

(No Model.)

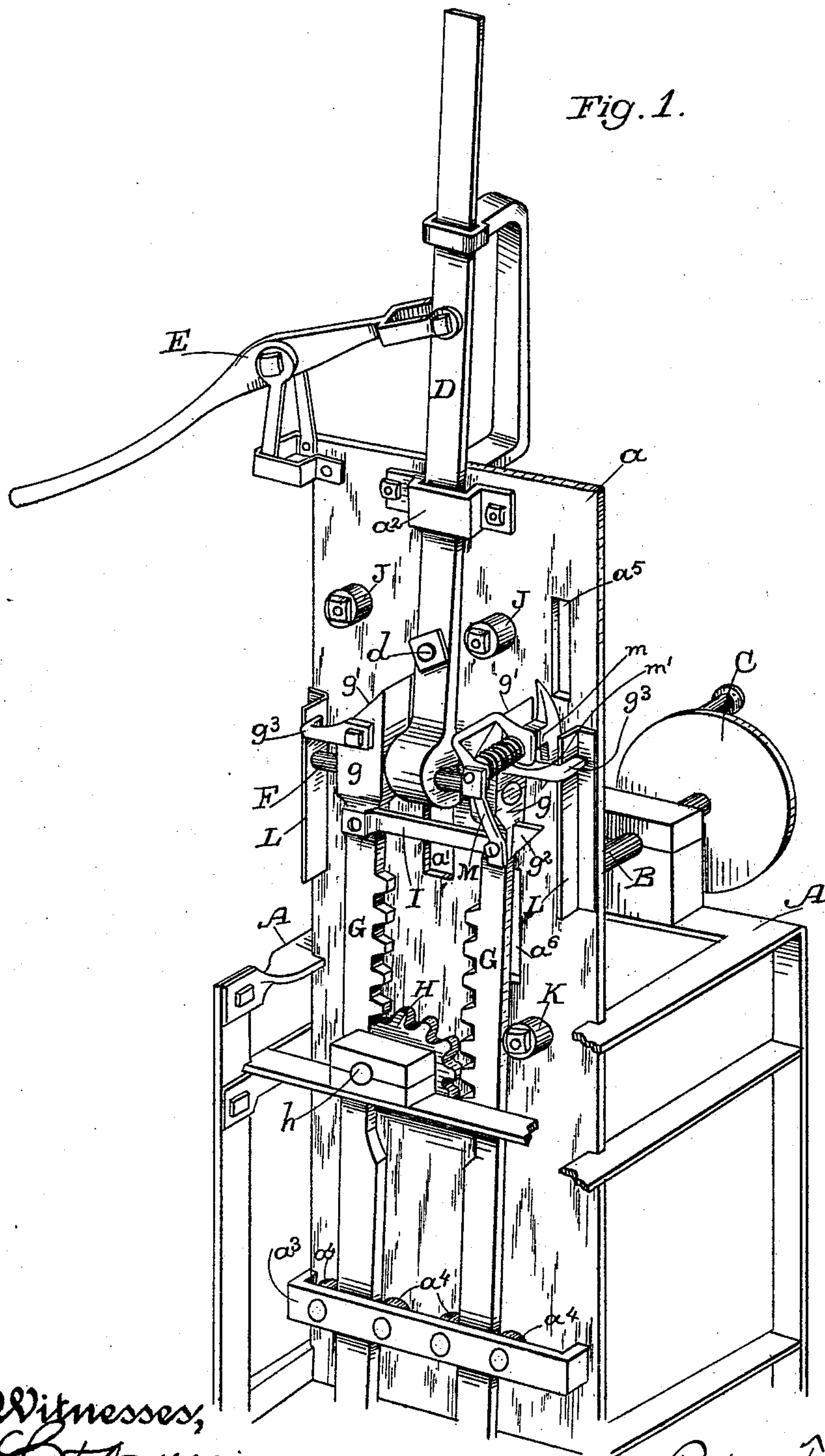
2 Sheets—Sheet 1.

P. FRICHETTE.
PUMP POWER.

No. 495,322.

Patented Apr. 11, 1893.

Fig. 1.



