# LUFKIN OIL FIELD EQUIPMENT


CATALOG 39

*Featuring the*

# LUFKIN *Universal* PUMPING UNIT

LUFKIN FOUNDRY & MACHINE COMPANY • LUFKIN, TEXAS

# LUFKIN EQUIPMENT OF ADVANCED DESIGN

# LUFKIN FOUNDRY & MACHINE CO.

FACTORY AND GENERAL OFFICES

**LUFKIN, TEXAS**

BRANCH OFFICES AND WAREHOUSES

GULF COAST DIVISION
Houston, Texas.
806 2nd Nat'l Bank Bldg.
Phone Preston 8610
WAREHOUSE
Alice, Texas.
Phone 395
EXPORT DIVISION
New York, N. Y.
149 Broadway,
Cable address "LUFFO"

CALIFORNIA DIVISION
Los Angeles, California,
5959 South Alameda
Bakersfield Warehouse,
30th and M Streets,
Bakersfield, California

EAST TEXAS DIVISION
Kilgore, Texas,
Phone 875
P. O. Box 871

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Tulsa, Oklahoma,
719 Thompson Bldg.

WAREHOUSE
Seminole, Oklahoma,
Phone 8435

KANSAS DIVISION
Great Bend, Kansas,
Phone 1044

DALLAS OFFICE
1016 Kirby Bldg.
Phone 2-5834

WAREHOUSE
Odessa, Texas,
Phone 216

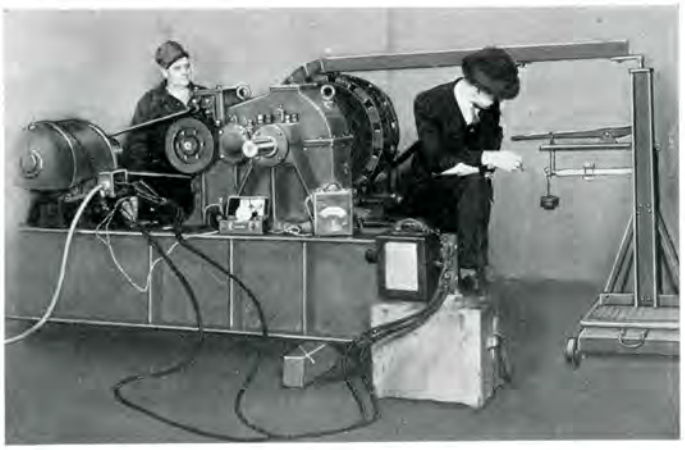
ILLINOIS
Effingham
Box 24

## WATCH LUFKIN

As pioneers in the manufacture of geared units for oil field pumping, the Lufkin Foundry & Machine Company has gained its present position as the world's largest manufacturer of PUMPING EQUIPMENT through no miracle, but rather having won this place through the continued efforts of its engineers seeking new and improved designs as experience dictated. In this endeavor we have had the fine and friendly cooperation of oil company engineers and practical operators in the field. As a result of this constant striving for the best to be had for the desired operation, LUFKIN UNITS stand foremost in the minds of producers everywhere.

Being located close to many producing areas has enabled our engineers to keep in close touch with the performance of our equipment, and has made it possible to continually watch details, which many times results in success or failure in practical operation.

In appreciation of the confidence of our friends, we will continue our policy of producing the most efficient, practical equipment, proportionately designed, manufactured of the best materials available, of superior workmanship; and to maintain helpful service as long as our equipment is in use.



*Testing Lufkin Units*

## THE LUFKIN UNIVERSAL UNIT

Users of Lufkin Units will note many improvements both in design and construction. These improvements have been made to meet changing demands of the industry. As a consequence we offer the **Lufkin Universal Unit.**

All general sizes and dimensions have been maintained so that recent improvements are interchangeable with former designs or can be applied to present equipment when necessary. The principal improvements in the new Lufkin Universal Unit are: larger pitman bearings; straight line Universal equalizers; and Universal beam bearings that allow "push-up" as well as "pull-down" movement without lost motion.

The last named improvement has been found necessary when more than one well is pumped from the same beam or when taking potential tests at high speeds.

Generally speaking, the new beams, posts, bearings, hangers and horseheads are interchangeable on either twin crank or single crank units.

Unit assemblies 0A, 1A, 2A and 3A, having longer beams, are regularly furnished with rod hangers (see Page 1424. However, horseheads with wire line hangers can be furnished if desired at slight extra cost.

Twin Crank Units Nos. 2, 3, 4, and 55, and the Nos. 66 and 77 Special Units are regularly furnished with horseheads.

Interchangeability of parts will be found a very desirable advantage in the new Lufkin Universal Unit.

Particularly, attention is called to the standardization of the single crank units shown on Page 1422.

The new Lufkin No. 66 and No. 77 Special Units are especially designed for light production and provide for either fast or slow pumping (see Page 1410).

Lufkin powers and surface equipment have been greatly improved and will appeal to those appreciative of substantial practical products.

ALL LUFKIN REDUCTION GEARS ARE TESTED UNDER FULL LOAD

***After all, the real cost is not determined by the purchase price but by how well the unit performs and how long it lasts!***

NOT HOW CHEAP—BUT HOW GOOD

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## WORKING "POINTS" THAT INSURE FULL STROKE ON POLISH RODS AND HIGHEST COUNTERBALANCE EFFICIENCY

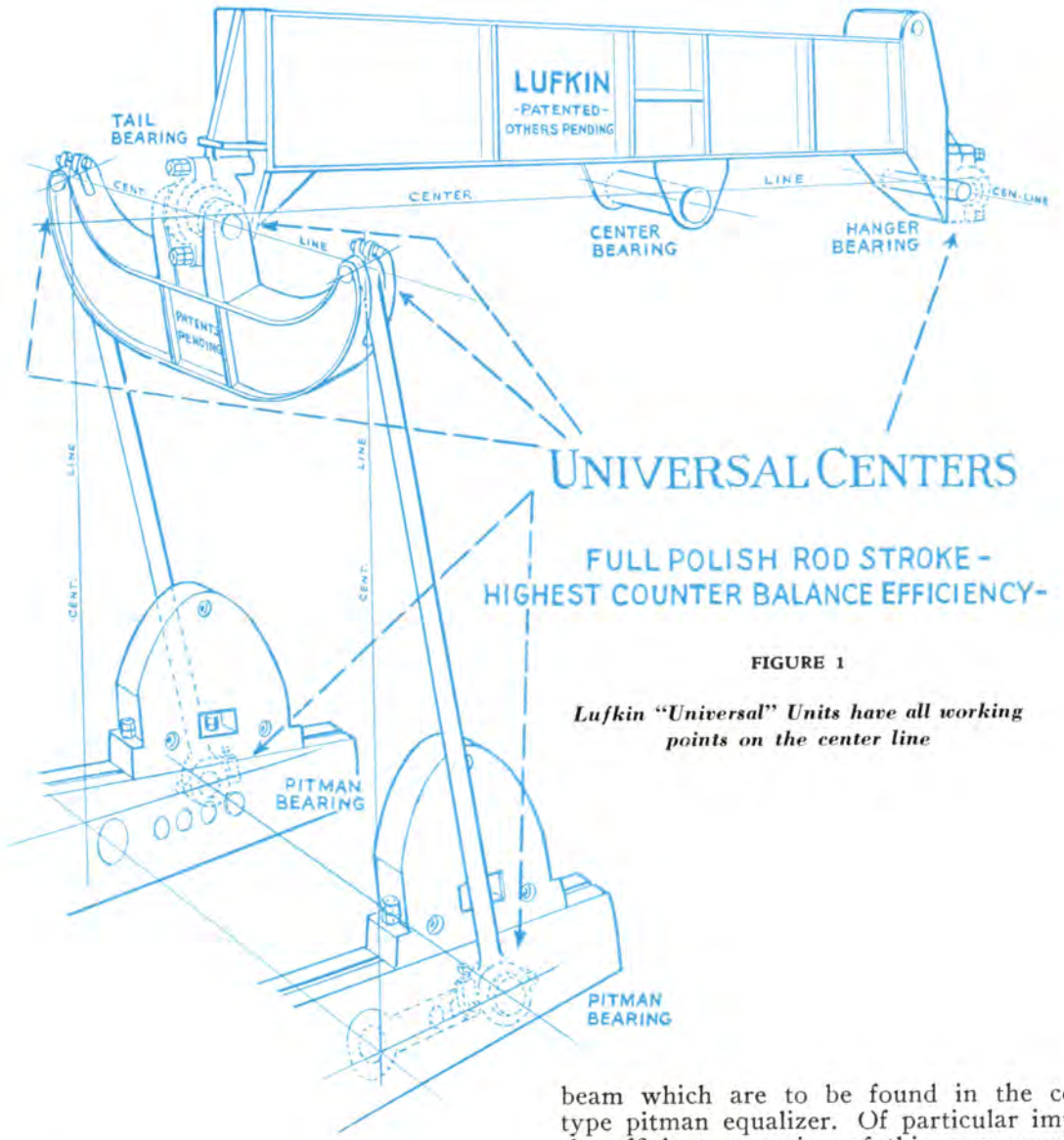



FIGURE 1

*Lufkin "Universal" Units have all working points on the center line*

### UNIVERSAL CENTERS . . .

**What They Mean to the Efficient Operation of Pumping Equipment.**

This improved Lufkin Unit is the result of many years experience in the design and manufacture of pumping equipment. After exhaustive experimental operations in the field, we offer it as the latest and most efficient development.

The success of the Lufkin center line beam is phenomenal. With all centers in line, this design permits full length stroke on the polished rod and makes possible the highest operating efficiency of the rotary type crank counterbalance.

This center line idea, originated and patented by Lufkin Foundry & Machine Co., has been incorporated in the design of the new pitman equalizer. All working points are in line, eliminating thereby all the usual unnecessary strains on pitman and beam which are to be found in the conventional type pitman equalizer. Of particular importance to the efficient operation of this new equalizer is the cast steel, machined ball and socket connection with Bronzoid shaft bearings. In this design the pressure area is placed on the bottom of the bearing.

It is evident that where this "center line action" is not included (where pitman connects from top of beam) that not only is there loss in the length of stroke on polished rod, but there is also a serious loss in counterbalance effect. Charts of equipment of conventional designs in operation indicate a "nose-diving" action as the rods go in the hole, making correct counterbalance adjustment impossible.

The new Lufkin center line equalizer has been under test for a considerable length of time under the most exacting operating conditions, and has been found not only efficient in every respect, but practical and desirable from every operating standpoint.

Ball and socket connections are standard equipment and are provided on either end of the beam.

# BOILED DOWN FACTS ABOUT LUFKIN COUNTERBALANCE CRANKS

## THE TROUT COUNTERBALANCE CRANK

Rotary crank counterbalancing (originated by Lufkin) is now universally accepted, the idea not only reducing the power required, but due to the even strain placed on rods and walking beam, as well as the geared unit, rod trouble and beam breakage has been almost entirely eliminated.

Cranks in several forms have since been offered, but our many customers continue to favor the Trout crank. It has twelve outstanding mechanical advantages:

1. Simple, practical construction.

2. Easily adjustable from zero to maximum counterbalance.

3. Accurate balance within 2-amps on up and down stroke.

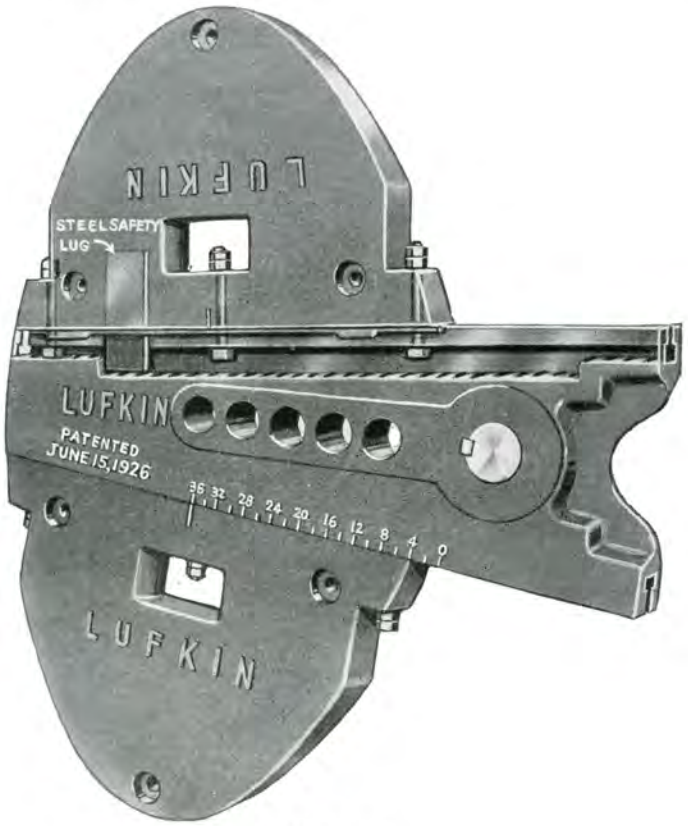



FIGURE 2

*Adjustable Counterbalance Crank. — Note Safety lugs; weights cannot slide off. This feature with fly-wheel brake allows weights to be shifted in five minutes.*

4. Adjustments quickly made. Average not over five minutes, no weights to lift, add or subtract.

5. Lead or lag balance readily obtainable.

6. Safety feature — impossible for weights to slide off — steel safety lug cast in each weight with forged steel bolts insure absolute safety. Unquestionably the safest crank to handle from the operator's standpoint.

7. Trout cranks have a short radius of gyration (do not require as high concrete foundations as do those with weights on out end) consequently a better balance at top and bottom of dead center, and due to concentrated weight closer to crank pin, insures less bearing pressures and eliminates excessive strains on crank shaft.

8. Due to gas and other changing conditions frequent adjustment of crank weights is necessary to effect maximum power saving, etc. This is readily accomplished with a Trout crank, but is very costly with an "added to" or "subtracted from" drop crank.

9. Sufficient counterbalance proportionate to stroke readily obtainable, and especially desirable in a three-well hook-up.

10. Counterbalance cranks, aided by high speed brake flywheel, cut down the strain on pumping equipment, and aid economical operation by permitting the use of smaller electrical equipment.

11. Accurate counterbalancing means operation at highest efficiency.

12. You CAN balance a well with a Lufkin Unit and Trout Crank.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## SINGLE REDUCTION GEAR UNITS

Single reduction gear units are preferred where slow speed engines (up to 750 R.P.M.) are used. They are built in five sizes and five horsepowers.

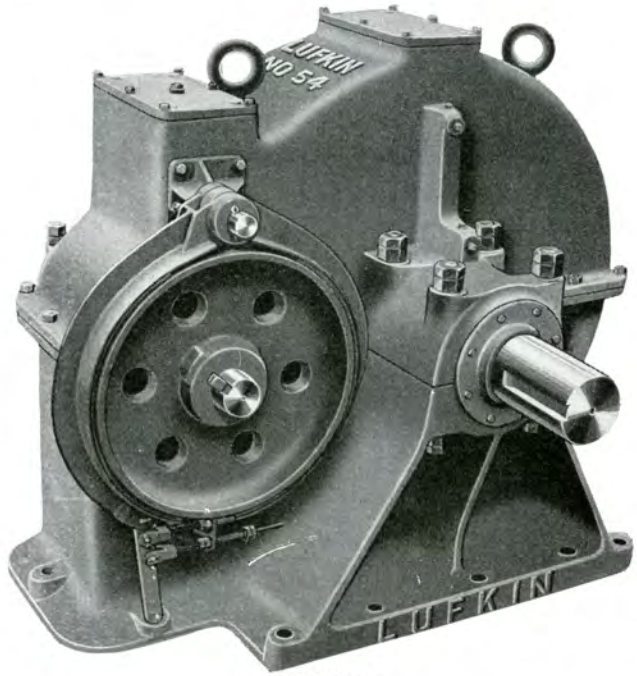



FIGURE 3

## DOUBLE REDUCTION GEAR UNITS

Double reduction gear units are used with electric motors and multi-cylinder gas engines. They are made in nine sizes and eight horsepowers.

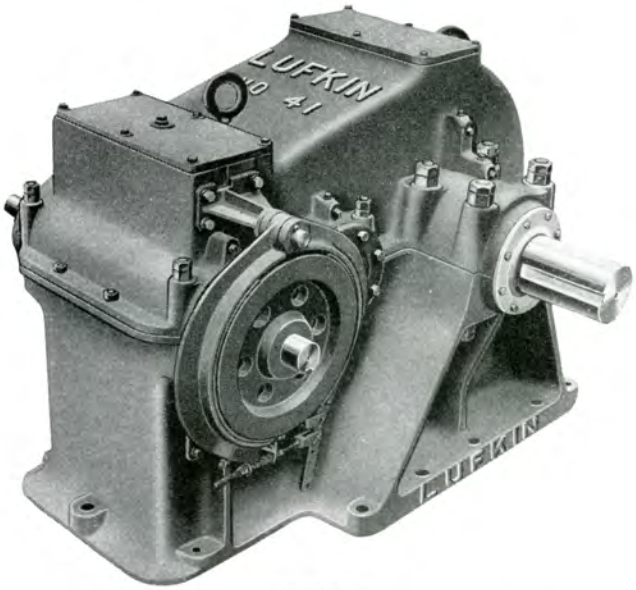



FIGURE 5

LUFKIN ENGINEERS HAVE A RICH BACKGROUND of practical experience in unit operation, and behind their manufacturing processes is a plant using modern production methods and up-to-date tools where absolute duplicate precision work is maintained.

Our entire product is made in jigs or by template, even to posts and walking beams, to secure correct alignment and absolute duplication of parts.

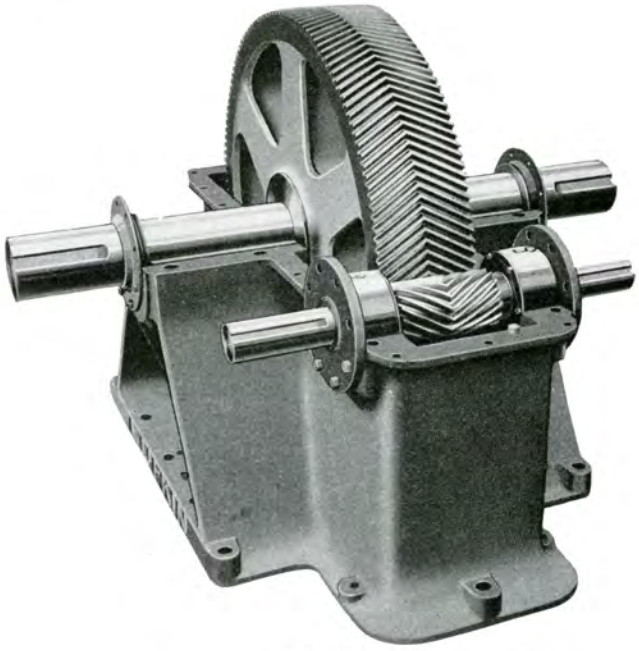


FIGURE 4
*Single Reduction Gear Unit, cover removed*

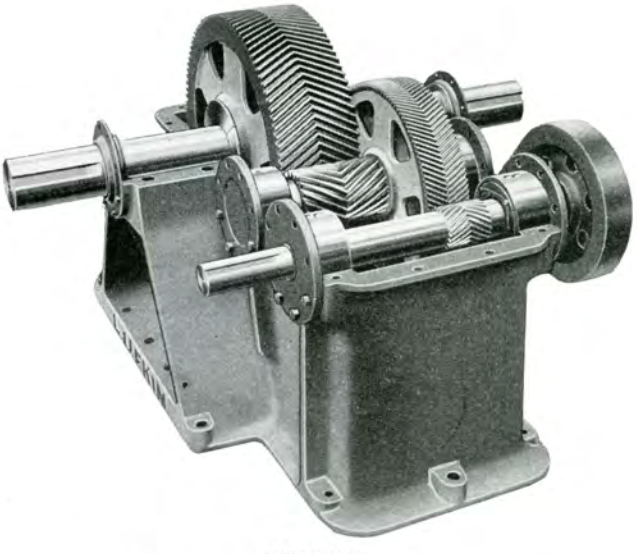


FIGURE 6
*Double Reduction Gear Unit, cover removed*

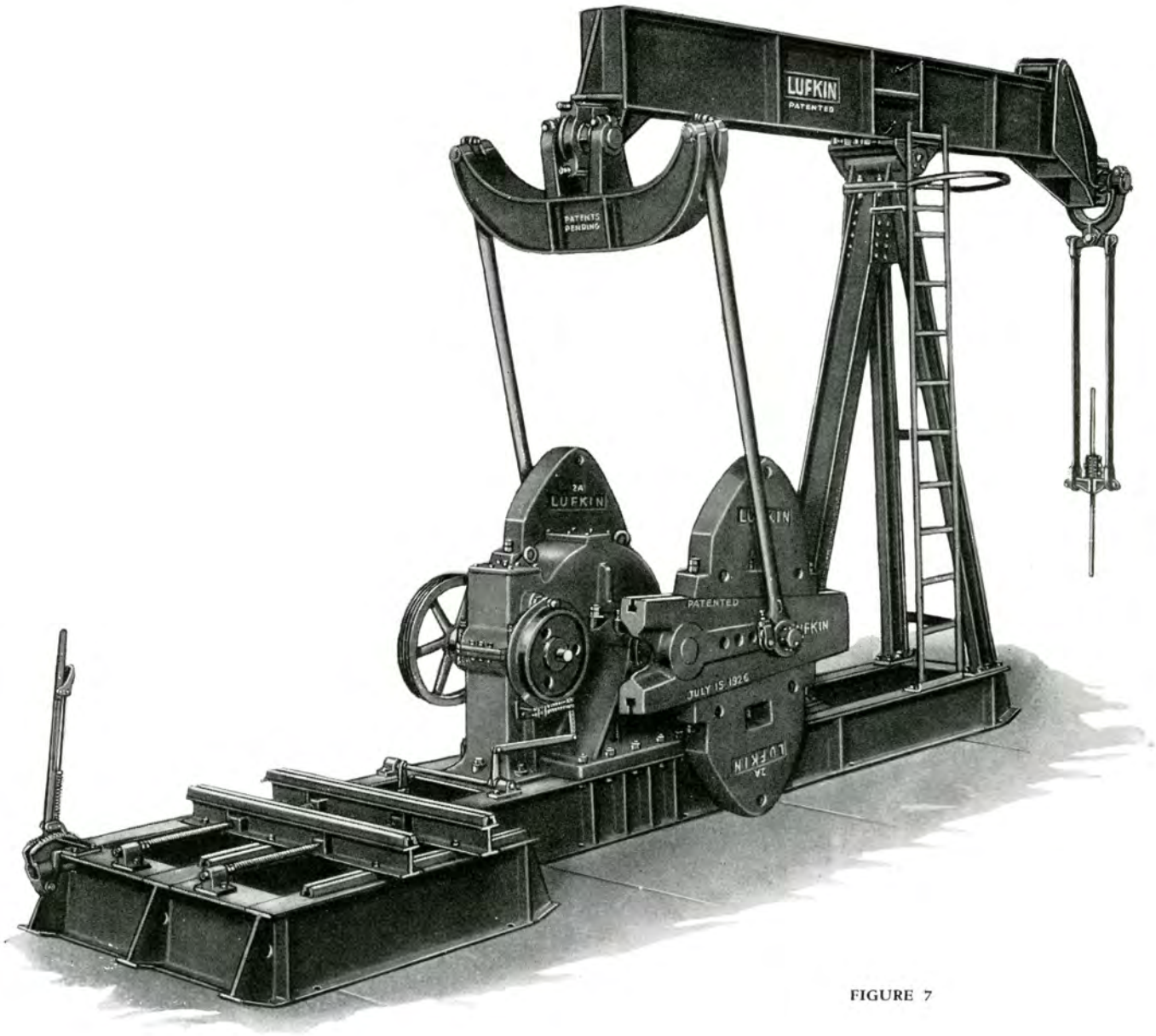



FIGURE 7

## THE LUFKIN UNIVERSAL TWIN CRANK PUMPING UNIT

Into the design of the new Lufkin Universal Unit has been built all of the experience of Lufkin engineers. Chief among the improvements is the "center-line" beam and Pitman equalizer in which all bearings are maintained on an absolute center line. (See Fig. 1, Page 1393).

Successful experimental application of this new principle in field operation permits us to offer the innovation of "Universal Center-line" design as the epitome of mechanical efficiency.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## BOILED DOWN FACTS ABOUT LUFKIN REDUCTION GEARS

1. Housings especially built for oil well service, of rugged construction with large factors of safety.
2. Lufkin-Sykes Herringbone Gears, precision cut on our machines, are used exclusively in Lufkin units.
3. Gears Cases are jig bored to same accuracy as gears.
4. All Shafts forged from alloy steel, heat treated and precision ground.
5. Oversize Bronzoid Bearings on crank shafts. Easily renewable.
6. Crank Shaft held rigid by Bronzoid hub plates. All pinions float on Hy-Load Hyatt Roller Bearings.
7. No Oil Leaks. Pinion shaft bearings equipped with patented oil seals; main crankshaft with collar oil slinger and aluminum drain cover.
8. No Oil Pumps. Lufkin gears operate in oil bath with gear wipers to flood bearings.
9. Clam Shell Brake. No grabbing. Improved ratchet lever and stand, locomotive type.
10. Trout Cranks are equipped with quick change crank pins having tapered bushings in straight holes, with safety key and castellated nuts to eliminate pin turning or loosening in crank. (See Page 1399).

## BOILED DOWN FACTS ABOUT LUFKIN UNIVERSAL ASSEMBLIES

1. All structural members are arc welded; made in jigs and are therefore interchangeable.
2. Walking beams are interchangeable for single or twin crank units and are adjustable laterally to set over well in correct position. They are also arranged to swivel for well clearance.
3. Hanger heads or horseheads swing back over top of beam to clear well, and are interchangeable.
4. Beam and equalizer bearings are always in line.
5. All bearings, with the exception of the center bearings, are self-aligning.
6. Pitman and hanger bearings are lubricated under pressure from the center of the beam. Samson post ladders are equipped with a safety guard loop at top, to protect the operator when lubricating bearings.
7. Beam and center bearings are Bronzoid, oil sealed and of generous size.
8. Pitman connections are of extra heavy tubing.
9. The new Universal pitman bearings are of improved type (see Page 1399) and have one-third more bearing area than usual types; they are equipped with improved oil seals. The bearings are self-aligning, being equipped with straps and ball seated joint which are easily disconnected.

LUFKIN UNITS ARE MANUFACTURED ON A MODERN

PRODUCTION BASIS — WHEN IN EAST TEXAS —

VISIT OUR PLANT

## LUFKIN UNIVERSAL BEAM CONNECTIONS

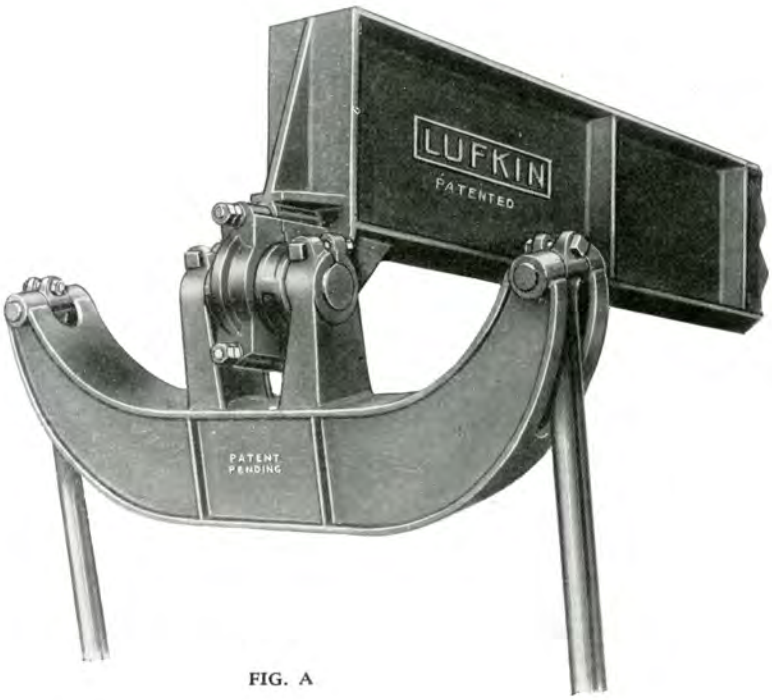



FIG. A

FIG. B




FIG. C

**Fig. A.** Shows Universal bearing and equalizer construction. The equalizer, made of welded steel, of box type structure, is strong and rigid, with heavy well designed connections to tail bearing shaft and pitmans. Shafts of generous size, turned and ground, are provided for all bearings.

Special attention is called to the Universal bearing which is Bronzoid bushed and oil sealed, and which, with its socket of steel, is a completely machined job. This design gives full Universal action as all connections are in one line. The bearing is Alemite lubricated from the center of the beam.

**Fig. B.** The Universal hanger bearing is a duplicate of the tail bearing, except that it is mounted on a hinged hanger that may be laid back on the beam. Like the tail bearing, it is lubricated from the center of the beam. An equalizing hanger, with solid side bars, is standard equipment. This type hanger has proven most satisfactory in service on the heaviest wells. It is regularly furnished on Assemblies Nos. 0A, 1A, 2A and 3A (See Page 1424 for special hanger used to take potentials at high speeds).

**Fig. C.** Horseheads and wire line hangers to polish rod carriers are standard equipment on assemblies Nos. 2, 3, 4, 55, 66 and 77. These horseheads are of all welded steel construction and are hinged to turn back on beam, but are locked when in operating position. An improved equalizer sheave is provided which facilitates putting wire lines on or off by the removal of only one bolt. The horseheads on the Nos. 66 and 77 are not hinged but are easily removable.

