

(No Model.)

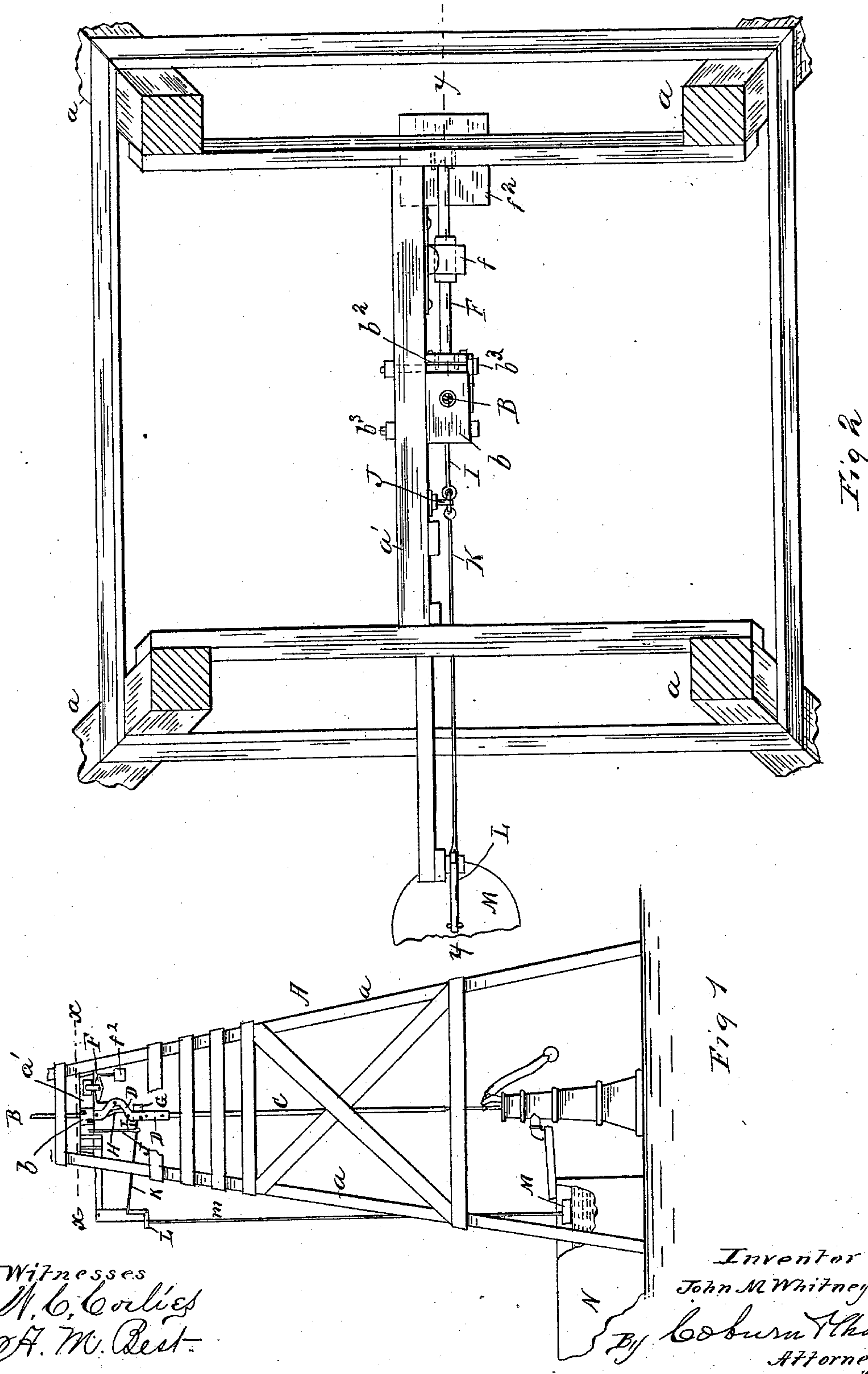
2 Sheets—Sheet 1.

J. M. WHITNEY.

AUTOMATIC STARTING AND STOPPING MECHANISM FOR WINDMILL PUMPS.

No. 300,177.

Patented June 10, 1884.



