

J. D. GIBBS.
CASING RING AND WEDGE APPARATUS.
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2 SHEETS—SHEET 1.

Fig. 1.

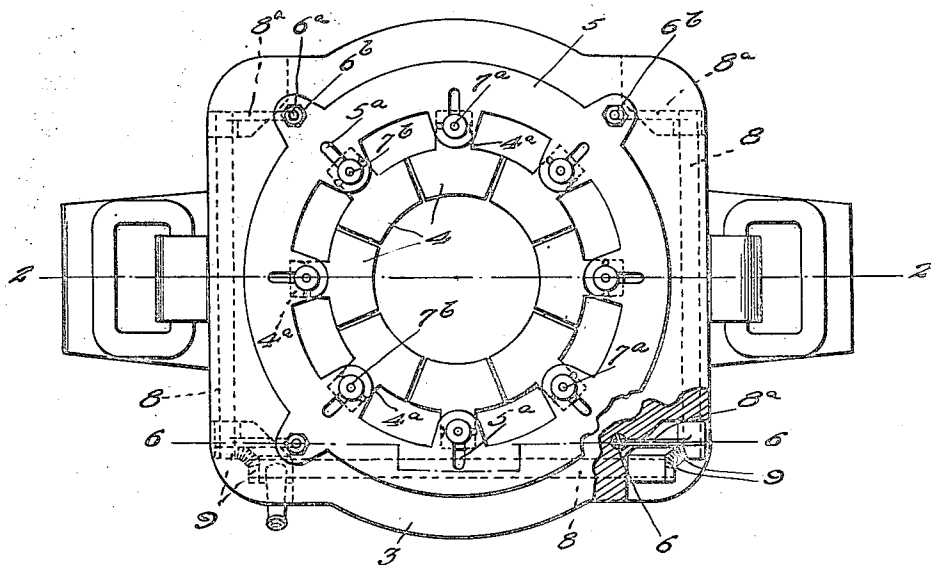
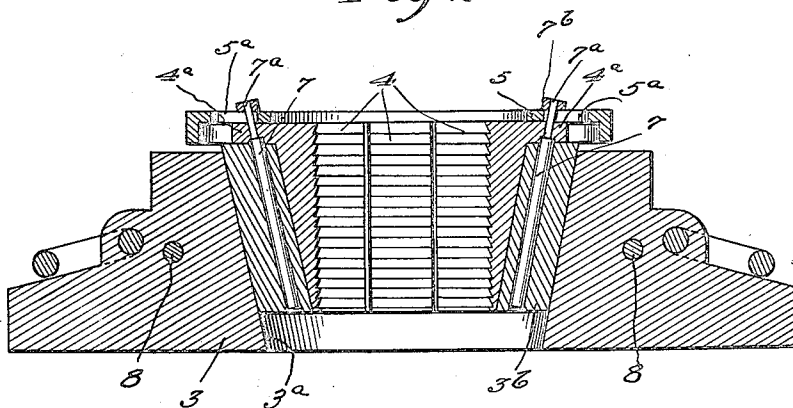


Fig. 2.



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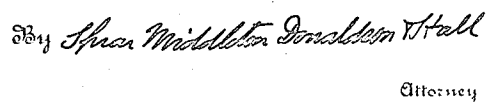
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

JAMES D. GIBBS, OF LOUISVILLE, KENTUCKY.

CASING RING AND WEDGE APPARATUS.

Application filed December 12, 1921. Serial No. 521,811.

To all whom it may concern:

Be it known that I, JAMES D. GIBBS, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Casing Rings and Wedge Apparatus, of which the following is a specification.

My present invention relates to improvements in casing wedges or slips designed for use in lowering casing pipes into well holes and aims to provide means which may be easily controlled by a single operator and which will firmly grip the pipe around its entire periphery.

The invention includes the novel features of construction and arrangement of parts hereinafter described and particularly defined by the appended claims.

An embodiment of my invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view of my improved slip or wedge device, partly broken away.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a side elevation.

Fig. 4 is a sectional elevation on a smaller scale showing the wedge operating mechanism, and

Fig. 5 is a sectional detail of the operating crank.

