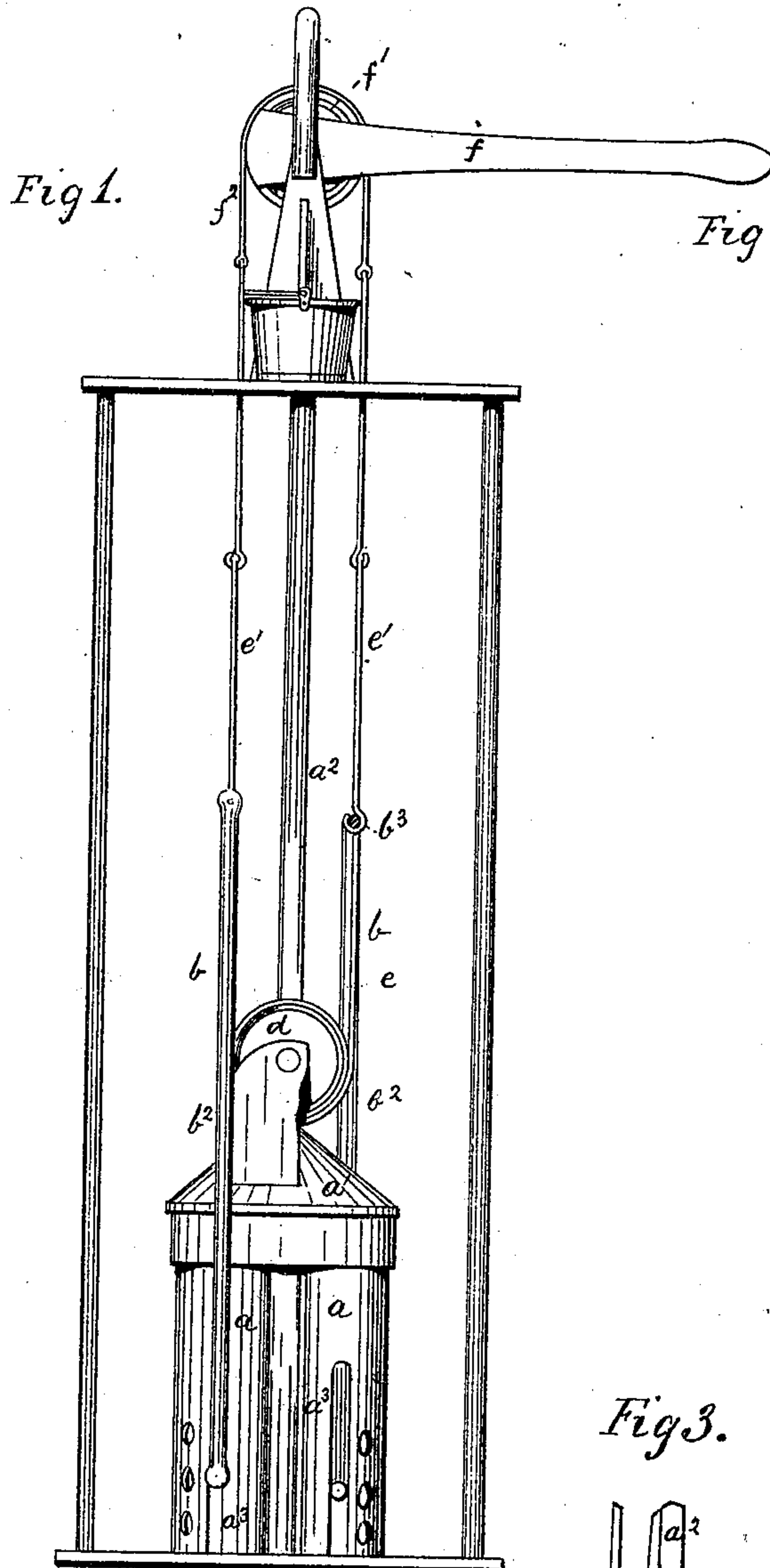


J. D. CARR.  
DOUBLE ACTING PUMP.

No. 178,835.

Patented June 20. 1876.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DOUBLE-ACTING PUMPS.

Specification forming part of Letters Patent No. 178,835, dated June 20, 1876; application filed May 22, 1876.

*To all whom it may concern:*

Be it known that I, JAMES D. CARR, of Sauk Centre, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Double-Acting Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in double-acting pumps, and has for its object to operate the buckets by connecting the piston or operating-rods to the underside thereof, and to provide means whereby any unequal movement, or jarring, or irregular action is prevented, and consists in the construction, arrangement, and combination of the several parts, as hereinafter fully explained.

