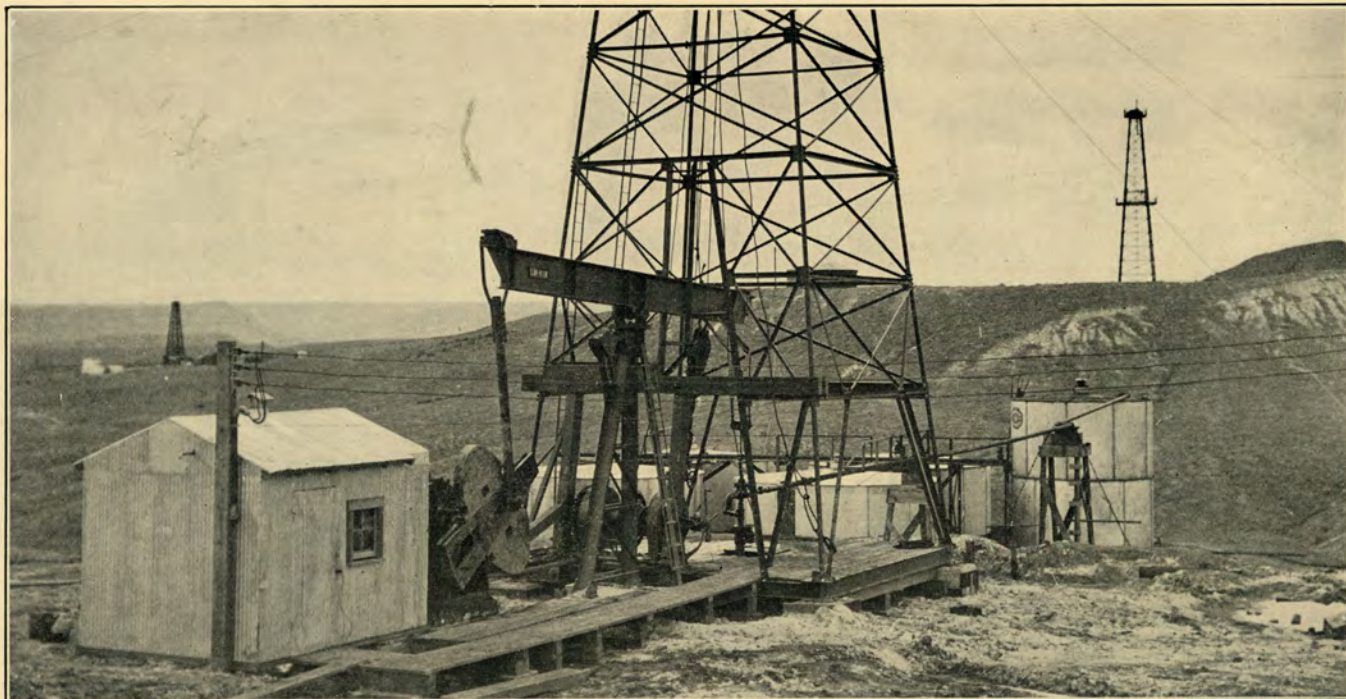


With ...  
**LUFKIN**  
EQUIPMENT  
IN THE  
FIELD

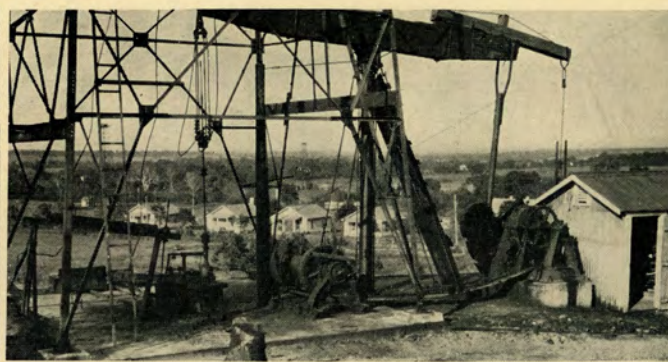


me, Winkler, Pecos, Electra, Counties in Texas and  
Kansas, Fields

Humble Smith B-3, Yates Pool, Pecos County, Standard Unit and auxiliary Equipment. No. 7, Louisiana Oil & Refining Company Settles No. 2 Howard County, complete Lufkin Installation. A neat installation. No. 8, General view Humble Company "C" lease, Winkler County. No. 9, Simms Company T. Waggoner No. 3, Electra, Texas, Model installation of Lufkin Baby Unit. No. 10, Marland Clay G-1, Howard County, Texas, near Big Spring. Baby Unit installation with No. 2 Samson Post. No. 11, Owen-Sloan Company, Dora Roberts No. 4, Howard County, Intermediate Unit with extra crank for shallow well; a help in balancing. No. 12, Simms M. A. Smith No. 1 Standard Unit. This well drilled in with Bull wheels and Lufkin No. 22 Hoist. Note how clean and neat each lease is. Fire hazard has been entirely eliminated, only a small motor house required in some instances, and everything accessible.



Chas. E. Orchard No. 3, Cody, Wyoming. Complete Lufkin Installation consisting of Lufkin 6½" Heavy Duty Unit, 20/50 G. E. Motor, No. 22 Hoist, No. 1 Samson Post assembly. Since this Unit was installed orders for two more have been received.

