

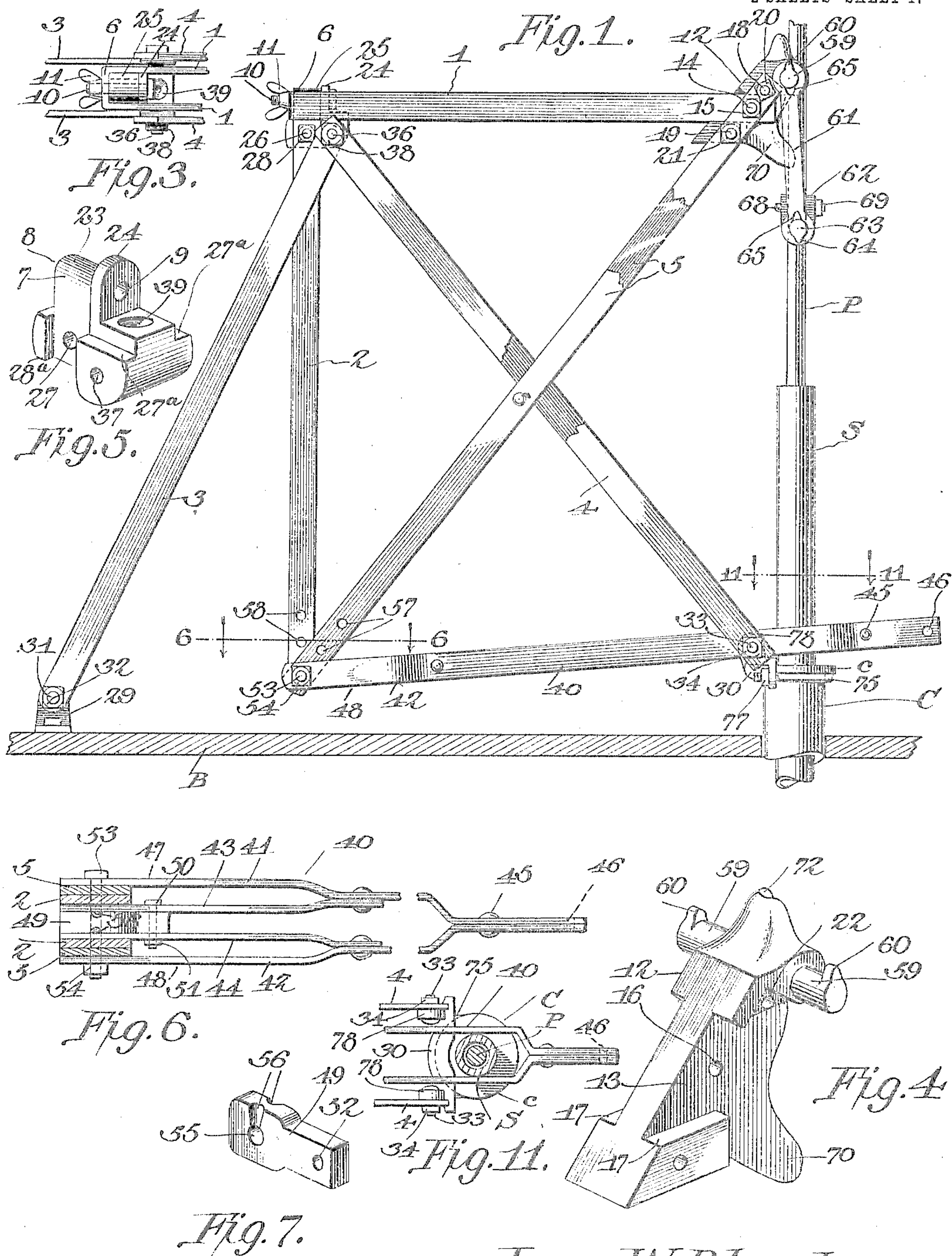
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PATENTED JULY 4, 1905.

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OIL WELL JACK.

APPLICATION FILED SEPT. 28, 1904.