In the drawings, Figure 1 is a front, and Fig. 2 a side, elevation, and Fig. 3 a detail view, of a part of a pump constructed according to my invention.

$a a$  are the barrels or pump-tubes, which are secured together by ordinary means, and have their upper ends covered by the tight cap  $a^1$ , which is so formed as to give space for the action of the upper valves, and for the passage of the water to the discharge-pipe  $a^2$ . They have the guide-slots  $a^3 a^3$  formed in the front and rear sides thereof, and extending from the lower ends upward a sufficient distance to admit of the necessary play or stroke of the supporting-frame of the buckets, as hereinafter explained.  $b$  is a sliding frame, which supports and operates the buckets. It is composed of the horizontal rod or bar  $b^1$ , which passes through the guide-slots  $a^3 a^3$ , and of the vertical rods or bars  $b^2 b^2$ , the lower ends of which attach to the ends of the rod  $b^1$ , and the other ends extend upward outside the barrel and above the cap  $a^1$ , and are curved inward and joined together by the bolt or pin  $b^3$ .  $c$  is the bucket. It is provided with the under-side arms  $c^1 c^1$ , which extend downward close to the side of the barrel and attach to the rod  $b^1$  of the frame  $b$ . These arms have a length equal to the stroke or vertical movement of the frame

$b$ , so that when the latter is forced to its lowest point the under side of the bucket will not be brought below the upper ends of the slots  $a^3 a^3$ .  $d$  is a friction-pulley, having a diameter equal to the distance between the centers of the barrels  $a a$ . It is placed centrally over the barrels, and has its axis suitably journaled in bearings on the cap  $a^1$  and discharge-pipe  $a^2$ . It is so arranged that its upper side will be slightly below the pin  $b^3$  of either frame when the latter is depressed to its lowest point.  $e$  is a flexible band or chain, which unites the tops of the frame  $b b$ , and passes under the friction-pulley  $d$ , by which it is held taut. By this device the movements of the frames  $b b$  are made perfectly reciprocal, and are preserved at all times in a vertical line, and by which I am enabled to employ rods  $e^1$ , made in sections linked together, or chains or ropes for connecting the frames  $b b$  with the operating devices above the well.  $f$  is the lever for operating the pump. It is provided with the round or pulley head  $f^1$ , over which is passed and to which is made fast the flexible draw band or chain  $f^2$ , which connects the upper ends of the rods or chains  $e^1 e^1$ .

Figures 4 and 5 represent the manner of arranging and applying my improvements for carrying the water to any desired distance away from the well. In this case I place the pulley  $f^1$  at the desired distance from the well, and employ an intermediate double-width pulley,  $f^3$ , which is secured over the mouth of the well. Over this double-width pulley is passed the two flexible bands  $f^4 f^5$ , the first of which connects with the rods  $e^1 e^1$ , and the second with the rods  $e^2 e^2$ , which connect with the draw-band  $f^2$ . The several parts are represented as secured to the under side of the covering or platform  $g$ , which is placed over the well, but it will be readily understood that the pulley  $f^1$  may be placed inside the house, and connected by suitable rods with the pulley  $f^3$  over the well outside the house. Instead of having the pulley  $f^1$  secured under, it can be easily rigged above the platform  $g$ , and a second double-width pulley attached where the pulley  $f^1$  is now secured, the two being connected by the necessary rods and bands.

In the operation of my device, the power being applied from the circumference of the



pulleys and the extremities of the horizontal diameter or radii, there will be no variation in the degree, nor will there be any loss of force, as is the case where rocking-arms are employed. It will be seen that the rods  $e^1 e^1$  move in the same line, and do not oscillate from side to side, as when they are operated by oscillating or rocking arms. It will be further seen that by my device all jarring and irregular movements are avoided.

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

1. The combination, with the frames  $b b$ , of the flexible band or chain  $e$ , and pulley  $d$ , se-

cured to the top of the barrels  $a a$ , substantially as specified.

2. The combination, with the frames  $b b$ , rods or chains  $e^1 e^1$ , and lever  $f$ , provided with the round pulley-head  $f^1$ , of the pulley  $d$ , and flexible bands or chains  $e$  and  $f^2$ , as and for the purpose set forth.

In testimony that I claim the foregoing as my own, I hereto affix my signature in presence of two witnesses.

JAMES D. CARR.

Witnesses:

L. KELLE,  
A. BARTO.