(No Model.)

H. E. MARCHAND.

ADJUSTABLE CRANK.

No. 490,879. Patented Jan. 31, 1893.

Fig. 1.

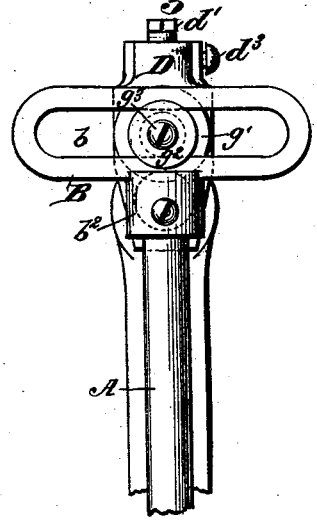


Fig. 2.

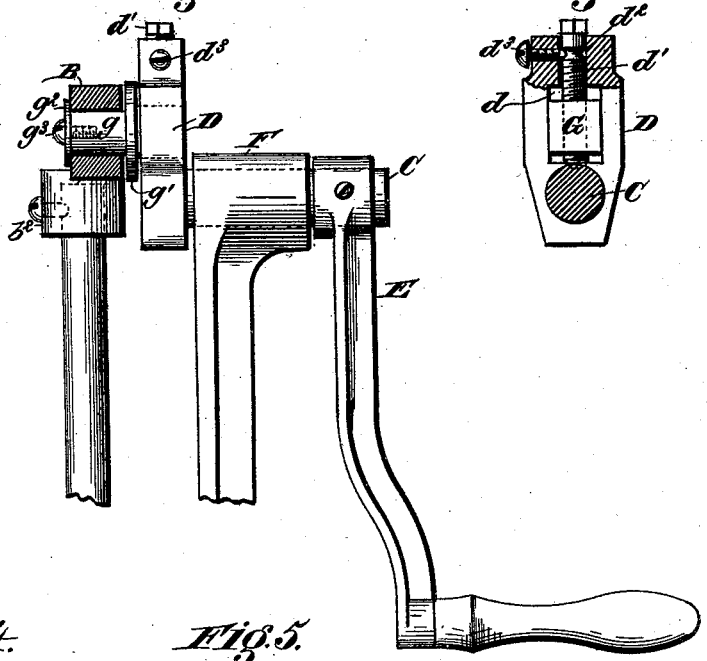


Fig. 3.

Fig. 4.

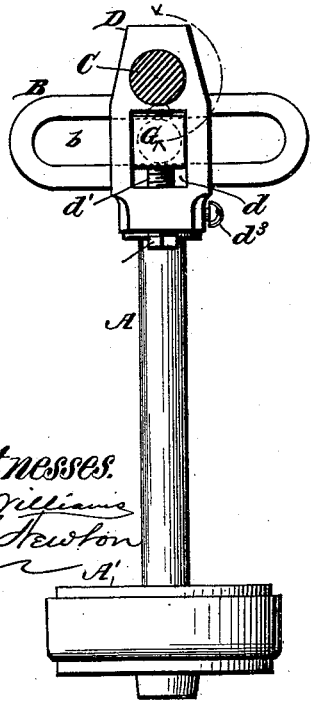


Fig. 5.

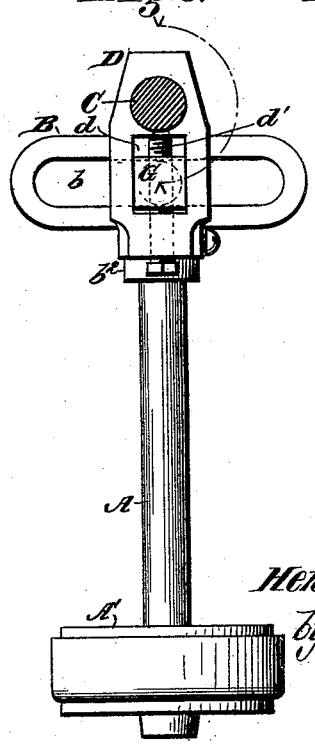
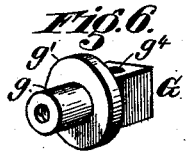


Fig. 6.



Witnesses.
E. F. Williams
S. S. Newton

Inventor.
Henry E. Marchand.
by William R. Baird
Atty.

UNITED STATES PATENT OFFICE.

HENRY E. MARCHAND, OF BAYONNE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS P. RYAN, OF NEW YORK, N. Y.