## NEW LUFKIN "UNIVERSAL" PITMAN

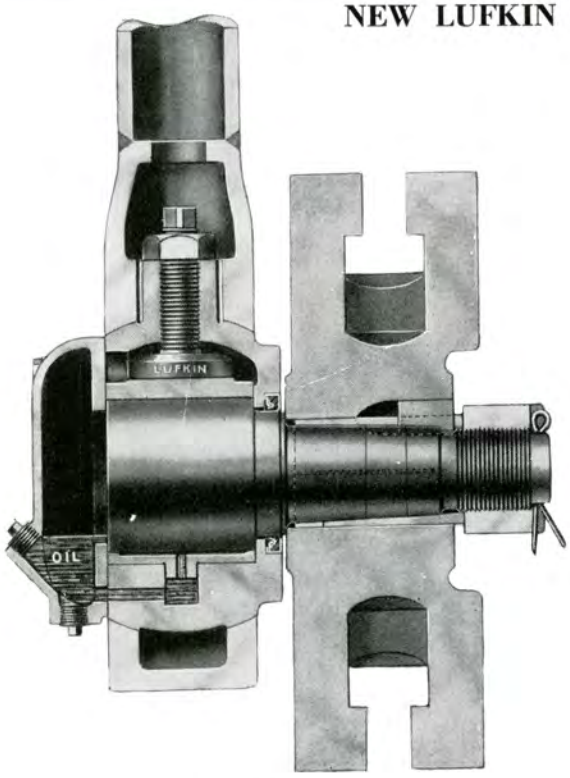



FIGURE 8

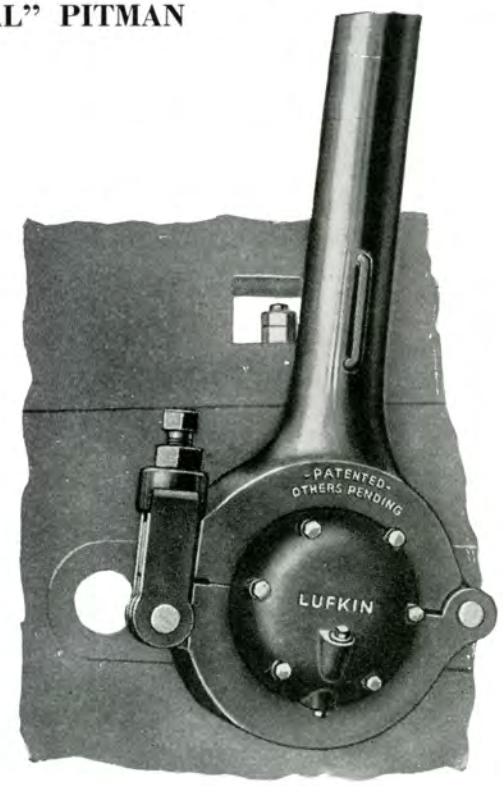



FIGURE 9
*General View of Pitman*

The new "Universal" pitman is shown in Figures 8 and 9. Many notable improvements have been made in these pitmans, but the original pin hole sizes have been maintained.

General characteristics of the new "Universal" pitman are:

1. One-third more bearing surface.
2. Bronzoid bearings top and bottom, with adjustable top bearing.
3. Patented oil seal—no leaks. No head of oil against seal.
4. Both the interior of the strap and the exterior of the pitman box are machined, and thus insure alignment without possibility of binding.
5. The pitman bearing is adjustable when strap or shackle is removed, and may be tested by hand before shackle is re-applied.
6. Lufkin Universal pitmans are designed to pull or push—no lost motion.
7. Journal box is semi-steel; straps and shackles are of cast steel welded to extra heavy tubing.
8. Crank pins are forged alloy steel turned and ground. Cranks have straight holes with taper bushing, locking key and castellated nut.

ROLLER BEARING PITMANS ARE FURNISHED WHEN DESIRED AT SLIGHT EXTRA COST.

NOTE: For Lufkin Center Bearings see Page 1425.

## LUFKIN BRAKE LEVER

Locomotive Type Brake Levers (Fig. 10) are furnished on all twin crank and single crank units. They will be found thoroughly reliable and satisfactory in operation.


FIGURE 10

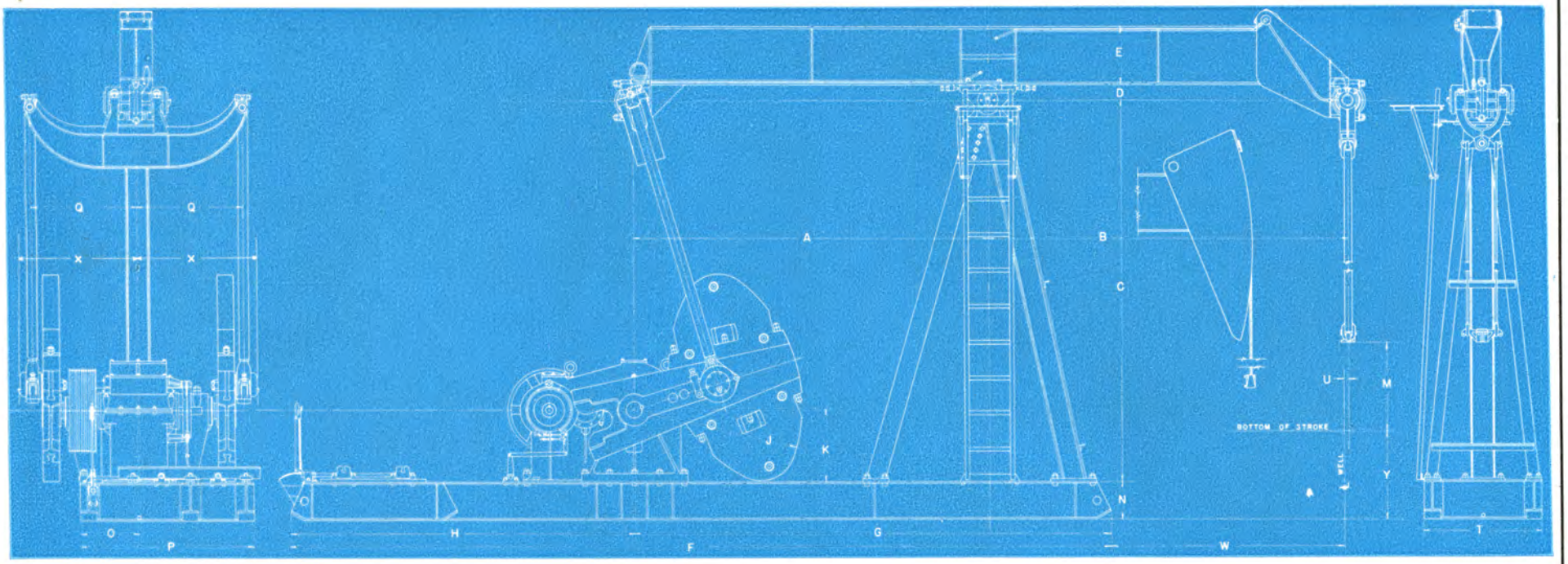



FIGURE 11

## DIMENSION SHEET—LUFKIN UNITS TC-0A, 1A, 2A AND 3A

| UNIT | A | B | C | D | E | F | G | H | J | K | M | N | O | P | Q | T | U | W | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC-0A-1328-C..... | 14′-0″ | 14′-2″ | 13′-3″ | 7″ | 24¼″ | 31′-6″ | 18′-4″ | 13′-2″ | 5′-11½″ | 2′-6″ | 3′-1″ | 16″ | 2′-1″ | 6′- 2″ | * | 4′-2″ | 2″ | 9′-8″ | † | 2′-9″ |
| TC-0A-1325-C..... | 12′-6″ | 12′-8¼″ | 13′-3″ | 7″ | 24¼″ | 30′-0″ | 16′-10″ | 13′-2″ | 5′-11½″ | 2′-6″ | 3′-1″ | 16″ | 2′-1″ | 6′- 2″ | * | 4′-2″ | 2¼″ | 8′-4¼″ | † | 2′-9″ |
| TC-1A-1328-C..... | 14′-0″ | 14′-2″ | 13′-3″ | 7″ | 24¼″ | 29′-6″ | 18′-3½″ | 11′-2½″ | 5′- 5½″ | 2′-4″ | 3′-1″ | 16″ | 21½″ | 5′-11″ | 3′- 3⅜″ | 3′-7″ | 2″ | 9′-8½″ | 3′-9¾″ | 2′-9″ |
| TC-1A-1325-C..... | 12′-6″ | 12′-8¼″ | 13′-3″ | 7″ | 24¼″ | 28′-0″ | 16′-9½″ | 11′-2½″ | 5′- 5½″ | 2′-4″ | 3′-1″ | 16″ | 21½″ | 5′-11″ | 3′- 3⅜″ | 3′-7″ | 2¼″ | 8′-4¾″ | 3′-9¾″ | 2′-9″ |
| TC-2A-1020-C..... | 10′-0″ | 10′-2¼″ | 12′-1″ | 6″ | 24″ | 27′-3″ | 13′-9″ | 13′-6″ | 4′-11½″ | 2′-3″ | 2′-8″ | 16″ | 18½″ | 5′-5″ | 2′-11 1/16″ | 3′-1″ | 2¼″ | 6′-5¼″ | 3′-5 5/16″ | 2′-0″ |
| TC-3A-8216-C..... | 8′-0″ | 8′-2¼″ | 12′-0″ | 6″ | 20⅞″ | 19′-4¾″ | 11′-2″ | 8′-2¾″ | 3′- 9½″ | 2′-3″ | 2′-3″ | 9⅞″ | 16″ | 4′-8½″ | 2′- 7 1/16″ | 2′-8″ | 2¼″ | 4′-10″ | 3′-1 5/16″ | 1′-10″ |

* For dimension "Q"—TC-0A-51A—3′-8⅞″, TC-0A-60—3′-4⅞″.
† For dimension "X"—TC-0A-51A—4′-3¼″, TC-0A-60—3′-11¼″.

Dimensions not guaranteed for settings—request certified prints.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## LUFKIN UNIVERSAL TC-0A UNIT ASSEMBLIES—30,000 Lb. Polish Rod Load and 74" Maximum Stroke

**WALKING BEAM:** 24" x 14" x 130 lbs., 12'-6" and 12'-6" working centers, or 14'-0" and 14' 0" working centers.
**HANGER:** Centerline type, Universal, bronze bushed.
**PITMAN:** Universal Equalizer with bearings "in line", 4" pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 1AS Bronze bushed, 7" x 20" oil bath, dust proof.
**SAMSON POST:** No. 13 Tripod, 13'-3" high.
**BASE:** 16" deep, 49¾" wide at gear box.
**CRANKS:** No. 7472, 71½" radius.
**CRANK PINS:** 5½" x 5½", bronze bushed, oil bath.
**TAIL AND HANGER BEARINGS:** 4 11/16" x 12" Bronze Bushed.

| | TC-0A-51A | TC-0A-60 |
|---|---|---|
| **GEARS** | Double Reduction Main Gear, 36" x 12" | Single Reduction Main Gear, 50" x 12" |
| **RATING** | 58.5 H.P. at 20 S.P.M. 289,100 lb. ins. Peak Torque | 70.5 H.P. at 20 S.P.M. 348,600 lb. ins. Peak Torque |
| **RATIO** | 28.79 | 9.54 |
| **CRANKSHAFT** | 6 7/16" | 6 7/16" |
| **SHEAVE** | 34¼"-11C Std. 51¼" Maximum 3 7/16" Bore | 37¼"-12C Std. 37¼" Maximum 3 11/16" Bore |
| **WEIGHT** | 40,900 lbs. | 39,735 lbs. |

**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 1 Weights | C.I. Auxiliary Weights |
|---|---|---|
| 34" | 32,000 | 39,900 |
| 44" | 24,750 | 30,850 |
| 54" | 20,150 | 25,100 |
| 64" | 17,000 | 21,200 |
| 74" | 15,100 | 18,850 |

## LUFKIN UNIVERSAL TC-1A UNIT ASSEMBLIES—25,000 Lb. Polish Rod Load and 74" Maximum Stroke

**WALKING BEAM:** 24" x 14" x 130 lbs., 12'-6" and 12'-6" working centers, or 14'-0" and 14'-0" working centers.
**HANGER:** Centerline type, Universal, bronze bushed.
**PITMAN:** Universal Equalizer with bearings "in line", 4" pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 1AS bronze bushed, 7" x 20", oil bath, dust proof.
**SAMSON POST:** No. 13 Tripod, 13'-3" high.
**BASE:** 16" deep, 43" wide at gear box.
**CRANKS:** No. 7466, 65½" radius.
**CRANK PINS:** 5½" x 5½", bronze bushed, oil bath.
**TAIL AND HANGER BEARINGS:** 4 11/16" x 12" Bronze Bushed.

| | TC-1A-41A | TC-1A-54A |
|---|---|---|
| **GEARS** | Double Reduction Main Gear, 34" x 10" | Single Reduction Main Gear, 47" x 10" |
| **RATING** | 47.4 H.P. at 20 S.P.M. 234,450 lb. ins. Peak Torque | 55.8 H.P. at 20 S.P.M. 275,850 lb. ins. Peak Torque |
| **RATIO** | 30.12 | 9.4 |
| **CRANKSHAFT** | 6 7/16" | 6 7/16" |
| **SHEAVE** | 24¼"-8C Std. 47¼" Maximum 2 11/16" Bore | 34¼"-11C Std. 34¼" Maximum 3 7/16" Bore |
| **WEIGHT** | 33,700 lbs. | 33,600 lbs. |

**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 2 Weights | C.I. Auxiliary Weights |
|---|---|---|
| 34" | 24,200 | 30,100 |
| 44" | 18,700 | 23,250 |
| 54" | 15,250 | 18,950 |
| 64" | 12,850 | 16,000 |
| 74" | 11,150 | 13,850 |

## LUFKIN UNIVERSAL TC-2A UNIT ASSEMBLIES—20,000 Lb. Polish Rod Load and 64" Maximum Stroke

**WALKING BEAM:** 24" x 12" x 100 lbs., 10'-0" and 10'-0" working centers.
**HANGER:** Centerline type, Universal bronze bushed.
**PITMAN:** Universal Equalizer with bearings "in line", 3" pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 2AS, bronze bushed, 6" x 17", oil bath, dust proof.
**SAMSON POST:** No. 12 Tripod, 12'-1", high.
**BASE:** 16" Deep, 37" wide at gear box.
**CRANKS:** No. 6460, 59½" radius.
**CRANK PINS:** 4¾" x 4⅝", bronze bushed, oil bath.
**TAIL AND HANGER BEARINGS:** 4 11/16" x 9¼" Bronze Bushed.

| | TC-2A-31C | TC-2A-26C |
|---|---|---|
| **GEARS** | Double Reduction Main Gear 27" x 11" | Single Reduction Main Gear, 42" x 8" |
| **RATING** | 33.4 H.P. at 20 S.P.M. 165,330 lb. ins. Peak Torque | 34.4 H.P. at 20 S.P.M. 170,000 lb. ins. Peak Torque |
| **RATIO** | 28.7 | 10.5 |
| **CRANKSHAFT** | 6" | 6" |
| **SHEAVE** | 24¼"-6C Std. 39¼" Maximum 2 7/16" Bore | 31¼"-8C Std. 31¼" Maximum 2 11/16" Bore |
| **WEIGHT** | 26,000 lbs. | 25,900 lbs. |

**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 2A Wts. | Aux. Wts. | No. 2 Wts. | Aux. Wts. |
|---|---|---|---|---|
| 24" | 25,950 | 31,950 | 28,800 | 35,950 |
| 34" | 18,300 | 22,550 | 20,350 | 25,350 |
| 44" | 14,150 | 17,400 | 15,700 | 19,600 |
| 54" | 11,550 | 14,200 | 12,800 | 15,950 |
| 64" | 9,750 | 12,000 | 10,800 | 13,500 |

## LUFKIN UNIVERSAL TC-3A UNIT ASSEMBLIES—17,000 Lb. Polish Rod Load and 54" Maximum Stroke

**WALKING BEAM:** 21" x 9" x 82 lbs., 8'-0" and 8'-0" working centers
**HANGER:** Hinged Horsehead or Universal center line type
**PITMAN:** Universal Equalizer with bearings "in line", 3" pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 3AS bronze bushed, 6" x 14", oil bath, dust proof.
**SAMSON POST:** Tripod, 12'-0" high.
**BASE:** 10" deep, 32" wide at gear box.
**CRANKS:** No. 5446, 45½" Radius.
**CRANK PINS:** 4¾" x 4⅝", bronze bushed, oil bath.
**TAIL AND HANGER BEARINGS:** 4 11/16" x 9¼" bronze bushed.

| | TC-3A-22C | TC-3A-18A |
|---|---|---|
| **GEARS** | Double Reduction Main Gear 25" x 7⅝" | Single Reduction Main Gear 42" x 6" |
| **RATING** | 24.0 H.P. at 20 S.P.M. 118,700 lb. ins. Peak Torque | 27.2 H.P. at 20 S.P.M. 134,400 lb. ins. Peak Torque |
| **RATIO** | 28.67 | 10.5 |
| **CRANKSHAFT** | 4 15/16" | 4 15/16" |
| **SHEAVE** | 24¼"-5C Std. 39¼" Maximum 2 7/16" Bore | 33¼"-6C Std. 33¼" Maximum 2 11/16" Bore |
| **WEIGHT** | 20,700 lbs. | 20,700 lbs. |

**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 3 Regular Weights | Aux. Weights |
|---|---|---|
| 24" | 14,500 | 20,900 |
| 34" | 10,250 | 14,750 |
| 44" | 7,925 | 10,400 |
| 54" | 6,450 | 9,300 |

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## ALTERNATIVE SETTINGS—LUFKIN UNIT ASSEMBLIES TC-0A, 1A, 2A AND 3A

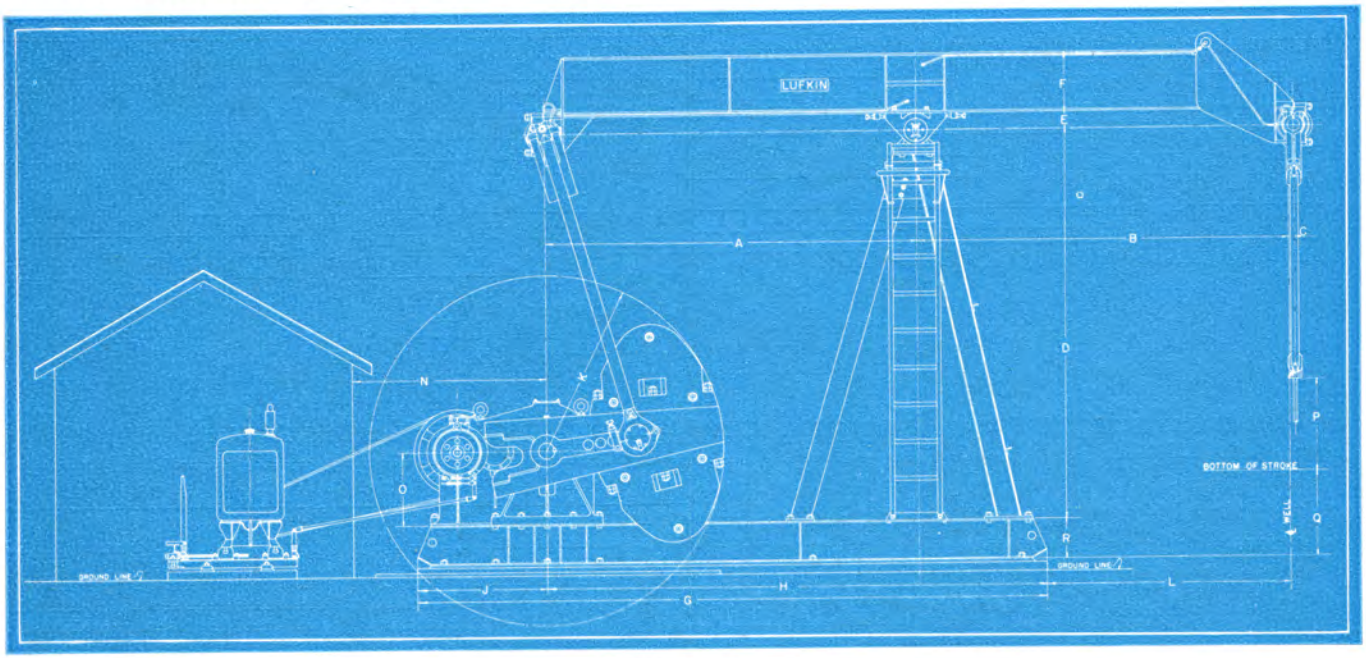



FIGURE 12

*0A, 1A, 2A and 3A with Stub Base and House for Multi-Cylinder Gas Engine*

### LUFKIN UNIT ALTERNATIVES TC-0A, 1A, 2A AND 3A
### GENERAL DIMENSIONS

| Unit | A | B | C | D | E | F | G | H | J | K | L | N | O | P | Q | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC-0A-1328C .... | 14′-0″ | 14′-0″ | 2″ | 13′-3″ | 7″ | 24″ | 22′-9″ | 18′-4″ | 4′-5″ | 5′-11½″ | 9′-8″ | 6′-6″ | 2′-6″ | 3′-1″ | 2′-9″ | 16″ |
| TC-0A-1325C .... | 12′-6″ | 12′-6″ | 2¼″ | 13′-3″ | 7″ | 24″ | 21′-3″ | 16′-10″ | 4′-5″ | 5′-11½″ | 8′-4¼″ | 6′-6″ | 2′-6″ | 3′-1″ | 2′-9″ | 16″ |
| TC-1A-1328C.... | 14′-0″ | 14′-0″ | 2″ | 13′-3″ | 7″ | 24″ | 23′-7″ | 18′-3½″ | 5′-3½″ | 5′-5½″ | 9′-8½″ | 6′-3″ | 2′-4″ | 3′-1″ | 2′-9″ | 16″ |
| TC-1A-1325C.... | 12′-6″ | 12′-6″ | 2¼″ | 13′-3″ | 7″ | 24″ | 22′-1″ | 16′-9½″ | 5′-3½″ | 5′-5½″ | 8′-4¾″ | 6′-3″ | 2′-4″ | 3′-1″ | 2′-9″ | 16″ |
| TC-2A-1020C.... | 10′-0″ | 10′-0″ | 2¼″ | 12′-1″ | 6″ | 24″ | 18′-0″ | 13′-9″ | 4′-3″ | 4′-11½″ | 6′-5¼″ | 5′-6″ | 2′-3″ | 2′-8″ | 2′-0″ | 16″ |
| TC-3A-8216C.... | 8′-0″ | 8′-0″ | 2¼″ | 12′-0″ | 6″ | 20⅞″ | 14′-5″ | 11′-2″ | 3′-3″ | 3′-9½″ | 4′-10″ | 4′-4″ | 2′-3″ | 2′-3″ | 1′-10″ | 9⅞″ |

**Ask for Certified Print before making foundations.**

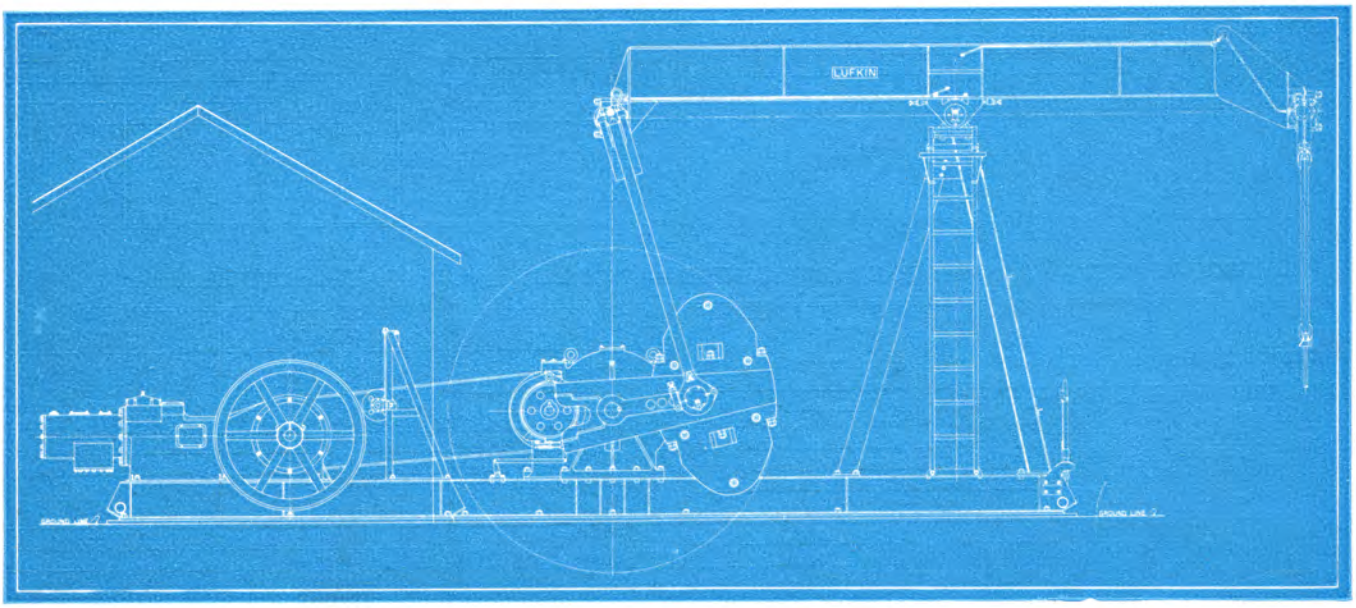
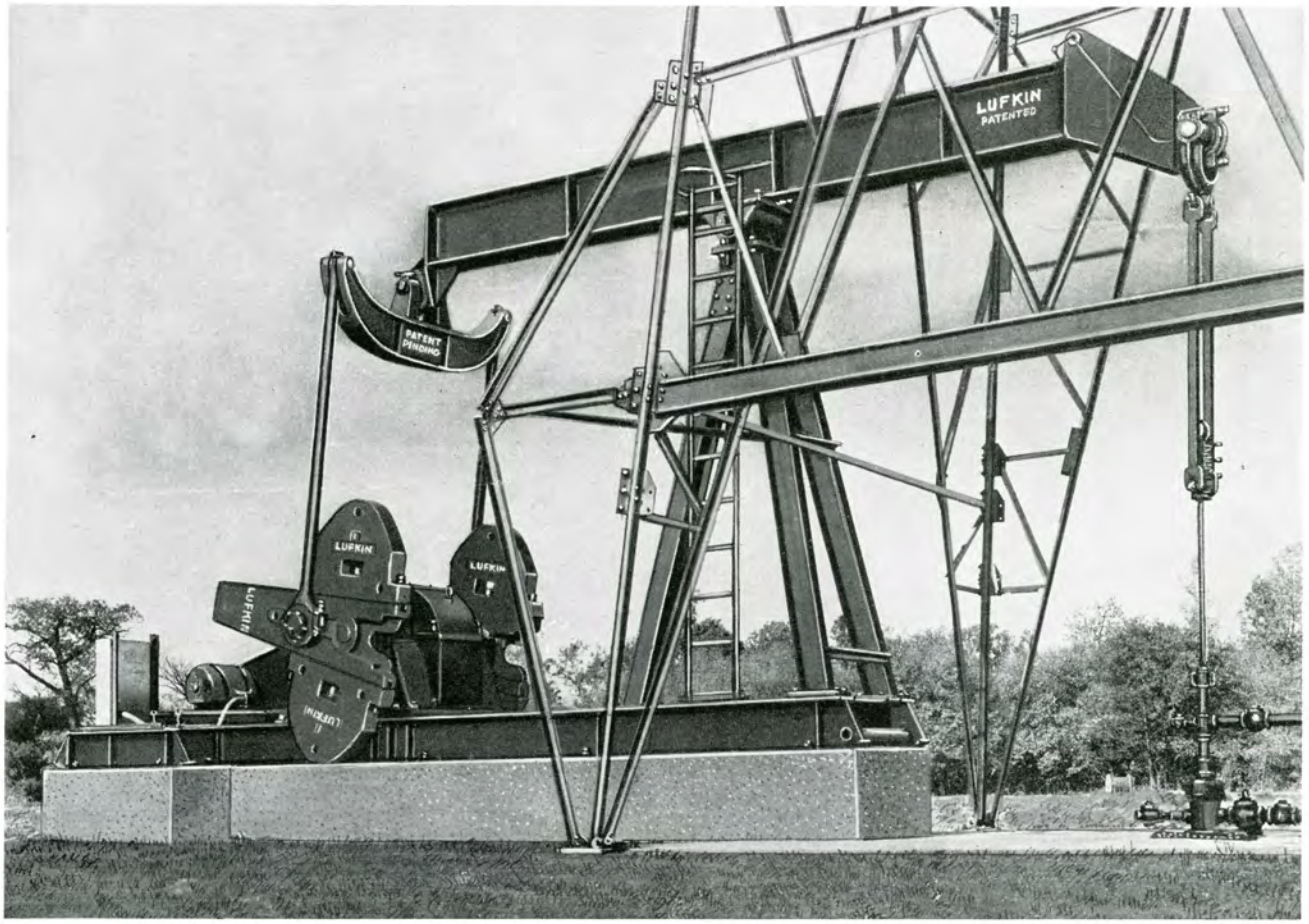


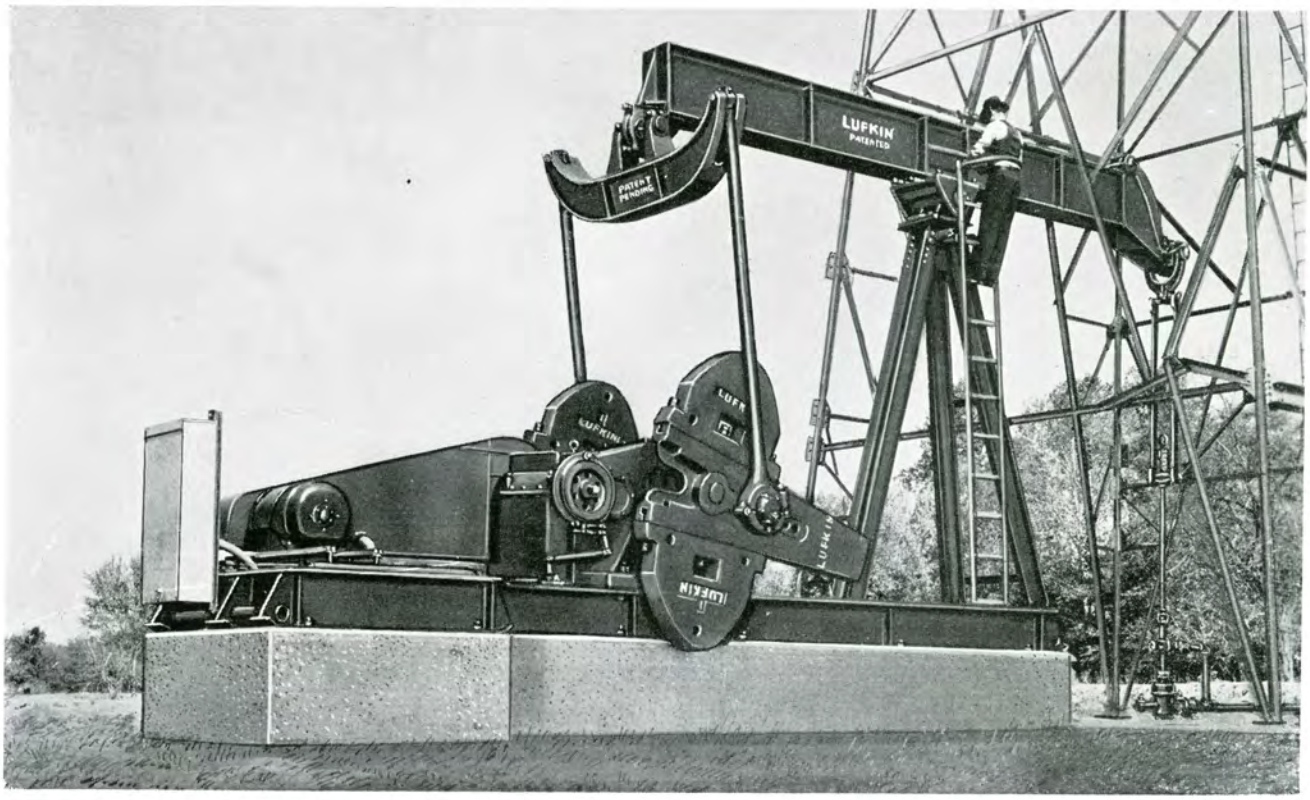

FIGURE 13

*0A Unit with Long Bed Plate in Two Sections to Take Single Cylinder Engines*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS