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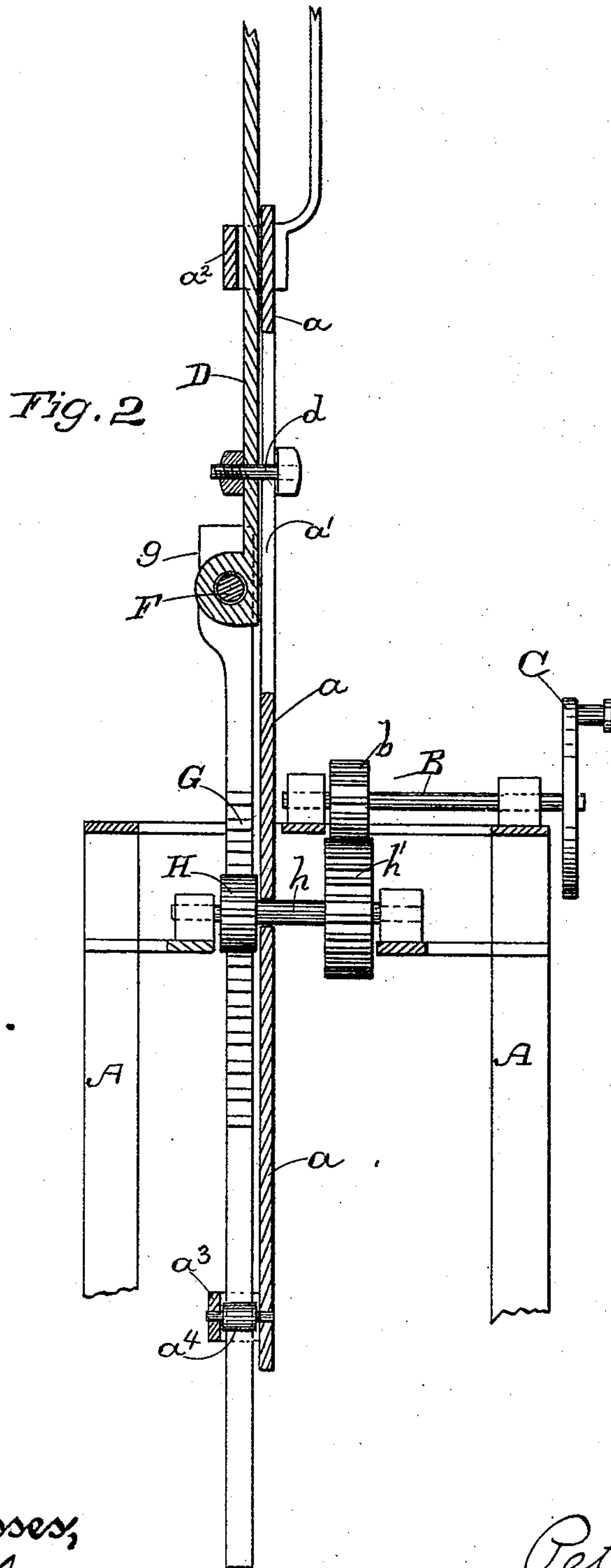
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2 Sheets—Sheet 2.

P. FRICHETTE.
PUMP POWER.

No. 495,322.

Patented Apr. 11, 1893.



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UNITED STATES PATENT OFFICE.

PETAR FRICHETTE, OF SHERIDAN, CALIFORNIA.

PUMP-POWER.

SPECIFICATION forming part of Letters Patent No. 495,322, dated April 11, 1893.

Application filed December 12, 1892. Serial No. 454,953. (No model.)

To all whom it may concern:

Be it known that I, PETAR FRICHETTE, a citizen of the United States, residing at Sheridan, Placer county, State of California, have invented an Improvement in Pump-Powers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of intermediate devices designed to increase the efficiency of a pump by increasing the number of its strokes, with the same movements of the initial driving mechanism.

My invention involves the principle of that mechanical movement in which opposing racks are thrown alternately into and out of gear with an intervening pinion; and it consists in the novel construction, arrangement and combinations of parts hereinafter fully described and specifically pointed out in the claims.

The object of my invention is to provide a device capable of transmitting the full movement of the initial power device, whether it be a windmill, horse-power or pump-handle, to operate the pump. With these powers, having vibrating or reciprocating motion, one half their movement, namely, the down stroke is lost as they operate the pump only on the up stroke. With my device the down stroke is utilized as well as the up stroke, and the pump is thereby operated faster and its efficiency increased with the same amount of movement of the initial power.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a perspective view of my device. Fig. 2 is a vertical section of same.

A is a frame, upon which is mounted the shaft B which, through the crank disk C, is adapted to drive the pump, unnecessary herein to show.

D is a vertically reciprocating rod, representing a suitable connection with any initial power device, such as a windmill, a horse power, or, as here shown, a pump handle E. This rod D is suitably mounted, being here shown as guided upon a plate α secured to frame A, said plate having a slot α' in it, through which passes and plays a bolt d from rod D; and said rod is further guided by the stirrup α^2 secured to the top of plate α . The lower end of rod D is secured to a cross foot

F, upon the projecting ends of which are mounted and adapted to slide, the upper ends or heads g of the racks G. The lower ends of these racks play freely down through a stirrup α^3 on the bottom of plate α , and are guided therein by suitably located anti-friction rollers α^4 . Between these racks lies a pinion H, which, though it may be mounted upon the end of the drive shaft B, is here shown as mounted upon a short counter-shaft h , the other end of which carries a gear h' which meshes with a gear b on shaft B, whereby, through proper proportions of these gears, the speed of rotation of the drive shaft may be determined. The racks G, near their heads, are connected by a link I to insure their operation in unison, and said racks are separated by a distance greater than the diameter of the pinion H, whereby when one of the racks is in engagement with the pinion on one side, the other is entirely free of said pinion on the other side, and vice versa. The heads of the two racks are formed into or are provided with inclined planes or cams represented by g' , similarly arranged and located, and adapted to impinge upon the fixed studs J, secured to plate α above, and preferably in the form of anti-friction rollers. The effect of this impingement is to throw both racks over to one side, here shown as to the right, when facing the machine, whereby the left hand rack is thrown to engagement with pinion H and the right hand rack is thrown out of engagement therewith. In this movement the heads g of the racks slide freely upon the cross foot F.