Witnesses
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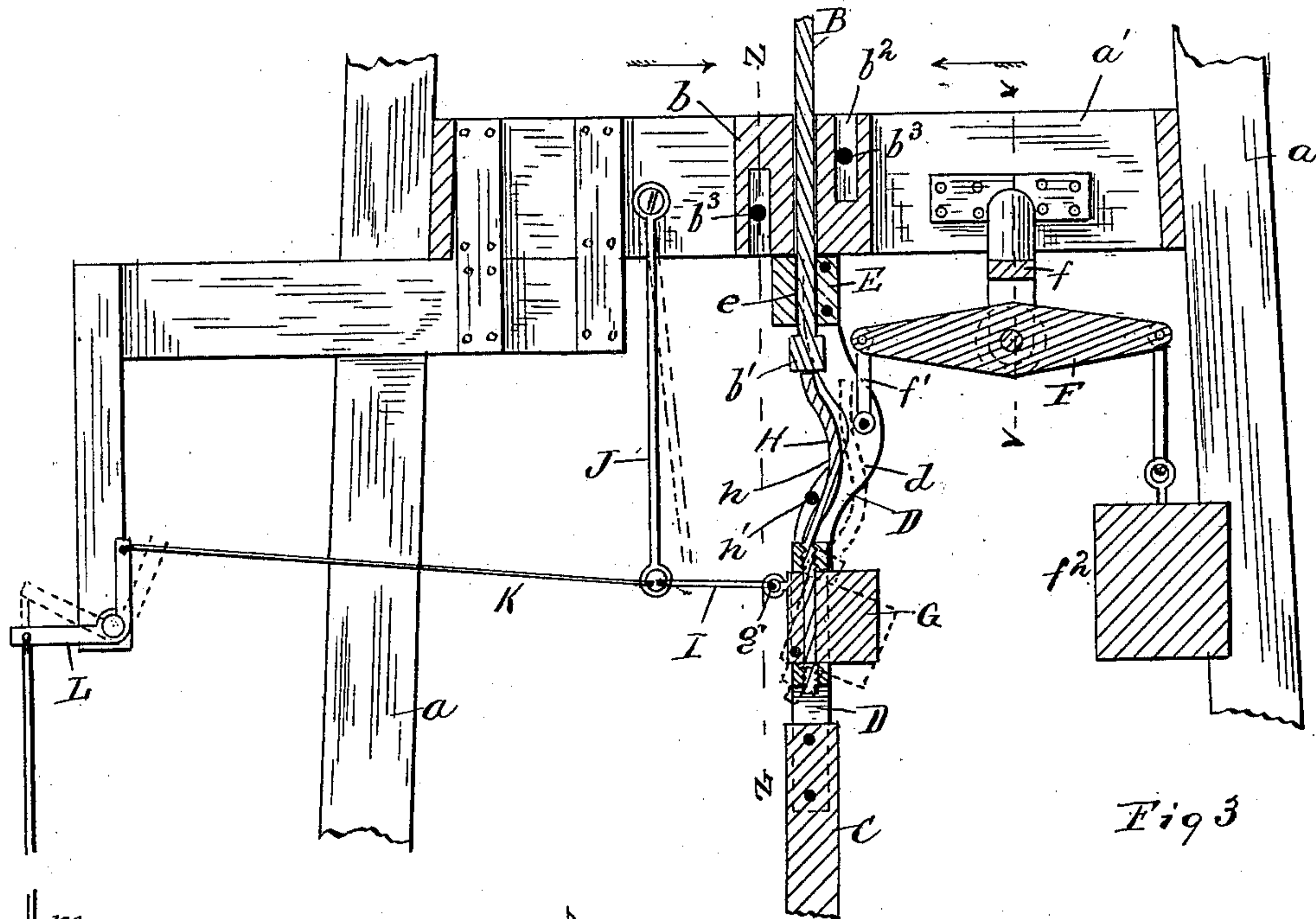


