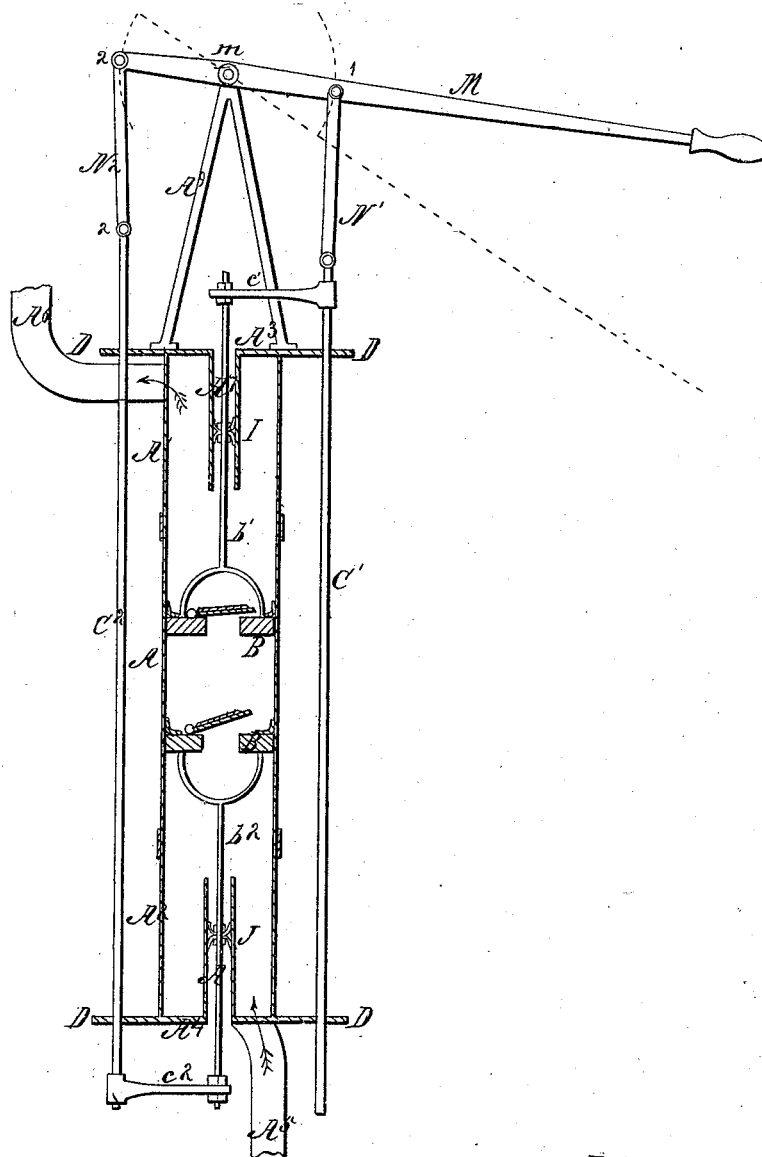


N. Hotz,
Pump Brake.

N^o 46,360.

Patented Feb. 14, 1865.



Witnesses,
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NIKOLAS HOTZ, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **46,360**, dated February 14, 1865.

To all whom it may concern:

Be it known that I, NIKOLAS HOTZ, of Brooklyn, in the county of Kings, in the State of New York, have invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full and exact description thereof. The accompanying drawing forms a part of this specification and is a central vertical section through pump containing my improvements.

To enable others skilled in the art to make and use my invention, I will proceed to describe it by the aid of the drawing and of the letters of reference marked thereon.

A is a smoothly-bored cylinder or barrel, and A' A² are rough extensions thereof.

A³ is the top plate, A⁴ is the bottom plate, A⁵ is the suction-pipe, and A⁶ the delivery-pipe. The suction and delivery pipes may either or both be provided with valves and other ordinary devices, as check-valves for some purposes, if desired.

A⁷ is a smoothly-bored tube or pipe extending downward from the center of the top plate, A³.

A⁸ is a corresponding tube extending upward from the bottom plate, A⁴.

A⁹ is a frame adapted to support the center of motion of the operating-lever. These parts constitute the fixed portion of my machine.

B' B² are boxes or valved buckets with valves opening upward, and b' b² are rods firmly fixed therein, the rod b' extending upward from the bucket B', and the rod b² extending downward from the bucket B².

C' C² are rods adapted to slide vertically through the guides D D. An arm keyed on the rod C' is indicated by c', and to this arm the rod b' is attached. A corresponding arm, c², is carried on the rod C², but at the lower end, instead of the upper end thereof, and to the arm c² the rod b² is attached.

M is a hand-lever adapted to turn on the fixed center m above the pump supported as above described.

N' and N² are links connecting the lever M to the sliding rods C' C² by joints or eyes 1 1 and 2 2, as represented, so that the vibrations of the hand-lever M will operate the buckets B' B² simultaneously in opposite directions

and cause the water to flow upward through the barrel in an almost uninterrupted current, as will be obvious.

Pumps having two valved boxes corresponding in motion and function to my boxes A and B, have been before known and approved. I do not claim such, broadly, as my invention, but I consider mine an improved construction of such a pump.

I will now describe certain additional features, which I term the "suction-boxes" which I employ to properly close the ends of my pump.

I is a double cup leather, or a pair of cup-leathers with their convex sides against each other. They are firmly fixed on the rod b', at the point represented, by means of nuts above and below fitting on threads. (Not represented.)

J is a corresponding double cup-leather similarly fixed on the rod b². As the pump is operating, these double cup-leathers traverse up and down in the smooth pipes or tubes A⁷ A⁸, the upper leather in the suction-box expanding and fitting tightly to the tube A⁷ on its ascending motion, and the lower leather expanding and fitting tightly in the descending motion. The double cup-leather in the lower box performs a corresponding duty. These suction-boxes allow an easy motion and tight fit. They are very durable and are very readily and cheaply repaired when necessary.

I have used my pump successfully in situations where ordinary pumps could not serve. For example, I have pumped very thick material, nearly as thick as paste, and the same pump has been successful in pumping air. No other pump known to me can serve so wide a range of purposes and be equally simple and portable. I have made my cylinder A and the extensions A' A² of sheet-copper and have packed my valve-boxes B' B² loosely with simple cup-leather, as indicated, and find that the pump, although extremely light and obviously liable to be indented, answers well with careful usage. I attribute the success of my pump in working very ethereal fluid to the rapidity with which it may be easily operated, and its suc-

cess in working very thick mud to the fact that the fluid or semi-fluid is not allowed to rest at all in its motion through the pump.

Having now fully described my invention, what I claim as new in pumps, and desire to secure by Letters Patent, is as follows:

The sliding rods C' C^2 , guides D , links N' N^2 , and arms c' c^2 , in combination with the

hand-lever M and the two movable valve-boxes B' B^2 , all arranged and operating together as herein set forth.

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Witnesses:

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