Fig. 6 is a section on line 6—6 of Fig. 1.

Heretofore, so far as I am aware, in the lowering of casing tubes it has been customary to hold the tube stationary, when desired, by inserting individual wedges between the tube and casing ring, and to support the tube properly and without injury a plurality of wedges must be used, simultaneously inserted, which requires a plurality of operators and this is a difficult operation, and it is furthermore a hard matter to properly release the wedges when the tube is to be lowered further, all of which objections are overcome by my device.

Referring by reference characters to this drawing and first to Fig. 4, the numeral 1 designates the derrick floor and 2 the timbers which are usually laid across the same about the "cellar" opening, upon which timbers the casing "ring" or member 3 is supported.

This casing ring has its inner face in the shape of an inverted truncated cone, as indi-

cated at 3^a, which is preferably lined by a correspondingly flared bushing 3^b.

The wedges are indicated at 4 and are disposed in annular arrangement with their outer beveled faces slidably engaging the inner face of the bushing, while their inner faces are preferably serrated or toothed to enable them to better grip the pipe. The wedges have lug or flange portions 4^a which overhang the top of the bushing and limit the downward movement of the wedges.

Overlying all the wedges is a lifting ring 5 which is designed to be raised and lowered by lifter members or rods 6 which are slidably mounted in guide passages in the ring and have reduced portions 6^a which pass through openings in the lifting ring or plate 5, such reduced portions forming shoulders which bear against the under face of the lifting ring and being provided with nuts 6^b at their upper ends for securing the plate thereto.

The wedges are guided in their upward movement and raised by the lifting plate through the following means. Guide pins 7 are slidably mounted in inclined guide openings in the bushing and have reduced portions 7^a which pass through corresponding openings in the lugs 4^a, the reduced portions forming shoulders which bear against the lower faces of the lugs. These reduced portions also pass through radial slots 5^a in the lifting ring and are provided at their upper ends with heads 7^b which overlap the slots and bear against the upper face of the lifting ring or plate on each side thereof. By this arrangement vertical movement of the lifting ring raises and lowers the guide pins which imparts reciprocating movement to the wedges, the slots permitting radial movement of the reduced portions of the guide pins therein.

In order to impart vertical movement to the lifting plate I provide a plurality of rock shafts 8 journaled in horizontal tubular passages formed in the ring member 3 which are geared to oscillate in unison by bevel gears 9 located in cut away portions or recesses in the casing member. Two of these rock shafts carry arms 8^a which have ends engaging grooves or recesses 6^c in the lifting pins 6 above referred to. A lever arm 11 fast on the third rock shaft, is connected by a flexible element or cable 12,

passing around suitable pulleys 13 and 13^a, with a winding drum 14^a journaled on shaft 14 carried by a suitable and convenient post or support 15. This pulley carries a hand crank 14^b by which it may be rotated to wind up the cable and thus raise the wedges to release the casing pipe.

To enable the operator to hold the wedges elevated and release them at will while holding the crank against sudden movement, I provide a rod or pitman 16 which has its upper end pivotally connected to the crank at 16^a and its lower end slidably passed through a guide opening in the floor.

Preferably the rod is encircled by a longitudinally adjustable sleeve 16^c which is held in adjusted position by lock nuts 16^b and 16^c threaded on the pitman, which sleeve slides freely in said guide opening and can oscillate therein. A stop device in the shape of a treadle member 17 is attached to this sleeve, and the drum being of such dimensions that a little less than one complete rotation imparts the necessary movement to the wedges (as shown in Fig. 4,) when the stop will contact with the floor and limit the movement in either direction. After the operator has turned the crank in the wedge lifting direction indicated by the arrow until the stop has again contacted with the floor, by placing his foot on the stop he can hold the slips out of contact with the pipe, leaving his hands free for other purposes.

It will be obvious that any cable or flexible connection between the drum and lever at the casing ring would be likely to stretch and require adjustment from time to time. To provide for this the crank is adjustable on the drum upon loosening clamp nut X, and when so loosened the crank is turned to the limit or until the stop contacts with the floor, whereupon a wrench or like tool (not shown) is applied to the square portion 14^d of the shaft 14 which is turned thereby until all the slack is taken out of the cable, after which the clamp nut X is again tightened. If desired the abutting faces of the crank and drum may be corrugated to increase the gripping action.