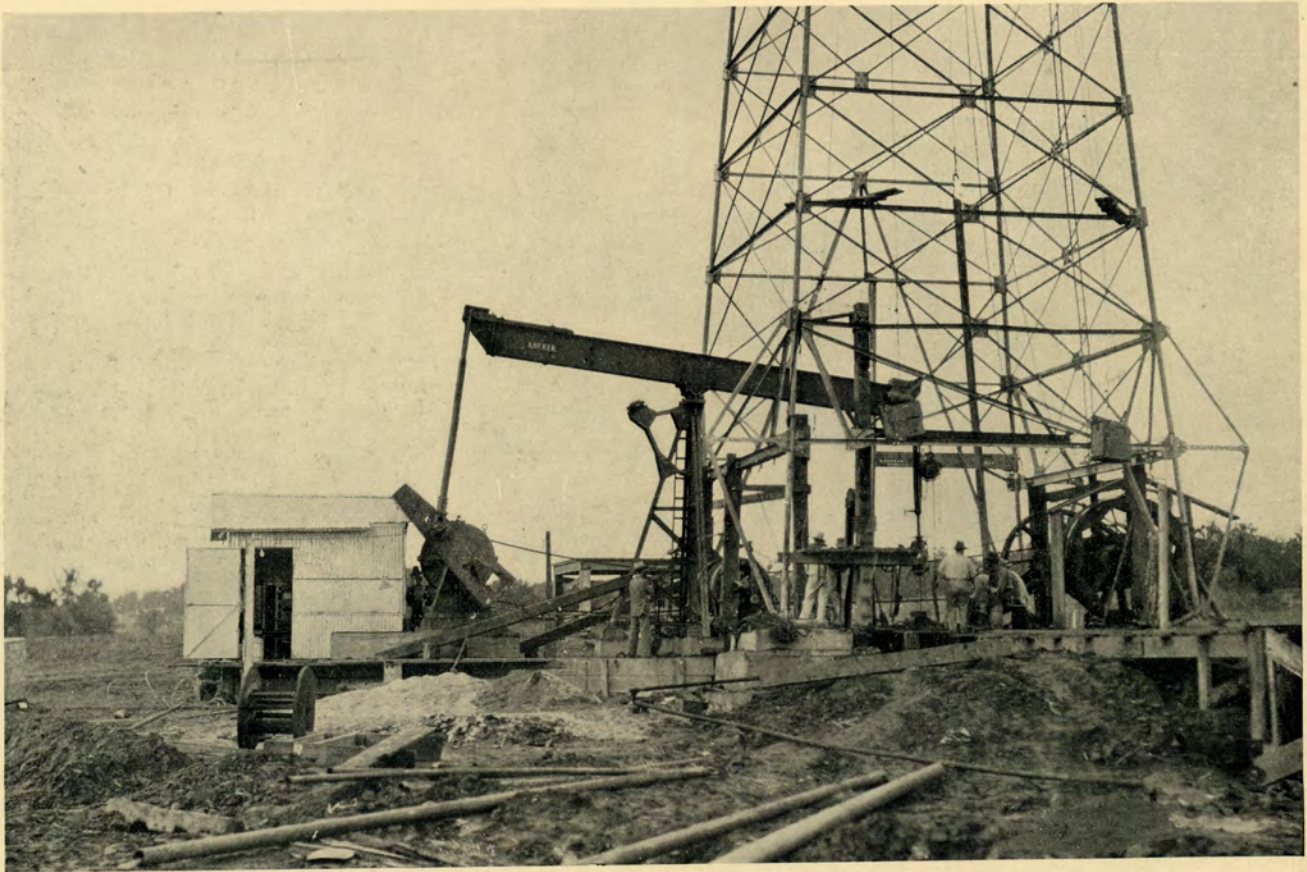


**CARTER OIL COMPANY'S LUKE No. 2**  
This well located on the concrete highway going into the town of Seminole, Oklahoma, which can be seen in the background.

Three years without rods out of hole, is the record of Wright No. 1, shown above, of the Shaffer Oil & Refining Company, Drum-right District, Oklahoma. The well is 3800 feet deep and at present is producing 100 barrels oil daily. Initial production three years ago 350 barrels. Lufkin equipment includes Standard (4½") Worm Geared Unit with electric motor drive.



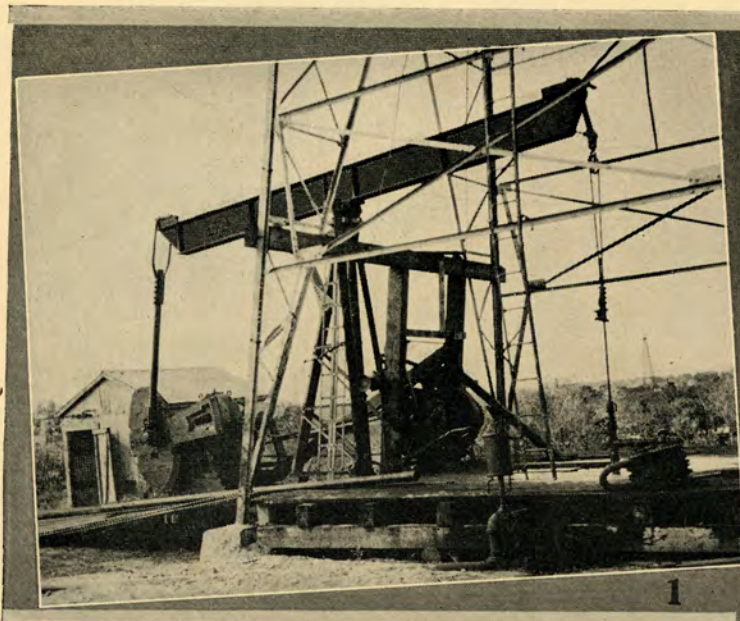
Chas. E. Orchard Well No. 1 with Steam Engine and Standard Rig which will be replaced by Lufkin Unit and Auxiliary equipment. *Upper:* view of Orchard camp, well No. 1 in background.



**DRILLING IN AFTER ROTARY WITH LUFKIN UNIT**  
Simms Oil Company, Alexander No. 1. On this well, Arch Clevenger, drilling contractor, set 4000 ft. of 6 $\frac{1}{4}$  O. D. pipe in 9 hours with Lufkin No. 522 Hoist.



**WHERE BEAUTY AND ECONOMY COMBINE**  
Modern Baby Unit Installations



Texas Company Merriweather No. 7—Lufkin completely equipped

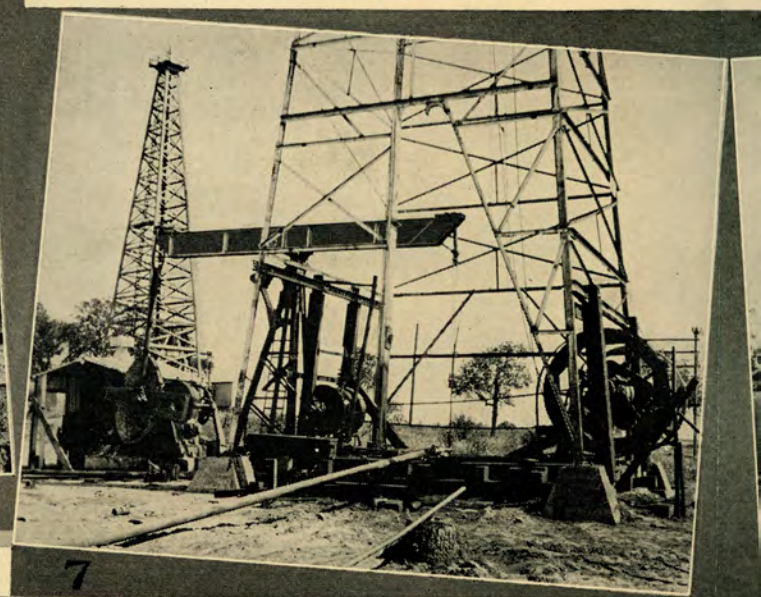
# "LUFKIN EQ in the Joe B



Humble, J. R. Tiller No. C-2



Shell, Tiller No. 6—Note Hill cut away



Figures do not tell the complete story, but some idea of the importance attached to the geared pumping unit by the larger operators in the Salt Flat or Joe Bruner Field can be gained by these figures: Of the 282 wells in the field at this time, nearly 83% or 233 wells are owned by only five large companies, namely: Humble, Shell, Gulf, Sun and Texas. Of the 233 wells only 1 is equipped with Standard Rig; 232 wells are equipped with geared units of which 163 or 70% are Lufkin Units, leaving only 30% divided amongst all other geared unit manufacturers. The largest operator in the field uses practically nothing but Lufkin Units. *In the Pictures:* No. 1: Texas Co. Merriweather No. 7; No. 2: Humble J. R. Tiller No. C-2; No. 3: Shell

