Aug. 28, 1923. 1,466,573

R. E. ALEXANDER

JACK FRAME FOR OIL WELLS

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Fig. 1.

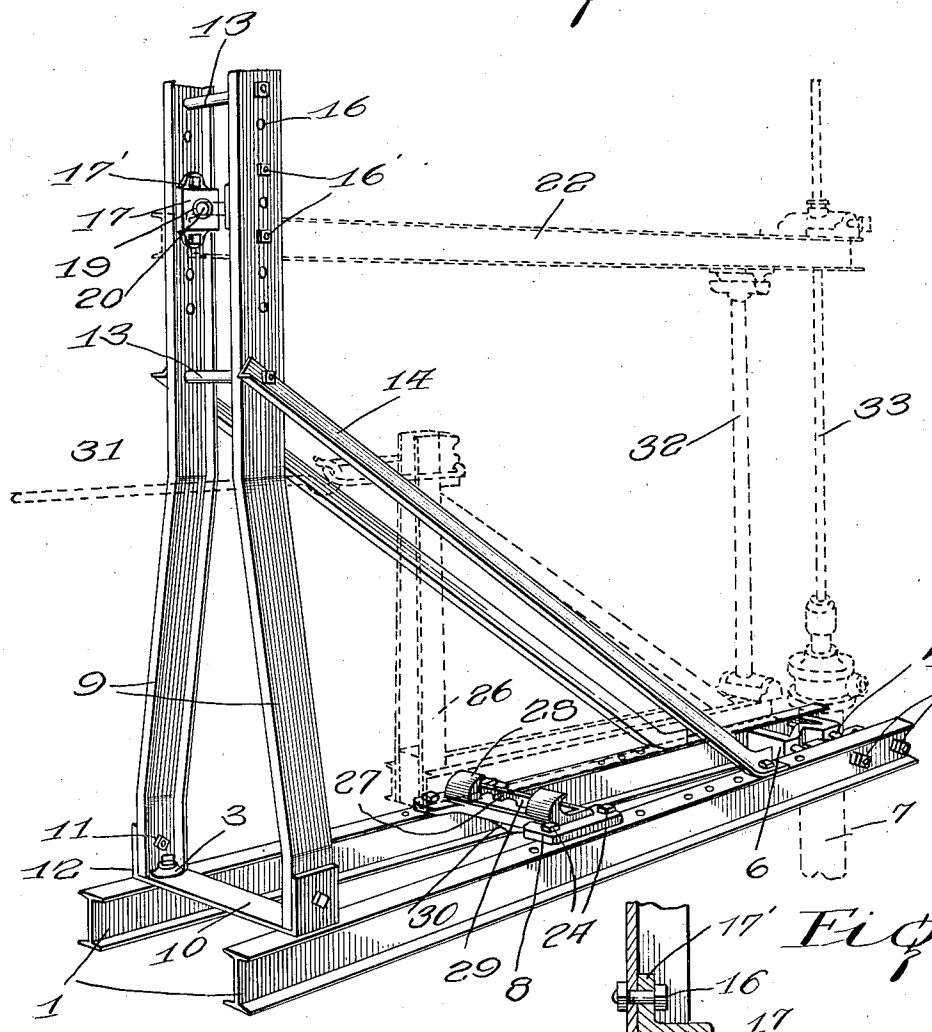


Fig. 2

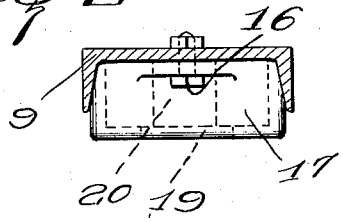
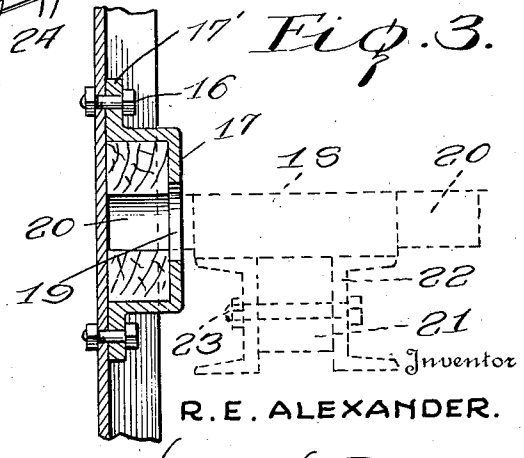


Fig. 3.