## MODERN INSTALLATIONS LUFKIN UNIVERSAL PUMPING UNITS



# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## TYPICAL INSTALLATIONS

*At left:*
*T. C. 2A—54 Unit with 1020C Beam Single Cylinder Engine Drive—Claflin, Kansas—with special platform for oiling beam bearings.*

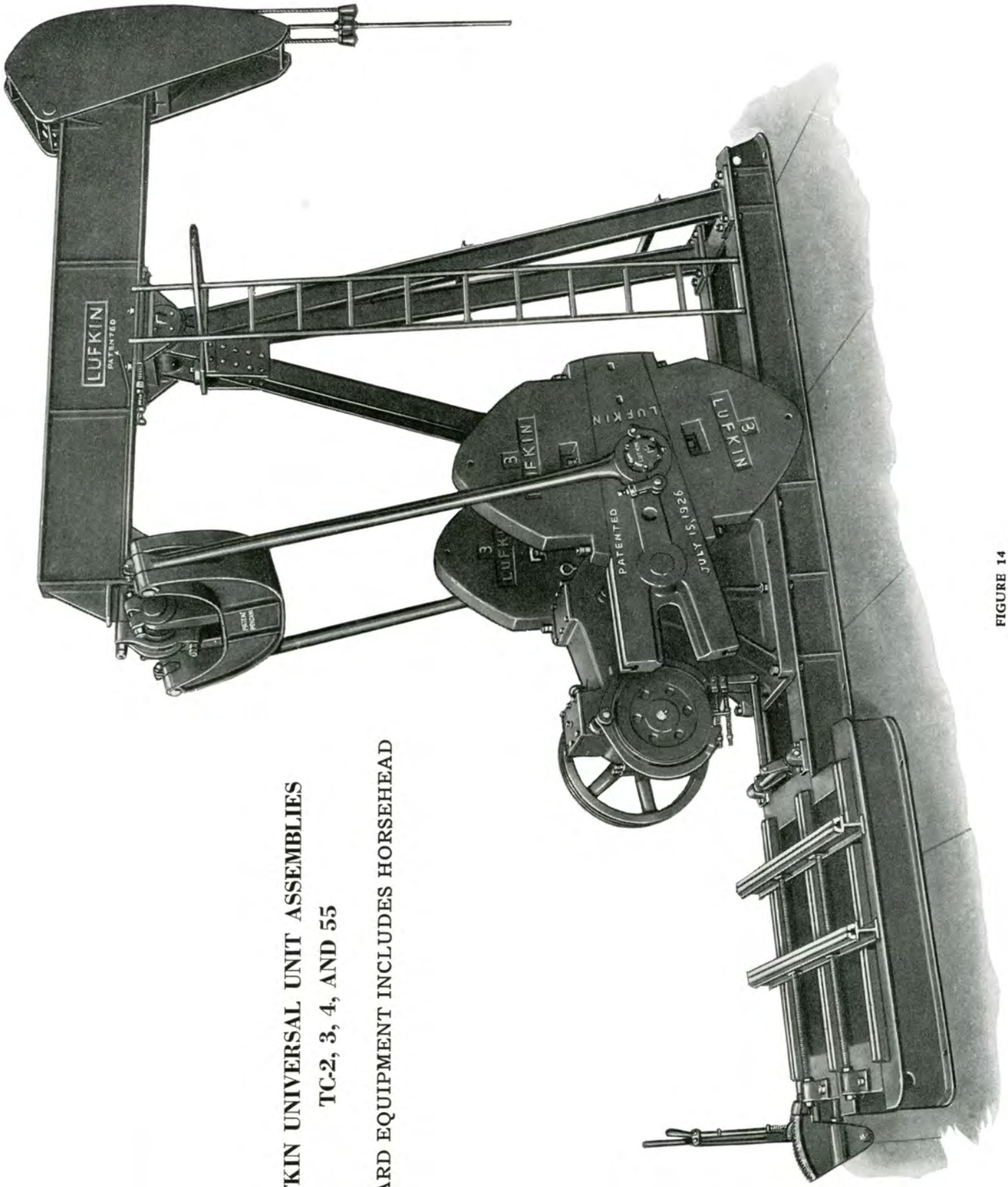
*Below:*
*New Unit No. 3A 16' Beam 8' Working Centers, High Post, Hanger Head, Either No. 18A or 22C Gears.*


*Oiling Center Bearing, also each of end Bearings of Beam from one central point. Platform of this type is furnished at slight extra charge.*

## TWIN CRANK UNITS WITH HORSEHEADS


*TC-3-22C—One of our most popular sizes. 54" stroke.*


*TC-55-7A with Trout simplified cranks. 42" stroke.*




**LUFKIN UNIVERSAL UNIT ASSEMBLIES**
**TC-2, 3, 4, AND 55**
**STANDARD EQUIPMENT INCLUDES HORSEHEAD**

FIGURE 14

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## GENERAL SPECIFICATIONS—LUFKIN UNIT ASSEMBLIES TC-2, 3, 4, AND 55

### LUFKIN UNIVERSAL TC-2 UNIT ASSEMBLIES
**20,000 Lbs. Polish Rod Load and 64″ Maximum Stroke**

**WALKING BEAM:** 21″ x 9″ x 82 lbs., 8′-0″ and 8′-0″ working centers.
**HANGER:** Hinged Horsehead with 1″ wire rope on equalizing sheave.
**PITMAN:** Universal Equalizer with bearings "in line", 3″ heavy pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 2AS, bronze bushed 6″ x 17″, oil bath, dust proof.
**SAMSON POST:** No. 12 Tripod, 12′-1″ high.
**BASE:** 16″ deep, 37″ wide at gear box, 22′-1″ long.
**CRANKS:** No. 6456, 55½″ radius.
**CRANK PINS:** 4¾″ x 4⅝″ bronze bushed, oil bath.
**TAIL BEARING:** 4 1/16″ x 9¼″, bronze bushed.

| | TC-2-31C | TC-2-26C |
|---|---|---|
| GEARS | Double Reduction Main Gear, 27″ x 11″ | Single Reduction Main Gear, 42″ x 8″ |
| RATING | 33.4 H.P. at 20 S.P.M. 165,330 lb. ins. Peak Torque | 34.4 H.P. at 20 S.P.M. 170,000 lb. ins. Peak Torque |
| RATIO | 28.7 | 10.5 |
| CRANKSHAFT | 6″ | 6″ |
| SHEAVE | 24¼″-6C Std. 39¼″ Maximum 2 7/16″ Bore | 31¼″-8C Std. 31¼″ Maximum 2 1/16″ Bore |
| WEIGHT | 24,500 lbs. | 25,500 lbs. |

**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 2A Wts. | Aux. Wts. | No. 2 Wts. | Aux. Wts. |
|---|---|---|---|---|
| 24″ | 22,950 | 28,350 | 25,420 | 31,840 |
| 34″ | 16,200 | 20,000 | 17,950 | 22,470 |
| 44″ | 12,500 | 15,460 | 13,870 | 17,360 |
| 54″ | 10,200 | 12,600 | 11,300 | 14,150 |
| 64″ | 8,600 | 10,630 | 9,530 | 11,940 |

### LUFKIN UNIVERSAL TC-3 UNIT ASSEMBLIES
**17,000 Lbs. Polish Rod Load and 54″ Maximum Stroke**

TC-3-22C

**WALKING BEAM:** 18″ x 8¾″ x 64 lbs., 7′-0″ and 5′-3¼″ working centers
**HANGER:** Hinged Horsehead with 1″ wire line on equalizing sheave.
**PITMAN:** Universal Equalizer with bearings "in line", 3″ heavy pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 3AS bronze bushed, 6″ x 14″, oil bath, dust proof.
**SAMSON POST:** Tripod, 10′-4″ high.
**BASE:** 10″ deep, 32″ wide at gear box, 17′-1½″ long.
**CRANKS:** No. 4146, 45½″ radius.
**CRANK PINS:** 4¾″ x 4⅝″, bronze bushed, oil bath.
**TAIL BEARING:** 4 1/16″ x 9¼″, bronze bushed.

| | TC-3-22C | TC-3-18A |
|---|---|---|
| GEARS | Double Reduction Main Gear 25″ x 7⅝″ | Single Reduction Main Gear 42″ x 6″ |
| RATING | 24.0 H.P. at 20 S.P.M. 118,700 lb. ins. Peak Torque | 27.2 H.P. at 20 S.P.M. 134,400 lb. ins. Peak Torque |
| RATIO | 28.67 | 10.5 |
| CRANKSHAFT | 4 7/16″ | 4 7/16″ |
| SHEAVE | 24¼″-5C Std. 39¼″ Maximum 2 7/16″ Bore | 33¼″-6C Std. 33¼″ Maximum 2 1/16″ Bore |
| WEIGHT | 19,300 lbs. | 19,300 lbs. |

**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 3 Reg. Wts. | C.I. Kidney Aux. Wts. |
|---|---|---|
| 27 9″ | 12,550 | 18,050 |
| 41.2″ | 8,500 | 12,250 |
| 54″ | 6,450 | 9,300 |

### LUFKIN UNIVERSAL TC-4-11B UNIT ASSEMBLY
**12,000 Lbs. Polish Rod Load and 42″ Maximum Stroke**

**WALKING BEAM:** 16″ x 8½″ x 58 lbs., 6′-0″ and 5′-3¼″ working centers.
**HANGER:** Hinged Horsehead with ⅞″ wire line on equalizing sheave.
**PITMAN:** Universal Equalizer with bearings "in line", 2½″ heavy pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 4AS, bronze bushed, 5″ x 10½″, oil bath, dust proof.
**SAMSON POST:** Tripod, 8′-1″ high.
**BASE:** 10″ deep, 32″ wide at gear box, 17′-1½″ long.
**CRANKS:** No. 3646, 45½″ radius.
**CRANK PINS:** 3¾″ x 3½″, bronze bushed, oil bath.
**TAIL BEARING:** 3 1/16″ x 7¼″, bronze bushed.

**GEARS:** Double reduction, main gear 22″ diameter, 7″ face.
**RATING:** 15.7 nominal horsepower at 20 S.P.M., 77,800 lb. ins. Peak Torque.
**RATIO:** 29.24.
**CRANKSHAFT:** 4 7/16″ diameter.
**SHEAVE:** 19¼″ dia., 4C grooves standard, 31¼″ maximum, 1 1/16″ bore.
**WEIGHT:** 14,850 lbs.
**STATIC COUNTERBALANCE—LBS.:**

| Stroke | No. 3A Reg. Wts. | C.I. Kidney Aux. Wts. |
|---|---|---|
| 18.6″ | 15,000 | 20,650 |
| 30.5″ | 9,200 | 12,700 |
| 42.0″ | 6,650 | 9,200 |

### LUFKIN UNIVERSAL TC-55 UNIT ASSEMBLIES
**10,000 Lbs. Polish Rod Load and 42″ Maximum Stroke**

**WALKING BEAM:** 12″ x 8″ x 40 lbs., 5′-0″ and 5′-0″ working centers.
**HANGER:** Hinge Horsehead with ⅞″ wire line.
**PITMAN:** Universal Equalizer with bearings "in line", 2½″ heavy pipe connections, Universal lower bearings.
**CENTER BEARING:** No. 4AS bronze bushed, 5″ x 10½″, oil bath, dust proof.
**SAMSON POST:** Tripod, 8′-1″ high.
**BASE:** 8″ deep, 25″ wide at gear box, 14′-2¾″ long.
**CRANKS:** No. 4242, 42″ radius.
**CRANK PINS:** 3¾″ x 3½″, bronze bushed, oil bath.
**TAIL BEARING:** 3 1/16″ x 7¼″, bronze bushed.

| | TC-55-7A | TC-55-16 |
|---|---|---|
| GEARS | Double Reduction Main Gear 20″ x 5″ | Single Reduction Main Gear 32½″ x 5″ |
| RATING | 11.1 H.P. at 20 S.P.M. 54,945 lb. ins. Peak Torque | 14.7 H.P. at 20 S.P.M. 72,685 lb. ins. Peak Torque |
| RATIO | 29.32 | 10 |
| CRANKSHAFT | 4″ | 4″ |
| SHEAVE | 19¼″ 3-C Std. 27¼″ Maximum 1 1/16″ Bore | 24″ 6-C Std. 24″ Maximum 2 7/16″ Bore |
| WEIGHT | 11,930 | 11,600 |

**STATIC COUNTERBALANCE—LBS.**

| Stroke | No. 5 Wts. | With Aux. Wts. |
|---|---|---|
| 22″ | 11,030 | 14,660 |
| 32″ | 7,600 | 9,950 |
| 42″ | 5,790 | 7,580 |

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

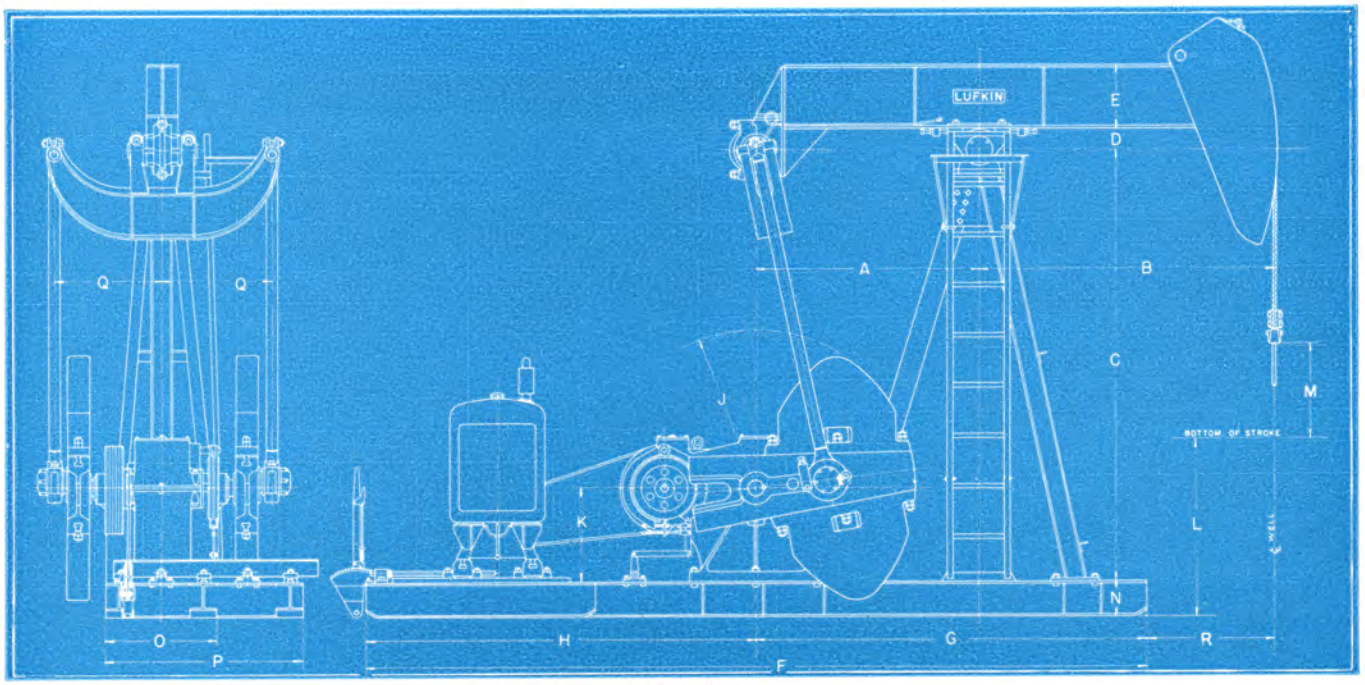



FIGURE 15

## LUFKIN UNIT ASSEMBLIES TC-2, 3, 4, AND 55

### GENERAL DIMENSIONS

| UNIT | A | B | C | D | E | F | G | H | J | K | L | M | N | O | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC-2..... | 8′-0″ | 8′-0″ | 12′-1″ | 6″ | 21″ | 22′-1″ | 11′-9″ | 10′-4″ | 4′-7½″ | 2′-3″ | 5′-0½″ | 2′-8″ | 16″ | 3′-1″ | 5′-5″ | 2′-11 7/16″ | 4′-3″ | 3′-5 5/16″ |
| TC-3..... | 5′-3¼″ | 7′-0″ | 10′-4″ | 6″ | 18″ | 17′-1½″ | 8′-10¾″ | 8′-2¾″ | 3′-9½″ | 2′-3″ | 5′-2½″ | 2′-3″ | 10″ | 2′-8″ | 4′-8½″ | 2′-7 7/16″ | 3′-4½″ | 3′-1 5/16″ |
| TC-4..... | 5′-3¼″ | 6′-0″ | 8′-1″ | 6″ | 16″ | 17′-1½″ | 8′-10¾″ | 8′-2¾″ | 3′-9½″ | 2′-3″ | 3′-6½″ | 21″ | 10″ | 2′-8″ | 4′-8½″ | 2′-4 13/16″ | 2′-4½″ | 2′-0 13/16″ |
| TC-55..... | 5′-0″ | 5′-0″ | 8′-1″ | 6″ | 12″ | 13′-11″ | 7′-1″ | 6′-10″ | 3′-6″ | 18″ | 4′-4″ | 18″ | 8″ | 2′-1″ | 4′-1″ | 2′-1 5/16″ | 2′-11″ | 2′-6 7/16″ |

Ask for certified print before making foundation. Note: TC-55 now has Trout Simplified Cranks

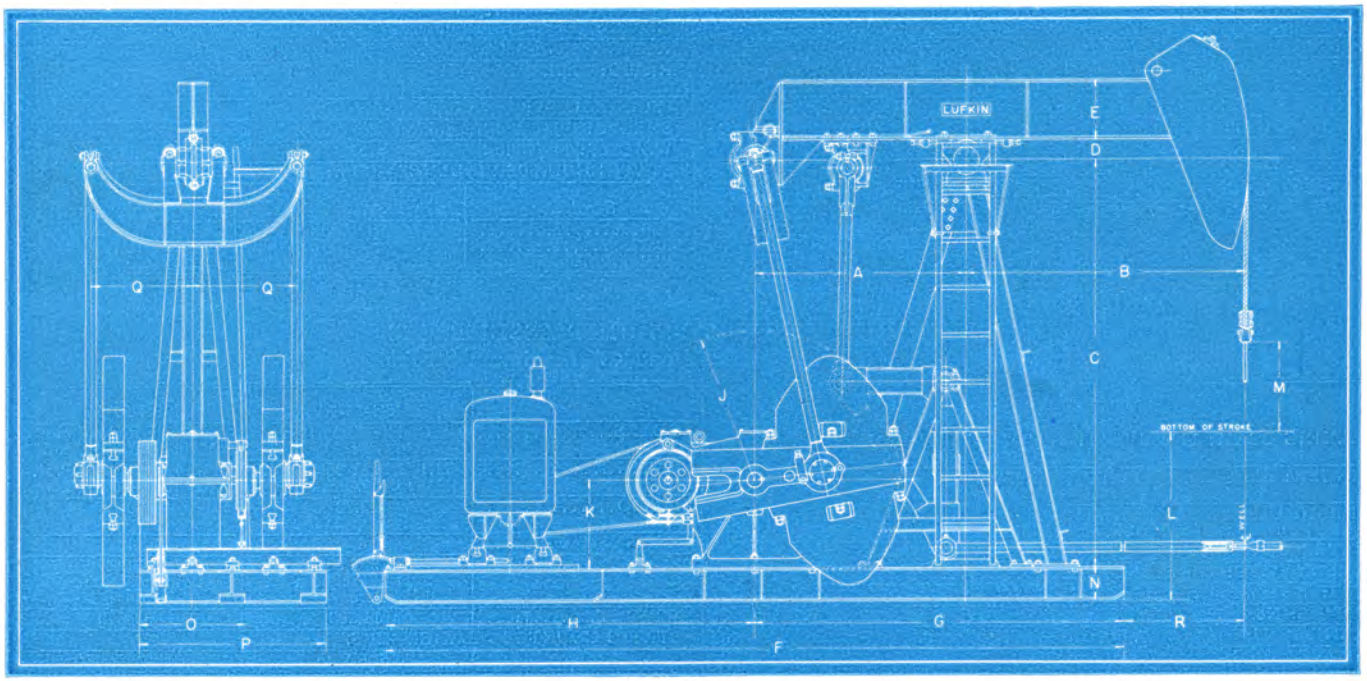



FIGURE 16

*Illustrating bell-crank connection for one additional well, applicable to the TC-2, 3, 4 and 55 assemblies.*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## ALTERNATIVE FEATURES—LUFKIN UNITS TC-2, 3, 4, AND 55

*Top: Lufkin TC 3-18A with Stub Base and Gas Engine Drive. Below: Same with Motor Mounted Under Samson Post.*

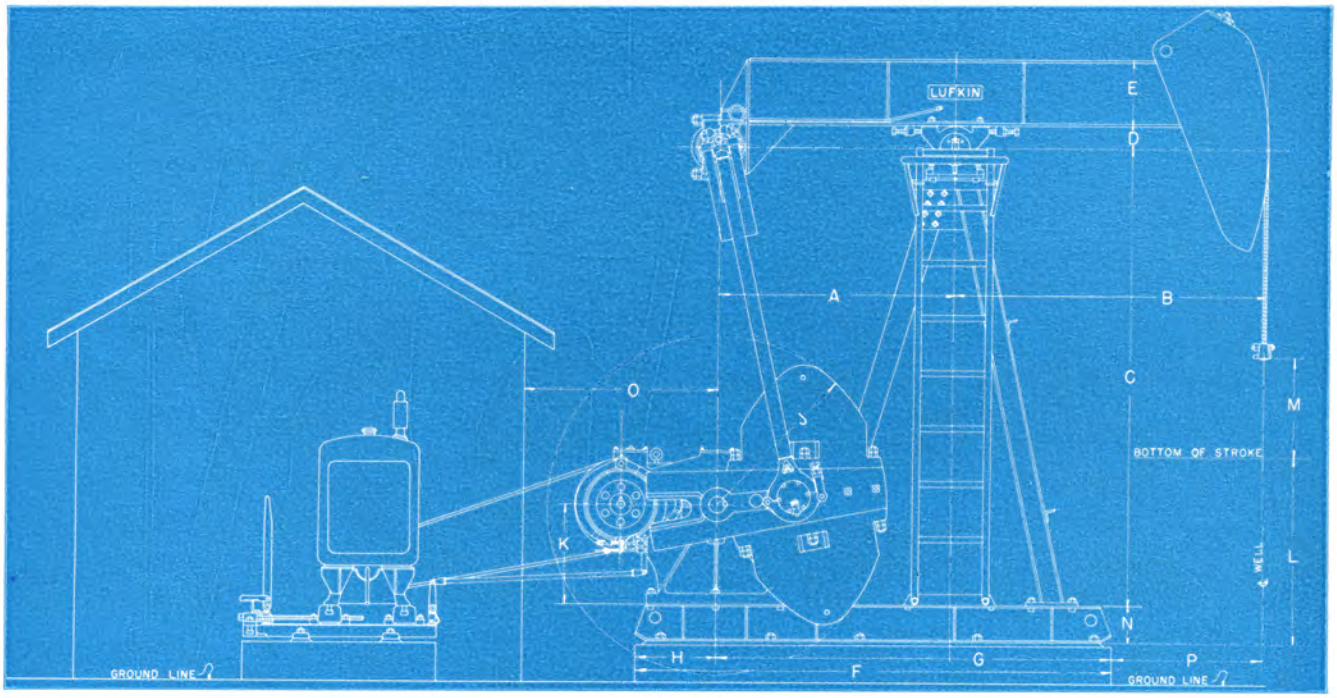



FIGURE 17

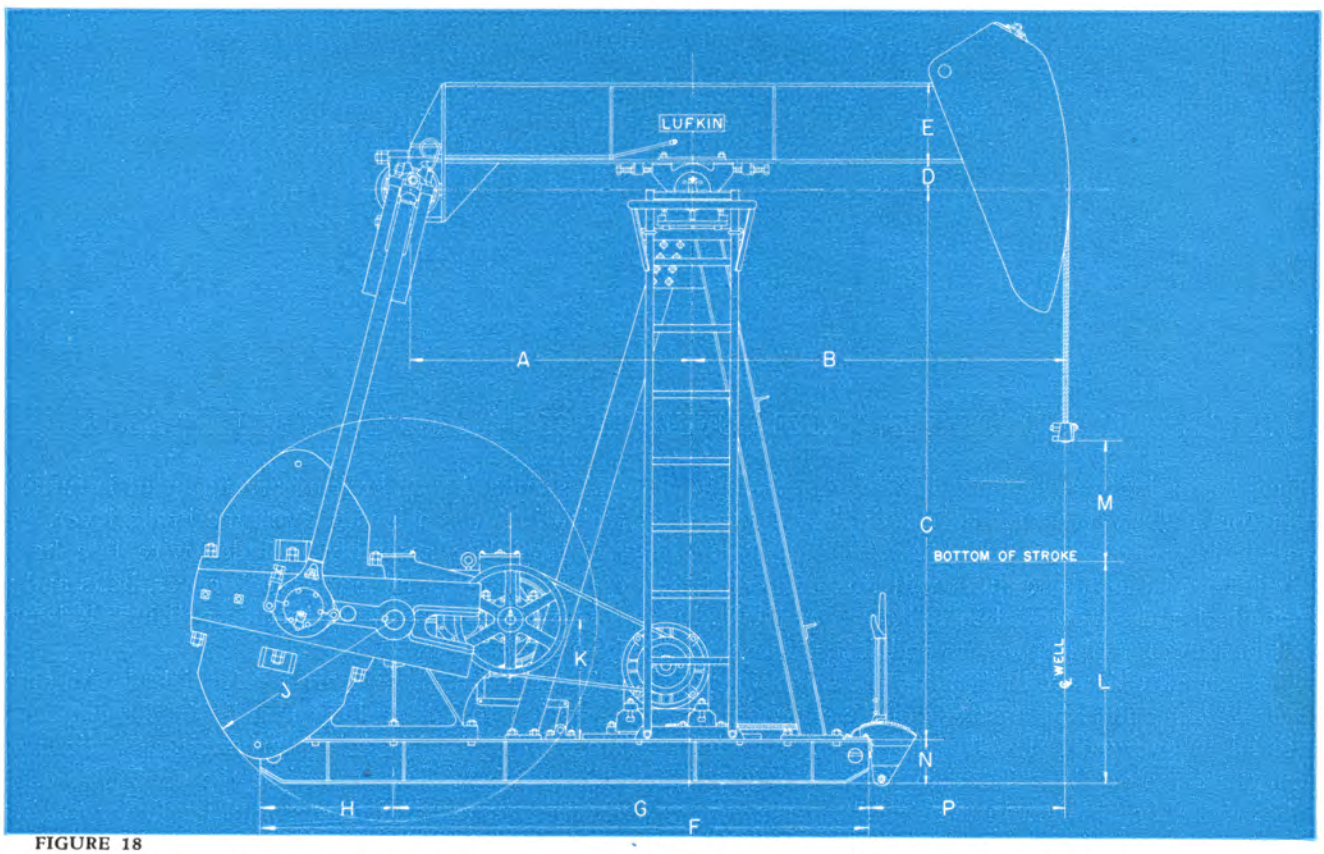



FIGURE 18

### GENERAL DIMENSION SHEET—LUFKIN ASSEMBLIES TC-2, 3, 4 and 55

| UNIT | A | B | C | D | E | F | G | H | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC-2 | 8′-0″ | 8′-0″ | 12′-1″ | 6″ | 21″ | 14′-0″ | 11′-9″ | 2′-3″ | 4′-7½″ | 2′-3″ | 5′-0½″ | 2′-8″ | 16″ | 5′-6″ | 4′-3″ |
| TC-3 | 5′-3¼″ | 7′-0″ | 10′-4″ | 6″ | 18″ | 12′-0″ | 9′-3¼″ | 2′-8¾″ | 3′-9½″ | 2′-3″ | 5′-2½″ | 2′-3″ | 10″ | 4′-4″ | 3′-0″ |
| TC-4 | 5′-3¼″ | 6′-0″ | 8′-1″ | 6″ | 16″ | 12′-0″ | 9′-3¼″ | 2′-8¾″ | 3′-9½″ | 2′-3″ | 3′-6½″ | 21″ | 10″ | 4′-4″ | 2′-0″ |
| TC-55 | 5′-0″ | 5′-0″ | 8′-1″ | 6″ | 12″ | 9′-7¼″ | 7′-1″ | 2′-6¼″ | 3′-6″ | 18″ | 4′-1″ | 21″ | 8″ | 4′-0″ | 2′-11″ |

**Ask for Certified Print before making foundation.**

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS


## GENERAL DATA CONCERNING THE LUFKIN TC-66-5-A AND TC-77-3 UNIT ASSEMBLIES

Due to an increased demand for small pumping units for shallow production, Lufkin has designed two small units of 5.9 and 3.7 horsepower capacities. It is believed that these units will fill the need for economical and substantial installations and will, in most instances, replace powers and jacks.

These small units are built along the same lines as larger Lufkin units and are made of the same quality material in every detail. Also they have built into them the same quality of Lufkin workmanship that makes them the "leaders in the field."

Both of these units are equipped with a modified design of Trout counterbalance crank. The counterbalance can be easily changed in a few minutes by one man by sliding the weights along the crank.