# EQUIPMENT

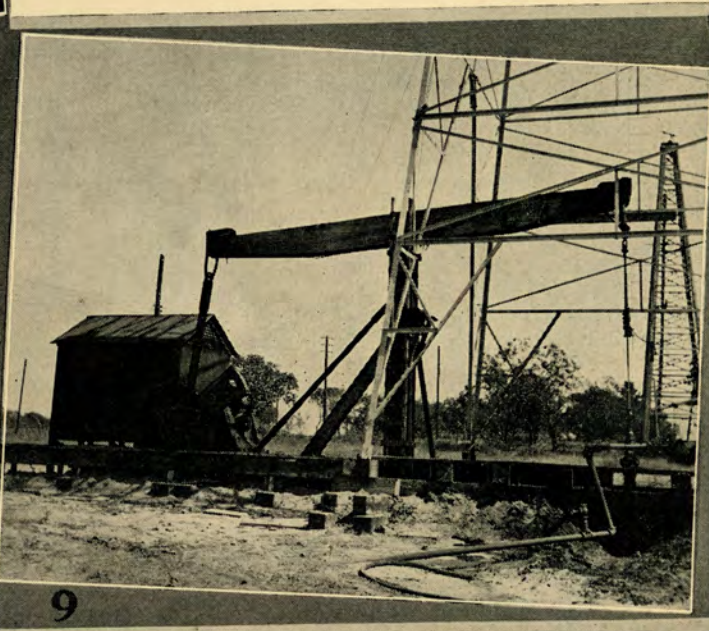
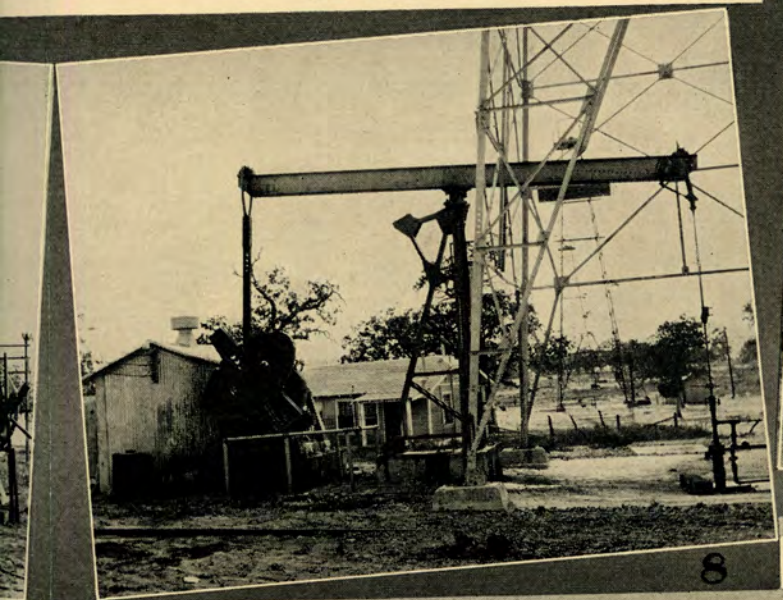
## "Bruner Pool"



Shell Wm. Smith No. 5



Sun Company, Malone No. 5—Lufkin completely equipped



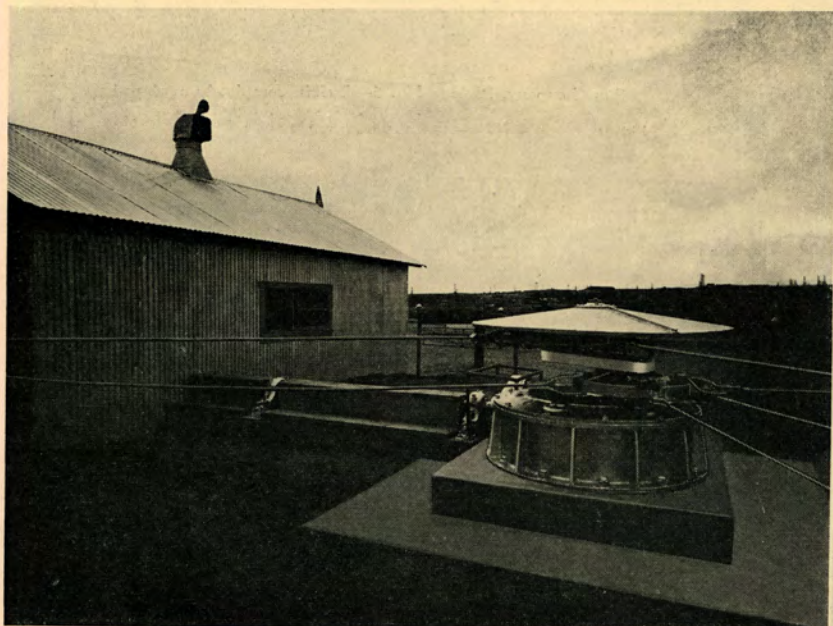
Gulf, Davis No. 3—This unit has served in three fields

Wm. Smith No. 5; No. 4: Sun Co. Malone No. 5; No. 6: Shell Tiller No. 6—Note hill cut away back of motor house. Imagine expense of installing standard rig in such a location. The ease with which Lufkin Units are installed in rough, hilly country is a big consideration. No. 7: Shell New Lease. No. 1 showing cable tool equipment hooked up. Well has just been worked over and put on beam. No. 8: Humble J. R. Tiller B-3. No. 9: Gulf, J. J. Davis No. 3. This is unit No. 225 shipped to the Gulf at Sour Lake in 1926, later moved to Spindle Top and now seeing service at Luling. Salvage of Lufkin equipment is practically 100%. Only concrete foundation is lost.