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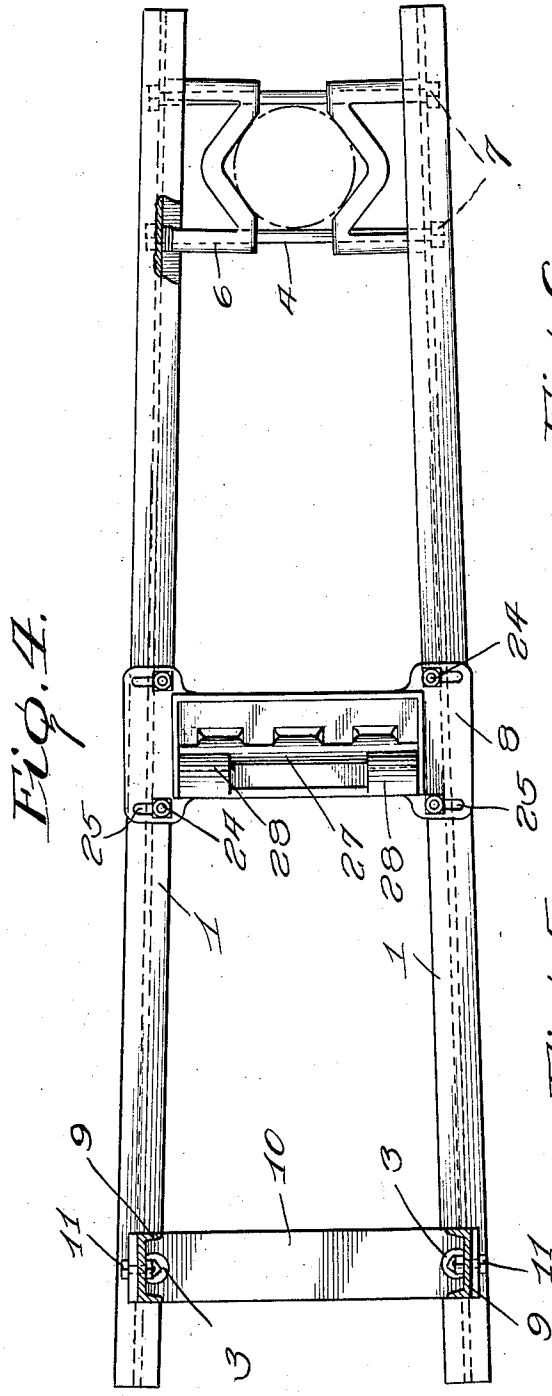
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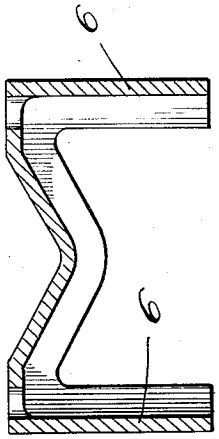
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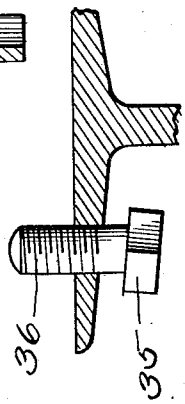
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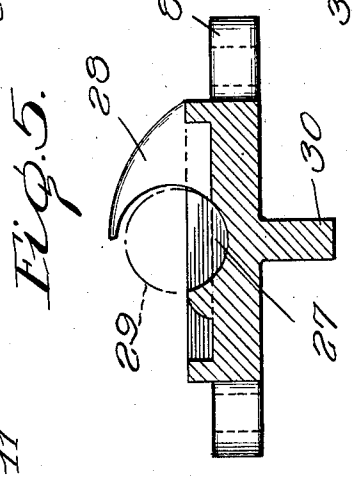
JACK FRAME FOR OIL WELLS

Filed March 2, 1923 2 Sheets-Sheet 2









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Patented Aug. 28, 1923. 1,466,573

UNITED STATES PATENT OFFICE.

ROBERT E. ALEXANDER, OF TULSA, OKLAHOMA.

JACK FRAME FOR OIL WELLS.

Application filed March 2, 1923. Serial No. 622,336.