Upon the racks, below their heads, here shown as upon one rack only (the right one), is a cam g^2 . This cam is adapted to impinge upon a fixed stud K on plate α , and the effect is to throw both racks over in the other direction, that is to the left, whereby the right hand rack is thrown to engagement with the pinion H and the left hand rack is thrown out of engagement therewith.

Upon plate α , near each side of its middle portion, are the flanges L, which serve as guides, and with these flanges engage the hook fingers g^3 secured to the sides of the rack heads. In the plate α are made the slots α^5 and α^6 , the former being above the flange L and the latter below it and removed from

its vertical plane a little more than is the slot a^5 .

Upon the head of one of the racks is a bracket M in which is mounted a safety lug m controlled by a spring m' .

The operation of my device is as follows:—
When the rod D is at the limit of its up stroke, the studs J, by contact with the cams g' of the rack heads, have forced the sliding heads of the racks and the racks themselves over to the right, whereby the left hand rack is thrown to engagement with the pinion H and the right hand rack is thrown out of engagement therewith. At this time the hook finger g^3 of the right hand rack lies above and outside of the vertical plane of the flange guide L on that side, and the hook finger of the other rack lies inside of the vertical plane of the other flange guide. The safety lug m , under the influence of its spring m' , is thrown into the upper guide slot a^5 . Now, as the rod D descends, the left hand rack rotates the pinion H, and through the connections described the drive shaft B and crank disk C are operated. The racks are first guided down true by the engagement of the safety lug m with the slot a^5 , until the hook finger g^3 of the right hand rack passes to its engagement with the flange guide L on the outside and the other hook finger passes down inside of its flange guide. Thus both racks are held true by these flange guides during the entire descending stroke. When the limit of the down stroke is nearly reached, and the hook fingers have cleared the flange guides below, the cam g^2 , coming in contact with the fixed stud K, throws both racks over to the left, whereby the right hand rack comes to engagement with pinion H and the left hand one is thrown out of engagement therewith. Now, on the up stroke of rod D, the safety lug m engaging slot a^6 first guides the movements of the racks, and then the hook fingers again engaging their flange guides (this time the left hand one being outside and the right hand one inside), continue to hold said racks true. On this up movement the right hand rack continues the rotation of pinion H in the same direction. When the upper limit is reached the operation is repeated, the racks being thrown over, as first described. Thus it will be seen that the drive shaft is operated on both movements of the rod D, and the pump is operated faster. The safety lug m , as seen in Fig. 1, has a segmental shape, and is so affected by its spring m' that the bulging part only of its body will lightly enter the slots a^5 and a^6 , thus fully serving the purpose of a temporary guide, until the

hook fingers g^3 engage the flanges L', at the same time permitting said lug, under the action of its spring, to move forward into the slots and to recede therefrom by simple contact of its ends in passing over the slot ends.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pump power consisting of a drive shaft to be connected with the pump, a pinion for operating said shaft, a reciprocating rod to be connected with the initial power, and having a cross foot, opposing racks one on each side of the pinion and having heads mounted and adapted to slide upon the cross foot of the reciprocating rod, cams on said racks, and fixed studs with which said cams engage whereby each of said racks are alternately thrown into and out of engagement with the pinion, substantially as herein described.

2. A pump power consisting of a drive shaft to be connected with the pump, a pinion for operating said shaft, a reciprocating rod to be connected with the initial power and having a cross foot, opposing racks one on each side of the pinion and having heads mounted and adapted to slide upon the cross foot of the reciprocating rod, cams on said racks and fixed studs with which they engage for alternately throwing each of said racks into and out of engagement with the pinion, hook fingers on said racks and fixed flange guides with which said fingers engage to hold the racks true in their movements substantially as herein described.

3. A pump power consisting of a drive shaft to be connected with the pump, a pinion for operating said shaft, a reciprocating rod to be connected with the initial power and having a cross foot, opposing racks one on each side of the pinion and having heads mounted and adapted to slide upon the cross foot of the reciprocating rod, cams on said racks and fixed studs with which they engage for alternately throwing each of said racks into and out of engagement with the pinion, hook fingers on said racks and fixed flange guides with which said fingers engage to hold the racks true in their movements, and the safety lug and slots for guiding the hook fingers to their engagement with the flange guides, substantially as herein described.

In witness whereof I have hereunto set my hand.

PETAR FRICHETTE.

Witnesses:

S. H. NOURSE,
GEO. H. STRONG.