*The First Central Power Installed in Grey County, Texas*

## **A Modern Lufkin Central Power Installation**



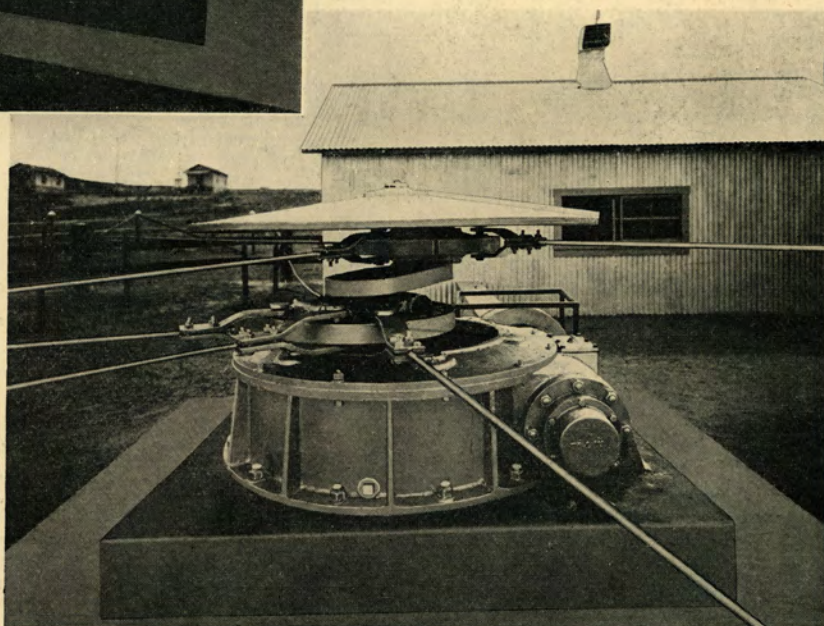
*Left*—View of Lufkin Central Power showing rod line connections and housed line shaft to motor house.

Seven wells 2600 ft. deep are now connected to this Power.

Order for the second Power has been received since this installation.

*Right*—A fine view of the rugged, heavily constructed Lufkin Central power.

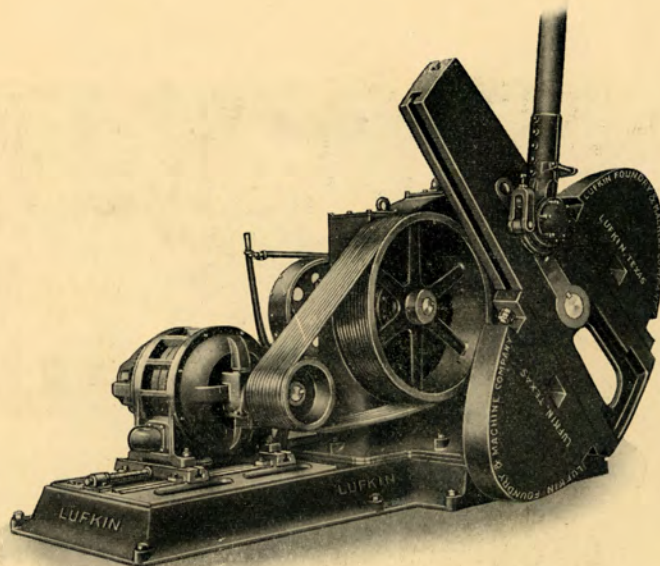
Lufkin Central Powers eliminate the usual large, expensive band wheel house, belts, etc., are fire-proof and economically operated.



# The Lufkin Herringbone Unit Is Introduced

The Lufkin Herringbone Unit was introduced in 1929. So universally adaptable was this unit to oil field pumping, pulling and drilling that it soon became standard equipment with a good many large operators.

At the time this catalogue goes to press almost three hundred of this type Unit have left the Lufkin plant.



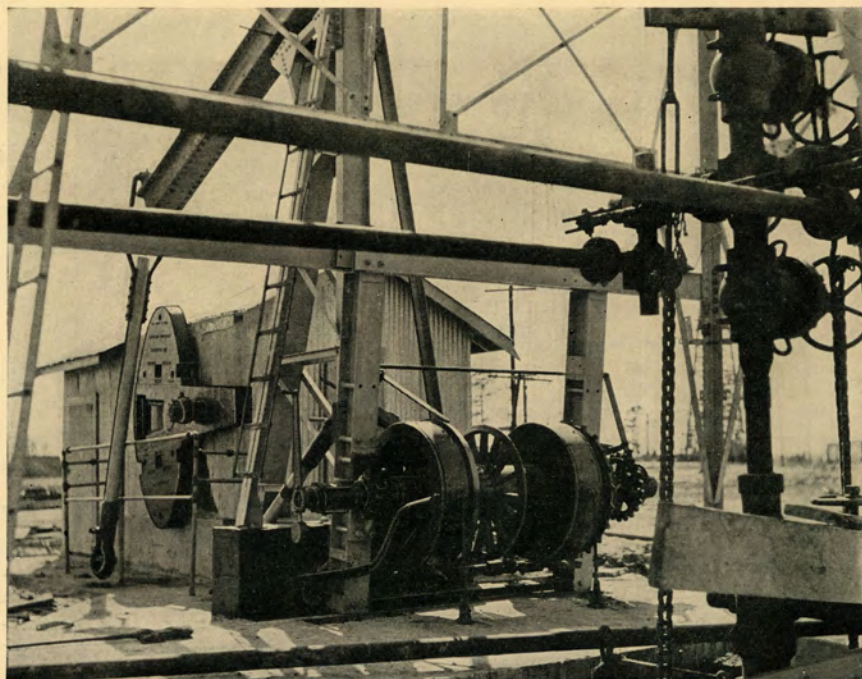
## LUFKIN HERRINGBONE UNIT

The Lufkin Herringbone Unit employs the "Sykes-Herringbone" type of gearing which is noted for its high efficiency, silence in operation and freedom from back-lash. Continuity of tooth contact and maximum tooth surface for width of gear face are also features of the Herringbone gear. Simplicity of operation and adaptability to most any prime mover add to popularity of the Lufkin Herringbone Unit.



SIMMS-PHILLIPS U. NO. 3 ECTOR  
POOL, WEST TEXAS

The rig on which new cable tool drilling record was established.



Typical Lufkin Herringbone Unit installation including No. 522 Hoist, Beam, Post and Pitman—Everything "Lufkin."