The Pitman equalizer and Pitman are equipped with universal bearings. All beam and Pitman bearings are Bronzoid bushed, dust proof and oil sealed.

A standard type braking arrangement is furnished which includes a locomotive type brake lever.

A complete assembly includes wire line hanger, counter-weights, slide rails, belt cover, belts and motor sheave, but does not include polish rod clamp or foundation bolts.

The structural bases are not furnished with an "L" extension to take a long multi-cylinder engine, but are furnished with rigid overhanging cast iron slide rails which will accommodate the usual size engine. In case an unusually long multi-cylinder engine is used on either of the two units, requiring a special base with an "L" extension, an extra charge will be made.

It will be noticed that these two units are of unusual rugged construction and are considerably heavier than other units of the same horsepower capacities.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN TEXAS

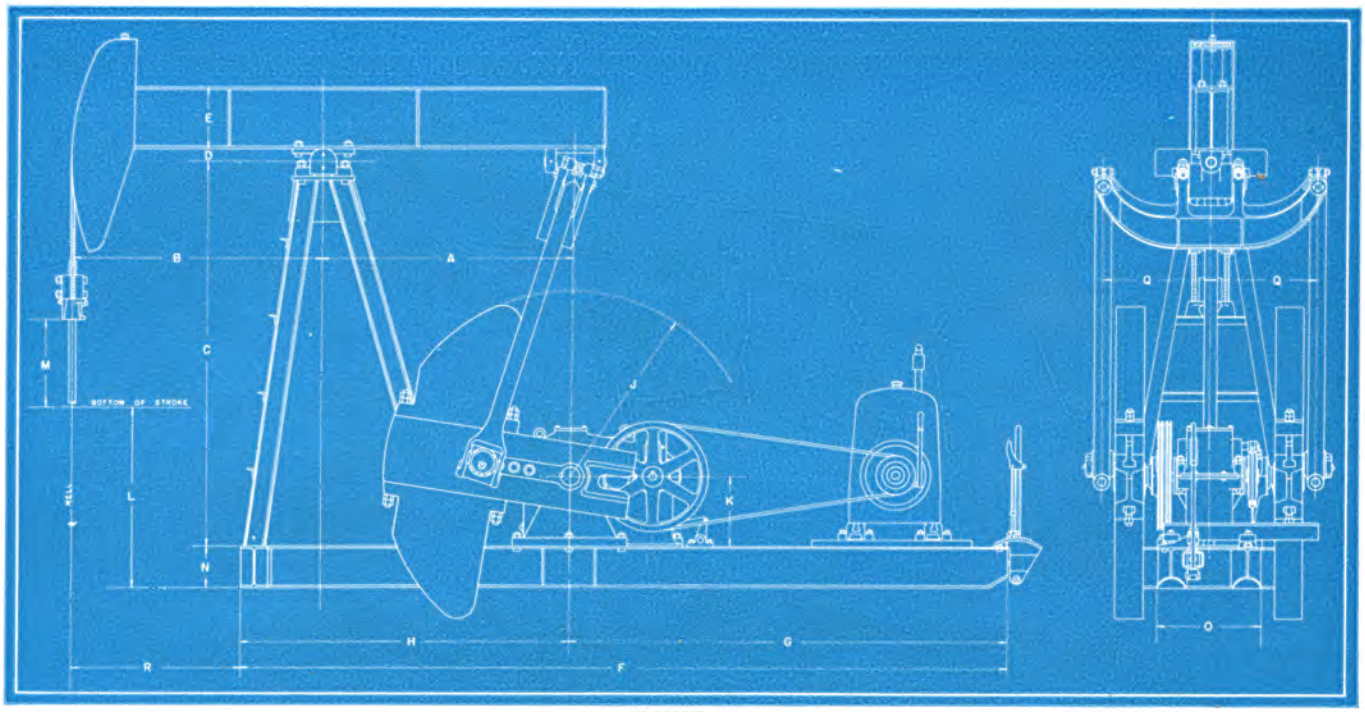



FIGURE 19

*Detail Drawing Lufkin TC-66-5A and 77-3*

## SCHEDULE OF TABULATED DIMENSIONS

| Unit | A | B | C | D | E | F | G | H | J | K | L | M | N | O | Q | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC-77-3 Unit..... | 3'-6" | 3'-6" | 5'-3" | 2¼" | 9⅞" | 11'-0" | 6'-4" | 4'-8" | 32" | 14" | 3'-0¼" | 12" | 6¼" | 17" | 17⅛" | 2'-4" |
| TC-66-5A Unit..... | 4'-0" | 4'-0" | 6'-2⅞" | 2¼" | 12" | 12'-3" | 7'-0" | 5'-3" | 36" | 14" | 2'-9¾" | 17" | 8" | 20" | 20¾" | 2'-9" |

## SPECIFICATIONS

## LUFKIN UNIVERSAL TC-66-5A UNIT ASSEMBLY

**Polish Rod Load Capacity:** 8,000 lbs.
**Walking Beam:** 12" x 6½", 28-lb. 4' 0" and 4' 0" working centers.
**Cranks:** No. 3436 Trout adjustable counterbalance with sliding weights, 36" sweep.
**Strokes:** 16", 22", 28" and 34".
**Hanger:** Removable horsehead, with ¾" wire line.
**Pitman:** Universal equalizer with bearings "in Line." Malleable side members of tubular section, Universal lower bearings.
**Center Bearing:** Bronze bushed dust proof, 2-15/16" x 10".
**Samson Post:** Tripod, 6' 2⅞" high.
**Base:** 8" x 5¼", 17-lb., 20" wide at gear box, 12' 3" long.
**Crank Pins:** 2¾" x 3" bronze bushed, oil bath.
**Foundation Bolts:** 14—⅞".
**Gears:** Double reduction herringbone, main gear 15" diameter, 4" face, of alloy steel; pinions of alloy steel forgings.
**Rating:** 5.9 Nominal horsepower at 20 spm., 29,200 lb. ins. peak torque.
**Ratio:** 24.97.
**Crank Shaft:** 3-7/16".
**Sheave:** 21" pitch diameter, 3-B grooves, 1-7/16" bore.
**Belts:** 136-B.
**Brake:** Double shoe with locomotive type control lever.
**Weight:** 6,875 lbs. complete.

| Stroke | Static Counterbalance, Lbs. With No. 6 Weight | With Aux. Weights |
|---|---|---|
| 16" | 8,480 | 10,700 |
| 22" | 6,160 | 7,780 |
| 28" | 4,850 | 6,115 |
| 34" | 3,985 | 5,040 |

## LUFKIN UNIVERSAL TC-77-3 UNIT ASSEMBLY

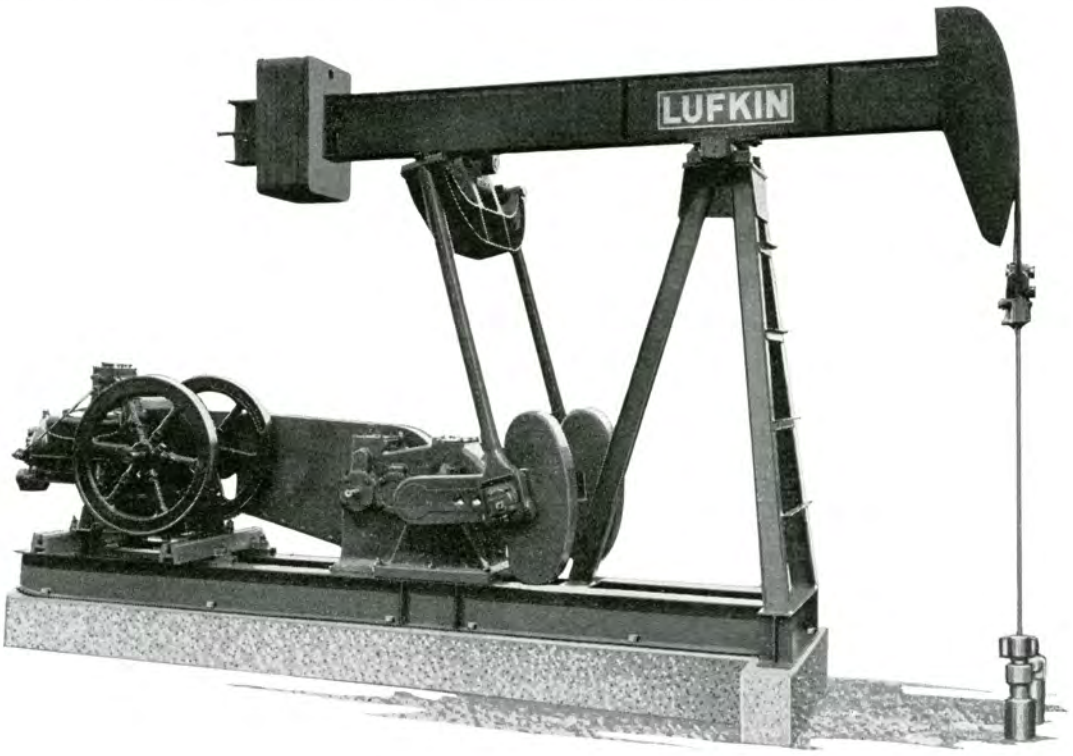
**Polish Rod Load Capacity:** 6,000 lbs.
**Walking Beam:** 9⅞" x 5¾", 21-lb., 42" and 42" working centers:
**Strokes:** 12", 18" and 24".
**Cranks:** No. 2432, Trout adjustable counterbalance with sliding weights, 32" sweep.
**Hanger:** Removable horsehead with ¾" wire line.
**Pitman:** Universal equalizer with bearings "in line," malleable side members of tubular section, universal lower bearings.
**Center Bearing:** Bronze bushed, oil bath, 2-15/16" x 10".
**Samson Post:** Tripod, 5' 3" high.
**Base:** 6" x 4", 16-lb., 17" wide at gear box, 11' 0" long.
**Crank Pins:** 2¾" x 3", bronze bushed, oil bath.
**Foundation Bolts:** 12—¾".
**Gears:** Double reduction herringbone; main gear 13" diameter 3⅝" face, of alloy steel; pinions of alloy steel forgings.
**Rating:** 3.7 nominal horsepower at 20 spm., 18,315 lb. ins. peak torque.
**Ratio:** 29.46.
**Crankshaft:** 3".
**Sheave:** 17½" pitch diameter, 3-A grooves, 1⅜" bore.
**Belts:** 128-A.
**Brake:** Double shoe with locomotive type control lever.
**Weight:** 4,600 lbs. complete.

| Stroke | Static Counterbalance, lbs. With No. 7 Weight |
|---|---|
| 12" | 6,200 |
| 18" | 4,125 |
| 24" | 3,100 |

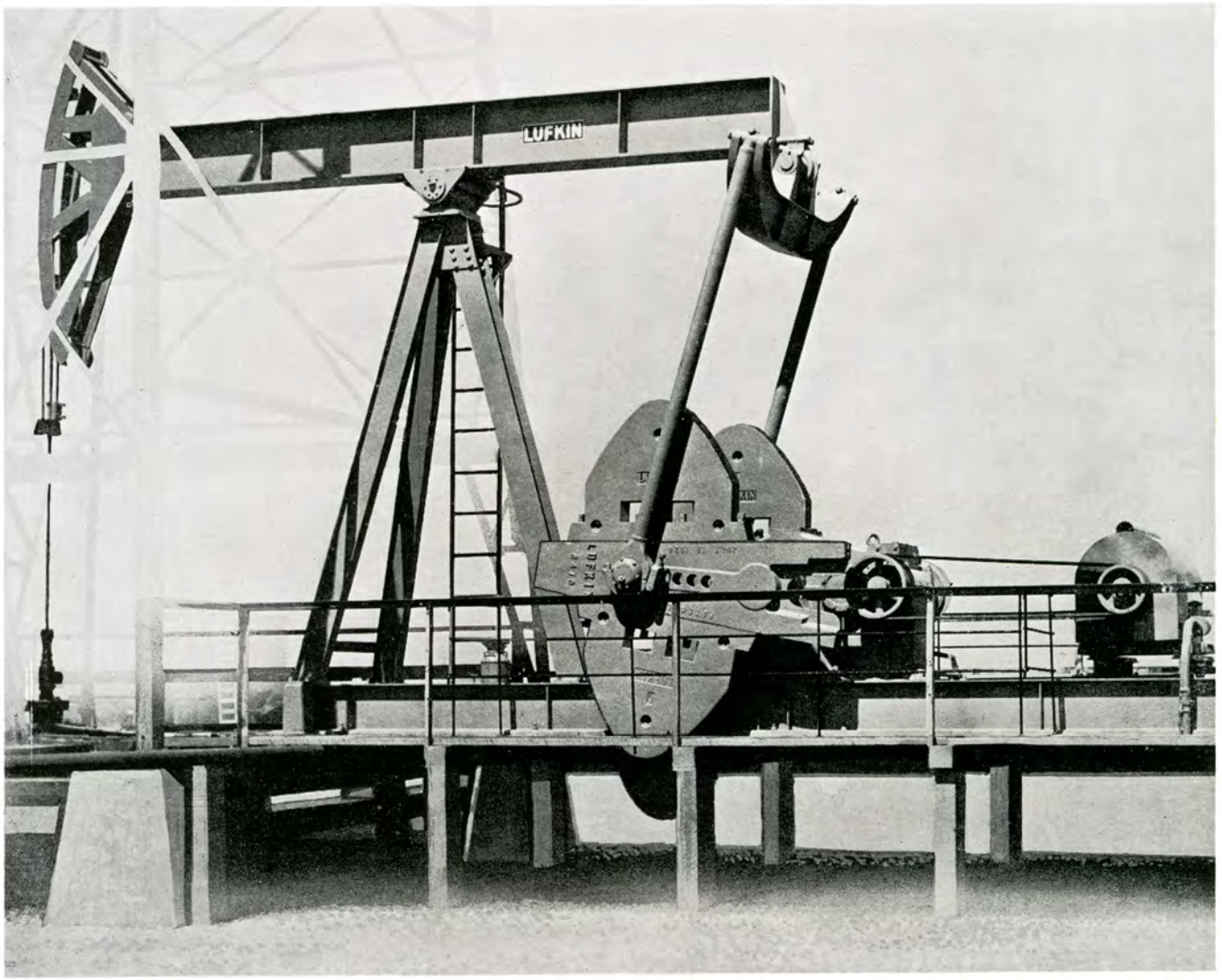
## SPECIAL SLOW SPEED
## COMBINATION WEIGHTED BEAM AND CRANK COUNTERBALANCE UNITS


*Above: TC 55-7A with weighted cranks and beam, for slow speed pumping. While the rotary (Trout) cranks can be operated at higher speed and as claimed by some producers will pump 50% more oil, we also recognize some prefer a beam balanced unit for slow speed pumping. The combination crank and beam balance performs much better than the beam balance alone, eliminating the usual shock load at top and bottom strokes. Specifications for these units are the same as shown on previous pages.*

*Below: TC 77-3 or 66-5 Units with weighted beams and cranks and horizontal engine drive.*



## SIMPLIFIED LONG STROKE UNITS




Recent tests having indicated that rod strings were standing up to eighteen 10-foot strokes with polish rod loads averaging 30,000 lbs., we were persuaded to design these long stroke units built in proportion to our regular line.

After nearly a year's experience we are convinced that, for long stroke pumping, the rotary counterbalance has the advantage of maintaining an even strain on the sucker rods and thereby eliminating unusual rod trouble.

With heavier gear trains (now being made) these units will stand this severe service and give satisfaction.

We are building them in two sizes: 8-ft. stroke, 27,000-lb. polish rod load, and 10-ft. stroke, 35,000-lb. polish rod load.

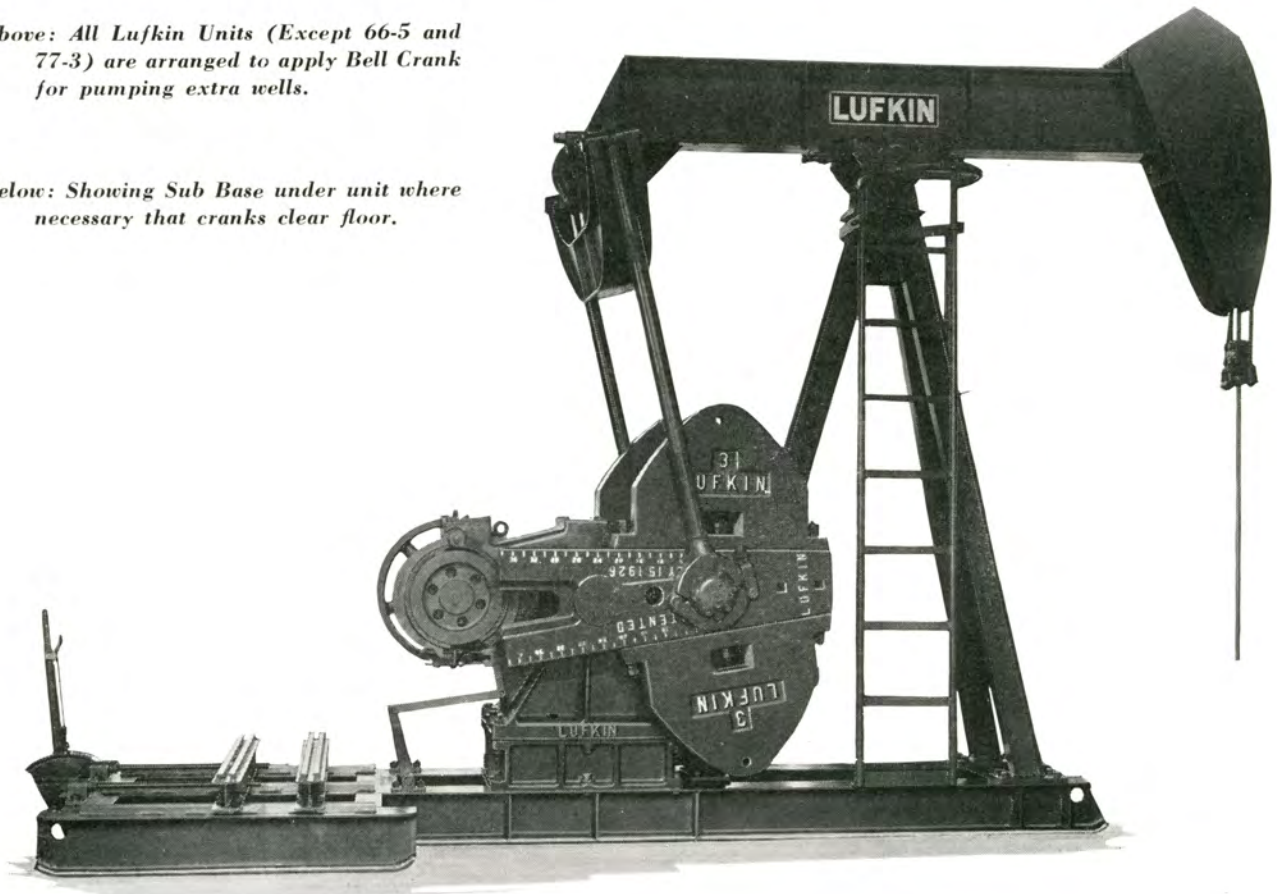
Special bulletin will be published shortly.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

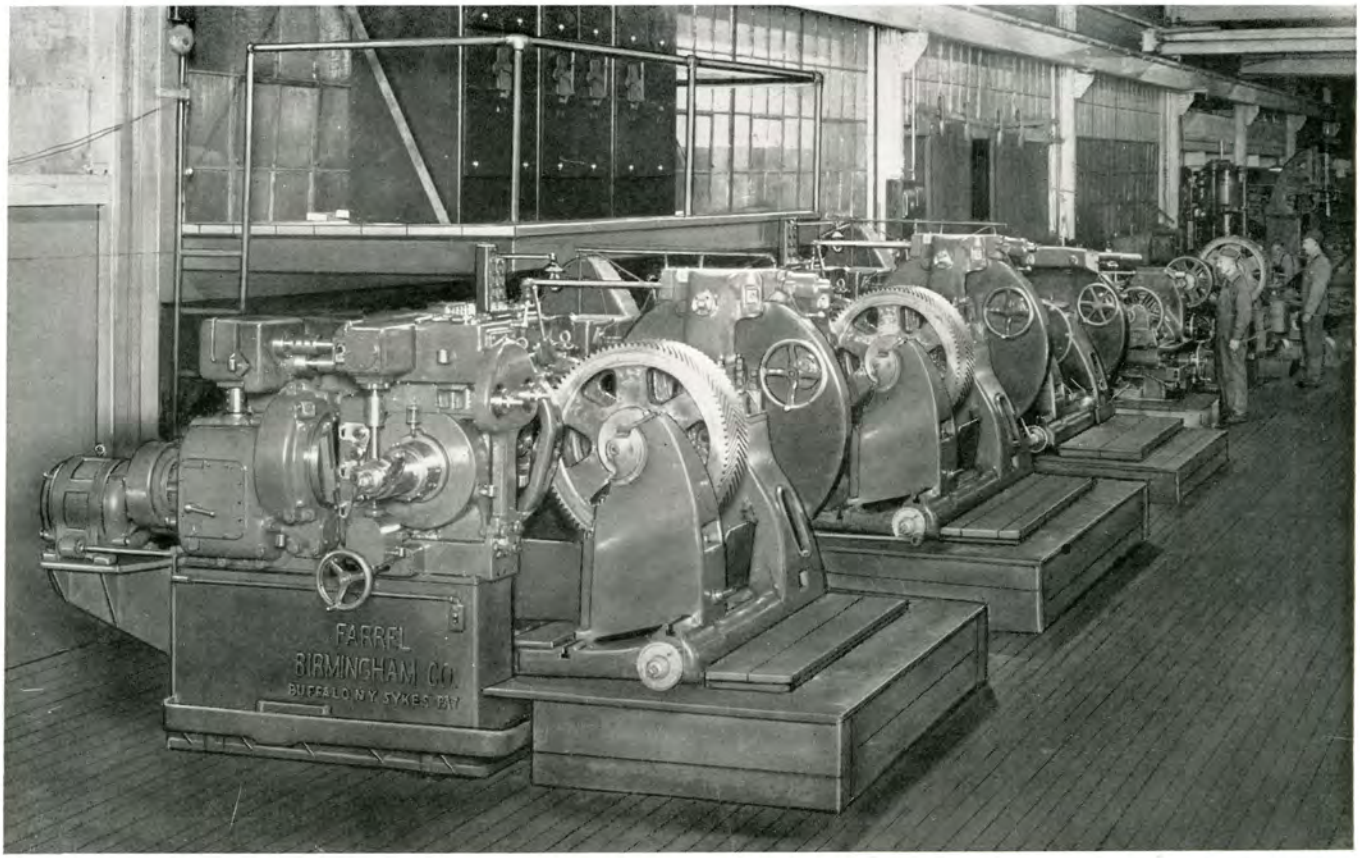
## SPECIAL FEATURES OF LUFKIN UNIT


*Above: All Lufkin Units (Except 66-5 and 77-3) are arranged to apply Bell Crank for pumping extra wells.*

*Below: Showing Sub Base under unit where necessary that cranks clear floor.*



# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

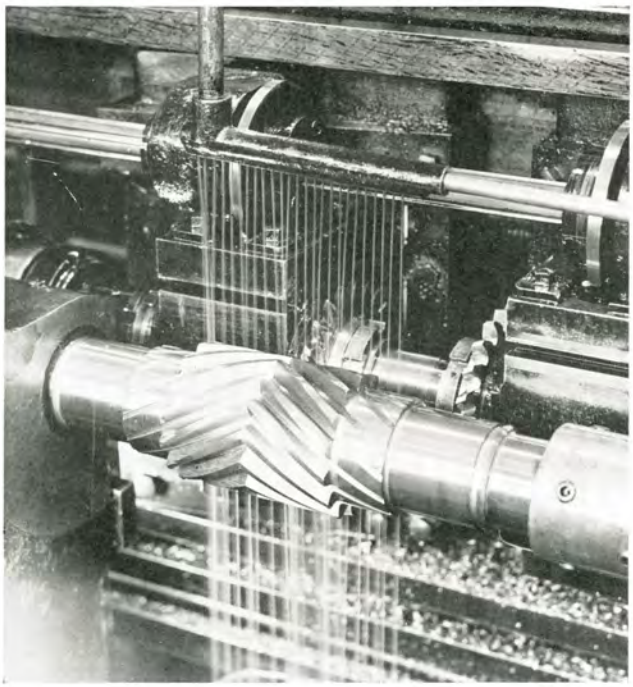



*Gear Cutting Department of our Lufkin Plant.*

## MODERN TOOLS MEAN PRECISION EQUIPMENT

Pictured above is one section of our gear cutting department. Four Sykes gear cutting machines are visible in the foreground, with a battery of lapping machines in the distance. These machines are of the latest type Sykes patent gear cutters and are the largest assembly of such machines in the South.

All gears and pinions that go with the manufacture of Lufkin Pumping Units are cut in our own plant, under our own control and supervision. A most rigid inspection is therefore possible, insuring absolute precision mating of each assembly.



## THE BACK-BONE OF A LUFKIN UNIT

Lufkin-Sykes Herringbone gears are often called "The Gears with a back-bone". All gears used in Lufkin Units are generated on machines in our own plant under a most rigid inspection system. The gear and its mating pinion are "lapped in" by running together for several hours using lapping compound on the teeth, to insure smooth and silent operation.

Lufkin-Sykes Herringbone gears have many distinct advantages over other types of gearing: The teeth are stronger due to arch-like construction; uniform load across face due to balanced thrust of the opposing helices; no thrust bearings necessary; smoother action due to absence of distortion; better lubrication due to oil film formed by "wedge action" of the teeth; and due to the accuracy of their cutting they are more silent.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

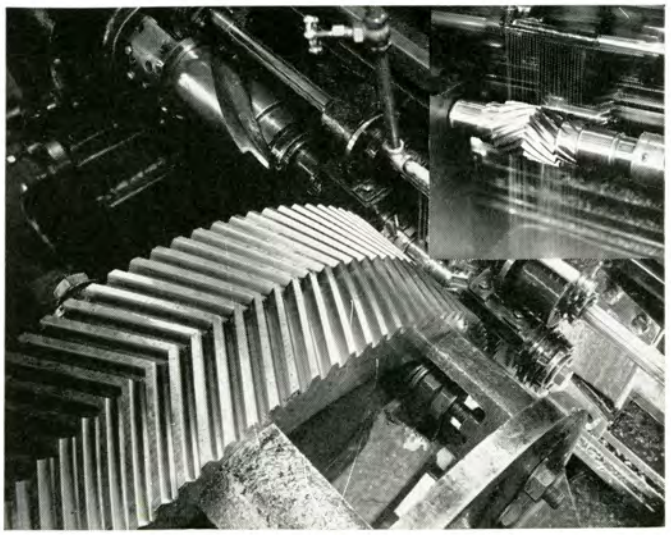

LUFKIN FOUNDRY & MACHINE COMPANY, LUFKIN

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

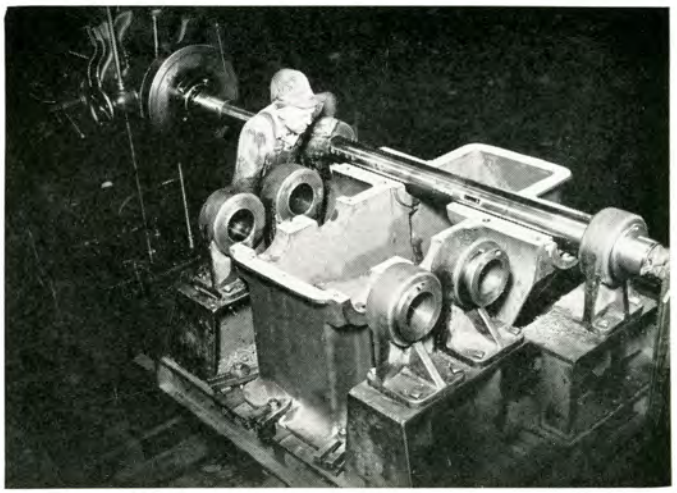

NY, LUFKIN, TEXAS—*"Quality Machinery Since 1900"*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

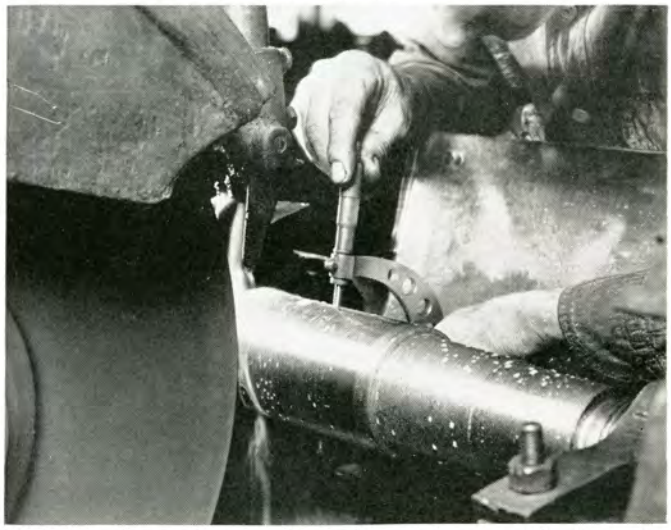
## MODERN TOOLS MEAN PRECISION EQUIPMENT



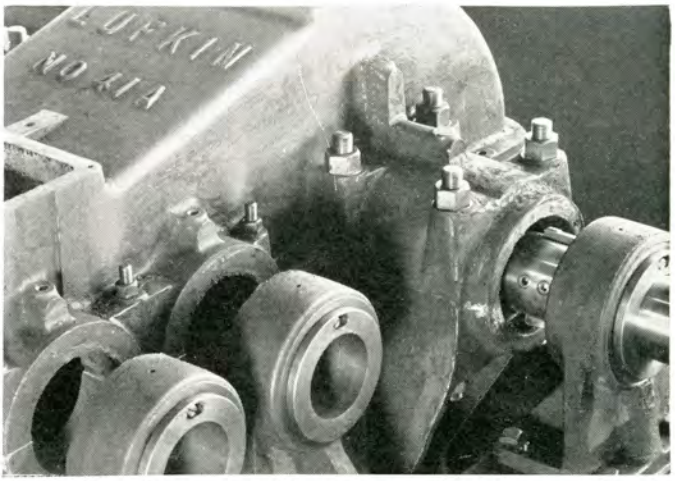
*All herringbone gears are generated on Sykes Patented gear generators in our own plant and under the most rigid inspection system. Photos show cutters in action generating gear and pinion.*



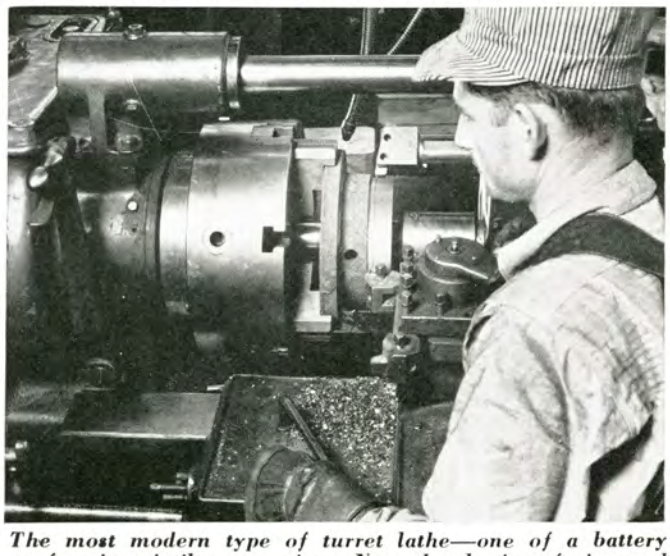
*Without doubt the most expensive and the most accurate bar yet built for precision boring of parallel bearings. This photo shows cover removed, revealing entire operation of bar.*



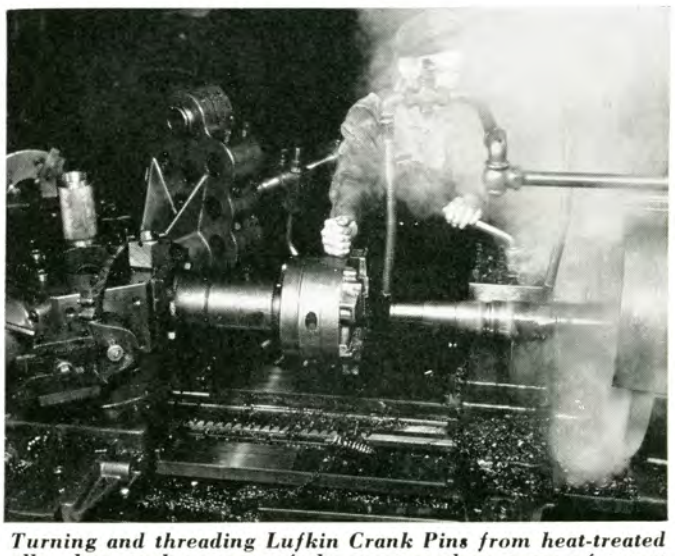
*Grinding for accuracy. All shafts, pinions, crank pins, etc., are ground to absolute micrometer size.*



*This photo shows start of boring operation with cover intact. Every Lufkin Unit is bored to absolute accuracy on equipment such as is described above.*



*The most modern type of turret lathe—one of a battery performing similar operations. Note that boring, facing and turning rough and finish cuts are completed in one operation.*



*Turning and threading Lufkin Crank Pins from heat-treated alloy bar stock on one of the most modern types of turret lathes.*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## ONLY THE FINEST GO INTO THE MANUFACTURE OF LUFKIN PUMPING UNITS

Only materials of the finest character — the very best now obtainable — go into the manufacture of Lufkin Units.