Fig 3

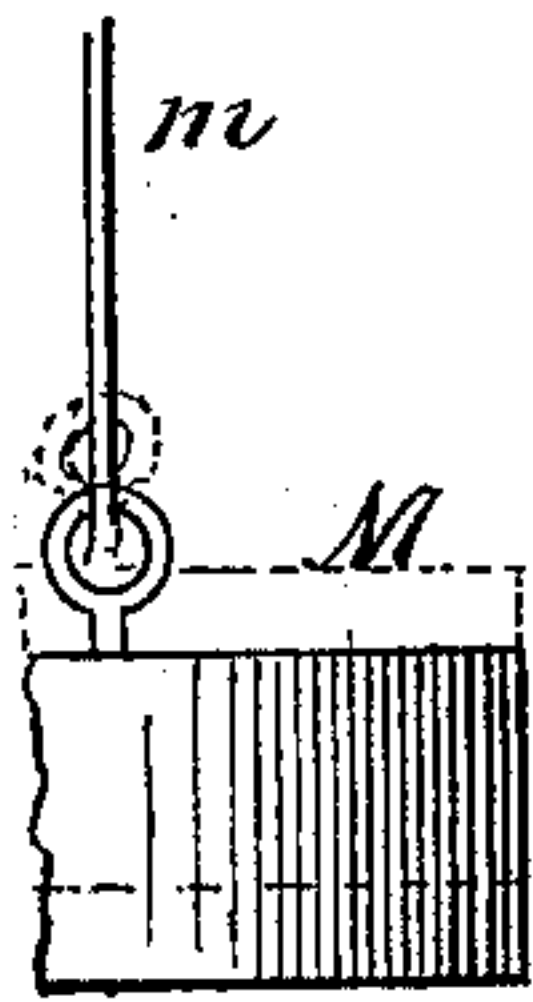


Fig 4

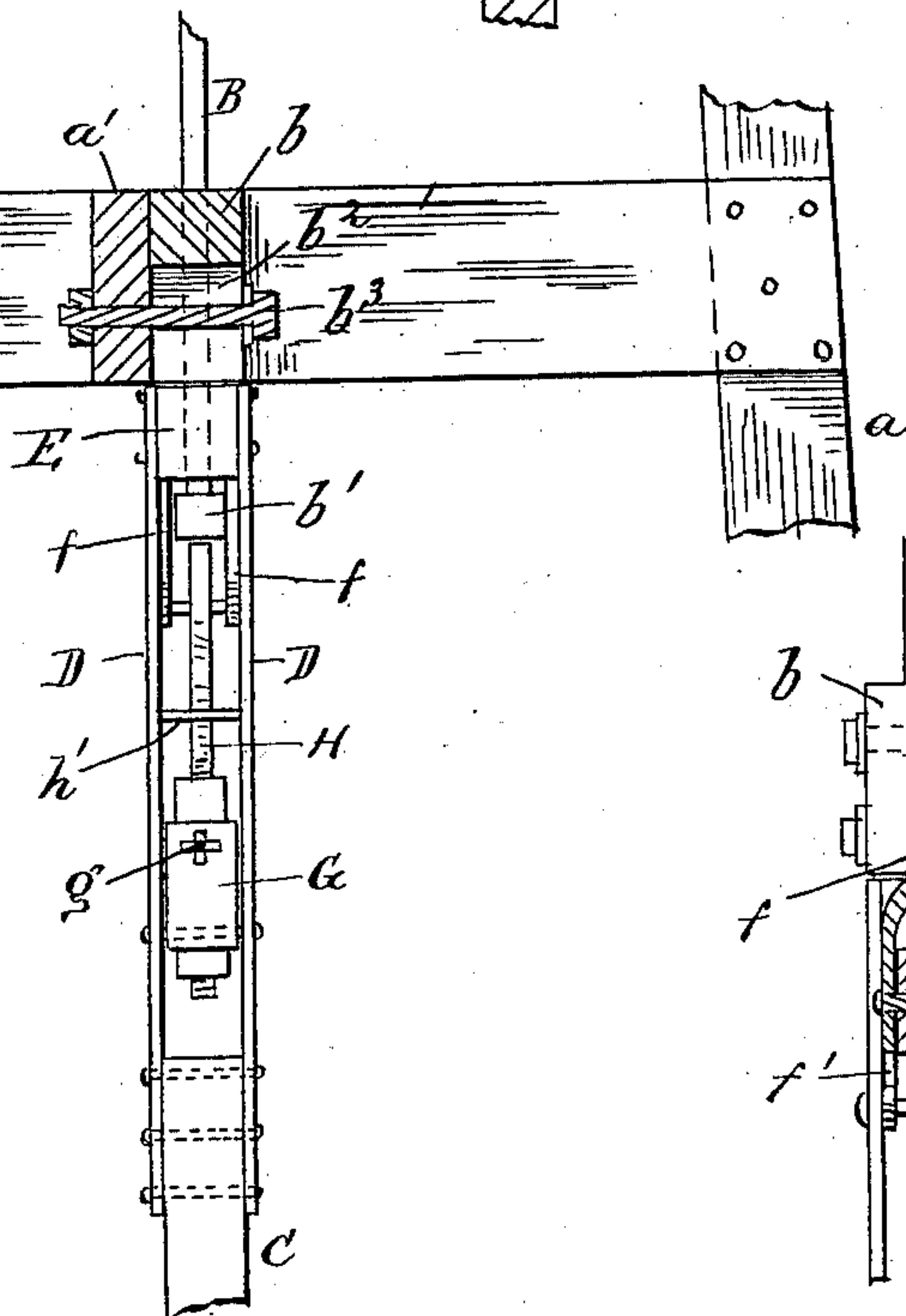


Fig 5

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UNITED STATES PATENT OFFICE.

JOHN M. WHITNEY, OF MOUNT PULASKI, ILLINOIS.

AUTOMATIC STARTING AND STOPPING MECHANISM FOR WINDMILL-PUMPS.

SPECIFICATION forming part of Letters Patent No. 300,177, dated June 10, 1884.

Application filed November 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. WHITNEY, a citizen of the United States, and residing at Mount Pulaski, in the county of Logan and State of Illinois, have invented a certain new and useful Improvement in Automatic Starting and Stopping Mechanism for Windmill-Pumps, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents an elevation of a windmill-tower and pump attachment, the mill and upper portion of the tower being removed below the platform; Fig. 2, a plan section of the same taken on the line *xx*, Fig. 1, and on an enlarged scale; Fig. 3, a detail vertical section taken on the line *yy*, Fig. 2, and on the same enlarged scale; Fig. 4, a detail section taken on the line *zz*, and looking in the direction of the left-hand arrow, Fig. 3, and on the same enlarged scale; and Fig. 5 a detail section taken on the line *vv*, looking in the direction of the right-hand arrow, Fig. 3, and on the same enlarged scale.

My invention relates to the application of windmills for pumping purposes, (a very common use to which they are applied throughout the country,) and more particularly to mechanism whereby the suction-rod of the pump and the pitman of the windmill may be automatically connected and disconnected, so that the pump may be either operated or not according to the relation of the parts, even though the mill itself be working.

The invention particularly relates to mechanism whereby the stroke of the pitman will be either operative or inoperative to work the suction-rod of the pump, according as the mechanism stands in one position or another, the position of the mechanism being controlled or regulated by the quantity of water in the tank.

