L. HERBERT & W. V. HENRY
Direct-Acting Horse-Power.

No. 216,089. Patented June 3, 1879.

FIG. 1

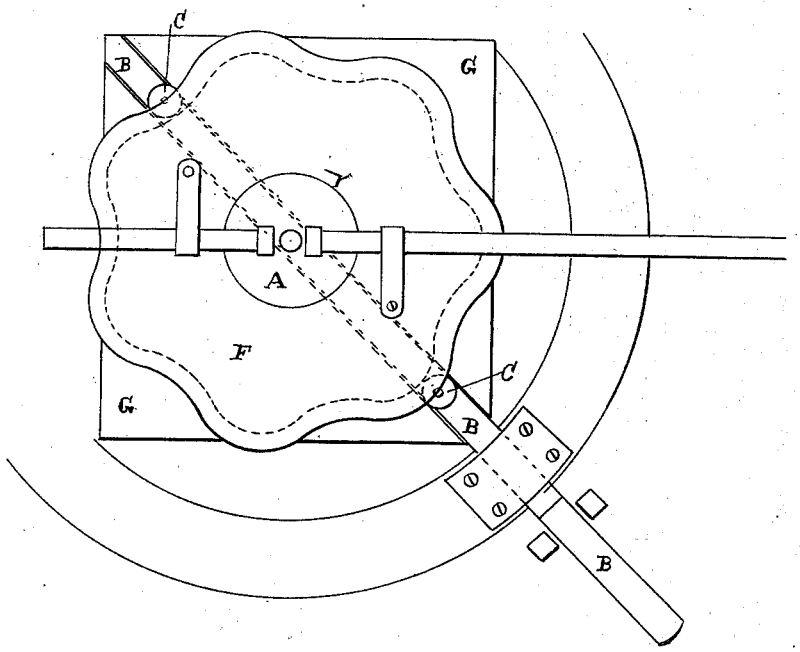


FIG. 2.

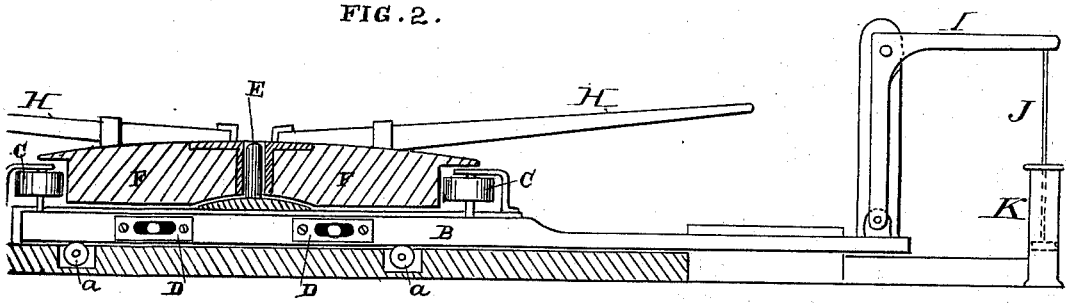
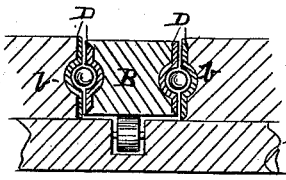


FIG. 3



Witnesses

Geo. H. Strong.

Frank A. Brooks

Inventor

Louis Herbert and
William V. Henry
By Dewey & Co. Attys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LOUIS HERBERT AND WILLIAM V. HENRY, OF HICKSVILLE, CALIFORNIA.

IMPROVEMENT IN DIRECT-ACTING HORSE-POWERS.

Specification forming part of Letters Patent No. **216,089**, dated June 3, 1879; application filed April 14, 1879.

To all whom it may concern:

Be it known that we, LOUIS HERBERT and WILLIAM V. HENRY, of Hicksville, county of Sacramento, and State of California, have invented a Direct-Acting Horse-Power; and we hereby declare the following to be a full, clear, and exact description thereof, reference being made to the accompanying drawings.

Our invention relates to a novel direct-acting horse-power; and our improvements consists in mounting on a horizontal bar, moving on anti-friction devices between suitable guides, two pulleys, which alternately pass in and out of depressions or corrugations formed in the periphery of a driving-wheel as it is rotated, a rectilinear motion being thus imparted to the driving-bar and power transmitted directly to a knee-lever operating the pitman of a pump, or similar device, without the intervention of any gearing.