The finest and most modern tools — marvels of mechanical science—produce parts to precision for Lufkin Units.

Skilled workmen—specialists with years of mature experience—men with their hearts in their jobs—assemble and construct Lufkin Units.

It is little wonder, then, that Lufkin, pioneer in the development of geared units for oil well pumping, has always maintained leadership in this field.

INSPECTION SHEET

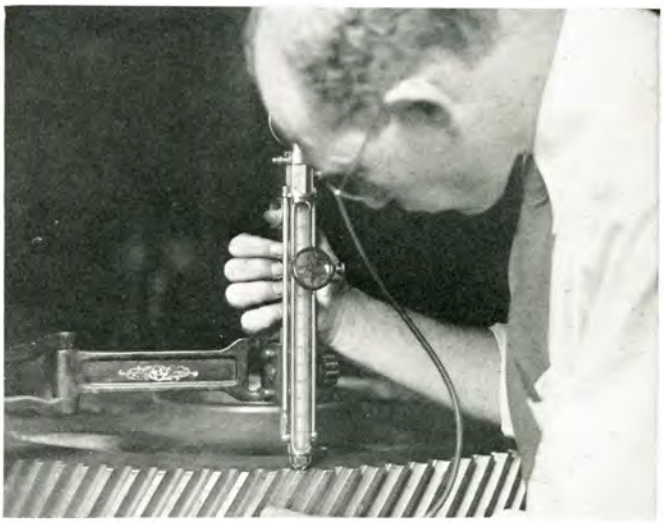
Order No. 32592 Serial No. 128

1. Instruction plate on cover stamped correctly aa
2. Holes for brake bracket on sheave side plugged aa
3. Oil wiper OK and ways are clear..... aa
4. Gears properly "run-in"..... H
5. Unit sheave on correct side and of proper dia. aa
6. Engine sheave. Micrometer dimensions of bore:
   Front end 1.251 Back end 1.251
   Size Keyway 5/8 Length hub 5 1/2"
   Number and size of grooves (same as on Unit) 6-C Outside dia. 14 1/2"
7. Crank pins put in properly, with key, in correct hole, or maximum stroke hole in smaller units unless otherwise specified..... aa
8. Cranks correct, bolts will fit slots..... aa
9. Crank key fit good and "driven home" unit sheave key and brake drum key driven home. aa
10. Belt cover correct. Made for sheave side of unit and is 1" to 1½" wider than sheave... H
11. Belt cover support correct..... H
12. Belts correct, matched set..... H
13. Counterweights correct, will fit slots.... H
14. Pitman straps fit around pitman bearings.. H
15. Pitman pipes proper length..... H
16. Pins fit pitman equalizer, pipes & connector H
17. Samson post fits base..... H
18. Center bearings fit samson post, bolt heads clear H
19. Saddle fits beam..... H
20. Proper length beam adjusting screws, tapped holes OK..... H
21. Hanger OK..... H
22. Polish rod clamp OK..... H
23. Engine slide rails proper length..... H
24. Brass adjusting screw nuts fit slide rails H
25. Brake lever latches paired properly..... H
26. Brake rigging fits slide rails..... H
27. Proper foundation bolts..... H

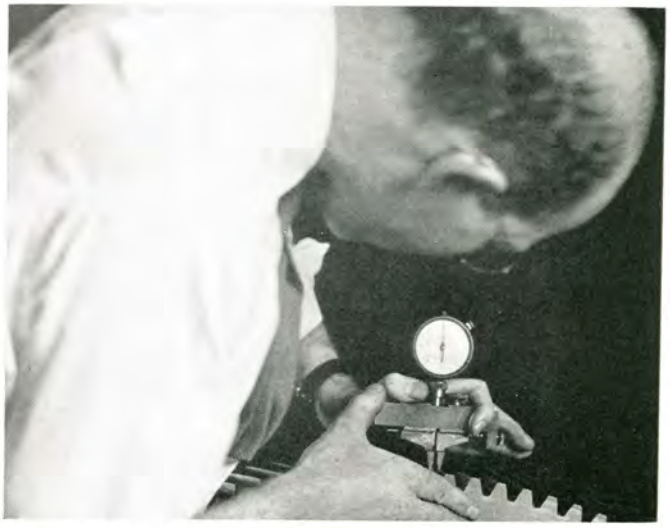
SHIPMENT APPROVED BY: [signature]
INSPECTOR

*After the Unit has been "run in" and passed numerous inspections along the assembly line, it now receives the final "OK" and is ready for shipment to the customer. Lufkin inspectors answer to no one except the customer.*

*Testing pinion shaft blank for eccentricity before cutting herringbone teeth. Accuracy here is of extreme importance.*



*Testing gear teeth for hardness.*



*Teeth of herringbone gears must pass rigid inspection for accuracy of formation.*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## SINGLE CRANK UNITS ON STEEL BASES

ANY ONE OF OUR SINGLE CRANK UNITS MAY BE FURNISHED WITH STEEL BASES—MAKING A SELF-CONTAINED UNIT—ALWAYS IN ALIGNMENT

---

BACK CRANK MAY BE ADDED TO PUMP TWO ADDITIONAL WELLS

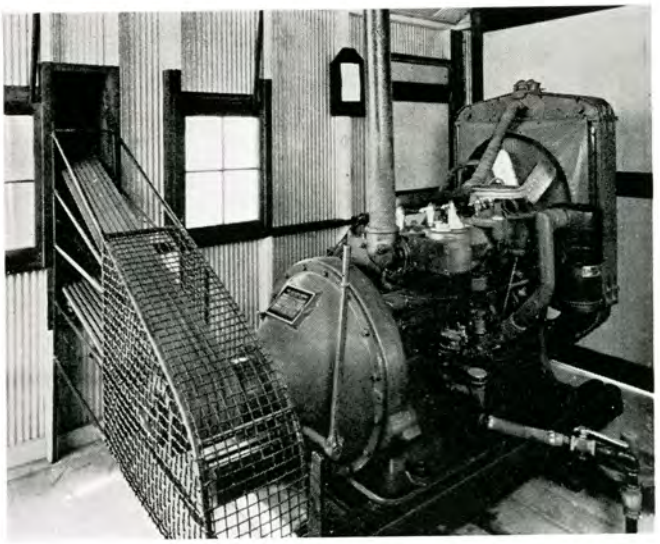
---

NOTE: Safety Ladder on Post—from which center bearing, also end bearings, are lubricated.

TYPICAL ENGINE ROOM FOR SINGLE CRANK UNIT INSTALLATIONS

---

We maintain a large stock of engines for immediate shipment. Illustration at right shows a Waukesha CHK built for oil field use.



## SINGLE CRANK UNIT INSTALLATIONS


*Top: Single Crank Installation—A-Frame Post, Safety Ladder, Universal Beam, with Hinged Horsehead, driven by multi-cylinder engine. Typical East Texas installation where Back Cranking is desired.*

*Bottom: Similar installation of heavier type with Universal Hanger and double channel single arm take-off pumping two additional wells.*

## LUFKIN SINGLE CRANK UNITS

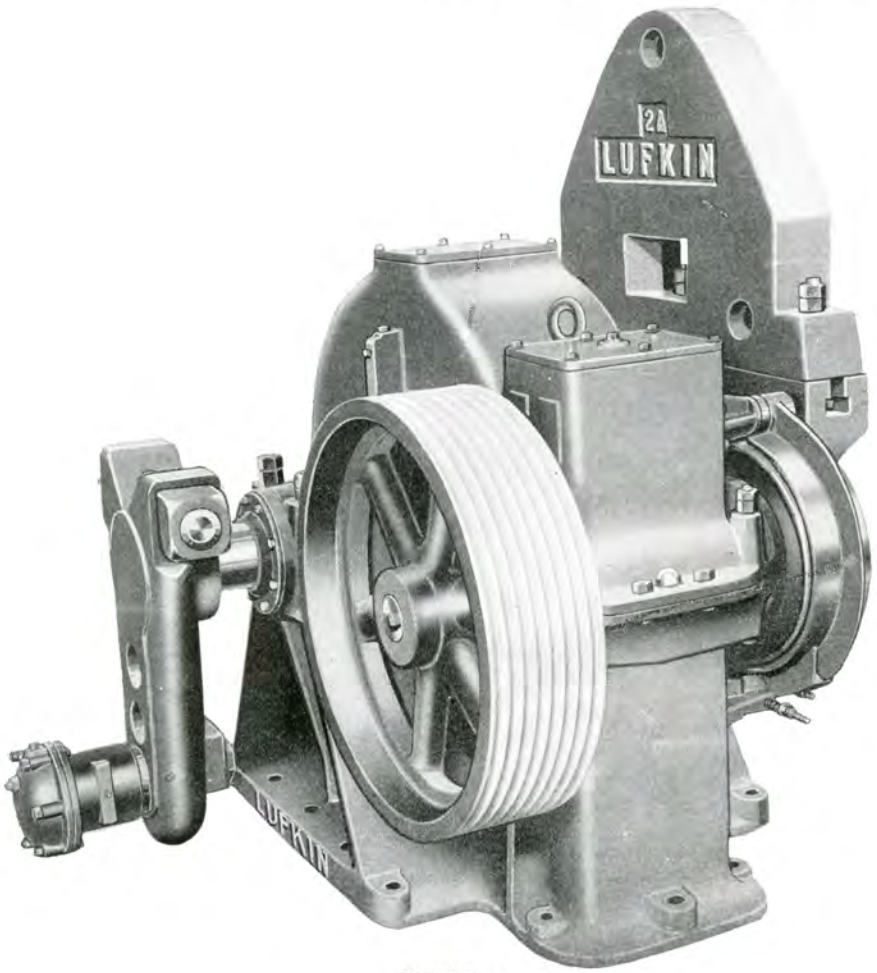



FIGURE 31

All Lufkin units, both single and double reduction types are built as illustrated with the sheave on the left side and brake on the right. The main counterbalance, of course, is on the right. The back-side crank is on the left. The sheave and brake can be reversed, if necessary, to suit special requirements. The cut to the left illustrates a complete and standard unit with the exception of the back-crank, which is extra and considered special.

Horsepower and peak torque ratings are based on the A.P.I. formula with a gear hardness of 225 Brinell and pinion hardness of 270 Brinell.

## GENERAL SPECIFICATIONS SINGLE CRANK UNITS.

| UNIT NO. | Type of Gears | Nom. H.P. at 20 s.p.m. | Peak Torque in Lb. Inches | Ratio | Diam. Face Main Gear | Crank Shaft Dia. | Bore Drive Sheave | Sheave P.D. and No. Grooves | Center of Crank to Base of Unit | Crank and Wts. | Stroke | Static Center-Balance, Lbs. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Reg. Wts. | Aux. Wts. |
| 60..... | SR | 70.5 | 348,600 | 9.54 | 50″x12″ | 6 7/16″ | 3 11/16″ | 37¼″-7D Std. 37¼″-Max. | 30″ | 7472 and No. 1 | 34″ | 16,000 | 19,950 |
| 54-A..... | SR | 55.8 | 275,850 | 9.4 | 47″x10″ | 6 7/16″ | 3 7/16″ | 34¼″-11C Std. 34¼″-Max. | 28″ | | 44″ | 12,350 | 15,400 |
| 51-A..... | DR | 58.5 | 289,100 | 28.79 | 36″x12″ | 6 7/16″ | 3 7/16″ | 34¼″-11C Std. 51¼″-Max. | 30″ | | 54″ | 10,100 | 12,550 |
| 41-A..... | DR | 47.4 | 234,450 | 30.12 | 34″x10″ | 6 7/16″ | 2 11/16″ | 24¼″-8C Std. 47¼″-Max. | 28″ | | 64″ | 8,500 | 10,600 |
| | | | | | | | | | | | 74″ | 7,550 | 9,400 |
| 31-C..... | DR | 33.4 | 165,330 | 28.7 | 27″x11″ | 6″ | 2 7/16″ | 24¼″-6C Std. 39¼″-Max. | 27″ | 6466 and No. 2 | 34″ | 12,100 | 15,050 |
| | | | | | | | | | | | 44″ | 9,350 | 11,650 |
| 26-C..... | SR | 34.4 | 170,000 | 10.5 | 42″x8″ | 6″ | 2 11/16″ | 31¼″-8C Std. 31¼″-Max. | 27″ | | 54″ | 7,650 | 9,500 |
| | | | | | | | | | | | 64″ | 6,450 | 8,000 |
| 21 C..... | DR | 24.0 | 118,700 | 28.67 | 25″x7⅝″ | 5 7/16″ | 2 3/16″ | 24¼″-5C Std. 35¼″-Max. | 22″ | 5460 and No. 2 | 24″ | 14,400 | 17,950 |
| | | | | | | | | | | | 34″ | 10,150 | 12,700 |
| | | | | | | | | | | | 44″ | 7,850 | 9,800 |
| | | | | | | | | | | | 54″ | 6,400 | 8,000 |
| 16..... | SR | 14.7 | 72,685 | 10 | 32½″x5″ | 4″ | 2 7/16″ | 24″-6C Std. 24″-Max. | 18″ | 4456 and No. 2A | 24″ | 11,500 | 14,150 |
| | | | | | | | | | | | 34″ | 8,100 | 10,000 |
| 11-B..... | DR | 15.7 | 77,800 | 29.24 | 22″x7″ | 4 7/16″ | 1 11/16″ | 19¼″-4C Std. 31¼″-Max. | 27″ | | 44″ | 6,300 | 7,750 |

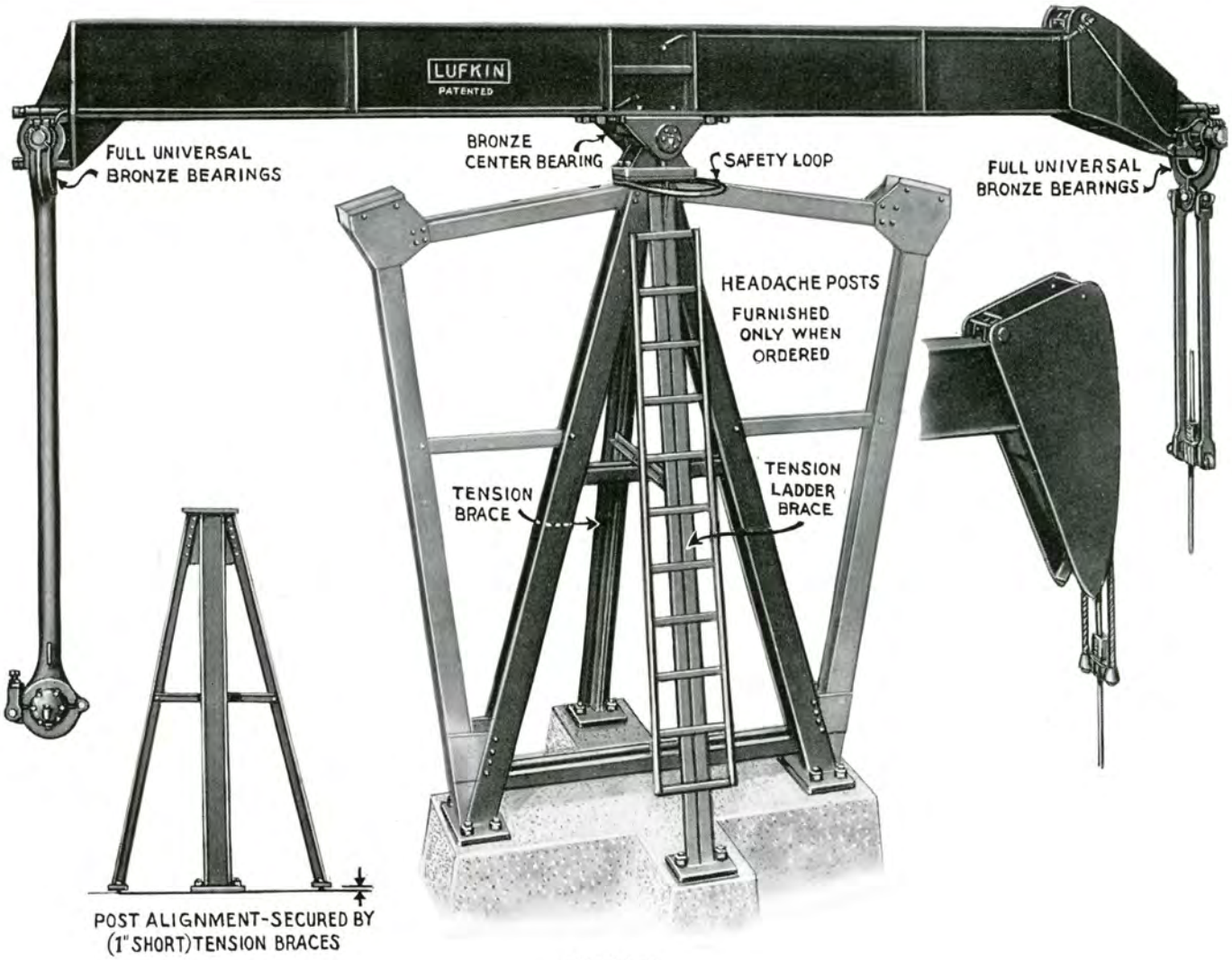



FIGURE 32

## LUFKIN UNIVERSAL SAMSON POST ASSEMBLIES

### GENERAL SPECIFICATIONS

| Assembly | Units Generally Used | BEAM SPECIFICATIONS | | | | | | Post Specifications | | | Center Brg. No. & Size | PITMAN | | Crank Pin Size | Tail & Hanger Bearing Size | Foundation Bolts * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | Depth | Width Flange | Weight per Ft. | Centers | A.P.I. Rating | Height | Type | Cap. | | Pipe Size | Centers | | | |
| 100 | 51-A, 60 41-A, 54-A | 1328CU | 24″ | 14″ | 130 | 28′ | 20,375 | 17′-6″ | AT | 40,750 | 1-AS 7″x20″ | 5″ | | 5½″x5½″ | 5″x12″ | 24–1¼″ |
| 200 | 41-A & 54-A | 1325CU | 24″ | 14″ | 130 | 25′ | 23,900 | 15′-7″ | AT | 47,800 | 1-AS 7″x20″ | 5″ | See Table | 5½″x5½″ | 5″x12″ | 24–1¼″ |
| 300 | 41-A, 54-A 31-C, 26-C | 1025CU | 24″ | 12″ | 100 | 25′ | 17,855 | 15′-5″ | AT | 47,800 | 2-AS 6″x17″ | 4″ | On | 5½″x5½″ | 5″x 9″ | 24–1¼″ |
| 400 | 31-C, 26-C, 21-C, 11-B | 8216CUH | 21″ | 9″ | 82 | 16′ | 19,000 | 13′-6″ | AT | 46,090 | 2-AS 6″x17″ | 4″ | Page 1426 | 5½″x5½″ | 5″x 9″ | 31-C & 26 C-24-1¼″, 21 C-22–1¼″, 11 B-8-1″ & 12-1¼″ |

*Foundation Bolts for Unit and Samson Post only.
**Note:** Headache Posts and Foundation Bolts furnished at Extra Price when specified.


FIG. A

## HANGERS, PITMANS AND CRANK PINS

**Fig. A.** Complete all-steel pitman connection with extra heavy pipe for single crank units.

**Fig. B.** "Universal" hanger with flat bar connections, regularly furnished on single crank units.

**Fig. C.** Special "Kansas Potential" hanger with two 2″ hanger rods furnished at extra price.

**Fig. D.** Universal crank pins and journals. For description see Page 1399.

**Fig. E. Lufkin** straight front posts built only on special order.

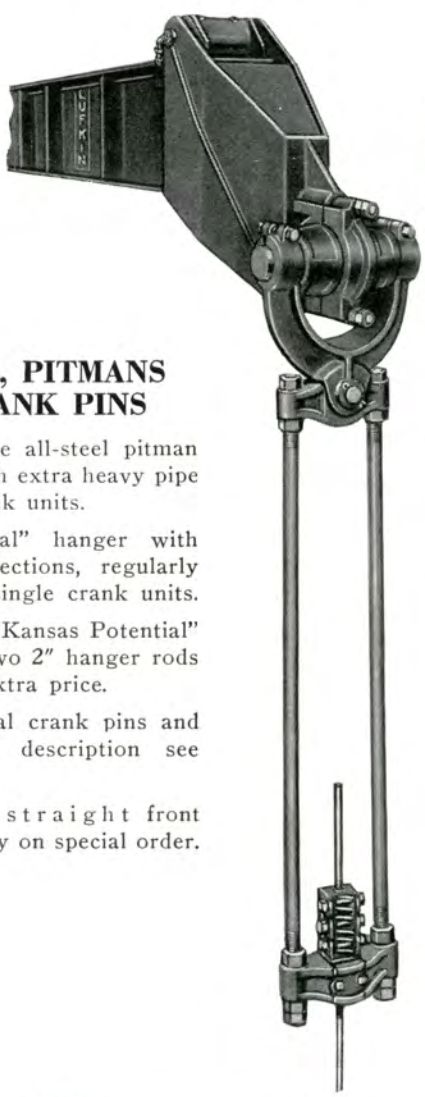



FIG. C

FIG. B

FIG. E

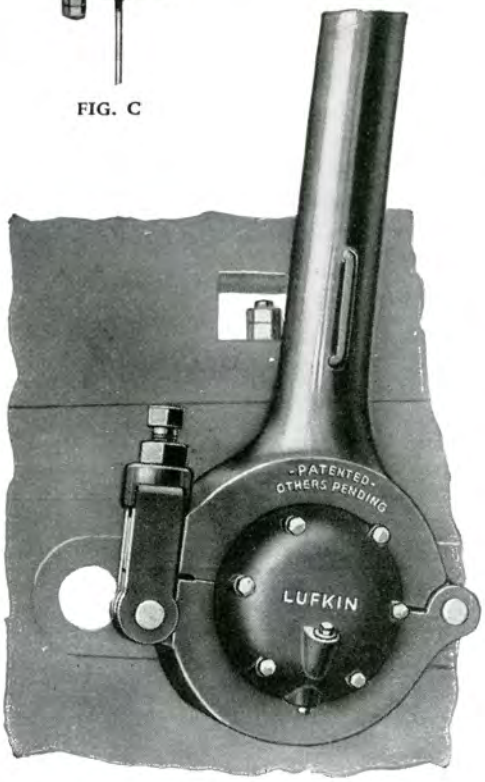



FIG. D

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## OIL TIGHT—BRONZE BUSHED CENTER BEARING

Patents Pending

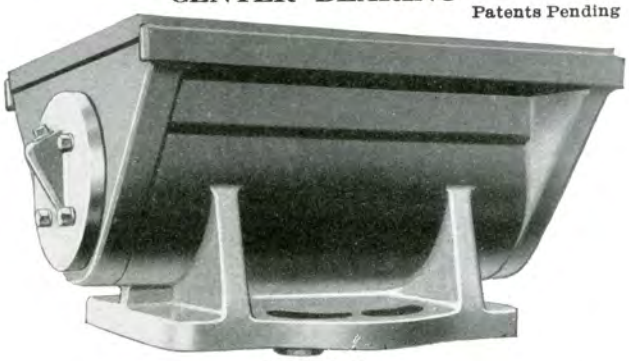


FIGURE 33

**Series "A"** Center Bearings are full Bronzoid bushed, with patent oil seals and are designed to allow beam to headache to about 40° either front or back and as usual with Lufkin center bearings, beams can be swung sideways about 25° from center line. We believe this is a superior bearing in every respect, being dust proof, oil tight with renewable bronzoid bushing. They have ample bearing surface.

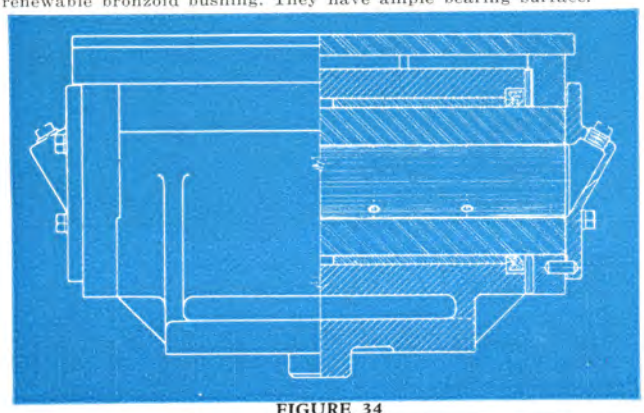


FIGURE 34

| Center Iron No. | Size Bearing | Where Used |
|---|---|---|
| 1-AS | 7″ x 20″ | TC No. 0 and No. 1<br>TC No. 0-A and No. 1-A<br>SC No. 100 & 200<br>Long Stroke |
| 2-AS | 6″ x 17″ | TC No. 2 and No. 2-A<br>SC No. 300 & 400 |
| 3-AS | 6″ x 14″ | TC No. 3 |
| 4-AS | 5″ x 10½″ | TC No. 4<br>TC No. 55 |

## BABBITTED OIL BATH CENTER BEARINGS, SERIES B & C

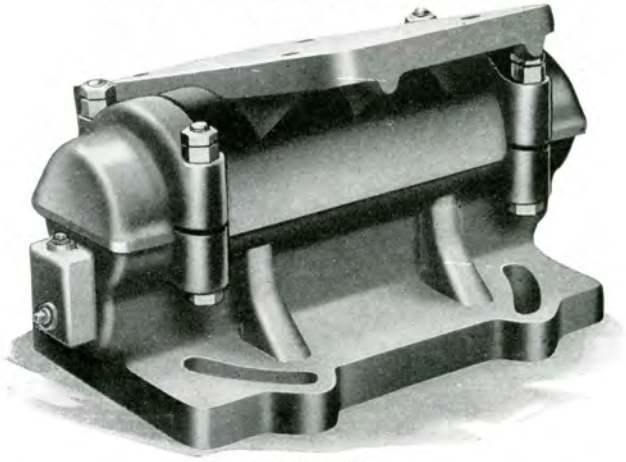


FIGURE 35

**Series "B and C"** Bearings listed below show our babbitted center bearings which are oil bath, but only reasonably dust proof, as blue print shows. This bearing is lined with a special high grade tin base metal to withstand the severe service of heavy loads and has ample oil capacity.

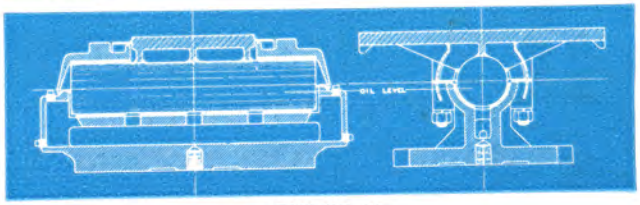



FIGURE 36

| Center Iron No. | Size Bearing | Where Used |
|---|---|---|
| 1-B | 5″ x 24″ | TC No. 1 and No. 1-A<br>SC No. 1 |
| 2-B | 5″ x 18″ | TC No. 2 and No. 2-A<br>SC No. 2 |
| 2-C | 5″ x 24″ | TC No. 2 and No. 2-A<br>SC No. 2 |
| 3-B | 4″ x 18″ | TC No. 3 TC No. 4<br>SC No. 3 TC No. 55 |
| 3-C | 5″ x 18″ | TC No. 3 |

## THE ORIGINAL TROUT PITMAN

Made in three sizes—No. 1: 4″ x 6″ pin; No. 2: 3½″ x 5″ pin; No. 3: 2¾″ x 4″ pin.