# LUFKIN SYKES-HER

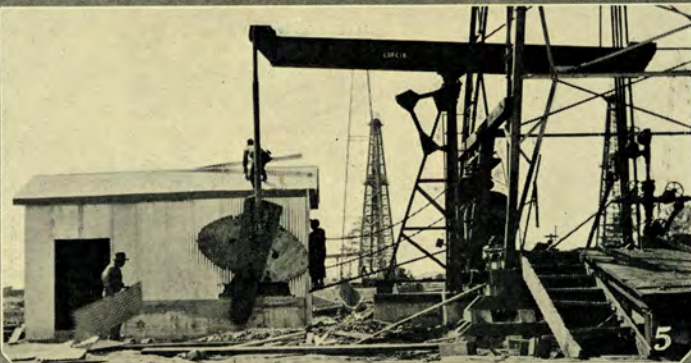
( In the )



Humble Company, William No. 4, Humble Field



South Texas Petroleum Company, No. 11, Humble Field



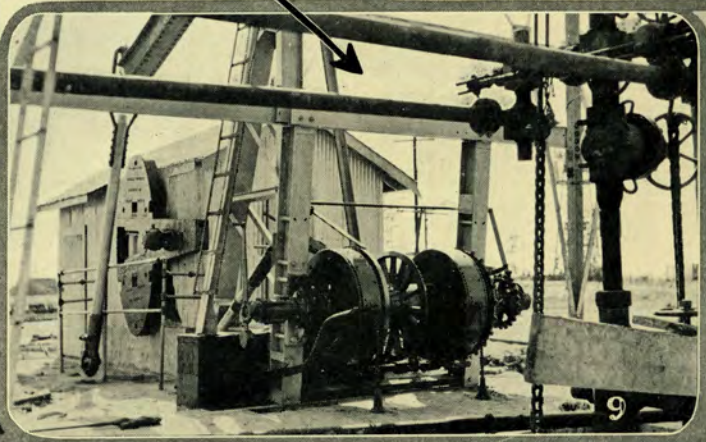
Texas Company, Dun No. 2, Humble field



Sun Oil Company, Knoblock



Texas Company, Lemmie Anderson No. 4, Darst Creek



Humble Company, Williams No. 9, Humble Field

1. Humble Company, William No. 4, Humble field, depth 5000 feet, well flowing 100 barrels daily. Lufkin 6 1/2" Herringbone Unit, Trout Pitman, Lufkin No. 1 Post and No. 522 Hoist.  
 2. South Texas Petroleum Company, No. 11 Humble Field, depth 5300 feet, 2 1/2" tubing, 3/4" rods, production 200 barrels. Complete Lufkin installation consisting of 6 1/2" Herringbone Unit, Samson Post, Beam, Pitman and No. 52 Hoist.

3. Simms Company, Mrs. Johnnie Manford No. 1, Darst Creek, depth 2580 feet, flowing 550 barrels. Lufkin completely equipped, 5 1/2" Herringbone Unit, Trout Pitman, No. 1 Samson Post and I Beam type walking beam and No. 522 Hoist.  
 4. Humble Company, D. D. Baker No. 3, Darst Creek, depth 2635 feet, 2" tubing, 3/4" rods,

production 950 barrels. Lufkin 5 1/2" Herringbone Unit and auxiliary equipment.  
 5. Texas Company, Dun No. 2, Humble Field, depth 5300 feet, production 500 barrels, Lufkin completely equipped including 6 1/2" Herringbone Unit, No. 522 Hoist, Trout Pitman Post and Beam.  
 6. Sun Oil Company, Knoblock No. 1, Darst Creek, depth 2650 feet, 2 1/2" tubing 3/4" rods, production 1000 barrels. Complete Lufkin

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 rods

Please Note: These pictures taken during intensive activity. Shortly they will be cleaned up, pre

## Instant Acceptance Has Been The Reception



# HERRINGBONE UNITS

## in the Darst Creek Field



Simms Company, Mrs. Johnnie Manford No. 1, Darst Creek



Humble Company, D. D. Baker No. 3, Darst Creek



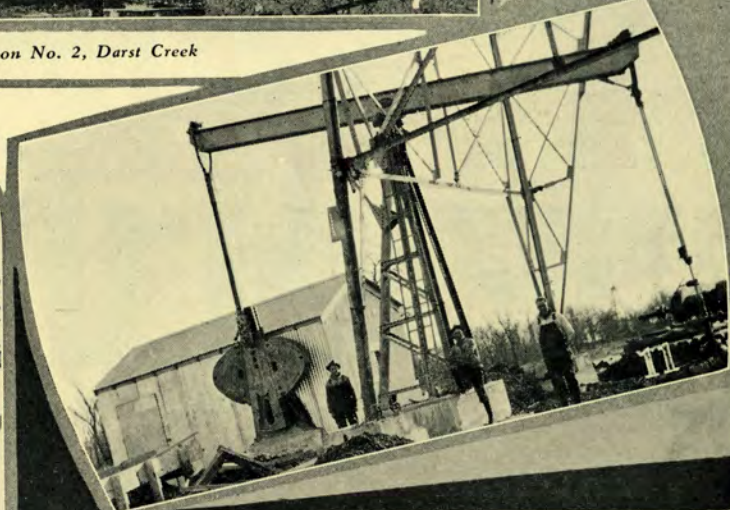
Knoblock No. 1, Darst Creek



Humble Company, Sallie Wilson No. 2, Darst Creek



United North and South, Roamel No. 1, Darst Creek



United North and South, Thos. Dix No. 2, Darst Creek



equipment including 5 1/2" Herringbone Unit, No. 522 Hoist, Pitman, Beam and Post.  
 7. Humble Company, Sallie Wilson No. 2, Darst Creek, depth 2650 feet, 2 1/2" tubing, 3/4" rods, production 1300 barrels, 5 1/2" Herringbone Unit, and auxiliary equipment.  
 8. Texas Company, Lemmie Anderson No. 4, Darst Creek, depth 2645 feet, 2 1/2" tubing, 3/4" rods, production 800 barrels, equipped with 5 1/2"

Herringbone Unit, No. 1 Samson Post. I Beam type walking Beam, Trout Pitman.  
 9. Humble Company, Williams No. 9, Humble Field, depth 4892 feet, flowing 4500 barrels, 6 1/2" Herringbone Unit, Trout Pitman and note Lufkin No. 522 Hoist with steel Jack Posts.  
 10. United North and South, Roamel No. 1, Darst Creek, depth 2490 feet, 2 1/2" tubing, 3/4" rods, production 1350 barrels. Equipment in-

cludes 6 1/2" Herringbone Unit, Trout Pitman and Samson Post assembly. Among the men in the picture are J. H. Bergman, gauger and N. T. McCarley, foreman.  
 11. United North and South, Thos. Dix No. 2, Darst Creek, depth 2530 feet, 3" tubing, 3/4" rods, production 2250 barrels. Lufkin equipment includes 6 1/2" Herringbone Unit, Trout Pitman and Samson Post assembly.