To all whom it may concern:

Be it known that I, ROBERT E. ALEXANDER, a citizen of the United States, residing at Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in Jack Frames for Oil Wells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in jack frames for oil wells, and has for its object, to provide a frame of this type which is durable and will withstand the strain of long use without necessitating the stoppage of production of the well for repairs, and is preferably constructed of steel.

An advantage of my invention resides in the ease with which my improved frame may be erected, the only tools necessary in the operation being a monkey wrench and a level. The frame can be put up complete in less than an hour, whereas with most frames known in the art, this operation requires the better part of a day.

Another object is that the frame may be quickly removed, in case work is necessary at the well, the loosening of four bolts allowing the stand and braces to be slipped out of the way.

My device may be easily dismantled and removed to another well.

If desired the base may be concreted and held permanently in place, the beams furnishing their own form.

A still further object of my invention is to provide a jack frame which can be used with any size casing, and to this end I provide clamps of different sizes for different sized pipes or casings, which insure proper setting.

With the above and other objects in view which will appear as the description proceeds, my invention consists in the novel features herein set forth, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

Referring to the drawings, in which numerals of like character designate similar parts throughout the several views,

Fig. 1 is a perspective view of my jack frame, showing in dotted lines the pumping jack itself, which is of the usual construction.

Figs. 2 and 3 are detail views in section, of the bearing boxes used to support the pivoted beam which actuates the polish rod of the pump.

Fig. 4 is a plan view of the frame, showing the clamping means for the casing, the slotted base plate of the jack or V, and a section of the uprights.

Fig. 5 is a detail view in cross section of the base plate, and

Fig. 6 is a detail sectional view of one of the casing clamps.

Fig. 7 is a detail view of the preferred form of bolt used in securing the parts to the upper flange of the I-beams.

In the drawings, 1 represents the two longitudinally extending I-beams which constitute the base of the frame and are provided at one end with sets of apertures 2 in the webs thereof, and in the other end with apertures 3 in the upper flanges. The sets of apertures 2 are adapted to receive bolts 4 which pass through slots 5 in the clamps 6.

These clamps are adjustably located at one end of and between the two beams 1 and abut the inner surfaces thereof. They are preferably made of cast iron, and are of a V-block shape, to conform with the well casing 7 and grip the same when the bolts 4 are tightened and draw the beams 1 together.

These clamps may be made for various sized casings for convenience and to maintain the same general position of the beams, but as a matter of fact one size clamp could be used for any size casing as the method of fastening and the slotted apertures in the cast iron base plate 8, which will be described later, allow the front ends of the beams 1 to swing inwardly or outwardly to suit the diameter of the casing.

Washers or distance pieces 34 are preferably used between the clamps 6 and the web of the I-beams 1 when binding to the casing. The reason for this being that when in position and clamped to the casing, the I-beams may and usually do assume a wedge shape position, being closer together at one end than at the other. If then the base

should be firmly anchored or concreted in that position it would be impossible to loosen or remove the clamps, as they would be tightly wedged between the casing and the I-beams. When the washers are used, however, the bolts may be taken out, the washers slipped out and the clamps then easily removed.

At the other end of the beams 1, are two upright channel irons 9 which are secured together at their lower extremities by means of a substantially U-shaped base plate 10 bolted thereto as at 11 by bolts 36, as shown in Fig. 1, which are preferably provided with slanting heads 35 to conform with the lower surfaces of the upper flanges of the I-beams. The bolts not only conform with the flanges, but are self holding and self locked, due to their eccentric heads. The uprights and base plate are secured to the beams 1 by means of the single bolts 12, which allow the beams to swing inwardly or outwardly when adjusting the clamps 6. These legs or upright channel irons are bent inwardly on an angle for a portion of their length and then extend parallel with each other to their upper extremities being spaced apart by spacers 13 through which bolts are passed.

In order to insure a rigid frame, I provide angle braces 14 which are secured at one end to the channels 9 by the bolt which passes through the lower spacer 13, and at the other end to the upper flanges of the beams 1 by means of the bolts 15.

The upper portions of the channels 9 are provided with a plurality of holes 16, to receive the bolts 16′ of the bearing boxes 17. The bearing boxes are provided with two ears 17′ through which the bolts 16′ pass, and are adapted to fit between the channels at the upper portions of the uprights 9.