These pitman journals are self-aligning, oil tight and dust proof, with lower half bronze bushed and upper half cast iron, adjustable. We will continue to furnish these pitman heads to those who desire them for standardization reasons. On all Universal units, however, the pitman journals shown on page 1424 will be furnished.

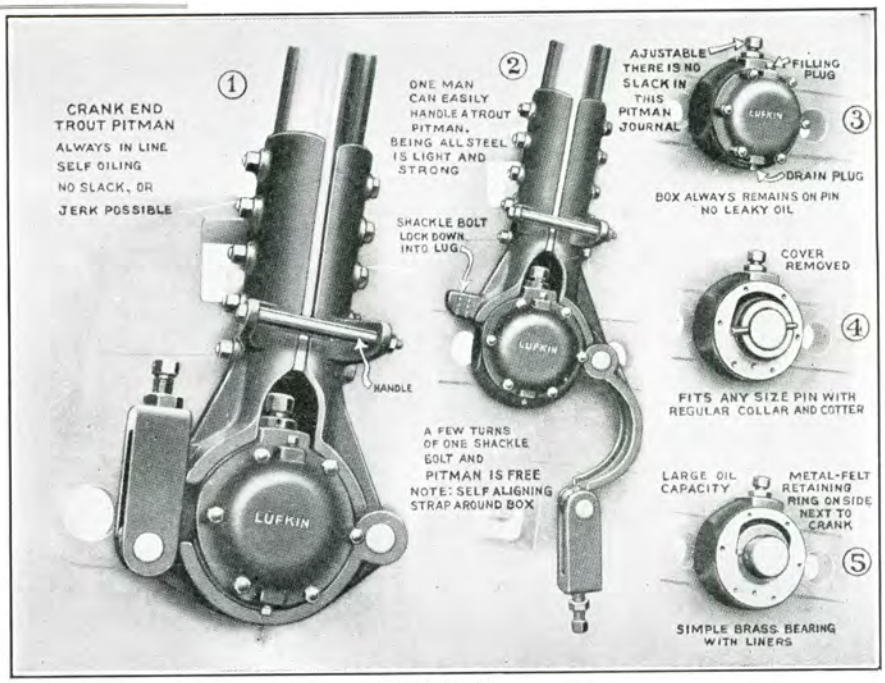



FIGURE 37

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## SINGLE CRANK UNITS—DIMENSION SHEET

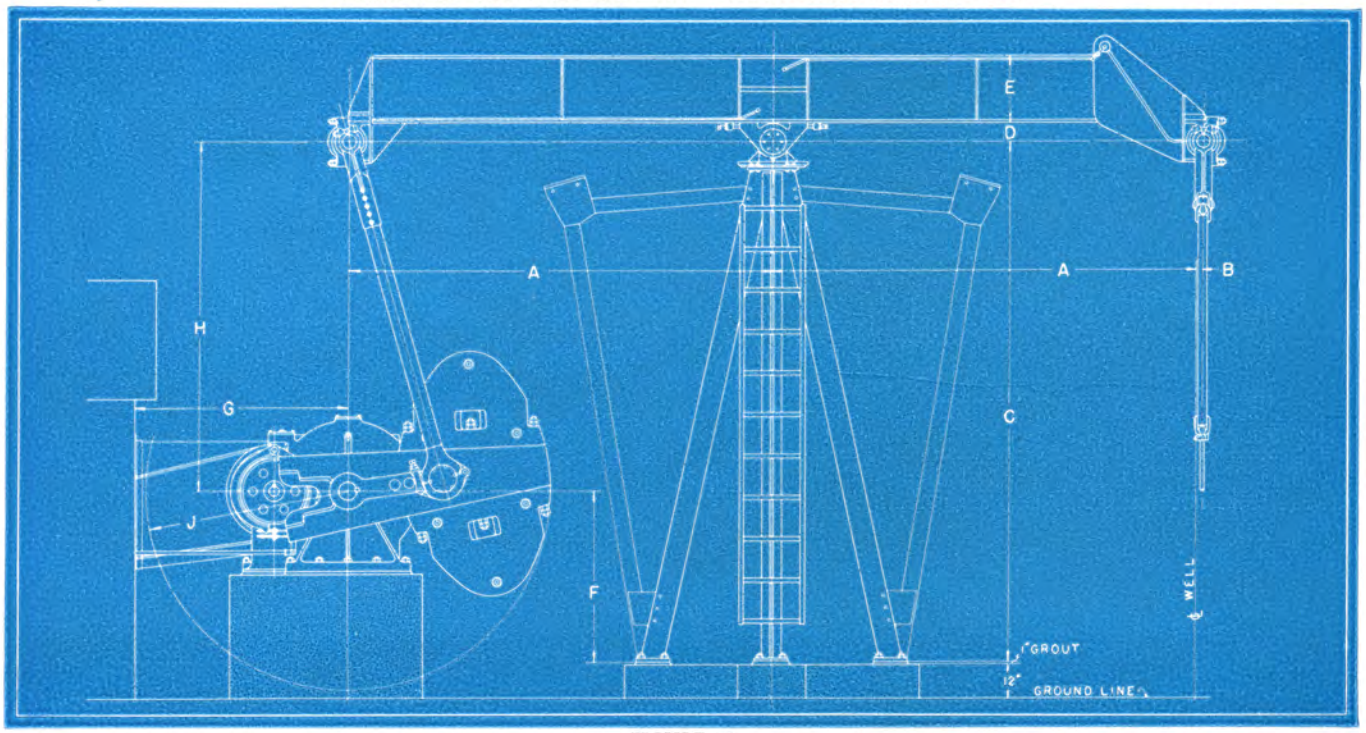



FIGURE 38

*Lufkin Single Crank Unit Assembly—Crank Clearing Ground*

GENERAL DIMENSIONS

| Assembly | A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 14′-0″ | 2″ | 17′-6″ | 7″ | 24″ | 5′-1″ | 6′-6″ | 12′-5″ | 5′-11½″ |
| 200 | 12′-6″ | 2¼″ | 15′-7″ | 7″ | 24″ | 5′-1″ | 6′-6″ | 10′-6″ | 5′-11½″ |
| 300 | 12′-6″ | 2¼″ | 15′-5″ | 6″ | 24″ | 4′-7″ | 6′-3″ | 10′-10″ | 5′-5½″ |
| 400* | 8′-0″ | * | 13′-6″ | 6″ | 21″ | 4′-1″ | 5′-6″ | 9′-5″ | 4′-11½″† |

* No. 400 furnished with Horsehead Beam Only. † No. 11B Unit furnished with 4′-7½″ Radius Crank.

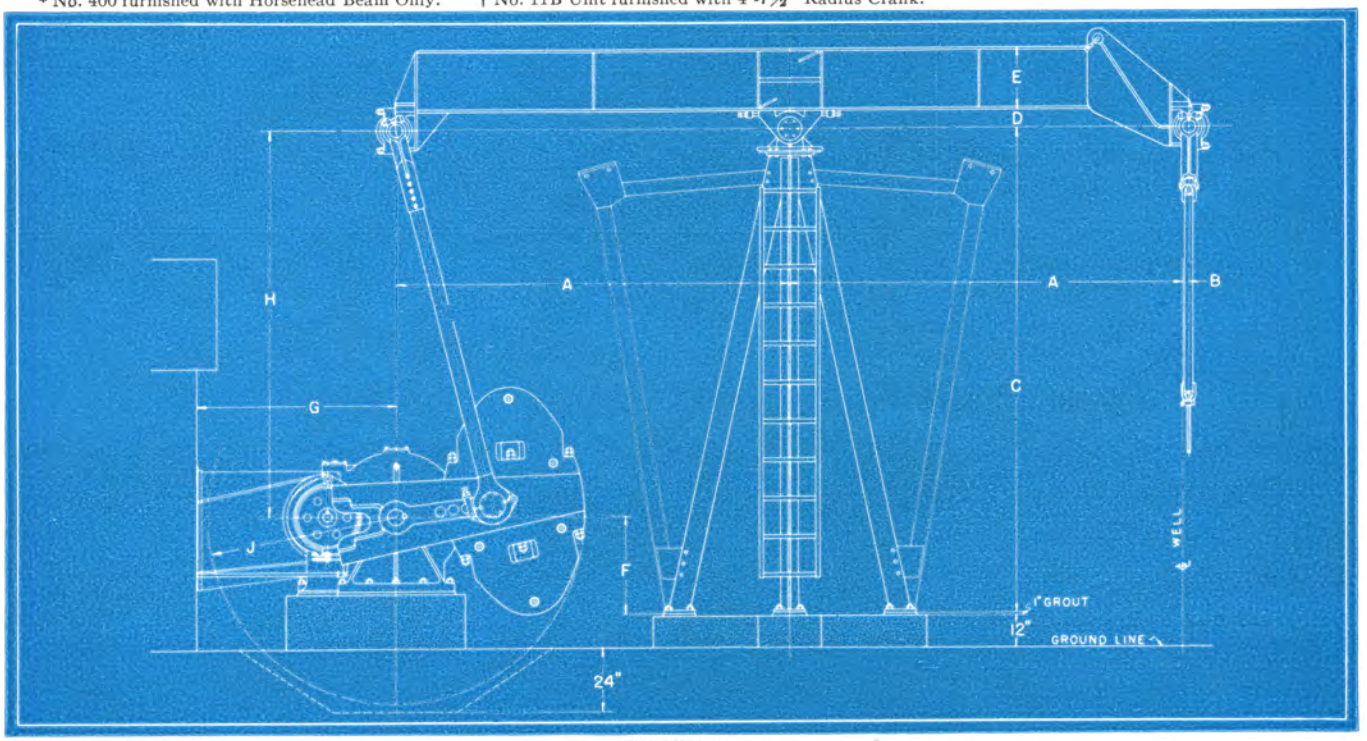



FIGURE 39

*Lufkin Single Crank Unit Assembly—Crank in Sump*

GENERAL DIMENSIONS

| Assembly | A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 14′-0″ | 2″ | 17′-6″ | 7″ | 24″ | 3′-1″ | 6′-6″ | 14′-5″ | 5′-11½″ |
| 200 | 12′-6″ | 2¼″ | 15′-7″ | 7″ | 24″ | 3′-1″ | 6′-6″ | 12′-6″ | 5′-11½″ |
| 300 | 12′-6″ | 2¼″ | 15′-5″ | 6″ | 24″ | 2′-7″ | 6′-3″ | 12′-10″ | 5′-5½″ |
| 400* | 8′-0″ | * | 13′-6″ | 6″ | 21″ | 2′-1″ | 5′-6″ | 11′-5″ | 4′-11½″† |

* No. 400 furnished with Horsehead Beam Only. † No. 11B Unit furnished with 4′-7½″ Radius Crank.

## POLISH ROD CAPACITIES OF LUFKIN WALKING BEAMS FOR SINGLE AND TWIN CRANKS

| Walking Beam Number | Section | Working Centers | RATING, LBS. | | Where Used |
|---|---|---|---|---|---|
| | | | A.P.I. | A.I.S.C. | |
| 1328-CU | 24″ x 14″ 130 lb | 28′ | 20,375 | 30,565 | TC-0A SC-100 and 200 |
| 1325-CU | 24″ x 14″ 130 lb | 25′ A.P.I. Std. | 23,900 | 35,860 | TC-0A and 1A SC-100 and 200 |
| 1025-CU | 24″ x 12″ 100 lb | 25′ | 16,855 | 25,285 | SC-300 |
| 1020-CU | 24″ x 12″ 100 lb | 20′ | 23,045 | 34,570 | TC-2A |
| 1020-CUH | 24″ x 12″ 100 lb | 20′ | 23,045 | 34,570 | TC-2A |
| 8216-CUH | 21″ x 9″ 82 lb | 16′ | 19,000 | 28,500 | TC-2 and TC-3A SC-400 |
| 6412-CUH | 18″ x 8¾″ 64 lb | 12′—3¼″ | 16,270 | 24,400 | TC-3 |
| 5811-CUH | 16″ x 8½″ 58 lb | 11′—3¼″ | 15,470 | 23,200 | TC-4 |
| 4010-CUH | 12″ x 8″ 40 lb | 10′ | 10,365 | 15,550 | TC-55 |
| 2408-CUH | 12″ x 6½″ 28 lb | 8′ | 8,900 | 13,350 | TC-66 |
| 2107-CUH | 10″ x 5¾″ 21 lb | 7′ | 5,760 | 8,640 | TC-77 |

## ENGINEERING DATA FOR THE PRACTICAL ENGINEER

### WELL LOADS

Weights as listed are based on a specific gravity of 1. To correct for individual condition multiply the figures in the following columns by the specific gravity of the fluid produced.

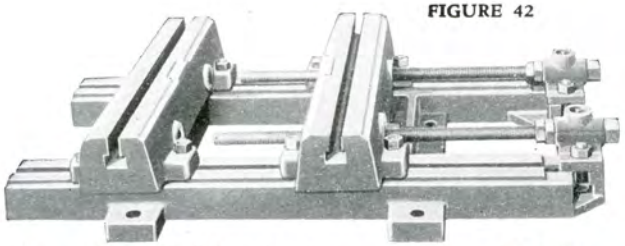
| Size Plunger | Size Rods | Weight To Be Lifted Per 1000 Feet | | | | |
|---|---|---|---|---|---|---|
| | | ½ Fluid | All Fluid | Rods | ½Fluid Plus Rods* | All Fluid Plus Rods |
| 1 ¼″ | ⅝″ | 125 | 250 | 1150 | 1275 | 1400 |
| 1¾″ | ⅝″ | 442 | 884 | 1150 | 1592 | 2034 |
| 1¾″ | ¾″ | 429 | 858 | 1690 | 2119 | 2548 |
| 2¼″ | ⅝″ | 793 | 1586 | 1150 | 1943 | 2736 |
| 2¼″ | ¾″ | 780 | 1560 | 1690 | 2470 | 3250 |
| 2¼″ | ⅞″ | 730 | 1460 | 2270 | 3000 | 3730 |
| 2¾″ | ¾″ | 1195 | 2390 | 1690 | 2885 | 4080 |
| 2¾″ | ⅞″ | 1170 | 2340 | 2270 | 3440 | 5610 |
| 3¼″ | ⅞″ | 2290 | 4580 | 2270 | 4560 | 6850 |

* Weight of one-half the fluid plus the rods equals the required counterbalance.
Weight of rods per 1000 Feet—⅝″ = 1150 lbs.; ¾″ = 1690 lbs.; ⅞″ = 2270 lbs.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## UNIVERSAL RAILS—FOR MOTORS OR GAS ENGINES

FIGURE 42



*Dimensions of 32" rails shown on blue print below*

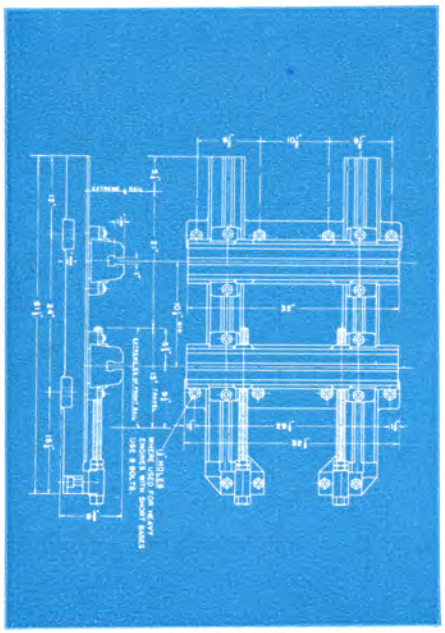
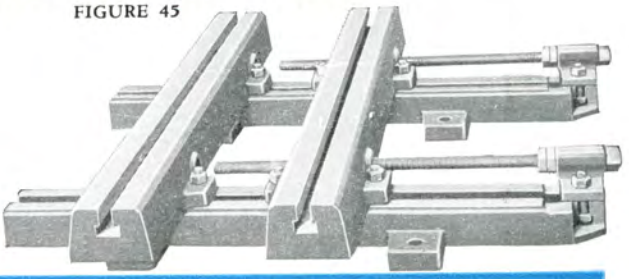


FIGURE 43

UNIVERSAL RAILS are thoroughly made. Base skids are planed and grooved—top skids planed to fit slots in base—top of skids and grooves are planed. Each set has double adjusting screws, all of substantial design.

FIGURE 45



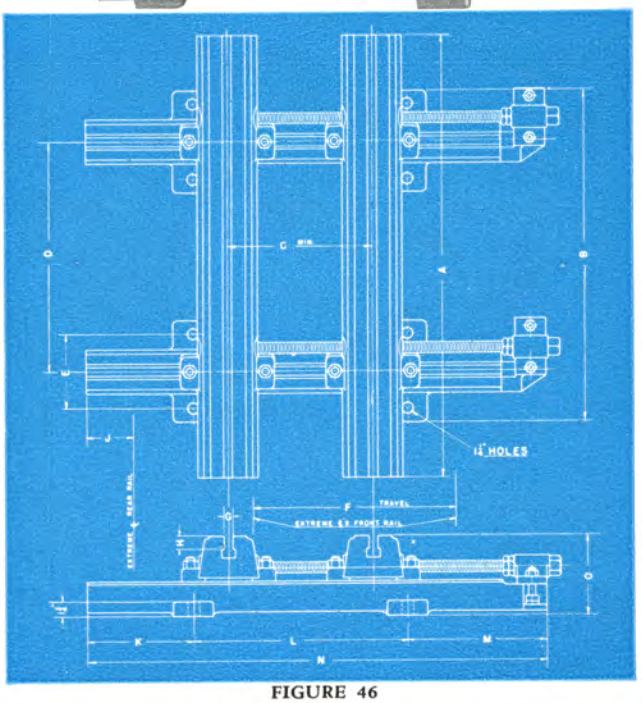



FIGURE 46

| UNIVERSAL GAS ENGINE RAILS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESCRIPTION | A | B | C | D | E | F | G | H | J | K | L | M | N | O |
| 50" ENG. RAILS | 50" | 37½" | 10½" | 26" | 8½" | 23½" | 1" | 1½" | 5¼" | 12" | 24" | 15⅝" | 51½" | 9⅛" |
| 69" ENG. RAILS | 69" | 47½" | 10½" | 36" | 8½" | 38½" | 1" | 1½" | 5¼" | 12" | 36" | 15⅝" | 63½" | 9⅛" |

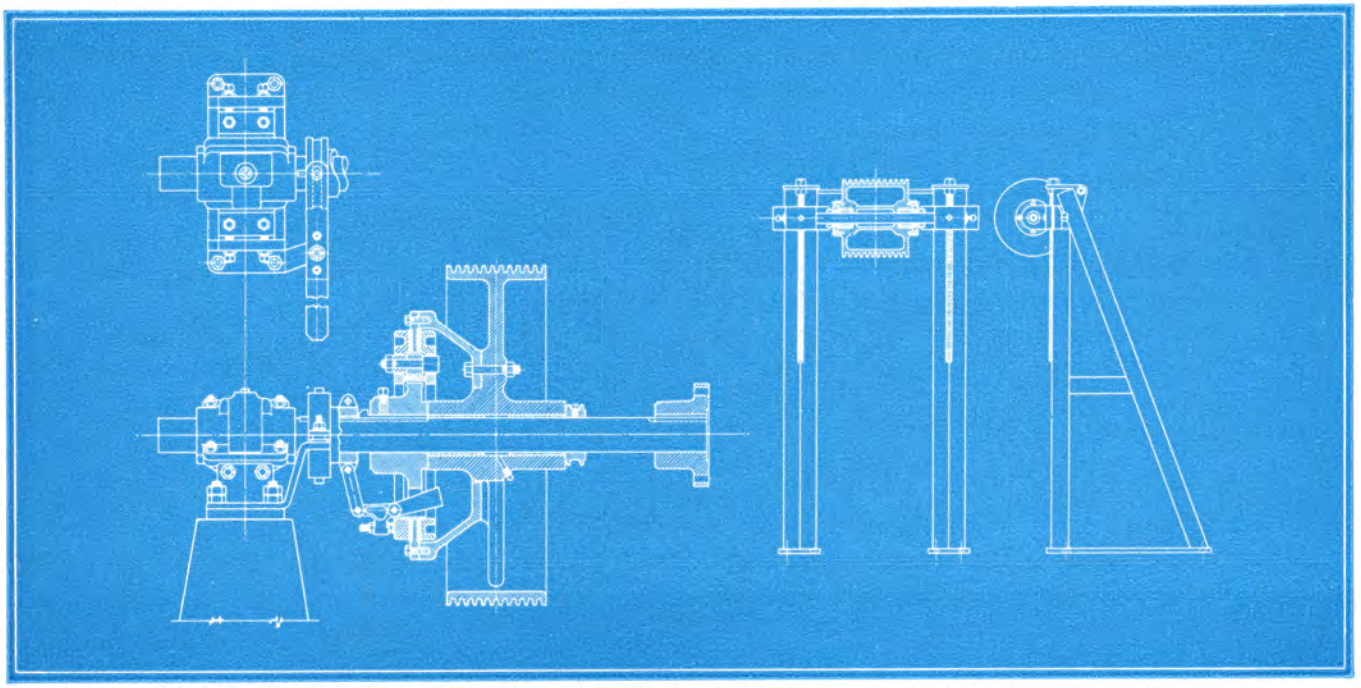


FIGURE 44—*CLUTCH shaft for single cylinder gas engine drive and usual tightener for same*

## LUFKIN POWERS

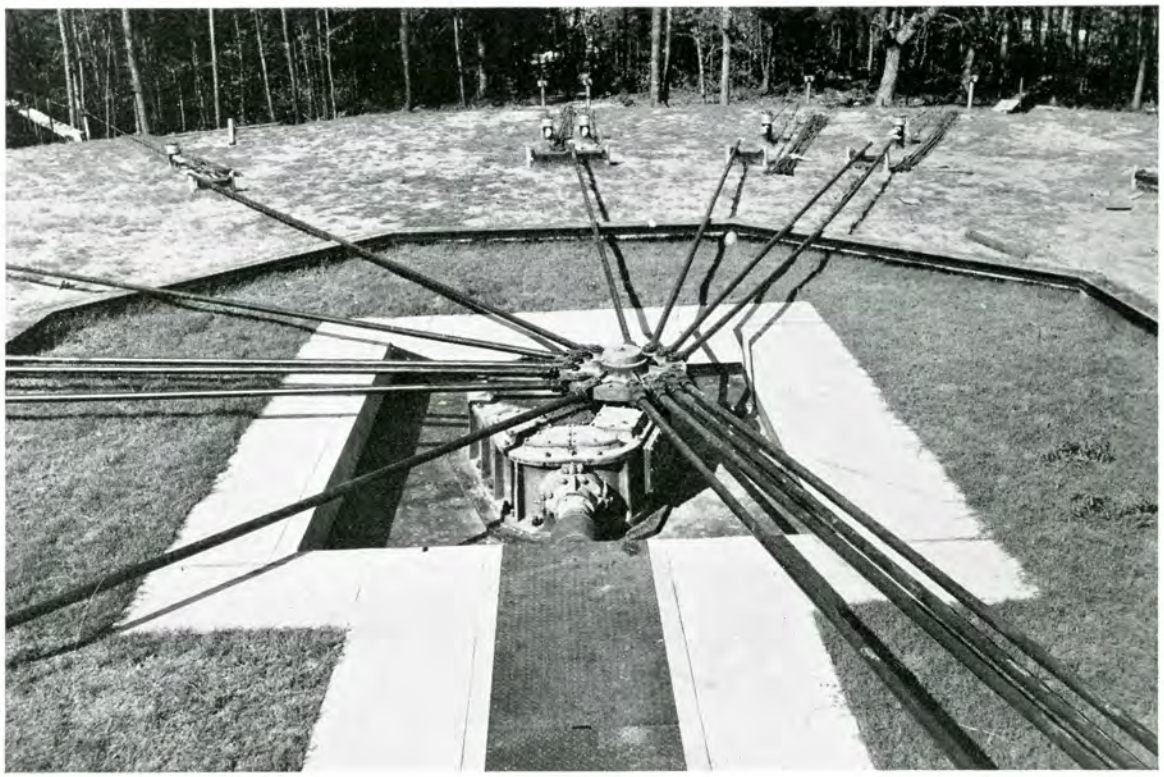


FIGURE 47

*Typical Lufkin Central Power Installation*

## LUFKIN *Streamlined* POWER

The following pages illustrate our new streamlined central pumping powers.

Constantly striving to improve, we offer a new simplified design that will be found to be a very practical arrangement of gears and bearings, all built into the main base housing, self-contained so that the entire cover (which is a cover only) is easily removable exposing all gears, etc., for inspection and adjustment if ever needed.

This is accomplished by using a steel bridge tree construction for the two upper bearings, supported by the sides of the gear box in a very substantial manner. The power therefore can be operated with the cover removed.

If ever necessary the whole assembly may be dismantled and reassembled in the field by any competent mechanic. All parts are easily renewable.

Helical alloy steel gears are used throughout. All shafts are forged, heat treated, alloy steel, and together with their bearings are designed with large factors of safety.

The power has unusual oil capacity and is rain proof (or water tight) with forced feed lubrication to gears and bearings.

### UNITS *Versus* POWERS

**Due to the increasing popularity of our smaller units with counterbalanced cranks, central pumping powers are not always found economical either in first cost or maintenance; however, in certain locations it may be advisable to use central powers. Our engineers will be glad to submit figures and help determine the relative advantages.**

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## LUFKIN *Streamlined* POWERS

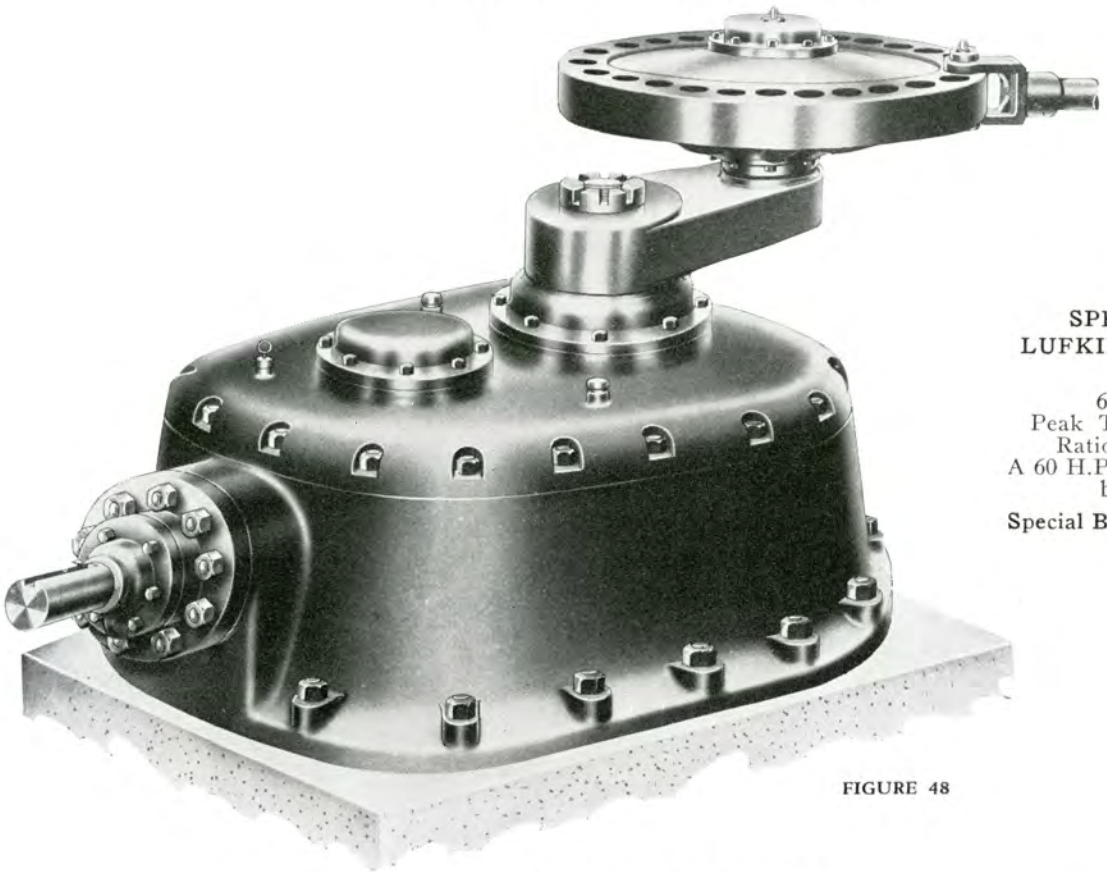


FIGURE 48

**SPECIFICATIONS**
**LUFKIN NO. 125 POWER**

121.3 H. P.
600,125 Lb. Ins.
Peak Torque at 20 S.P.M.
Ratio 19.1—Stroke 42″
A 60 H.P. Streamlined Power is being designed.

**Special Bulletin will be available soon.**

## IMPORTANT ADVANTAGES

1. Streamline design, compact, rigid.
2. Center of Rod Pull only 42″ above foundation.
3. Oil and water tight.
4. Large oil reservoir.
5. Positive pressure lubrication.
6. Alloy Helical Gears, Pinions and Shafts.
7. Helical Main Gears, Gleason Helical Bevel Gears.
8. Timken and Norma Hoffman Bearings, extra heavy duty.
9. Top cover easily removed for inspection. Power may be operated without cover.
10. Upper Timken Bearings set in steel bridge tree, making entire mechanism self-contained in base.
11. Removable Crank; Timken Bearing Crank Pin.
12. Built for lasting service, low upkeep cost.