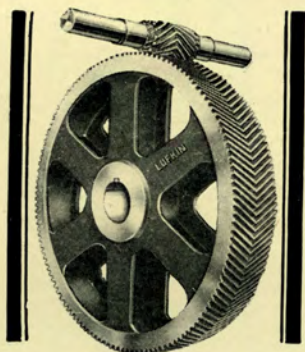
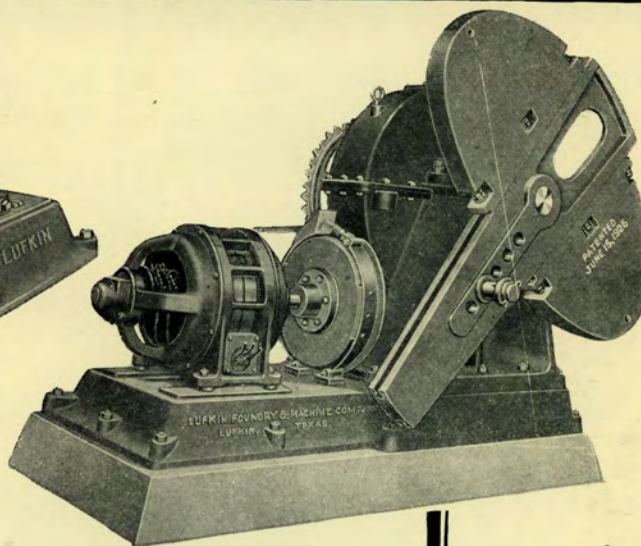
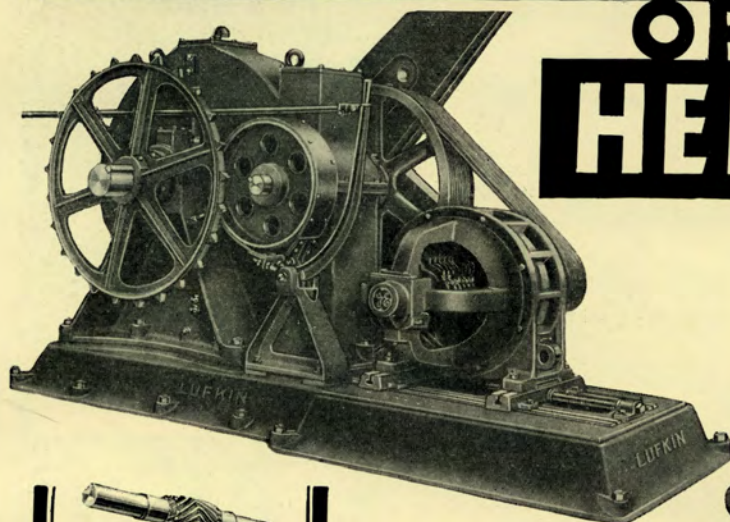
...ned up, presenting a neat, clean installation. This is always possible with a Lufkin Unit

# tion of The Lufkin Sykes-Herringbone Unit

# WORM GEAR

OR

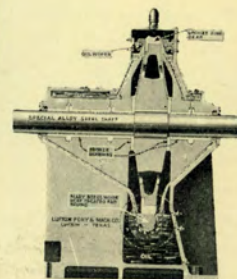
# HERRINGBONE?