ADJUSTABLE CRANK.

SPECIFICATION forming part of Letters Patent No. 490,879, dated January 31, 1893.

Application filed March 22, 1890. Renewed August 3, 1892. Serial No. 442,028. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. MARCHAND, a citizen of the United States, residing at Bayonne, Hudson county, New Jersey, have invented certain new and useful Improvements in Adjustable Cranks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to cranks and the means whereby the length of the stroke of a rod actuated by one of them can be readily adjusted, with more particular reference to the application of the same to self measuring pumps where a predetermined quantity of liquid is required to be delivered at each stroke.

The novelty of my device consists in the means employed to adjust the length of the crank arm by regulating the distance between the axes of the wrist pin and crank spindle.

In the drawings, in which the same letters refer to the same parts in all the figures, Figure 1 is a front view of my device. Fig. 2 is a side elevation showing the slotted bearing of the wrist pin in section. Fig. 3 is a rear view of the crank arm showing the crank spindle and the means for adjusting the wrist pin in partial section. Figs. 4 and 5 are views showing the relative positions of the parts with different adjustments of the wrist pin and Fig. 6 is a detail perspective view of the wrist pin.

In the drawings A is the piston rod of a pump or other mechanism designed to be actuated by the crank, and A′ is the piston.

E is the crank the spindle of which, C, is journaled in a fixed arm F firmly attached to the top of the pump cylinder, or to some similar portion of other mechanism. On the end of the crank spindle C, is attached the crank arm D which is provided with a rectangular slot d to receive the square end of the wrist pin G. The upper end of the arm D is perforated to receive the adjusting screw d' which passes through a threaded opening g^4 in the square end of the wrist pin G and which is grooved at d^2 to receive the pointed end of the set screw d^3 which turns in a threaded aperture in the crank arm adapted to receive it. The perforation in the end of the crank-arm D through which the screw d' passes acts simply as a sleeve, and is not threaded, the motion imparted to the head of the adjusting screw causing a forward or backward motion of the wrist pin G; this adjusting screw is kept in any desired position by tightening the set screw d^3. The wrist pin G. moves horizontally in a slotted bearing B, to which is firmly attached a lug b^2 adapted to receive and retain the end of the piston rod A. Said wrist-pin is provided with two washers, one g' being between the slotted bearing B and the crank arm D and the other g^2 at its front end held in place by the screw g^3, which is provided to prevent it slipping from the slotted bearing. Said wrist-pin is made preferably with a square end to secure the greatest amount of bearing surface in the slot d of the crank arm D.

The action of the device is simple. The length of the crank arm is determined by firmly adjusting the set screw d^3 and thus fixing the distance between the axis of the crank spindle and that of the wrist pin; and the crank E being turned, the vertical motion of the crank arm is imparted through the wrist pin and the bearing B to the piston rod, while its horizontal motion is taken up by its sliding change of position in the slot b. The length of the stroke imparted to the piston rod being determined by the length of the crank arm and that in turn being fixed by the position of the wrist pin in the slot d, we have in this device a simple and efficient method of fixing the length of the stroke.

The device was designed primarily for use with self measuring pumps where a predetermined quantity of liquid was to be delivered at each stroke and it has proven more satisfactory in practice than any other method of adjustment.

What I claim as new is,

1. The combination, of a crank and its spindle, a crank-arm eccentrically secured to the spindle, said crank-arm provided with a rectangular slot, a wrist-pin having its inner end

passing into said slot, and provided with a threaded aperture, and its outer end connected to the piston-rod, a vertical screw passing freely through one end of the crank-arm, and also passing through the threaded opening of the wrist-pin, and a screw passing horizontally through a perforation of the crank-arm and engaging an annular recess in the vertical screw, substantially as set forth.

2. The combination of a crank and its spindle, a crank-arm secured eccentrically thereto, said crank-arm provided with a central elongated slot, a wrist-pin having an inner square end fitting the elongated slot and vertically adjustable therein, a horizontally slotted bearing to which the piston-rod is attached, the slot of said bearing adapted to receive the outer rounded end of the wrist-pin, substantially as set forth.

3. The combination of the slotted crank arm D, the wrist pin G, the adjusting screw d', and means as d^3 for fixing its position, with the bearing B, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

H. E. MARCHAND.

Witnesses:
J. S. WILLIAMS,
S. PARKER, Jr.