*Cross Section*
*Streamlined Power*

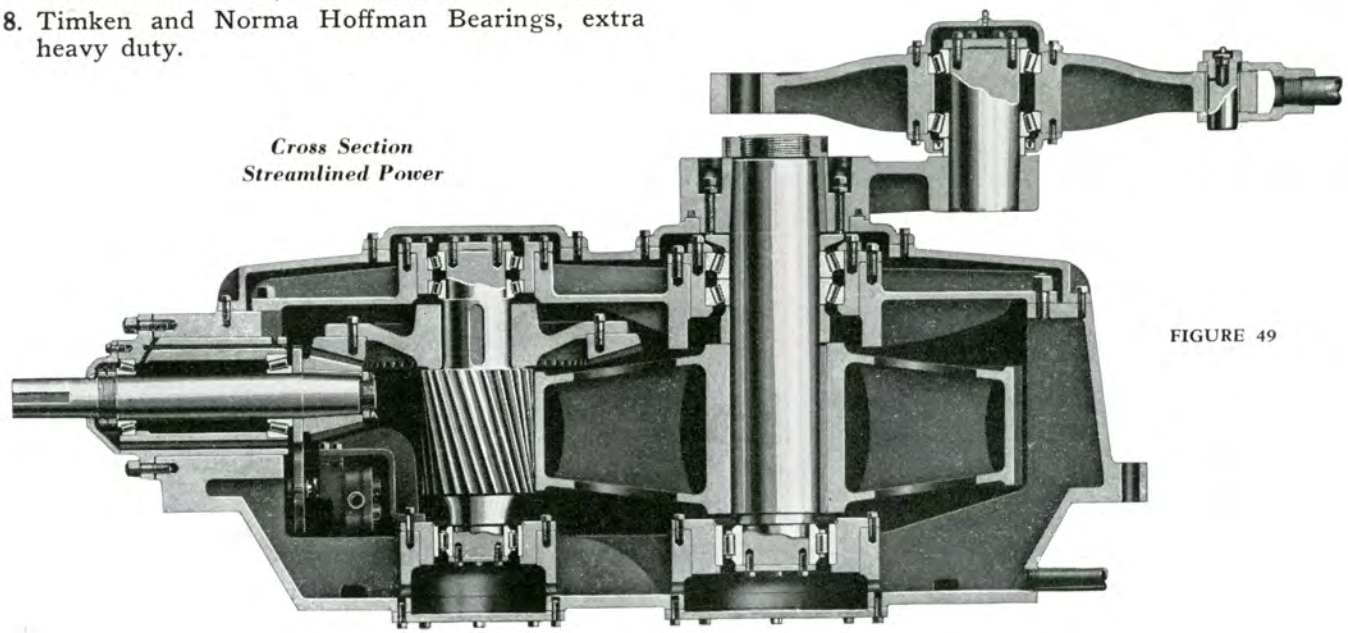


FIGURE 49

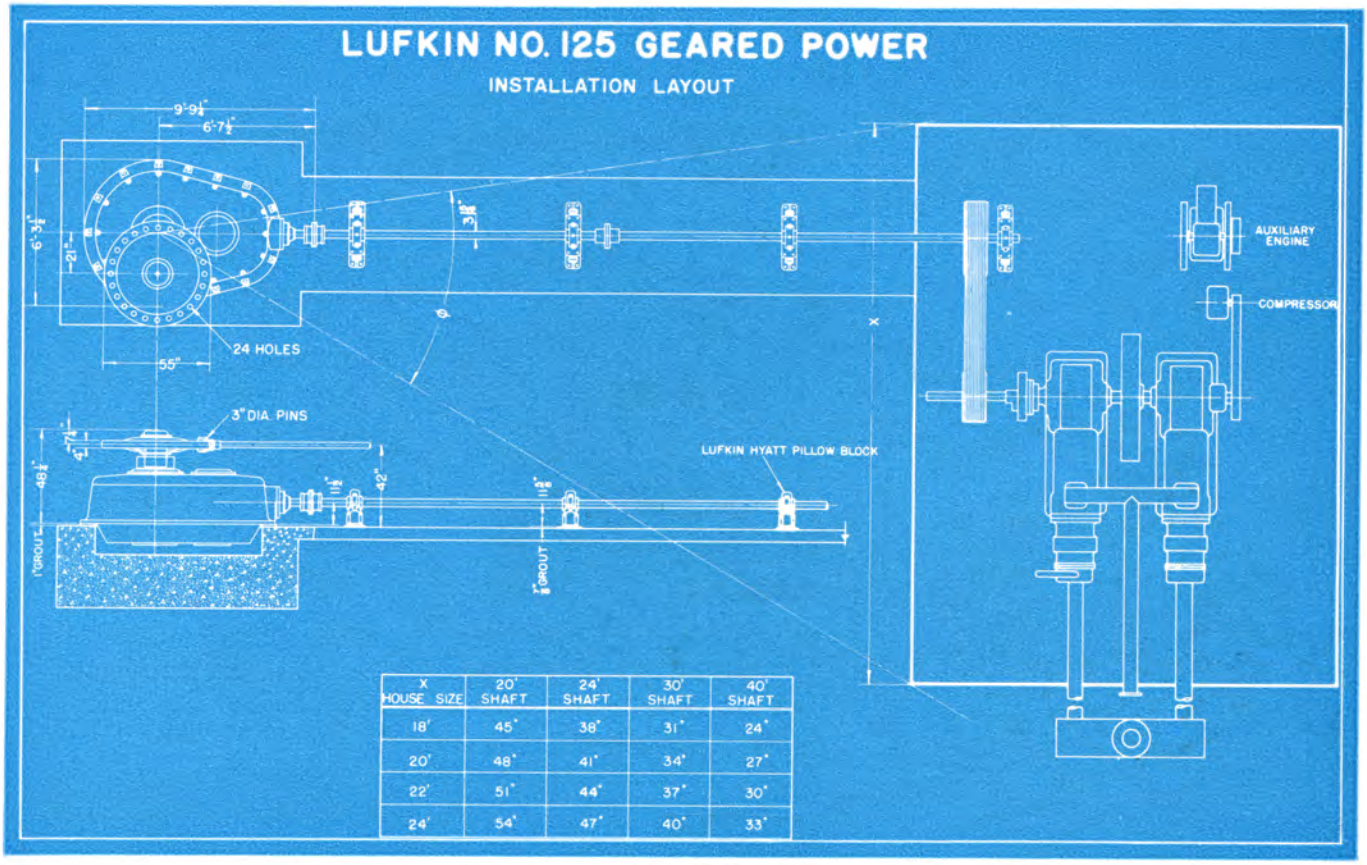
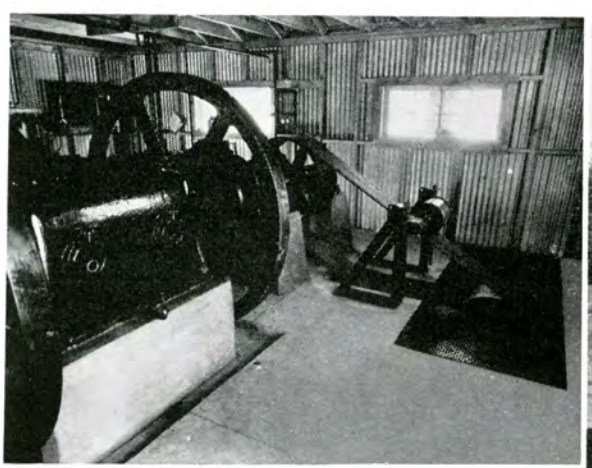
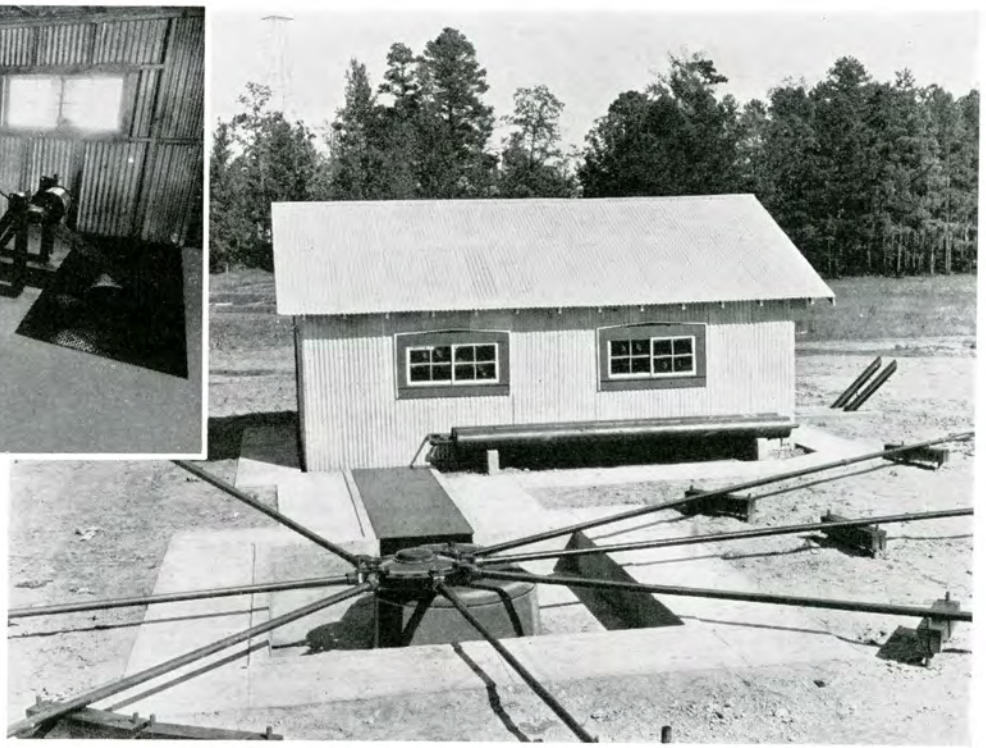



FIGURE 50

## TYPICAL ARRANGEMENT SHOWING ENGINE ROOM AND POWER





We are prepared to make complete power installations furnishing all equipment installed according to correct engineering designs.

FIGURE 51

# LUFKIN WORM GEAR CENTRAL POWERS

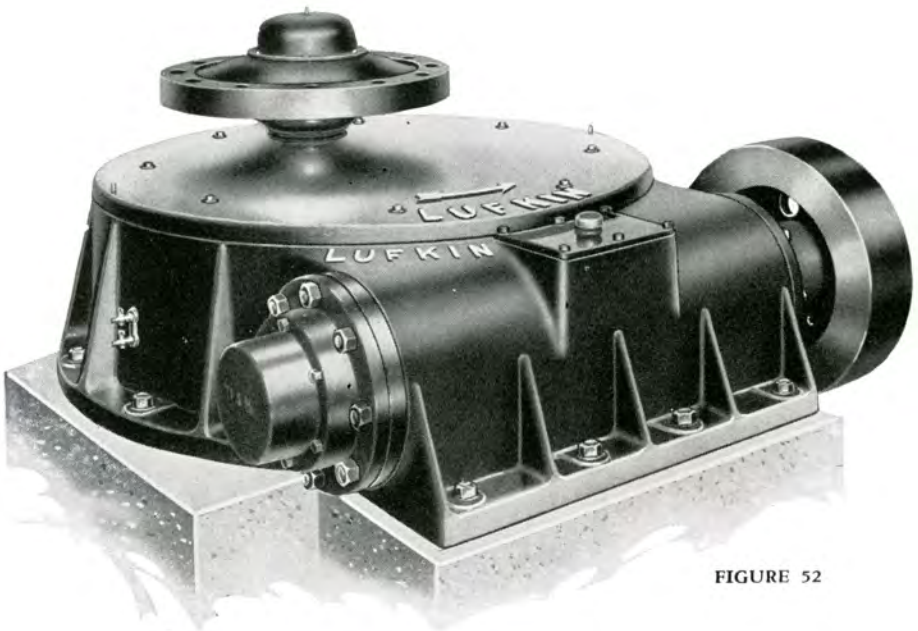



FIGURE 52

*The Lufkin Worm Gear Central Power—Two sizes, 50 and 125 H.P.*

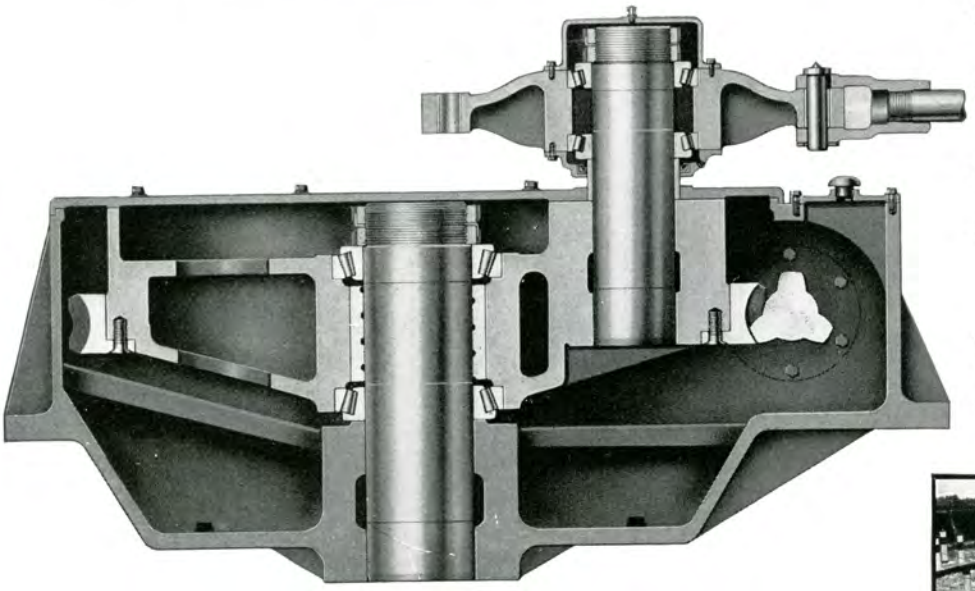


FIGURE 53

*Cross-Section Lufkin Worm Gear Power*

## Mechanical Characteristics

The first Lufkin Geared Powers were of the Worm Gear type. The earliest installations are today operating as efficiently as when first installed—an operating characteristic of Worm Gears, namely, sustained efficiency throughout the life of the gears.

Lufkin Worm Gear and Helical Gear Powers are comparable in many operating characteristics. Lufkin Worm Gear Powers have fewer wearing parts, other mechanical features may be summed up in the following:

1. Center Trunnion of Nickel Alloy Steel.
2. Center and Crank Pin Bearings: Timken.
3. Worm Bearings: Timken thrust, Hyatt radial.
4. Gear is of alloy bronze.
5. Worm of alloy steel, heat treated.

Lufkin worm gear powers are of heavy rugged construction designed for life-time service.

*Typical Lufkin Central Power Installation*

## GEAR RATINGS

### Lufkin Worm Gear Powers

| Number | H.P. @ 20 S.P.M. | Type Gears | Ratio | Drive Sheave Bore | Stroke | Dia. and Face Main Gear | Base To and Pull Rods |
|---|---|---|---|---|---|---|---|
| Standard | 50 | Worm | 29 3/8 | 3 7/16" | 32" | 51"x4½" | 24" |
| Giant | 125 | Worm | 29 3/8 | 3 11/16" | 36" | 71"x6" | 34⅝" |

## TRANSMISSION—CENTRAL POWER DRIVES

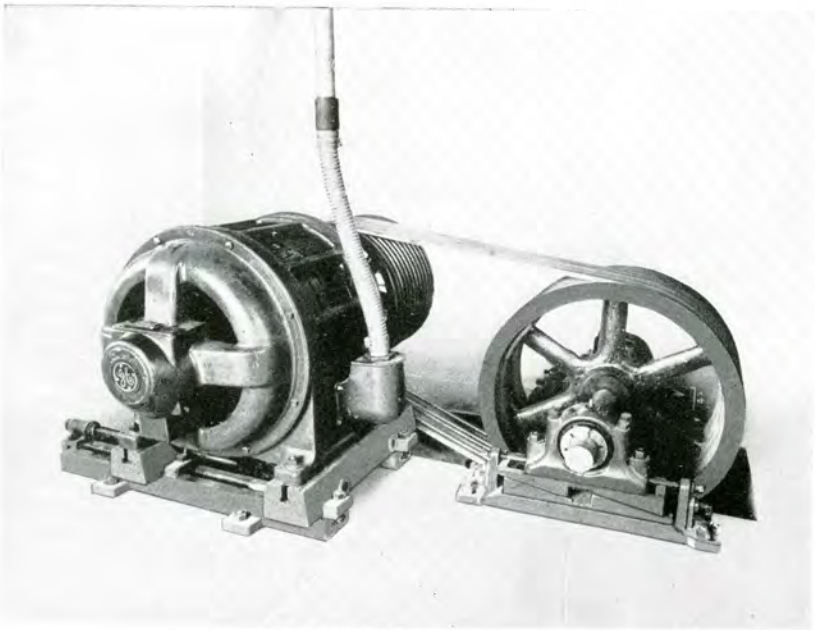


FIGURE 54

**Electric Motor Central Power Drive**—Motor is mounted on Lufkin Universal Motor Rails. Timken journals on Lufkin Adjustable Base Plates.

FIGURE 55

Lufkin-Hyatt Self-Aligning Bearings with Adjustable Base Plates.

FIGURE 56

**Type "C", B and S**—Dodge-Timken non-expansion type, self-aligning, oil and dust-proof ball and socket pillow-block.

FIGURE 57

**Type S-1-C**—Dodge-Timken, expansion type, self-aligning, oil and dust-proof pillow-block.

We also furnish self-aligning ball and socket babbitted journals if desired.

We manufacture and carry in stock, couplings, shaft bearings of both plain and frictionless types, "V" belt sheaves (especially for central power drives), and at all times maintain adequate stocks of "V" belts and turned and ground shafting. We are in position to furnish "V" belt drives for any purpose and solicit your inquiries.

Lufkin "V" belt sheaves will be found heavier than the usual sheaves and well designed for the job.

FIGURE 58

HEAVY DUTY "V" BELT SHEAVES

FIGURE 59

Flexible couplings always in stock.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## LUFKIN ARC-WELDED IMPROVED PUMP JACKS

TWO SIZES

No. 17B.....17,000 Lb. Capacity
No. 10B.....10,000 Lb. Capacity

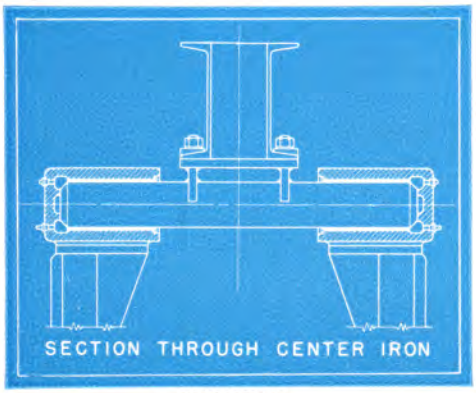



FIGURE 60

*Cross Section Showing Shaft and Bronzoid Bearings Oil Seals.*

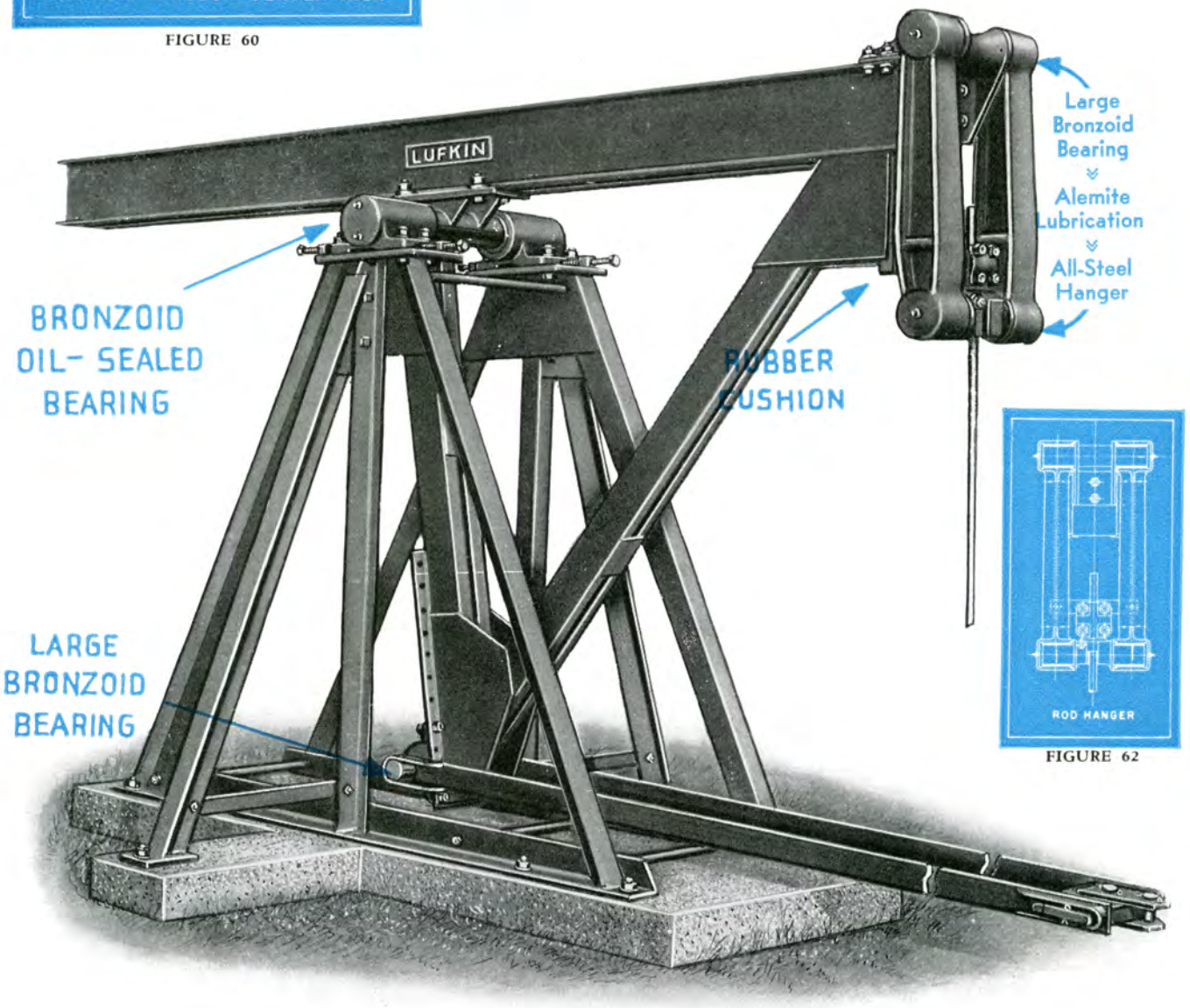






FIGURE 62

FIGURE 61

## LUFKIN IMPROVED ARC-WELDED PUMP JACK

After years of experience and research Lufkin offers an improved design in jack construction that we believe will appeal to particular buyers of this class of equipment.

1. The whole structure has increased strength and rigidity.
2. Side frames and walking beams are unusually heavy and welded in jigs, with special care to secure ample welding area in all members.
3. Side frames have unusual spread and are well tied together top and bottom.
4. Pivot shafts are extra large and thoroughly welded to saddle.
5. Main bearings are oversize and Bronzoid bushed, with patented seals.
6. All-steel hanger, that can be thrown over on top of jack; Bronzoid bushed bearings; Alemite lubricated and easily renewable.
7. Straight line action on polished rod is maintained. See diagram at right.
8. Lower adjustable beam bearings to pull rods are oversize and Bronzoid bushed with oil seals and are Alemite lubricated.
9. Foundation bolts and polished rod clamp are extra.
10. Lufkin jacks will convince and satisfy the most exacting individual looking for practical, substantial equipment with lowest maintenance cost.

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## LUFKIN ARC WELDED IMPROVED PUMP JACKS

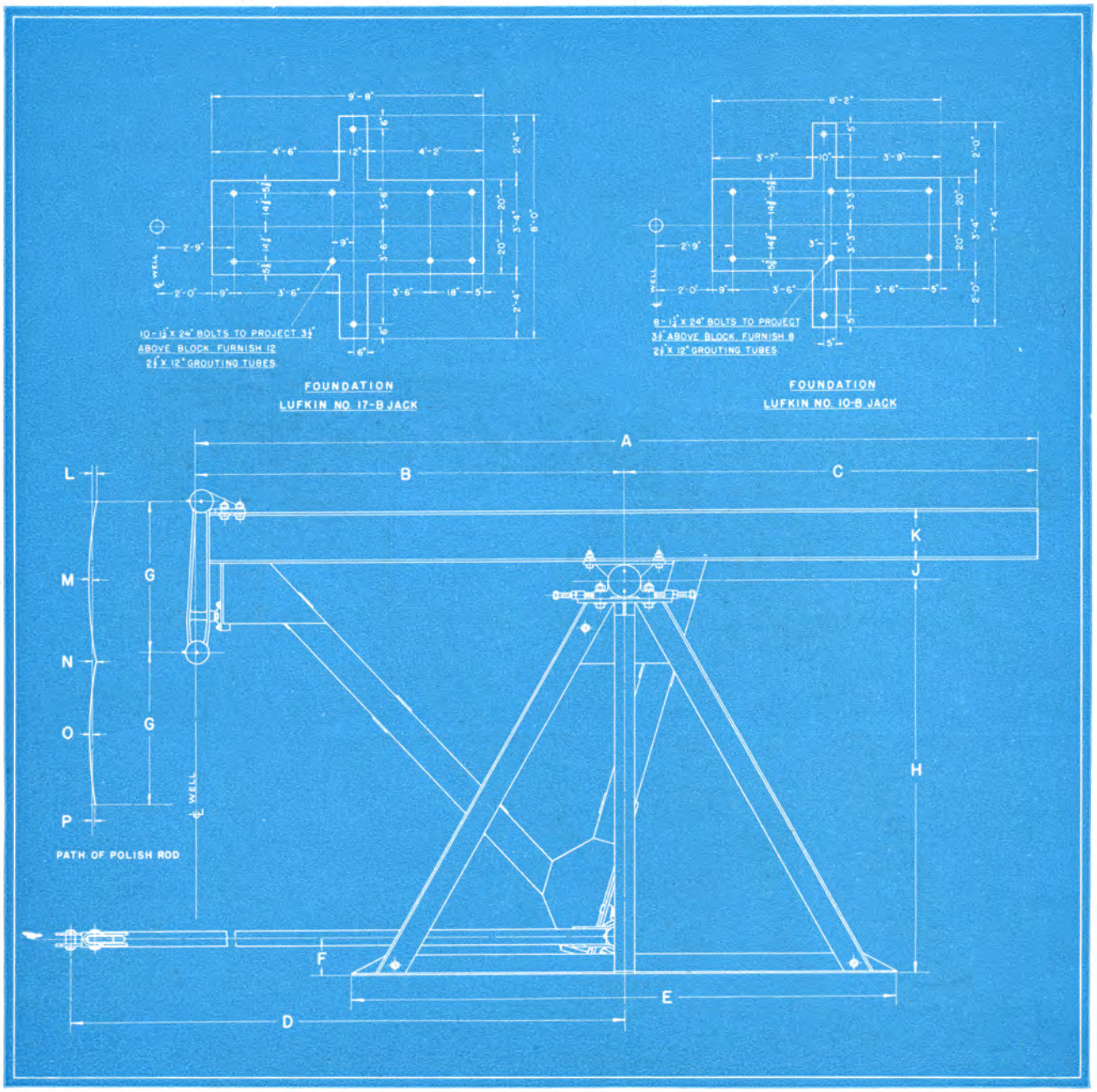



FIGURE 63

## DIMENSION SHEET—LUFKIN PUMP JACKS

| Jack No. | A | B | C | D | E | F | G | H | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10-B..... | 12′-10″ | 6′-0″ | 6′-10″ | 10′-2½″ | 7′-11″ | 8½″ | 2′-0″ | 5′-6″ | 2¼″ | 8″ | 11/16″ | 5/16″ | 5/16″ | 5/16″ | ¼″ |
| 17-B..... | 14′-8″ | 7′-0″ | 7′-8″ | 12′-3¾″ | 8′-11″ | 8½″ | 2′-6″ | 6′-6⅜″ | 2¾″ | 10″ | 11/16″ | ⅜″ | ⅝″ | ⅜″ | 1/16″ |

## GENERAL SPECIFICATIONS

| | No. 10 B | No. 17 B |
|---|---|---|
| Rated Polish Rod Load | 10,000 Lbs. | 17,000 Lbs. |
| Stroke | 48″ | 60″ |
| Maximum Ratio Polish Rod to Pull Rod Stroke | 1.71 to 1 | 1.70 to 1 |
| Minumum Ratio Polish Rod to Pull Rod Stroke | 1.24 to 1 | 1.19 to 1 |
| Depth Walking Beam | 8″ | 10″ |
| Diameter and Length Saddle Bearing | 2 11/16″x10½″ | 3 11/16″x15″ |
| Bearing Surface Saddle Bearing (Bronze) | 31.5 Sq. In. | 60 Sq. In. |
| Bearing Surface on Hanger (Bronze) | 16 Sq. In. | 25 Sq. In. |
| Base to Bottom of Hanger at Mid-Stroke | 4′—3⅞″ | 5′—0½″ |
| Stirrup Bearing Size | 2 11/16x8″ | 3 11/16x10″ |
| Number and Size Foundation Bolts | 8—1¼x24″ | 10—1¼x24″ |

## LUFKIN HORSEHEAD JACKS

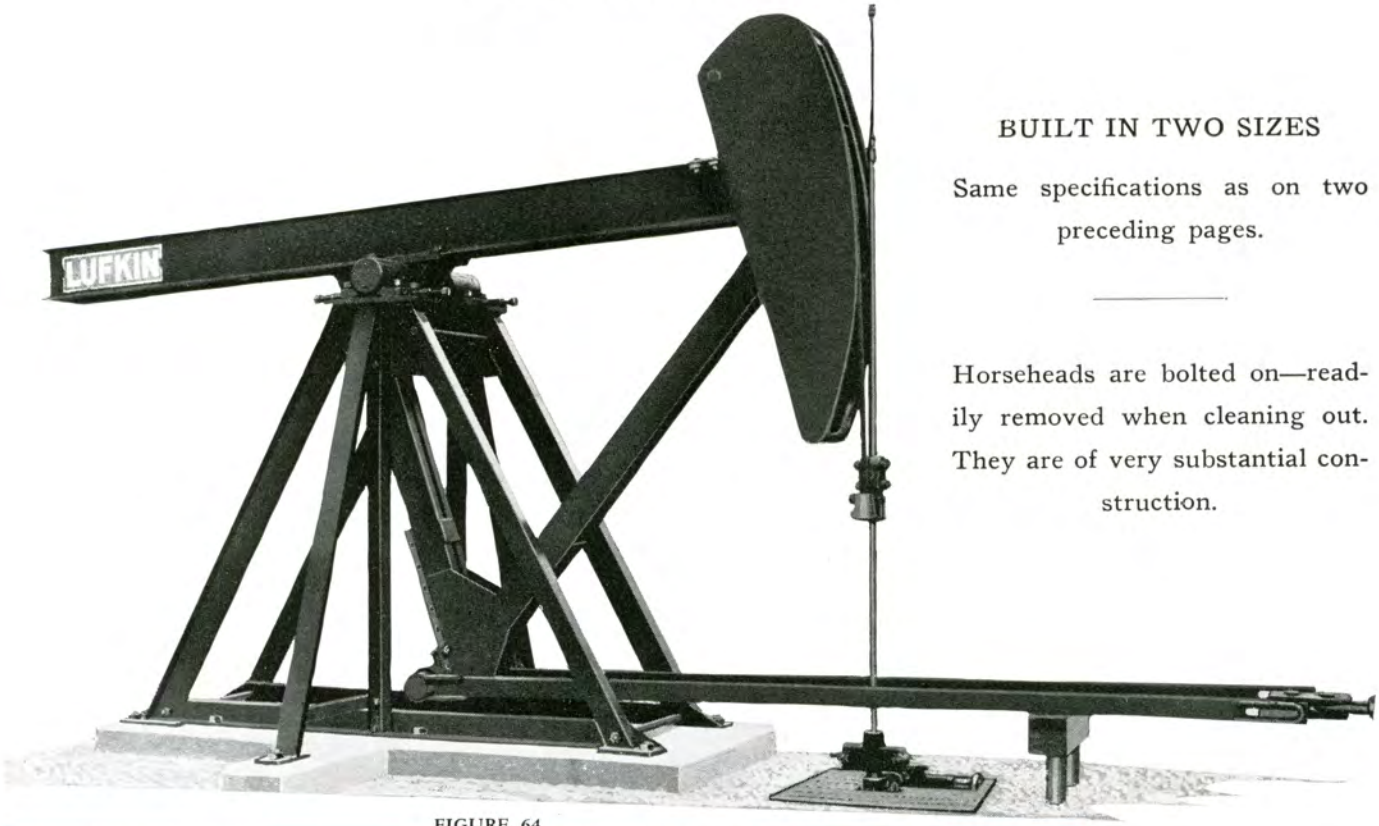



FIGURE 64

### BUILT IN TWO SIZES

Same specifications as on two preceding pages.

