March 3, 1931. A. CLACSON 1,794,443

PUMP JACK

Filed June 30, 1928

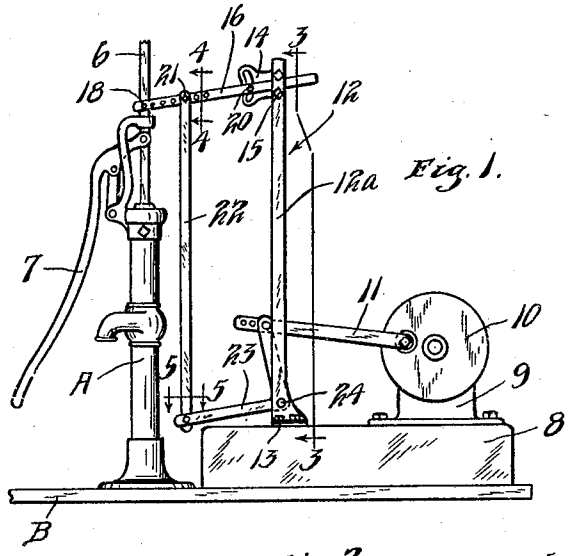


Fig. 1.

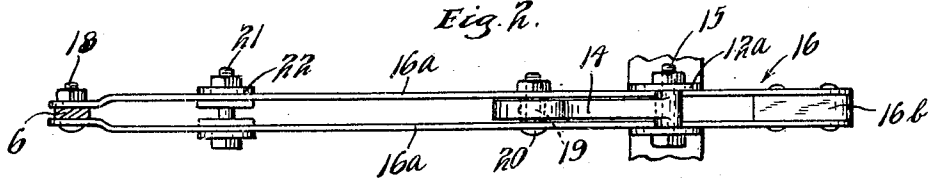


Fig. 2.

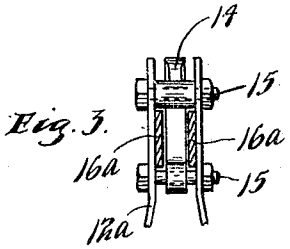


Fig. 3.

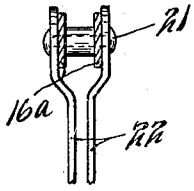
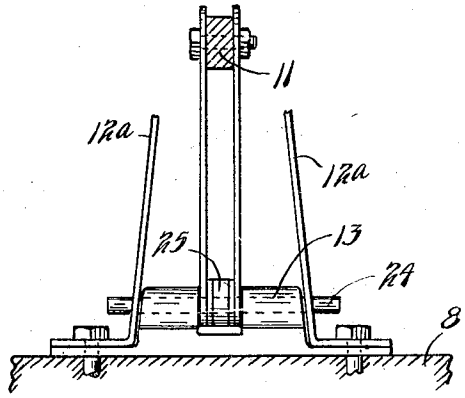


Fig. 4.



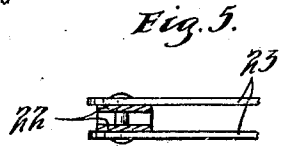


Fig. 5.

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UNITED STATES PATENT OFFICE

ANDERS CLACSON, OF LEWIS RUN, PENNSYLVANIA

PUMP JACK

Application filed June 30, 1928. Serial No. 289,389.

It is the object of this invention to provide a novel and improved pump jack of cheap and simple construction which may be used for raising and lowering the pump plunger rod of an ordinary water pump in a true vertical plane.

To these ends, the invention consists in the novel parts and novel combinations of parts hereinafter defined in the claims and described in the following specification, made in connection with the accompanying drawings, wherein like reference characters refer to the same, or similar parts throughout the various views and, in which,

Fig. 1 is a view in side elevation of the pump jack applied to an ordinary water pump;

Fig. 2 is a plan view of the pump jack;

Fig. 3 is a vertical section through the pump jack taken substantially on the line 3—3 of Fig. 1, as is indicated by the arrows;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 1, as is indicated by the arrows, and

Fig. 5 is a horizontal section taken on the line 5—5 of Fig. 1, as is indicated by the arrows.

Referring to the drawings, a water pump A of typical standard construction is illustrated and is shown as being mounted on a platform B. The pump plunger rod is designated by the numeral 6 and the handle of the pump is designated by the numeral 7. A base 8 is mounted on the platform B at one side of the pump A and a suitable power mechanism 9, such as an electric motor, or gasoline engine, is illustrated as being secured to the base adjacent its end farthest away from the pump, hereinafter designated the rear end. The power unit 9 carries a rotatable disk 10 and a link 11 is pivotally secured to the disk 10 in an eccentric position relative to the center of rotation of the disk.