2 SHEETS—SHEET 1.



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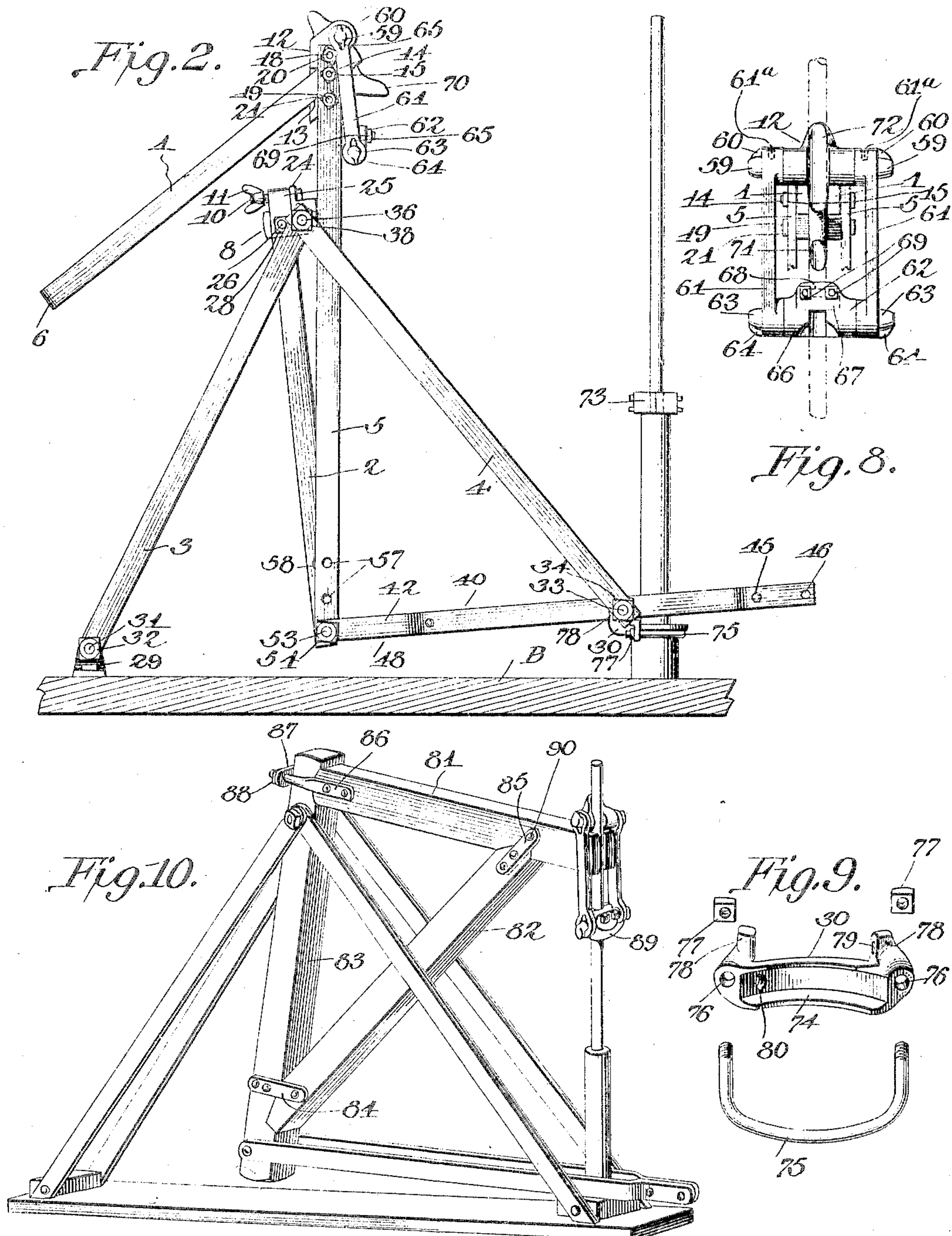
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# UNITED STATES PATENT OFFICE.

JAMES WILLIAM RHOADES, OF FOSTORIA, OHIO.

## OIL-WELL JACK.

SPECIFICATION forming part of Letters Patent No. 793,804, dated July 4, 1905.

Application filed September 28, 1904. Serial No. 226,402.

*To all whom it may concern:*

Be it known that I, JAMES WILLIAM RHOADES, a citizen of the United States, residing at Fostoria, in the county of Seneca and State of Ohio, have invented a new and useful Oil-Well Jack, of which the following is a specification.

This invention relates to oil-well jacks.