Herringbone Gear and Pinion—Lufkin Herringbone Unit

## TWO POPULAR

# LUFKIN UNITS



Cross section Lufkin Worm Gear

### BLONDE OR BRUNETTE?

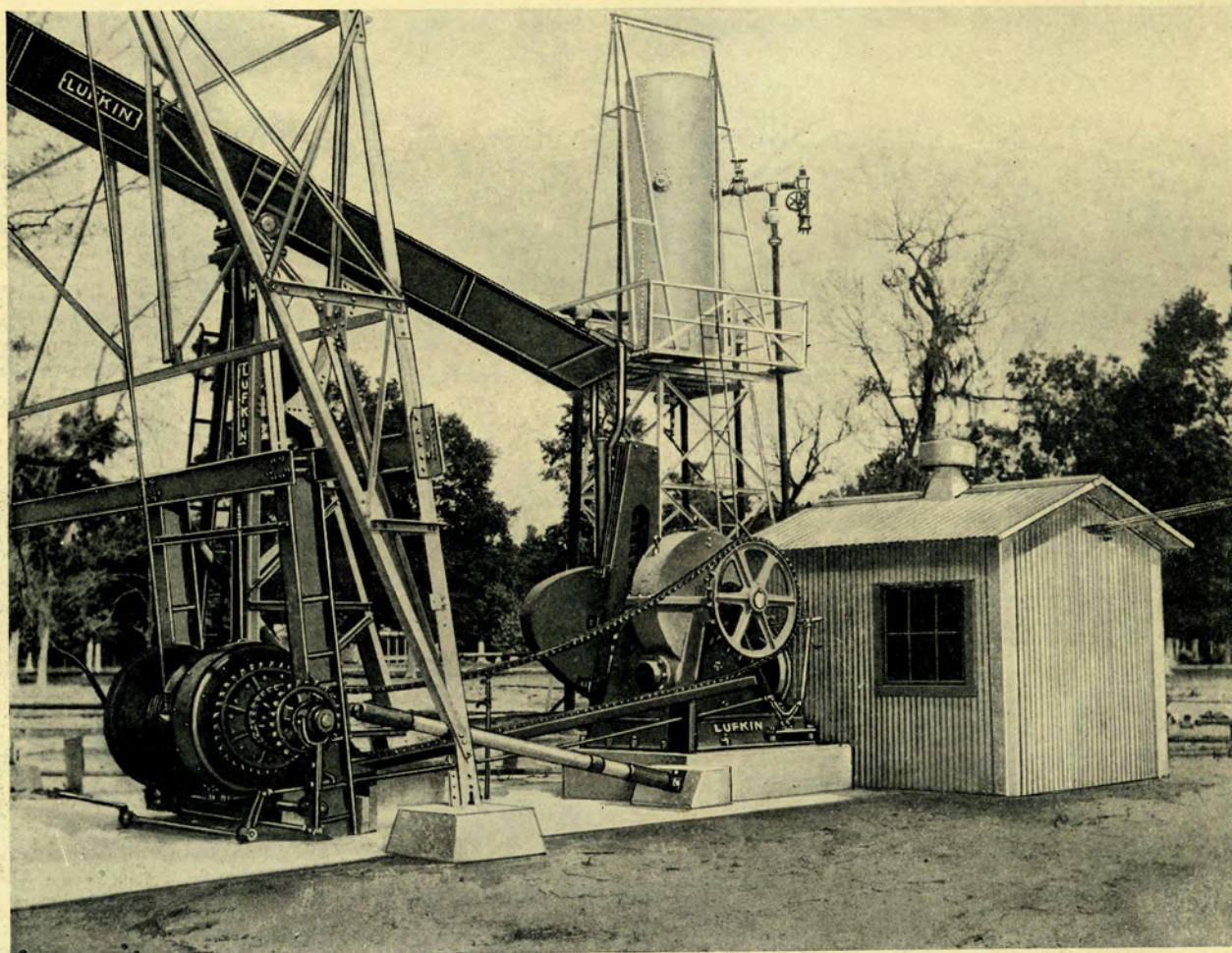
It's a matter of Choice

The Lufkin Herringbone Gear Unit is new in design and construction and because of its better "fall" meets the need for a cable tool drilling Unit. The Lufkin Herringbone Unit is easily and inexpensively adaptable to any type drive, particularly the regular oil field type single cylinder gas engine of which type we have recently installed twenty-five. Over two hundred Lufkin Herringbone Gear Units now in operation.

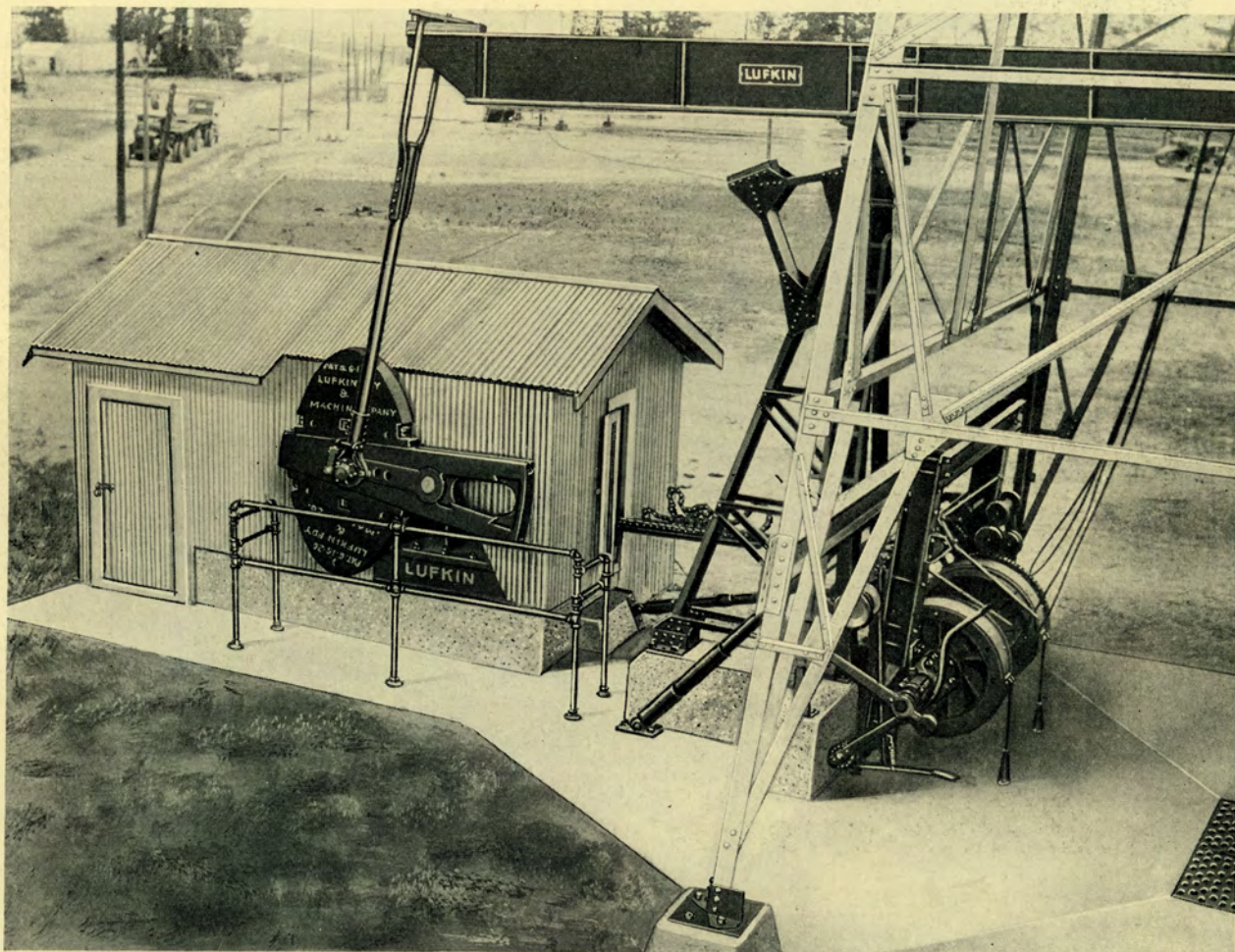
Lufkin Worm Gear type Units pioneered the reduction gear system for pumping oil wells. Fourteen hundred Lufkin Worm Gears are now successfully operating in domestic and foreign fields and are considered standard equipment by many large operators. Lufkin Worm Gear Units are made in four sizes to suit well conditions and are adaptable to any type drive . . . They have many points in favor and are ideal for pumping.

*Lufkin Units are designed for continuous service and long life . . . as to type—it's a matter of choice . . . we can furnish either . . . take your pick . . . "Blonde or Brunette."*

*A Typically Modern*  
**Lufkin Worm Gear Installation**  
*with Auxiliary Equipment*



*A Typically Modern*  
**Lufkin Herringbone Unit**  
**Installation**  
*with Auxiliary Equipment*



# A Modern Plant »»» ««« Plus Warehouses at Strategic Points *Lufkin's Way of Serving the Oil Industry*



Entrance to the plant of the Lufkin Foundry & Machine Co., Lufkin, Texas.  
Office building on the right.

ODESSA, TEXAS,  
WAREHOUSE



SEMINOLE, OKLA., WAREHOUSE



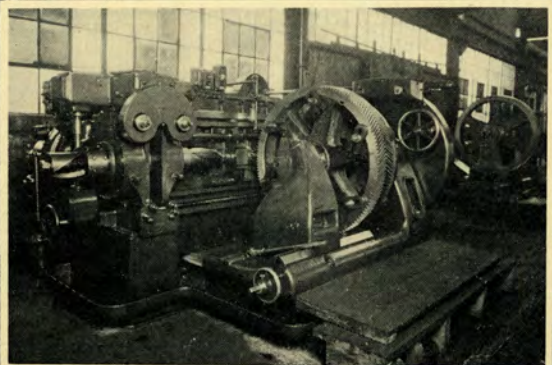
Two views of Lufkin's Seminole, Oklahoma, warehouse.  
Upper is front view; lower is view of loading platform  
showing part of heavy stock carried in Seminole.