I will proceed to describe the construction and operation of devices by means of which I have practically carried out my invention in one way, and will then point out definitely in the claims the special improvements which I believe to be new and wish to protect by Letters Patent. As the windmill constitutes no part of my invention, I have not shown it, and

shall not describe it, and have shown and shall describe only so much of the tower and other parts relating to the windmill structure as may be necessary to an understanding of the construction of my improvements.

In the drawings, A represents the tower of the windmill, which is of any usual construction, in this instance being shown composed of four posts, *a*, properly braced and provided with cross-beams. A cross-beam, *a'*, is arranged a short distance below the platform of the mill, and the pitman B of the mill extends down by the side of this cross-beam, passing through a block or box, *b*, fastened to the side of the beam. The lower end of the pitman reaches a little below this box and terminates in a button, nut, or enlarged head, *b'*.

The suction-rod C of the pump extends up toward the pitman B, and is connected to the lower end of the latter in the following manner: At its upper end two metal plates, D, are attached, one on each side thereof, and at their upper ends embracing a block, E, at one edge thereof, being fastened to the block so as to securely hold it in place, as shown in Figs. 3 and 4 of the drawings. These plates are preferably, but not necessarily, bent or curved centrally, so as to provide a bend or curve, *d*, near the middle portion thereof, which stands out of line with the two points of attachment of the plates, and the latter are so arranged that this bend will stand outside of the line of attachment, or outside of the plane of the suction-rod and the block at the upper end, as shown in Fig. 3 of the drawings. The pitman passes down through a hole, *e*, about the center of the block E, and the parts are arranged so that when the pitman is at its highest point it will about bring the suction-rod up to the bearing of the block *b*, this position being shown in Fig. 3 of the drawings, though a very little play may be left, as the parts must not work too closely.

