

Pumpn Brake,

N^o 33,671,

Patented Nov. 5, 1861.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 33,671, dated November 5, 1861.

To all whom it may concern:

Be it known that I, THOMAS J. WADLEIGH, of Sutton, in the county of Merrimac and State of New Hampshire, have invented a new and useful Improvement in Hydraulic Pumps; and I do declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the drawings making a part of this specification, in which—

Figure 1 is a longitudinal perspective view; Fig. 2, a longitudinal sectional view; Fig. 3, a view of the right and left screw and sliding and rotary blocks; Fig. 4, a longitudinal sectional view of the same devices; Fig. 5, a front view of the sliding block and rotary block inserted therein; Fig. 6, a front upright view of the rotary block and curved projections; Fig. 7, a side view of the same, and Fig. 8 a top view of the same.

The same letters in the different figures represent identical parts of the machine or apparatus.

A A' A'' represent the cylinder or stock containing the pistons and valves.

B B' are supports of the axle D, to which is attached the winch F.

I I' are two front braces, (there being two corresponding braces between, not shown in the drawings,) which support the collar C and give strength and firmness to the working apparatus of the pump.

H is a spindle or shaft, on the low part of which are cut right and left hand screws, the grooves of which are represented by *a a*, &c., and *a' a'*, &c., and on the upper end of which is a gearing-wheel O, the teeth of which work into the teeth of the gearing-wheel E on the axle D.

M is a collar moving on the upper part of the spindle H, with arms J J' projecting, to which the piston or valve-rods Q Q' are attached.

N is a collar playing on the lower part of spindle H, with arms K K' projecting, to which the piston or valve-rods Q'' Q''' are attached, the rod Q''' not being represented in the drawings.

L L' are supports of the collar M.

R is a sliding block moving in a mortise or box U in the support L, the box U being of sufficient dimensions to admit the free action

of the sliding block R up and down a distance equal to the width of one thread and two grooves of the screw.

S is a rotary block moving in a corresponding box in the sliding block R, bearing on its upper end a curved projection *b*.

S' is a rotary block moving in a corresponding box in support L, also bearing on its upper end a curved projection C, both of which projections are adapted to and traverse the grooves *a a*, &c., and *a' a'*, &c., alternately as the pistons of the pump ascend and descend. The blocks S S' are made rotary in order that the projections *b* may adapt themselves to the angles of the right and left grooves *a a*, &c., and *a' a'*, &c., when the pump is in operation. The collar N has also a corresponding sliding block and rotary blocks bearing projections *b*, constructed and operating precisely like those which are inserted in supports L L', the outline of one of which last-mentioned rotary blocks is seen at S''' in Fig. 2.

P is the lubricating-cup for the reception of oil, composed of that portion of the pump-stock represented by A'' below the line T.

Having above described the construction of my improved apparatus for pumps, I now proceed to set forth its mode of operation, which is as follows, viz: The motive power is applied through the medium of the winch F, and is communicated to the pistons and valves through the instrumentality of the shaft H and the screws *a a'* and the collars M and N. The projections *b* in the supports L L' traverse the groove *a* of the right-hand male screw as the collar M ascends and in the groove *a'* of the left-hand male screw as the same collar descends. The corresponding projections in the collar N act in the same manner, and are so adapted that while the projections in L L' are traversing the right-hand groove *a* the projections in collar N are traversing the groove *a'*, thereby causing the collar M with its piston and valve to ascend and the collar N with its piston and valve to descend precisely at the same time and alternately. Thus when the pump is ready for operation the collar M with its piston and valve is at the point as high as the screws will permit it to ascend, and the collar N with its piston and valve is at the lowest point to which the screws permit it to descend, as seen in Fig. 1. When

the motive power is applied, the collar M commences to descend and the collar N commences to ascend. The downward motion of the collar M and upward motion of collar N continue until they approach to the point of contact, the screws being constructed so as to permit them to reach that precise point and to advance either way no farther. This downward motion of the collar M and upward motion of the collar N are effected by the action of the projections *b*, the projections in the supports *L L'* traversing the groove *a* of the right-hand male screw and the projections in collar N traversing the groove *a'* of the left-hand male screw. When the two collars M and N arrive at the precise point of contact, the projections *b* in the supports *L L'* pass into groove *a'* of the left-hand male screw and cause the collar M to ascend, while at the same time the projections *b* in the collar N pass into the groove *a'* of the right-hand male screw, thereby causing the collar N to descend. The rotatory block *S'* in the support *L* and the corresponding rotatory block *S'''* in the collar N are stationary with respect to the male screws, merely rotating sufficiently to adapt their projections *b* to the angles of the grooves *a a'* of the screws as the collars M and N ascend and descend, as above described. The projection *b* in the sliding block *R* passes up and down in the box *U*, moving in a space equal to the width of one thread and two grooves of the screws. Thus, as seen in Fig. 4, (which is designed to represent the supports *L L'* in the position they occupy before the collar M commences to descend,) the sliding block *R*, which bears the rotatory block *S* and its projection *b*, rests and presses upon the upper shoulder of the box *U*. It continues in that position until the collar M with its supports *L L'* have passed down to the lowest point to which they are permitted to descend. The projection *b* in the sliding block *R* then passes into the left-hand groove *a'* at the upper end of the groove, and the sliding block moves down the box *U* until its lower end rests and presses

upon the lower shoulder of the box *U*, and there remains until the collar M ascends to the highest point to which it is permitted to go, when the projection *b* reverses its action and passes into the right-hand groove *a*, thereby causing the collar M to ascend. At the moment the projection *b* in the sliding block passes into groove *a* at its upper extremity the projection *b* in the stationary rotatory block *S'* passes into the same groove at its lower extremity, both constantly acting in co-operation. The sliding block and rotatory blocks with their projections *b* in the collar N operate in precisely the same manner, except at alternate times, with the corresponding blocks and projections *b* in the supports *L L'*.

By means of the apparatus above described the pistons and valves are made to act continuously and constantly upon the water, thereby producing a continuous and constant flow. It is obvious that the pistons and valves may be increased in number upon the same principle by increasing the number of collars and apparatus therewith connected, as above described.

Having above fully described my improvement in the hydraulic pump and its mode of operation, what I claim, and desire to secure by Letters Patent, is—

An improved pump composed of the stock *A A' A''*, the axle *D*, the braces *I I* and corresponding braces in the rear of *I I*, the collar *C*, the shaft *H*, with its right and left screws, the wheels *O* and *E*, the collar *M*, the arms *J J*, the valve-rods *Q Q*, the arms *K K*, the supports *L L'*, the sliding block *R*, the mortise *U*, the rotatory blocks *S S'*, with their projections *b*, the collar *N*, with its sliding and rotatory blocks, and the lubricating-cup *P*, combined, arranged, and operating as above set forth.

In witness whereof I have hereunto set my hand and seal this 2d day of May, A. D. 1861.

THOMAS J. WADLEIGH. [L. s.]

Witnesses:

JOHN D. WADLEIGH,
BENJN. E. WADLEIGH.