In these bearing boxes I provide blocks preferably composed of hard wood saturated with oil, to make a suitable bearing for the gudgeon casting 18, shown in Fig. 3. The boxes and blocks are recessed at 19 to receive the reduced ends 20 of the gudgeon for which they form a bearing.

This gudgeon as stated, is reduced on each end as at 20, and is provided with a downwardly projecting portion 21 which serves as a spacer and support for the usual pair of beams 22. The beams 22 are secured to the gudgeon by means of a bolt 23 passing through the web of the beams and the extension 21 of the gudgeon.

In mounting, the boxes 17 are placed on the reduced ends 20 of the gudgeon 18 and then slipped into place between the uprights 9.

The plurality of holes 16 in the uprights make it possible to raise or lower the boxes as desired, for a long or short pitman, or in case of a hillside well where it is inconvenient to set the frame at the same level as the casing head or the jack base. There is another advantage of the plurality of holes in the channels which should be mentioned. The jack frame being rigid and the pivotal bearing at the rear end of the beam permanently fixed, the front end of the beam where it grips the polish rod necessarily describes an arc, with a radius of about 8′ 6″. The polish rod is usually a ten foot extension attached to the upper end of the sucker rods, which works up and down through the stuffing box. Because the pull is through an arc and not vertical there is considerable wear on the rod where it passes through the stuffing box, thereby causing leakage and calling for frequent replacement. A perfect setting would of course equalize and thus minimize the wear. Movement of the rear bearing boxes up or down changes the relative position of the arc and allows a perfect equalizing adjustment.

The angle braces may be moved forward or backward at their lower extremities to preserve proper distance between the rear bearing and the polish rod.

The base plate 8, before mentioned, is situated about midway of the ends of the two I-beams 1, and removably secured to the top flanges thereof by means of bolts 24 which pass through transverse slots 25, shown in Fig. 4. These slots allow for the adjustment of the beams 1 inwardly and outwardly when gripping the well casing. The function of the base plate 8 is to serve as a support or pivot for the usual V 26, and is recessed at 27 and provided with ears 28 to receive and pivotally secure the axle 29 of the V, which rocks thereon. To strengthen the base plate, I provide a web or brace 30 cast on the under side thereof.

The operation of the device is obvious, as it is used with the regular pumping jack familiar to those skilled in the art. The pull rod 31 is attached at one end to an eccentric strap (not shown) at a central power station usually some distance from the well. The other end is attached to the rocking V as shown in Fig. 1. The pull of the rod 31 rocks the V 26 on the base plate 8, and forces the pitman rod 32 upwardly and with it the swinging beam 22. This actuates the polish rod 33 in the stuffing box and casing.

From the foregoing it is believed that my invention can be clearly understood, and in closing it may be stated that numerous changes may be made in the details of construction without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:—

1. A portable jack frame for oil wells, comprising a pair of beams forming a base

portion, a pair of clamps adjustably secured between said beams for gripping a well casing, means secured to said beams for supporting a rocking jack or V, uprights secured to said beams and means mounted on said uprights for supporting a pumping beam.

2. A portable jack frame for oil wells, comprising a pair of beams forming a base portion, a pair of clamps adjustably secured between said beams for gripping a well casing, a base plate secured to said beams, for supporting a rocking jack or V, uprights secured to said beams and bearing boxes adjustably mounted on said uprights for supporting a pumping beam.

3. A portable jack frame for oil wells as claimed in claim 2, wherein the base beams are pivotally secured to a transverse connecting part at one end.

4. A portable jack frame for oil wells as claimed in claim 2, wherein the clamps are of a V-block shape, and abut the inner surfaces of one end of the base beams, said beams being adapted to be drawn together by means of bolts, which force the clamps together to grip a well casing.

5. A portable jack frame for oil wells as claimed in claim 2, wherein the base plate for the jack or V is slotted at predetermined points to allow for the inward and outward movement of the base beams, said base plate being also provided with ears to retain the pivot of the V.

6. A portable jack frame for oil wells as claimed in claim 2, wherein the uprights are provided with a plurality of apertures for adjustably securing the bearing boxes in place thereon.

7. A jack frame for oil wells as claimed in claim 2, wherein the bearing boxes are recessed and provided with blocks of hard wood saturated with oil, said blocks being recessed to register with the recesses in the boxes, and receive the reduced ends of a gudgeon which supports the pumping beam.

In testimony whereof I affix my signature.

ROBERT E. ALEXANDER.