When circumstances are such as to render it desirable the arm 11 may be lengthened to form a hand lever for direct manipulation.

Having thus described my invention, what I claim is:—

1. In apparatus of the class described, a casing member having a pipe passage, a plurality of pipe gripping members annularly arranged about said passage, a pair of parallel rock shafts supported by and penetrating said casing member, a third rock shaft extending between the ends of said first named shaft, intermeshing bevel gears connecting said shafts, operating connections between said rock shafts and gripping mem-

bers whereby movement of the rock shafts moves said gripping members, and means for oscillating said rock shafts.

2. In apparatus of the class described, a casing member having a pipe passage, a plurality of pipe gripping members annularly arranged about said passage, a pair of parallel rock shafts supported by and penetrating said casing member on opposite sides of said passage, a third rock shaft between ends of said first named shafts, bevel gears connecting said shafts, operating connections between said rock shafts and gripping members whereby movement of the rock shafts moves said gripping members, an arm on one of said rock shafts, a winding drum with means for operating it, and a flexible element leading from said arm to said winding drum.

3. In apparatus of the class described, a casing member having a pipe passage, a plurality of pipe gripping members annularly arranged about said passage, a plurality of rock shafts supported by said casing member and connected to rotate in unison, operative connections between said rock shafts and gripping members whereby movement of the rock shafts moves said gripping members, an arm on one of said rock shafts, a winding drum with means for operating it, and a flexible element leading from said arm to said winding drum, a hand crank for rotating said winding drum, a pitman connected to said crank, a guide in which said pitman is slidably mounted, and a stop carried by said pitman designed to coact with said guide.

4. In apparatus of the class described, a casing member having a pipe passage, a plurality of pipe gripping members annularly arranged about said passage, a plurality of rock shafts supported by said casing member and connected to rotate in unison, operative connections between said rock shafts and gripping members whereby movement of the rock shafts moves said gripping members, an arm on one of said rock shafts, a winding drum with means for operating it, and a flexible element leading from said arm to said winding drum, a hand crank for rotating said winding drum, a pitman connected to said crank, a guide in which said pitman is slidably mounted, and a stop carried by said pitman designed to coact with said guide, said stop being adjustably carried by said pitman and having a tread member.

5. In apparatus of the class described, a casing member having a pipe passage, a plurality of gripping members carried thereby and movable to engage and disengage the pipe, and means for operating said gripping members including a flexible cable, a winding drum therefor, a crank for operating the drum having a suitable handle,

a pitman pivotally connected to the crank, a guide for said pitman, a stop on said pitman cooperating with said guide, and means for adjusting the crank with relation to the drum.

6. In combination a casing member having a flared pipe passage, a plurality of annularly arranged gripping wedges slidably arranged in said passage, a lifting ring overlying said wedges and having a radially slidable lifting connection therewith, rock shafts disposed about three sides of said passage and geared to oscillate in unison, lifting arms carried by said rock shafts and connected with said lifting ring, and means for operating said rock shafts.

7. In combination a casing member having a flared pipe passage, a plurality of wedges annularly arranged about said passage, and having outwardly extending lug portions, a lifting plate having radial slots aligning with said lug portions, guide rods carried by said casing member and having reduced portions forming shoulders engaging the under side of said lug portions, said reduced portions extending through

said slots and having heads overlapping the slots, and means for raising and lowering said lifting plate.

8. In combination a casing member having a flared pipe passage, a plurality of wedges annularly arranged about said passage, and having outwardly extending lug portions, a lifting plate having radial slots aligning with said lug portions, guide rods carried by said casing member and having reduced portions forming shoulders engaging the under side of said lug portions, said reduced portions extending through said slots and having heads overlapping the slots, and means for raising and lowering said lifting plate, said means comprising vertically movable lifting pins, rock shafts having arms connected to said lifting pins, and means for operating said rock shafts.

In testimony whereof, I affix my signature.

JAMES D. GIBBS.

Witnesses:

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