Horseheads are bolted on—readily removed when cleaning out. They are of very substantial construction.

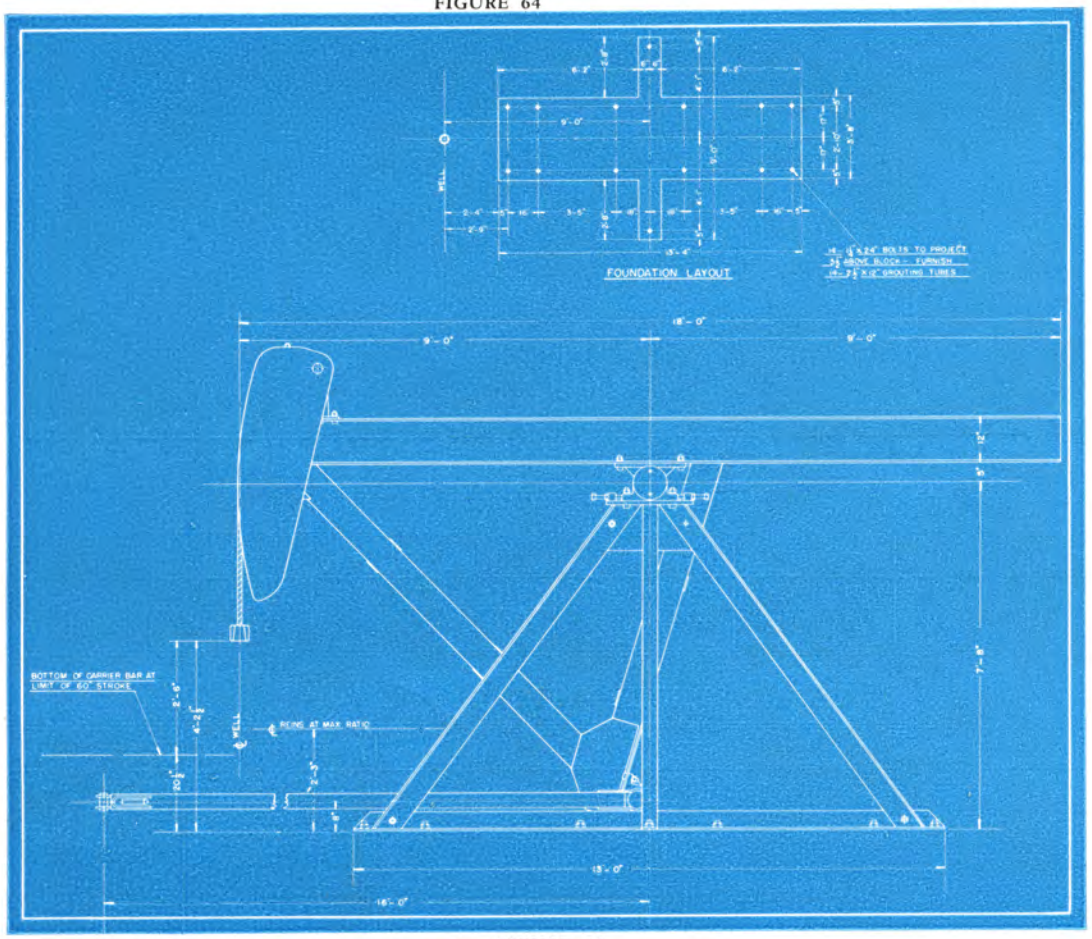



FIGURE 65

### No. 20 SPECIAL HIGH FRAME HORSEHEAD JACKS

*(At Left)*

*20,000-lb. Polish Rod Load, Long Stroke Jack, with high side frames leaving foundations usual height. An advantage in remote locations where concrete may be expensive.*

*Also furnished with hanger type head.*

# LUFKIN SURFACE EQUIPMENT

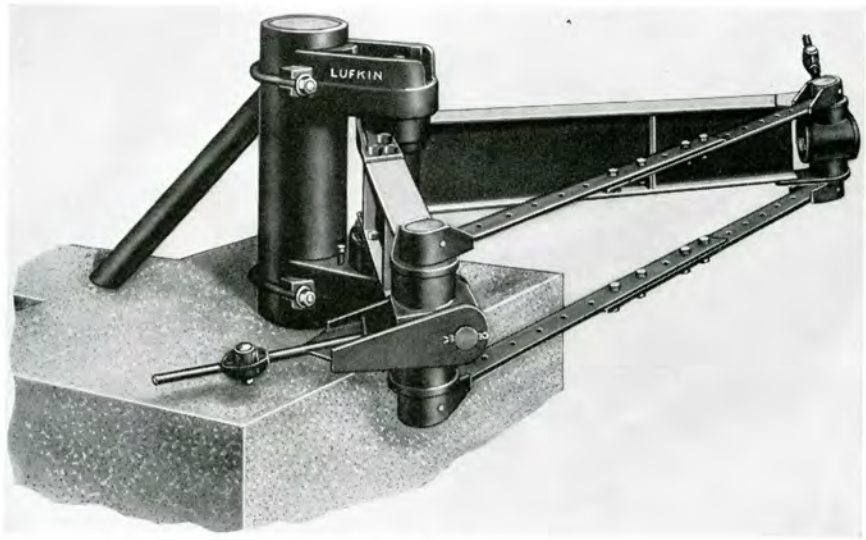



FIGURE 67

## LUFKIN IMPROVED POST SWING

Fig. 67 shows the Lufkin improved swing. Bearings in pivot shaft are dust-proof and bronze bushed. Each bearing is 6½" diameter, 3" long, with vertical thrust running in oil bath. Bearing bushings are easily renewable.

Rod line bearings are "Universal" and are bronze bushed and oil tight.

Fig. 69 shows arrangement up to 90 degrees.

Fig. 68 shows extra strut for larger angles. Angles are adjustable within limits, as shown.

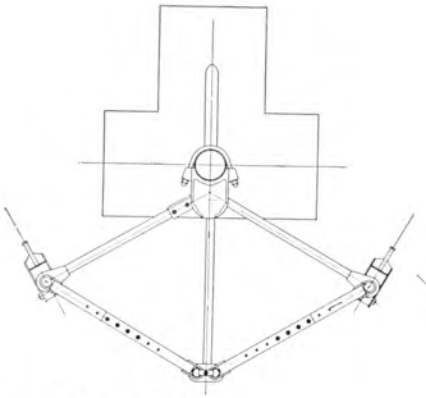


FIGURE 68
*Showing Standard Arrangement Lufkin Structural Swing for Large Angles.*

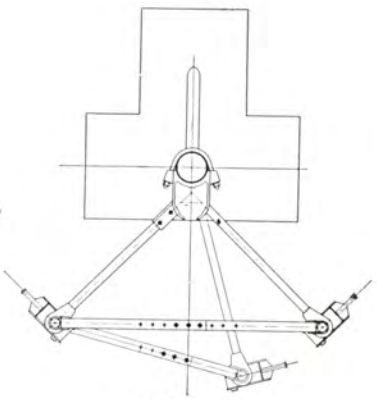
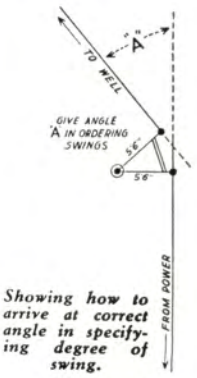


FIGURE 69
*Showing how adjustment in angle may be accomplished.*




*Showing how to arrive at correct angle in specifying degree of swing.*

FIGURE 70

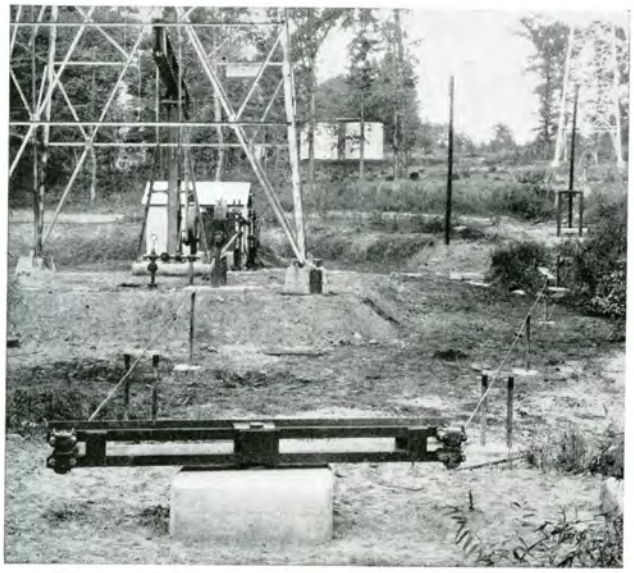


FIGURE 71
*Installation of Lufkin 180-degree structural steel swing*

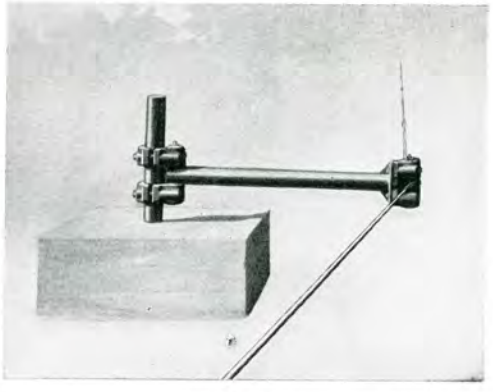


FIGURE 72
*Hold-up used for Swing where small angles are encountered. Not recommended for greater than 10° deflection.*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## LUFKIN COMBINED VERTICAL SWING TAKE-OFF AND KNOCK-OUT

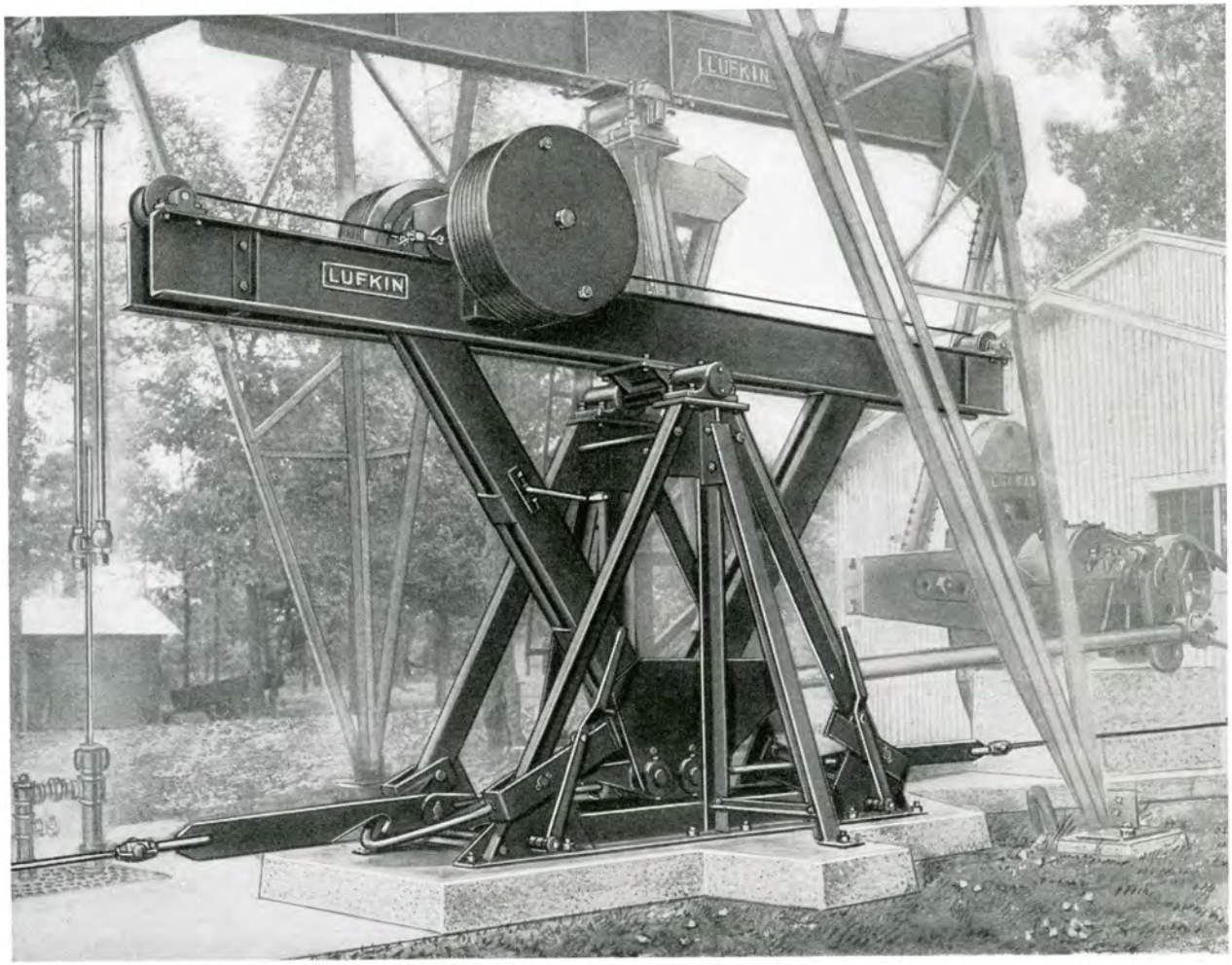



FIGURE 73—*Patents allowed and others pending*

The Lufkin combined vertical swing takeoff and knockout attachment is a great improvement over the earlier designs. Most important is the method of rolling the weight to any desired point simply by loosening two bolts on the weight saddle and turning the crank. Both operations can be accomplished by one man on the ground in a few minutes.

Hooking on and off wells is accomplished by one lever with no chance of injury to the operator.

The whole structure is thoroughly and substantially built of heavy structural steel with a view to rigidity and steady operation. As will be noted on Page 1439, Fig. 77, crank pin and bearing are of the improved type, adjustable for wear, and dust proof. The same bearing is in the swing takeoff, the connection being made of 4″ pipe. Saddle bearings are bronze bushed and oil tight. Knockoff arrangement is of all steel forgings and thoroughly made to give efficient lasting service.

This counterbalance will be found more effective and practical than a crank balance, which can be furnished if preferred.

## LUFKIN KNOCK OUT POST

Lufkin knockoff posts are especially handy. Lifting weight lever knocks the well off; lifting double connection under hook (which is the extension from a twin crank unit in this case) automatically puts the well in operation. The same knockoff is used on central power and back-crank jobs. The knockout bar notches are on the upper edge allowing a smooth lower surface to ride on a renewable wood block end grain inserted in cast iron shoe and spreader plate.

FIGURE 74

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## LUFKIN VERTICAL SWING TAKE-OFF

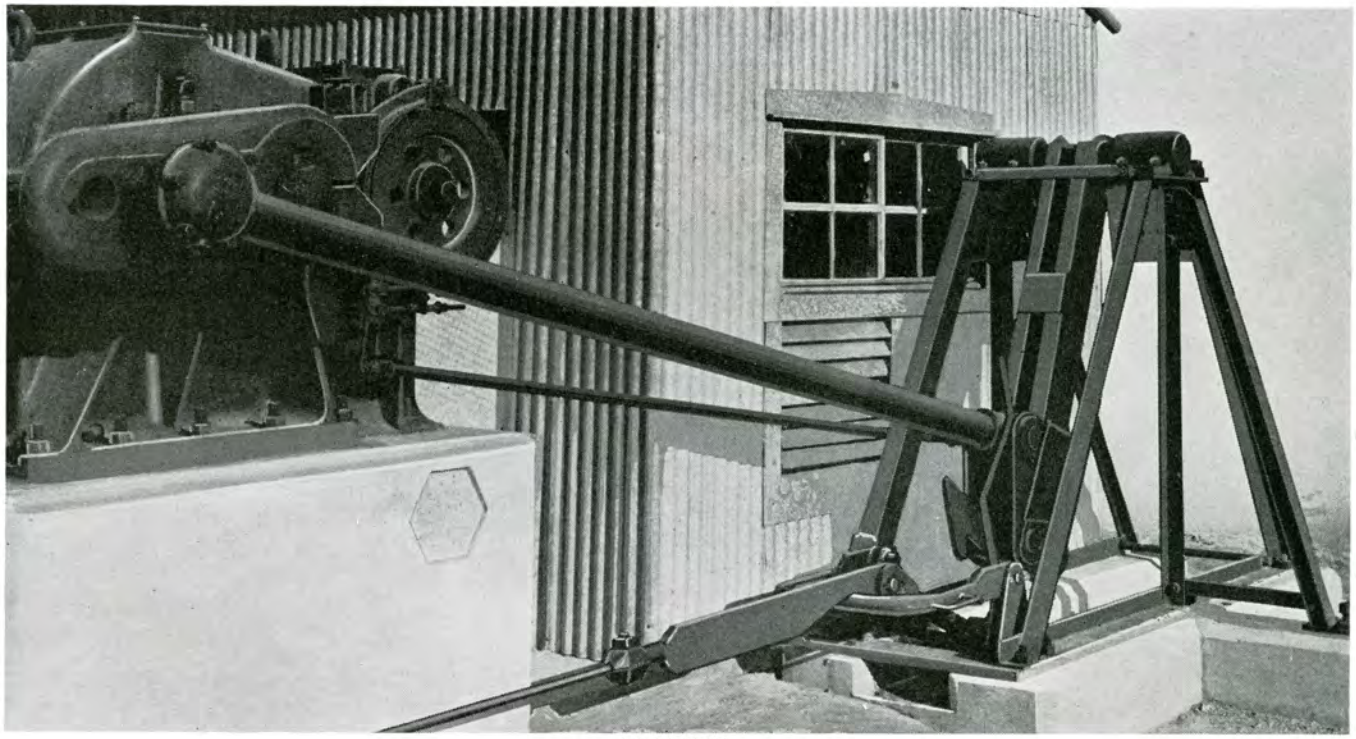


FIGURE 75

*Above—USUAL BACK CRANK ASSEMBLY—With Single Arm Take-Off for one or two wells as desired. This take-off is made of the side frames of our No. 10-B Jack, with bronzoid center bearings, with the pendulum swinging between them. The lower bearing is likewise bronzoid bushed and fitted with Garlock seals.*

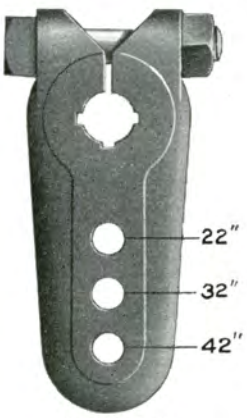



FIGURE 76


FIGURE 77
Single Take-Off Connector.

LUFKIN BACK-SIDE CRANKS

3 Hole 42" stroke—Max. Bore 6-7/16"—No. 1910-W
3 Hole 36" stroke—Max. Bore 5-7/16"—No. 2059-W
3 Hole 30" stroke—Max. Bore 4-7/16"—No. 2060-W

### LUFKIN BACK CRANKS

Lufkin back cranks (left) are extra heavy and, while carried in stock to suit our units, we can furnish and bore to suit requirements on short notice. Crank Pins are taper hole type. Take-off connector bearings are bronzoid bushed with oil seals.

All back crank pins have taper shanks. The bearings, however, are 5½" x 5½" with oil seals and bronze bearings, made adjustable to take up lost motion. Connection is 4" pipe.

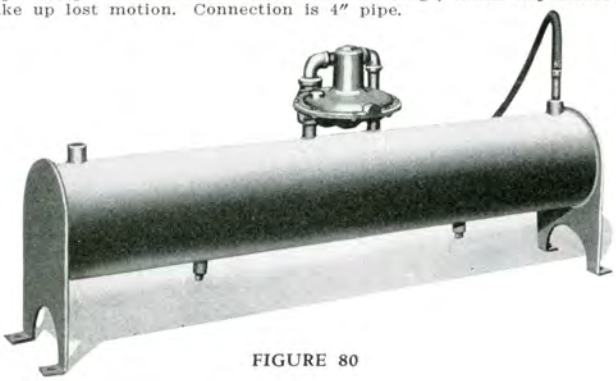


FIGURE 80

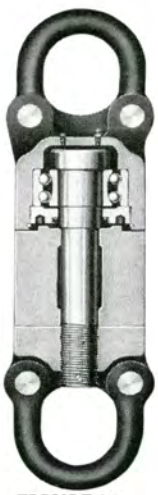


FIGURE 78

### LUFKIN NO. 150 SWIVELING ROD LINE WEIGHT

**Weight, 150 Lbs.**

This weight is of all steel construction, with anti-friction bearings and has a capacity of 12,000 lbs.

FIGURE 79

### VOLUME TANK AND REGULATOR FOR GAS ENGINES

Double chamber volume tanks are usually furnished with multicylinder engines. They are carried in stock, fitted with Fisher regulators and flexible hose connection to engine as shown. The tank is 8" in diameter and 48" long with partition in center. They are well made and have ¾" pipe coupling connections. Center of tank to base is 10".

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## LUFKIN ROD LINE EQUIPMENT

FIGURE 81

*Lufkin Roller hold-down in structural frame. Note roller hold-up in distance*

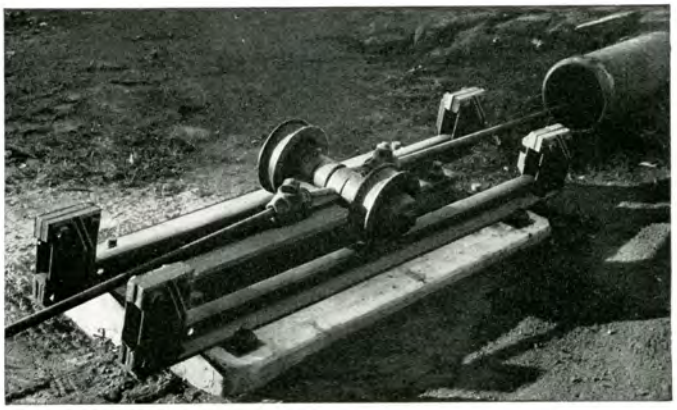

FIGURE 83

*Lufkin Roller hold-up. Carriage operates on rail frame*

### LUFKIN STROKE OR MULTIPLIER POST

This type post is commonly used when change in stroke is desired near unit. Take-off bearings on this post are bronze bushed, universal type. The lower bearings are interchangeable with Lufkin hold-up and hold-down.

FIGURE 84

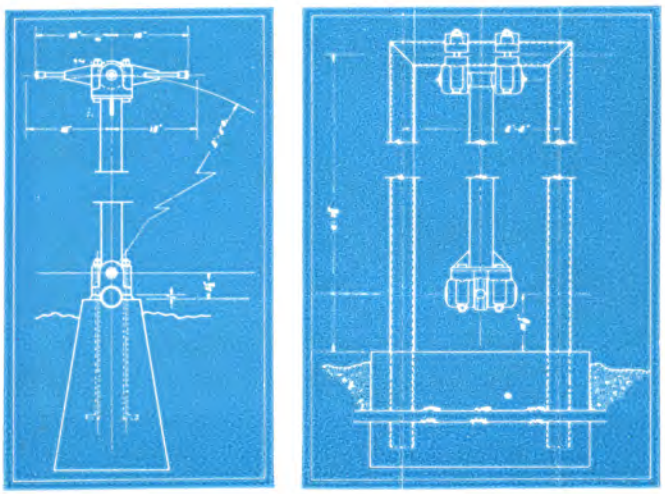

FIGURE 82

*Blue print cross section of Lufkin hold-up and hold-down illustrated to the right*

FIGURE 85 FIGURE 86

*Lufkin hold-up and hold-down. All bearings interchangeable and Alemite lubricated*

# LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS

## NOTES ON ORDERING LUFKIN UNITS—OPERATING INSTRUCTIONS

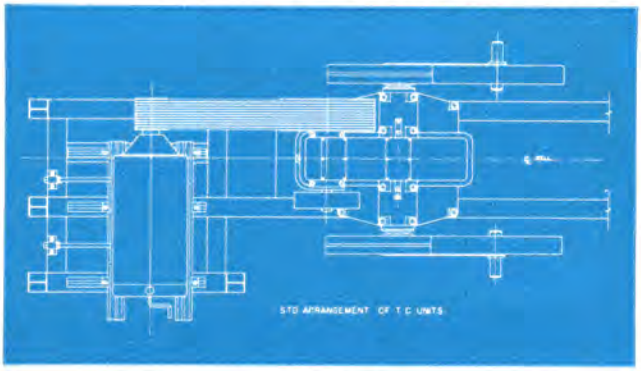


FIGURE 87
*Standard Layout Twin Crank Units*

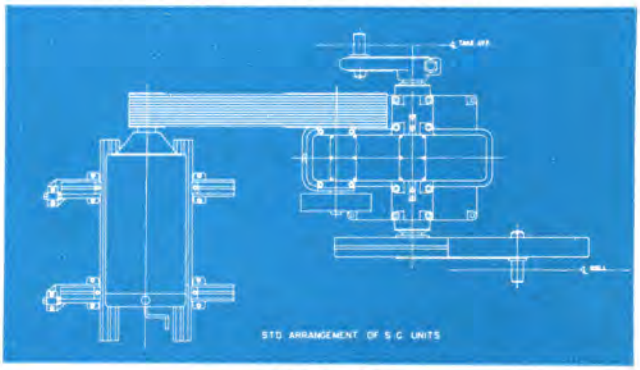


FIGURE 88
*Standard Layout Single Crank Units*

### GENERAL NOTES APPLYING TO TWIN AND SINGLE CRANK UNITS

Drive Sheaves are on the left and Brake on the right, standing behind the unit looking toward the well.

With gas engines double reduction gear units run clockwise, single reduction gear units run counter clockwise.

Unless otherwise specified units will be shipped to operate at 20 strokes per minute. Motor sheaves are furnished for any desired speed.

### TWIN CRANK UNITS

Standard Twin Crank Unit Bases are made as per print above, extension for gas engine or motor is on the right standing behind unit facing the well. Bases are the same for gas engine or electric motor. Any motor or multi-cylinder gas engine will fit. Also on large sizes some makes of 2 cylinder, slow speed engines fit without changes. However with some engines having large fly wheels special designs are necessary for the base for which we make slight extra charge.

Standard bases are regularly in stock, special bases delay shipments, but usually can be made promptly.

Assemblies Nos. 0A, 1A, 2A and 3A, have long beams and are usually furnished with a hanger and rod connection to polished rod. Horseheads may be substituted if desired. Assemblies No. 2, 3, 4, 55, 66 and 77 have shorter beams and are regularly furnished with hinged horseheads.

Lufkin Twin Crank Units are priced complete except Prime Mover, Foundation Bolts and Polish Rod Clamps, which are extra.

Note: Bolts are provided for bolting gas engine or motor to our Universal rails.

With each Unit we furnish Crank Pin Wrench and Wrench for counter weight bolts.

Complete guards around cranks can be furnished at extra price.

### SINGLE CRANK UNITS

Single Crank Units are quoted complete except Prime Mover, Foundation Bolts, Brake Levers and Connections, Belt Cover and Polish Rod Clamps, as these items are only furnished when specified.

Units include Drive with Motor Sheave having bore and K.S. to suit Prime Mover, "V" Belts, Brake and Brake Band (only), Crank, Crank Pin and Counter Weights. Back Cranks are extra.

Headache posts between sampson post and well are extra.

Electric Motors, include overload relay and push button station.

Gas Engines (multi-cylinder type) are complete except Volume Tank, Scrubber and Regulator.

## ERECTING AND OPERATING INSTRUCTIONS

NOTE: For ready office reference we include operating instructions herewith as they appear on our name plates—which have of course identification information for each unit as follows: Type, Order No., Gear Ratio, Serial No., H.P. Ratings, Peak Torque in accordance with A.P.I. requirements.

1. When erecting a unit, special attention and care should be taken to see that crank pins and bearings, equalizer pins and holes for same are well cleaned.
2. When applying counterweights see that ways and slots are clean. Use wrench furnished to tighten bolts thoroughly.
3. Be sure that pulley and brake keys are tight before starting.
4. Do not jam on brake. Apply gradually.

### Lubrication—Most Important

#### GEAR BOX

Use S.A.E. 50 motor oil for temperatures 70°F. and above.
Use S.A.E. 40 motor oil for temperatures 70°F. and below.
Fill gear box until oil runs out top pet cock.
NOTE: Do not fill above top pet cock.
Change oil semi-annually. This unit requires — gallons.

#### PITMAN

Fill with 120 to 150 S.A.E. (steam cylinder oil) to oil level plug in cover. Check weekly. Change every three months. Too much oil causes leaks. For roller bearings use No. 3 grease.

#### CENTER BEARINGS

Use same oil as in gear box. Be sure center bearing is full to gauge. To insure this, remove plugs from both ends of bearing, fill and replace.

#### ROD HANGER AND EQUALIZER BEARINGS

Use No. 3 gun grease. To insure filling remove small plugs to let air out. See that grease comes thru before replacing plugs. Check weekly.

#### GENERAL

The above instructions are for average operating conditions. However, for unusually heavy wells in cold weather, lubrication should be watched closely, especially the pitman, center bearings, and beam bearings.

When ordering parts, give serial number of unit.

Printed in U. S. A.

# LUFKIN

EQUIPMENT OF ADVANCED DESIGN