In accordance with the present invention, a suitable upstanding standard 12 is provided, and this standard is illustrated as being composed from the two bars 12*a* having their lower ends spaced a considerable distance apart, and provided with horizontal bends which rest on a bearing block 13 mounted on the base 8 and extending between the lower ends of the bars 12*a*. The bearing block 13 and the lower ends of the bars 12*a* may be suitably bolted or otherwise secured to the base 8. The bars 12*a* project diagonally upwardly and toward each other from their lower ends, abut shoulders on the bearing blocks 13 and are bent adjacent their upper ends, so that they extend in parallel closely spaced relationship. A camway 14 extends between the upper parallel portions of the bars 12*a* of the standard and projects forwardly therefrom. The camway is provided with two spaced hubs adjacent its rear end and nutted bolts 15 extend through the hubs of the camway and the upper ends of the two bars 12*a*, to secure the camway to the standard 12 and at the same time to secure the upper ends of the bars 12*a* together in parallel spaced relationship. The upper hub of the camway preferably extends throughout the whole distance between the upper ends of the two bars 12*a* to space the two bars, and the lower hub is of short length and occupies merely the central space on the lower bolt 15 between the two bars 12*a*. The slot in the camway is substantially arcuate and is concave relative to the plunger rod 6 of the pump. An arm 16 formed from two bars 16*a* held in parallel spaced relationship by a spacing block 16*b* at their rear ends, and secured to the block and having a plurality of spaced holes adjacent their forward ends, is pivotally secured at its forward end to the plunger rod 6 of the pump by means of the nutted bolt 18. The two bars 16*a* are bent slightly toward each other at their forward ends, and one of the bars extend at either side of the plunger rod 6. The main portion of the camway 14 extends between the two bars 16*a* of the arm 16 adjacent its rear end, while the rear portion of the camway extends between the two bars 12*a* of the standard 12 and between the two bolts 15. The bars 16*a* extend one at either side of the lower hub of the camway 14, mounted on the lower bolt 15. The upper hub of the camway 14 mounted on the upper bolt 15, and the lower bolt 15 will form ful-

crum members for the arm 16. A cam roller 19 mounted on a bolt 20 secured to the two bars 16*a* adjacent the central portion thereof, fits within the arcuate slot of the camway 14 and works therein. Pivotally secured to the arm 16 adjacent its forward end by a pivot 21 is a downwardly projecting link 22 formed from two bars, and this link is pivoted at its lower end to one arm of a bell crank lever 23 also formed from two bars. The bell crank lever is pivotally mounted on a short shaft 24 which is journaled in the bearing block 13. A collar 25 is secured to the shaft 24′ intermediate the two bars forming the bell crank lever 23, and washers are interposed between the inner sides of the bars of the bell crank lever and the collar 25. Inner shoulders on the bearing blocks 13 abut the outer sides of the bars forming the bell crank lever and it will thus be seen that the bars forming the bell crank lever will be held in spaced relationship and that the shaft 24 cannot slide longitudinally. If desired, small spacing collars may be interposed about the pivot 21 inwardly from the bars 16*a*. As illustrated in Fig. 5, the two bars forming link 22 are formed from one piece of material having a U-shaped portion joining the lower ends of the two bars. The U-shaped portion of the link will brace and hold the bars forming the bell crank lever 23 in spaced arrangement at their ends pivoted to the link 22. The link 11 is provided with a series of spaced holes at its forward end and the other arm of the bell crank lever 23 will be pivotally secured to the link 11 through one of these holes.

In operation, the bell crank lever may be oscillated by means of the link 11 which is eccentrically mounted on the disk 10 and will move backwardly and forwardly as the disk 10 is rotated. Motion will be imparted from the bell crank lever 23 to the link 22 which will first act to raise the forward end of arm 16 and then to lower the same. As the arm 16 is raised, it will swing about the lower bolt 15 as a fulcrum point, and the cam slot in the camway 14 will so guide the cam roller 19 mounted on the arm 16, that the forward end of the arm will be capable of movement in only a vertical plane. As the arm is raised, therefore it will slide first rearwardly and then forwardly respective to the lower bolt 15. Upon the downward movement of the link 22, the forward end of the arm 16 will be carried downwardly, thereby causing the rear portion of the arm to strike the upper hub of the camway 14 causing the upper hub to act as a fulcrum. The slot in the camway 14 will act to restrict the downward movement of the forward end of the arm 16 to movement in only a vertical plane, and the arm will be free to slide forwardly and rearwardly respective to the upper bolt 15, and the upper hub of the camway 14. As the forward end of the arm 16 is moved upwardly and downwardly, the plunger rod of the pump will be actuated to operate the pump. A straight upward and downward movement of the plunger rod will occur.

The device is cheap and simple in construction, can be readily installed on practically any type of pump and will be found to be most efficient in action.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of the present invention.

What is claimed is:

1. A pump jack or the like having in combination a pair of upstanding spaced bars forming a standard, a pair of horizontal vertically spaced fulcrum members mounted in and extending between said spaced bars, an arm having a forward end adapted to be pivotally secured to a pump plunger rod or the like and having a free rear end projecting through the opening between said spaced bars and said fulcrum members for sliding movement, a camway secured to said standard, means mounted on said arm and working within said camway, and means for moving the forward end of said arm upwardly and downwardly, said camway acting with said standard and fulcrum members to restrict the forward end of said arm to movement in a vertical line.

2. A pump jack or the like comprising a standard including two bars placed in spaced arrangement adjacent their upper ends, a pair of vertically spaced horizontal bolts connecting said two bars adjacent their upper ends, a camway having a forward portion of narrower width than the spacing between the upper ends of said bars and having a first rear hub of the same width as the spacing between the upper ends of said bars and fitting on one of said bolts between the bars, said camway having a second rear hub of less width than the spacing between the upper ends of said bars and centrally mounted between said bars on the other of said bolts, an arm composed of two bars, straddling said camway and extending between said two bolts, said arm being adapted to engage both said first mentioned hub of said camway and said second mentioned bolt for sliding fulcrumed movement thereon, said arm at its forward end being adapted to be pivoted to the plunger rod of a pump or the like and a member connected to said arm and working within said camway whereby when reciprocating movement is imparted to said arm, the forward end thereof will be confined to movement in a true vertical line.

In testimony whereof I affix my signature.

ANDERS CLACSON.