A lever, F, is pivoted centrally to a suitable support or bracket, *f*, attached to the cross-beam of the tower. This lever is connected at one end by a link, *f'*, to the upper part of the suction-rod of the pump or the plates at the upper end of the latter, and at its other end carries a weight, *f''*, which is sufficiently heavy

to a little overbalance the weight of the suction-rod, and so it will be seen that this device will operate to hold up the suction-rod against the cross-beam of the tower or block *b* in the position shown in Fig. 3 of the drawings, unless there is something to prevent.

Now, it is evident from the description of the connection thus far given that there is a perfectly clear space between the block *E* and the upper end of the suction-rod where the plates are attached, so that if nothing intervened the pitman would make its stroke without any effect upon the suction-rod, slipping down through the opening in the block at the upper end of the latter, which would be held up in place against the cross-beam by the action of the weight.

In order to make the downstroke of the pitman effective, to correspondingly force downward the suction-rod of the pump, some device must be interposed between the lower end of the pitman and the upper end of the suction-rod proper, so as to prevent the free sliding of the pitman through the block *b*, and, obviously, this device must be movable, so as to be brought into position under the pitman, or removed therefrom readily for the purpose of connecting and disconnecting the pitman and suction-rod so far as effective work is concerned. To accomplish this I provide a block, *G*, preferably rectangular in form, and of suitable size to be received between the plates at the upper end of the suction-rod. In this block I mount a stiff rod or bolt, *H*, near one edge thereof, and pivot the block to the suction-rod plates at the lower front corner of this edge, as shown in Fig. 3 of the drawings. The rod or bolt *H* extends upward from the block, and is preferably bent outward, so as to have a central portion, *h*, projecting beyond the line of the pitman and suction-rod, while the arrangement of the parts is such that when the block is brought up so as to stand squarely and level within the plates, the upper and lower ends of the bolt will be in line with the pitman and suction-rod. The length of the bolt is sufficient to substantially fill the space between its pivoted block and the lower end of the pitman when raised to its greatest height, though a little allowance should be made for easy working, and the bolt is threaded and secured to the block by adjusting-nuts, so as to regulate its length relatively to the block and distance to the pitman, as described above. Now, it is evident that when the pivoted block is brought up level between the suction-rod plates in the position shown in full lines in Fig. 3 of the drawings, the downward stroke of the pitman will necessarily push downward the suction-rod, and the upward stroke will pull it up again by the action of the head of the pitman, and so the pump will be worked. Of course this action is with the corresponding movement of the lever and counterbalancing-weight; but this places very little additional work on the mill, as the weight but

slightly exceeds the weight of the suction-rod. When the bolt or block is left free from any restraining force, obviously, by reason of its pivot being located at one corner, it will automatically turn backward on its pivot, which will throw the bolt back out of line with the pitman, thereby entirely disconnecting the latter from the suction-rod, and on account of the bend outward in the bolt its body will fall back entirely out of line with the pitman between the bent portion of the suction-rod plates, as shown in dotted lines in Fig. 3 of the drawings, and so there will be no portion of the bolt to interfere with the free movement of the pitman. This clearance would not be effected so well if the bolt were straight, though a straight bolt may be used. A pin, *h'*, is put through the suction-rod plates just in front of the swinging bolt when in its proper vertical position, so as to prevent its being carried forward too far.

In order to operate the swinging connecting-bolt automatically, I first provide a short rod or wire, *I*, which is connected at one end by a staple, *g*, to the upper front corner of the pivoted block *G*, from which it extends out in a horizontal direction, and is linked at its other end to the lower end of a swinging rod, wire, or other suitable support, *J*, which is fastened at its upper end to the cross-beam of the tower. A second horizontal rod or wire, *K*, is linked at one end to the lower end of the support *J* and at its other end connected to one arm of a bell-crank lever, *L*, pivoted to a suitable support attached to the tower. The float-weight *M*, located in the cistern *N*, is connected by a wire or other suitable device, *m*, to the other arm of this lever.