EL DORADO, ARKANSAS, WAREHOUSE



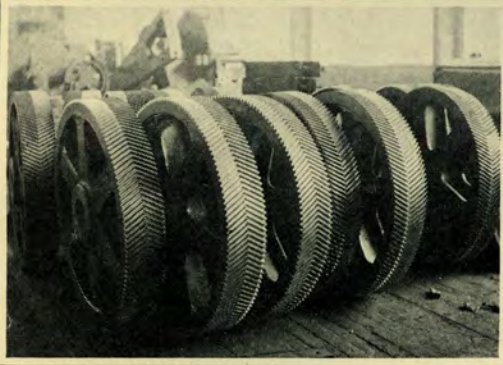
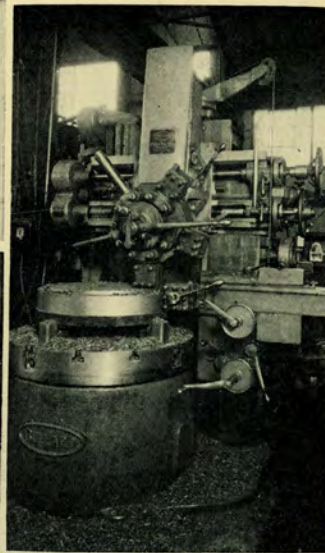
LOS ANGELES  
AND  
BAKERSFIELD  
WAREHOUSES NOT SHOWN

# Machinery of Latest Design Used in Manufacture of Lufkin Equipment

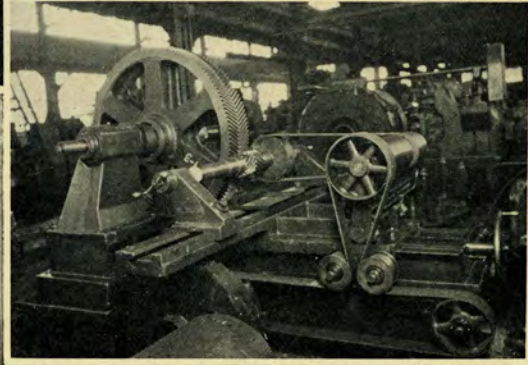


*Left: Sykes-Herringbone Gear Generator. This machine has been installed in the Lufkin plant for generating the gears used in the new Lufkin Unit only.*

*Right: Bullard Turret Boring mill. This machine faces and bores fly wheels, "V" belt sheaves, etc., without rechucking. This is accomplished by means of the turret head.*



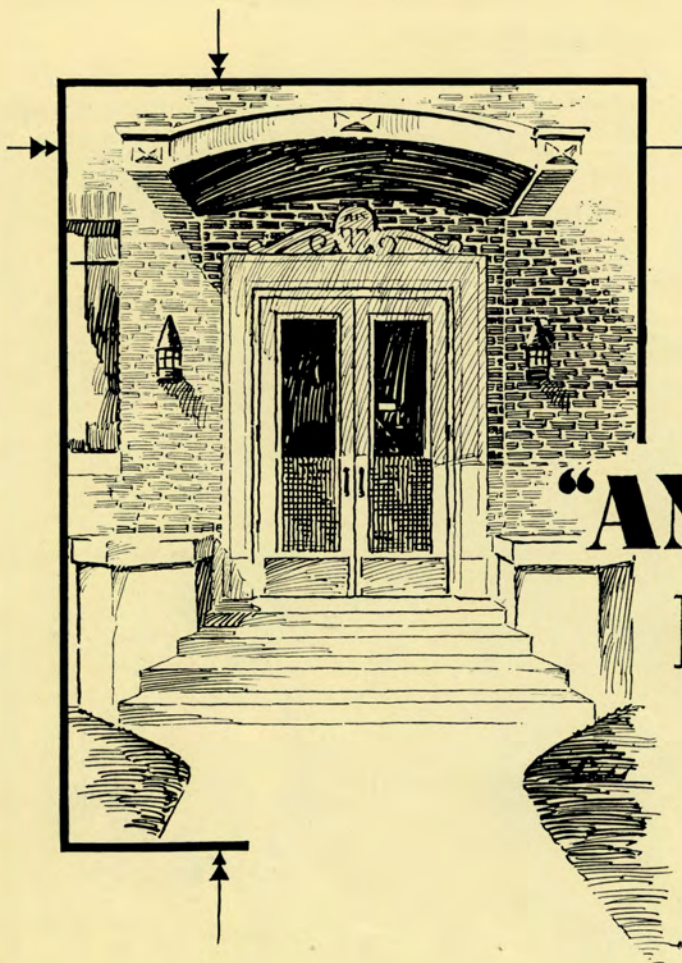
*Left: Sykes - Herringbone Gears for the Lufkin Herringbone Unit. Right: "Lapping in" machine used for lapping in and matching to insure absolute precision of the Sykes tooth gear and pinion for the Lufkin Herringbone Unit. Gears and Pinions are cut to within .003" and then lapped in with ground glass and oil.*



Lufkin Units come through the shop in regular production style. The most up-to-date machines are used and modern production methods are

**CENTER: ON THE PRODUCTION LINE AT LUFKIN**

employed in all departments. A constant rigid inspection department is maintained which keeps Lufkin products up to a standard otherwise impossible to attain.



Entrance to new office of the  
Lufkin Foundry & Machine  
Company

## “AND THE END IS NOT YET”

Thirty odd years ago the Lufkin Foundry & Machine Company came into existence. Lufkin, at that time, was centrally located in the thickly forested pine belt of East Texas. The “plant” at that period consisted of one large wooden building and a few used tools. Its purpose was “a handy repair shop” for the yellow pine mills nearby.

From this humble beginning has grown one of the South’s important factories.

For the first time in the South, a complete saw mill plant was manufactured by this concern.

For the first time in the Southwest, refinery fittings of a special nature were manufactured in Lufkin.

For the first time in the Southwest, heavy duty pipe line fittings were manufactured in Lufkin.

For the first time *anywhere*, the first successful reduction geared pumping unit for the oil fields was manufactured by the Lufkin concern who were pioneers in this type of oil field equipment.

In addition to developing the first successful reduction gear for pumping and pulling—

Lufkin developed the first counter-balanced crank;

The Trout dust proof, oil bath Pitman;

And many other improvements for the oil industry.

Modern buildings, production tools and capable men are being constantly added to the facilities and forces of this Southern institution. Today it leads all others in the production and sale of its particular specialty—**LUFKIN PUMPING UNITS—**

“And the end is not yet.”