The object of the present invention is to facilitate the disconnection of the rock-beam from the polish-rod and its shifting out of the path of movement thereof, thereby to permit the said rod readily to be removed when necessary; furthermore, to improve the manner of connecting the parts of the frame of the jack, whereby with the greatest simplicity of construction the highest efficiency and durability in use are secured and liability of breakage in use reduced to a minimum.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of an oil-well jack, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there are illustrated two forms of embodiment of the invention, each capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

In the drawings, Figure 1 is a view in elevation of the preferred form of embodiment of the invention, showing the same in operative position with relation to a polish-rod of a pump. Fig. 2 is a similar view showing the rock-beam disconnected from the polish-rod and thrown back out of the path of the movement thereof. Fig. 3 is a detail view in plan, showing the connection between certain parts of the frame. Fig. 4 is a perspective detail view of an improved form of head-block or saddle. Fig. 5 is a similar view of an improved tail-block. Fig. 6 is a view in plan, partly in section, exhibiting the construction of the operating-lever or draw-bar. Fig. 7 is a perspective detail view of a combined spac-

ing-block and oil-cup used in connection with the operating-lever. Fig. 8 is a view in front elevation of the head-block. Fig. 9 is a collective detail view of an anchor-block for connecting the structure with the casing-head of the well. Fig. 10 is a perspective detail view of a slightly-modified form of jack. Fig. 11 is a detail view in plan of a part of the apparatus.

In Figs. 1 to 9 and Fig. 11 there is shown the preferred form of embodiment of the invention in which all the parts thereof are constructed of metal, while in the form of the invention shown in Fig. 10 the structure is composed partly of metal and partly of wood.

In the preferred form of the invention, C designates the ordinary casing-head of a well, S the stuffing-box, and P the polish-rod. As these parts may be of the usual or any preferred construction, illustration thereof is deemed unnecessary. The jack comprises, as usual, a rock-beam consisting of double arms 1 and 2, disposed when in normal position approximately at right angles to each other, a supporting-standard consisting of double legs 3 and 4, and a rocking beam-brace consisting of double arms 5. The beam-arm 1, as shown in Fig. 3, is an approximate U-shaped structure, the bend 6 of which is adapted to fit around a bearing 7, carried by a tail-block 8, the bearing being provided with a longitudinal orifice 9 to receive a bolt 10, carrying a thumb-nut 11, which operates to clamp the bend against the bearing, as clearly shown in Fig. 3. The forward ends of the arms 1 are secured to a head-block, (designated generally 12,) which constitutes one of the essential points of the present invention and serves to connect the arms 1 and the beam-braces 5. This head-block is provided on each side with a recess 13, in which the arms 1 rest, the recesses being of a depth equal to the thickness of the arms and are held assembled with the head-block by a bolt 14 and nut 15, the said bolt passing through a transverse orifice 16 in the head-block. The opposite shoulders 17 of the recesses form solid bearing-surfaces for the terminals of the arms 1, thus to hold them against any vibratory movement when the machine is in operation. The upper ends of



the beam braces or arms 5 are also combined with the head-block and bear against the outer sides of the terminals of the arms 1 and are held combined with the block through the medium of two bolts 18 and 19 and nuts 20 and 21 in addition to the bolt and nut 14 and 15, and by this means of securing the brace-rods to the head not only are the arms 1 additionally held against displacement, but the beam-braces are caused to perform their function in a manner that will be positive under all conditions. It will be noted that the terminals of the arms 5 rest in sockets 22, formed in the sides of the head-block, and the walls of these sockets against which the upper ends of the beam-braces bear will operate to receive the jar and thrust, and thus relieve the bolts from undue strain and from any tendency to loosen. As will be seen by reference to Fig. 5, the upper side of the bearing 7 is rounded, as at 23, and is provided with a stop-flange 24. This rounded portion is engaged by the bend 25 of the two arms 2 of the rock-beam and bears against the stop-flange 24, the said arms being combined with the tail-block by a bolt 26, which passes through an orifice 27 in the bearing and carries a nut 28. To cause the connection between the arms 1 and 2 and the tail-block to be of the firmest possible character, the latter is provided with shoulders 27<sup>a</sup> and 28<sup>a</sup>, against which the respective arms rest, and are held thereagainst through the medium of the bolts that combine them with the tail-block. This manner of combining the members of the rock-beam with the tail-block will be found of the highest efficiency in preventing any lost motion under the operation of the apparatus and not only obviates unnecessary wear of the parts, but also any loosening of the assembling-bolts. The standard, which, as before stated, consists of pairs of legs 3 and 4, is supported at the rear of the structure by connecting the legs 3 to a bracket 29, secured to the base B of the apparatus, and the legs 4 to an anchor-block 30, secured to the casing-head, the construction of which latter part will hereinafter be described. The legs 3 are disposed exteriorly of the beam-arms 2, and the legs 4 are arranged outside the beam-braces 5, as will readily be seen by reference to Fig. 1, and by this arrangement side shake of the apparatus is in a large measure obviated. The bracket 29 may be of the usual or any preferred construction, and the legs 3 are held combined therewith through the medium of a bolt 31 and a nut 32, while the legs 4 are held combined with the anchor-block 30 by a bolt 33 and nut 34. Disposed at opposite sides of the tail-block is one of each of the legs 3 and 4, the legs 3 being disposed against the tail-block and the legs 4 against the legs 3, as will be readily understood by reference to Fig. 3, and the legs are held combined with the tail-block through a bolt 36, which passes through