It will be understood from the description above that the suction-rod of the pump when not in action is always held at the top of the stroke of the pitman by the operation of the weight attached thereto. I make the length of the swinging support *J* such that its lower end is in a horizontal line with the points of connection between the swinging block and bell-crank lever when the suction-rod is in this position, and hence the broken connection between the bell-crank and the swinging block when the suction-rod is in its elevated position will make a substantially horizontal line. Now, it is obvious that as the water is lowered a little in the tank the float begins to drop, and that this will produce a pull on the pivoted bolt-block, thereby causing the latter to swing inward in a direction to swing the bolt under the pitman, and as soon as the bolt is brought under the pitman, so as to be caught by the latter and forced down, the downward movement of the suction-rod will of course carry downward the point of connection between the wire *I*, bringing a strain on the float-weight, tending to raise the latter bodily, which will produce an increase of force to pull the bolt inward, and so insure its proper position under the pitman with perfect certainty. This operation is se-

cured by using a support for the rod or wire I only a short distance from the block, so that with the short lever the connection at the block will be carried down sharply and produce a pull, while if the connection were one long wire from the block to the bell-crank lever very little of this effect would be produced in the distribution of the movement throughout the length of the wire. The support of the connection near the pivoted bolt-block is therefore a very important element in the successful operation of my improvement, and the breaking of the connection between the block and the lever at this point is the best way of constructing this device, though a somewhat similar effect might be obtained by having the wire continuous and running through a support, either stiff or springing, at the point named. As soon as the pump is worked and water supplied to the cistern, the float will of course be supported and raised and the pivoted block will be released from all strain and will fall back of its own weight, carrying the bolt with it and disconnecting the suction-rod from the pitman.

It will thus be seen that I provide means for automatically operating the swinging bolt, which are controlled by the quantity of water in the cistern, so that when the cistern is filled to a certain point the pitman will be entirely disconnected from the suction-rod and the pump cease to work; but as soon as water is drawn out from the cistern the bolt will be swung back and the pitman connected to the suction-rod again and the pump worked. The construction and arrangement of the devices are such that the bolt-block is operated on very slight change in the quantity of water in the cistern, so that obviously the pump will be worked to keep the cistern nearly full all the time. I make the block *b* adjustable vertically, connecting it to the cross-beam by means of slots *b*² and bolts *b*³. This is for the purpose of determining the position of the block, so that it can always be fixed to stop the suction-rod at its proper height.

In practical operation I have found this mechanism efficient and satisfactory; but while I have described the best way in which I think my invention is carried out, I do not wish to be understood as limiting myself to the precise details of construction, and to the precise devices as herein shown and described, for changes and substitutions may be made obviously without departing from the main idea of my invention.

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

1. The windmill-pitman, in combination with the pump suction-rod, connected loosely to permit movement of the pitman on the rod, and swinging bolt arranged to stand in line with the pitman and suction-rod when in a vertical position, and to swing backward out of such line when released from strain, substantially as and for the purposes set forth.

2. The windmill-pitman, in combination with the block *b*, adjustable vertically, and the pump suction-rod, substantially as and for the purposes set forth.

3. The pump suction-rod, in combination with the block *G*, pivoted thereto at its lower front corner, the bolt *H*, attached to the block, the windmill-pitman, and a suitable device for holding the pump suction-rod up when released from the action of the pitman, substantially as and for the purposes set forth.

4. The pump suction-rod provided with plates *D* at its upper end, the block *E* at the upper end of the plates, the swinging block *G*, arranged between the plates and pivoted thereto at its lower front corner, the bolt *H*, mounted on the pivoted block, the pitman *B*, the stop-block *b*, and the counterbalancing-weight connected to the suction-rod, substantially as and for the purposes set forth.

5. The pump suction-rod, in combination with the block *G*, pivoted thereto at its lower front corner, the bolt *H*, arranged to stand in line with the pitman and suction-rod when in a vertical position, the float *M*, and the bell-crank lever *L*, connected to both float and pivoted block, substantially as and for the purposes set forth.

6. The pump suction-rod, in combination with the block *G*, pivoted thereto at its lower front corner, the bolt *H*, mounted thereon, the windmill-pitman, the connecting rods or wires *I* and *K*, the support *J*, the bell-crank lever *L*, and the float *M*, substantially as and for the purposes set forth.

7. The pump suction-rod, in combination with the mill-pitman, the swinging bolt hinged to the suction-rod below its connection with the pitman, the bell-crank lever connected to the float, and a connecting device between the bell-crank lever and the swinging bolt arranged horizontally and broken and supported at a point shortly distant from its connection to the swinging bolt, substantially as and for the purposes set forth.

JOHN M. WHITNEY.

Witnesses:

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G. E. FAULKNER.