Figure 1 is a top view. Fig. 2 is a longitudinal section. Fig. 3 is a transverse section through the lever B.

The bed-frame G is made square and bolted to suitable sills, a slot being made from corner to corner of the frame to admit the rectilinear driving bar or shaft B, as shown. On top of the bed-frame is placed a plate, having a stud or pin, E, which fits into the hole in the central plate, A, of the driving-wheel, so that the driving-wheel F rotates on said pin.

The driving-bar moves under the plate carrying the central pin. The periphery of the driving-wheel F is made with regularly-alternating rounded projections and depressions, as shown.

On the driving bar or shaft B are placed two rollers or pulleys, C, one on each side of the driving-wheel, so situated that when one of them is at the center of a depression the opposite one will be at the center of a rounded projection. The driving-wheel has its corrugated or curved edge formed regularly, so that these oppositely-placed rollers on the shaft will always occupy the same relative positions with respect to the depressions and projections.

On the sills, between the frame-pieces which form the guides for the driving-bar, are placed anti-friction rollers *a*, on which the driving-bar rests and runs. In the rotation of the wave-edged driving-wheel there is a certain amount of lateral pressure on the longitudinally-moving driving-bar, caused by the roller rising up the curve on the edge of the wheel. To reduce the friction incident to this lateral pressure, we place on the side of the bar a metal socket, D, and a correspondingly-shaped socket is placed on the side of the guide or frame, and an anti-friction roller or ball, *b*, fitting into both sockets. The lateral pressure is then exerted on the ball or equivalent device, instead of on the whole side of the driving-bar, so that the friction is only nominal.

It will be seen that only one pair of sockets, with a ball, is needed at each end of the driving-bar as long as the driving-wheel is only to be rotated in one direction, the lateral pressuse at opposite ends of the bar being in opposite directions.

The levers H are secured to the top of the driving-wheel by straps, or in any desired manner. At the end of the driving-bar is hinged a bell-crank lever, I, to the outer arm of which is fastened the pitman J of a pump, K.

As the driving-wheel is rotated by the horses, a direct rectilinear motion is imparted to the horizontal driving bar or shaft B by the oppositely-placed rollers on said bar alternately passing into the depressions and over the projections on the waved or corrugated edge of the driving-wheel. As soon as the roller at one end has risen up the incline on the edge of the wheel and reached the apex of the projection, drawing the bar in that direction with it, the pulley or roller at the other end begins to draw the bar in the other direction in the same manner, an alternately-reciprocating motion of the bar being thus accomplished. This motion operates the bell-crank lever attached to the pump without any intervening gear, and a direct action is thus attained.

It will be evident that a bell-crank lever may be attached to each end of the driving-bar, and that there may be more than one driving-bar, if desired, so that two or more pumps may be worked by the same power at the same time. The driving-bar may also be extended out so as to work more than one pump at one end.

It will also be manifest that instead of having the rollers on the bar at opposite sides of the wheel, by making a waved or corrugated

flange instead of the edges, as I have shown, the two rollers may be placed at one end of the driving-bar, one on each side of the corrugated flange.

The alternate depressions and projections may be made in any desired form, with greater or less pitch, to get a quicker or slower motion for any special purpose.

This power may be applied to other purposes than pumping, where a direct action is desired, without the intervention of gearing of any kind.

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

1. The combination, with a corrugated or waved edged wheel, F, of the rectilinear driving-bar B, moving on anti-friction devices, and having the driving-rollers C, impinging on the wheel F, whereby a direct reciprocating motion is imparted to the driving-bar, substantially as and for the purpose herein described.

2. The driving-bar B, moving on rollers *a*, and having laterally-placed anti-friction rollers *b*, with its operating pulleys or rollers C, actuated by the corrugated or wave-edged driving-wheel F, substantially as and for the purpose herein described.

In witness whereof we have hereunto set our hands and seals.

LOUIS HERBERT. [L. S.]
WM. V. HENRY. [L. S.]

Witnesses:
A. G. BUTLER,
LEWIS F. JOHNSON.