an orifice 37, extending entirely through the tail-block, and is held in position by a nut 38. In order to supply a lubricant to the bolt, there is an oil well or cup 39 provided in the tail-block which communicates with the orifice 37 and operates in a manner that will be well understood to feed oil to the parts to be lubricated in the operation of the machinery. The operating rod or lever 40 is constructed of four bars of metal 41, 42, 43, and 44, the bars 41 and 42 having their forward portions spaced apart a sufficient distance to straddle the stuffing-box S and their outer terminals bent inward and secured together by a bolt or rivet 45, an orifice 46, disposed near the free end of the rod, serving as a means of connection with a pitman-rod or other suitable means for imparting a rocking movement to the beam. The rear portions of the bars 41 and 42 are deflected laterally, and connected to their inner sides are the bars 43 and 44, which are likewise deflected laterally, the two pairs of bars 41 43 and 42 44 forming two yokes 47 and 48, between each of which is disposed one of the beam-braces 5 and one of the beam members 2, as clearly shown in Fig. 6. The two yokes 47 and 48 are held properly spaced by a spacing-block 49, which is combined with the bars 43 and 44 by a bolt 50 and nut 51, the bolt passing through an orifice 52 in the spacing-block provided for the purpose. The yokes 47 and 48 are combined with the spacing-block by a bolt 53 and nut 54, the bolt being passed through suitable orifices in the bars 41-44, and through the beam members 2 and 5, and through an orifice 55 in the spacing-block. In order to supply a suitable lubricant to the bolt 53, which constitutes the pivot-bolt, each side of the head-block is provided with an oil-groove 56, which communicates with the orifice 55, as will be readily understood by reference to Fig. 7. By this manner of constructing the operating-rod and combining the beam members therewith the greatest stability is secured with a maximum of lightness, and further side play or motion will be materially lessened, thereby reducing the wear upon the pivot-bolt 54. In order to vary the throw of the rock-beam, which might be desired under certain conditions, the beam-braces and arms 2 are each provided with a plurality of orifices 57 and 58, into which the pivot-bolt 54 may be shifted as required. The head-block, a detail view of which is shown in Fig. 4, is provided with lateral trunnions 59, having terminal upstanding ears 60, and these trunnions are engaged by the upper ends of a pair of links 61, the lower ends of the links having combined with them a polish-rod grip, (designated generally 62,) which latter is also provided with laterally-projecting trunnions 63, having downward-extending ears 64. The upper ends of the links are provided with oil-holes 61<sup>a</sup>, by which a lubricant is supplied to the trunnions



59. The function of the ears on the two sets of trunnions is to prevent accidental disconnection of the links therefrom, and to secure this result the openings 65 in the links that engage the trunnions are approximately key-hole-shaped and disposed in reverse order—that is to say, the necks of the openings in the upper ends of the links project downward and those in the openings at the lower end of the links project upward—this being exactly in the reverse order of the disposition of the ears. The grip, to which reference has been made, comprises a head 66 and a clamp-plate 67, the opposed faces of the two parts being grooved to receive the polish-rod, and the clamp-plate being secured to the head and against the polish-rod through the medium of a U-shaped bolt 68, the ends of which project through the clamp-plate and carry nuts 69. As will be seen more particularly by reference to Fig. 4, the head-block is provided at its lower portion with an extension 70, and this extension as well as the outer face of the head-block are provided, respectively, with aligned grooves 71 and 72, in which the polish-rod works, the two grooves cooperating to cause the polish-rod to move in a vertical line, and the approximate vertical disposition of the links, which is secured by the arrangement of the two sets of trunnions, causing the rod to move always in a vertical line, and thus reduce the power necessary to operate it. As stated at the outset of the specification, one of the essential features of this invention is to permit disconnection of the beam from the polish-rod and its shifting out of the path of movement thereof. This is effected by loosening the bolts 69, removing the bolt 10, throwing the bend of the arms 1 out of engagement with the bearing 7, slipping the grip off the polish-rod, and then moving the brace, and with it the beam-arms 1, to position shown in Fig. 2. Of course it will be understood that prior to loosening the grip a stop-block 73 of the usual or any preferred construction will be secured to the polish-rod and will bear upon the upper end of the stuffing-box, and thus positively hold the polish-rod from dropping. These parts are all that are necessary to be disturbed when the polish-rod is to be removed, and it will be seen that this procedure may be effected with but small loss of time and at the expense of the minimum of labor. The anchor-block 30, which combines the legs 4 with the casing-head, is a segmental casting and is provided with a flange 74 to engage with the flange *c* of the casing-head, as clearly shown in Fig. 1, a U-bolt 75 being employed to complete the circle to surround the casing-head. The terminals of the U-bolt project through orifices 76, formed at the terminals of the anchor-block, nuts 77, screwed on the terminals of the bolt, serving to hold it positively combined with the block. The block

is provided with two upstanding lugs 78, each having a transverse orifice 79, and through these two orifices passes the bolt 33, that serves to hold the legs 4 combined with the anchor-block. The block is further provided with a lateral orifice 80 to receive a bolt, which by engagement with the casing-head will positively clamp the anchor-block against turning. This manner of combining the standards 4 to the casing-head will result in an extremely rigid connection and one which will effectively prevent any rotary movement and thus strain to the apparatus when in operation.

In the form of the invention shown in Fig. 10 the main difference resides in the fact that the rock-beam is constructed of three wooden beams 81, 82, and 83, the beam 82, which constitutes the brace, being secured to the beams 81 and 83 by straps 84 and 85, bolted to the opposite sides thereof. At the rear of the beam 81 and at the opposite sides thereof are bolted straps 86, (only one being shown,) the rear ends of which project beyond the beam 83 and are threaded, and on the threaded portions is arranged a clamp-plate 87, which is secured in position by nuts 88, one only of which is shown. The grip 89 is of the same construction as that already described and is combined in the same manner with the polish-rod. To effect disconnection of the beam member 81 from the polish-rod to permit it to be removed to the position shown in Fig. 2, the upper bolt 90, which holds the straps 85 combined with the beam 81, is removed, and the nuts 88 are removed and the clamp-plate 87 detached, thereby permitting the rock-beam to be lifted bodily from the structure, it being of course understood that the grip has been loosened upon the polish-rod in the manner already described. This latter form of the invention is cheaper of construction than the form first described and will in many instances be found to be as efficient in use. It will be seen from the description just given that the feature common to both of the apparatus is the adaptability of shifting the upper beam-arm and the disconnection of the grip from the polish-rod to permit removal of the latter.

While the forms of the invention herein shown and the manner of combining the parts have been found thoroughly efficient in use, it is to be understood that the invention is not to be limited thereto, as various changes in the form and manner of assembling the parts may be adopted and still be within the scope of the invention.

Having thus described the invention, what is claimed is—

1. In an apparatus of the class described, a tail-block provided with a bearing having a rounded crest, a rock-beam having a member to straddle the bearing, and means for holding the member assembled with the tail-block.



2. An apparatus of the class described comprising a tail-block having a bearing provided with a rounded crest and with shoulders on each side of the bearing, a rock-beam having  
5 a member to straddle the bearing and to engage the crest and the shoulders, and means for holding the member assembled with the tail-block.

3. An apparatus of the class described comprising a tail-block provided with a bearing  
10 having a curved upper terminal and with vertical and horizontal shoulders, a rock-beam having a vertical member provided with a bend to straddle the bearing and to engage  
15 the vertical shoulders, means for holding the member assembled with the tail-block, a horizontal beam member adapted to straddle the said bearing and the first-named beam member, and to engage the horizontal shoulders,  
20 and means for detachably connecting the horizontal beam member with the tail-block.

4. In an apparatus of the class described, the combination with a rock-beam, of an operating-lever embodying a pair of yokes, a  
25 combined oil-distributor and spacing-block interposed between the yokes, a rock-beam

embodying vertical and horizontal beam members and a beam-brace, the lower terminals of the vertical beam members and beam-brace being disposed between the yokes, and a pivot-  
30 bolt passing through the yoke, spacing-block and beam members and beam-brace.

5. An apparatus of the class described comprising a head-block provided on its outer  
35 face with a plurality of open-sided polish-rod guides, trunnions projecting laterally from the block, a polish-rod guide supported by the trunnions, a tail-block provided with a bearing having a rounded crest, a rock-beam  
40 embodying a member having one terminal secured to the head-block and its other terminal constructed to straddle the bearing of the tail-block, and means for detachably connecting the rock-beam member with the tail-block.

In testimony that I claim the foregoing as  
45 my own I have hereto affixed my signature in the presence of two witnesses.

JAMES WILLIAM RHOADES.

Witnesses:

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