M. SCHULTZ.
Steam-Pump.

No. 204,619. Patented June 4, 1878.

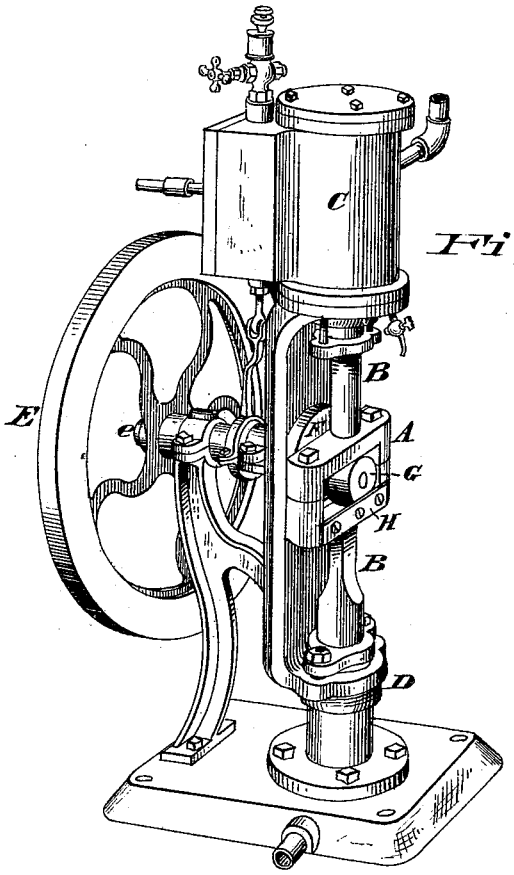
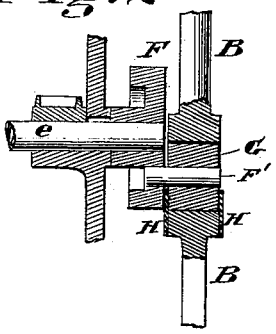


Fig. 1.

Fig. 2



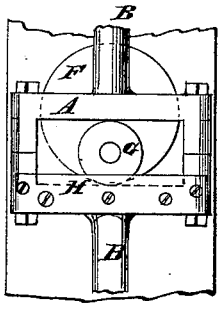


Fig. 3.

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UNITED STATES PATENT OFFICE.

MICHAEL SCHULTZ, OF CINCINNATI, OHIO.

IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. **204,619**, dated June 4, 1878; application filed April 26, 1878.

To all whom it may concern:

Be it known that I, MICHAEL SCHULTZ, of Cincinnati, Hamilton county, State of Ohio, have invented an Improvement in Steam-Pumps, of which the following is a specification:

My invention has for its object the cheapening of the cost of construction of steam-pumps, or, more particularly speaking, that class of steam-pumps known as "boiler-feeders," while at the same time looking specially to the efficiency and reliability of the devices employed.

Therefore my invention refers to a class of pumps employing a steam and pumping piston combined to act in a direct manner, and having a cross-head and sliding-box device to impart rotary motion to a governing fly-wheel through its crank-pin; and my invention consists of the application of a device, whereby I am enabled to dispense with the sliding box of the cross-head and its accompanying feature of a sliding frictional surface, said device being essentially a roller moving freely upon the crank-pin of the fly-wheel shaft, and adapted to play freely within the slide of the cross-head, where it is preferably retained by flanges upon the lower part of the slideway, which also form in connection therewith a lubricant-chamber.

In the accompanying drawings, Figure 1 is a perspective view of a vertical direct-acting boiler-feeder embodying my invention. Fig. 2 is a sectional elevation of the cross-head and my improvements. Fig. 3 is a front elevation of the same.

A is the slotted cross-head of the pump, formed in two parts, and secured between the steam and pumping sections of the piston B, which plays vertically between the steam and pumping chambers C D. The fly-wheel E is secured upon shaft *e*, which is journaled in the frame of the pump, and provided at its inner end with crank-plate F and pin F′, while it also operates the steam-valves.

The pump thus constructed is what is known as a "vertical direct-acting boiler-feeder," and the necessary motion has heretofore been imparted to the governing fly-wheel by means of a sliding box in the cross-head and upon the crank-pin F′; but the unreliability of this manner of operating the fly-wheel, owing to the tendency of the sliding box to "stick," as well as the great amount of frictional resistance generated, has led me to devise and employ a roller, G, to fit freely in the slot of the cross-head and upon crank-pin F′.

The movement of the roller in the slot is rotary alternately in opposing directions, accordingly as the upper or lower face of the slot presses against it, and the face of the roller, by presenting its every part successively as it moves along the slot, obviates all frictional resistance that would be present in the operation of the sliding box heretofore used.

In order to secure the roller within the slideway of the cross-head and upon the crank-pin, I secure upon the lower part of the cross-head flanges H, which rise above the lower boundary of the slot upon each side thereof, and embrace the ends of the roller, and these flanges also form, in connection with the lower or bottom surface of the slot, an oil or lubricant receptacle for the retention of a sufficient quantity to keep the connection properly lubricated.

In the drawing, the flanges H are secured by screws upon the exterior surface of the cross-head, and they may be secured in proper recesses.

In connection with this description I will state that I am aware of the existence of what are called "anti-friction rollers," used for various purposes.

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

In combination with slotted cross-head A of the piston and roller G upon the crank-pin, the flanges H, arranged substantially in the manner and for the purpose specified.

In testimony of which invention I hereunto set my hand.

MICHAEL SCHULTZ.

Witnesses:

JOHN H. DUHME,

JOHN E. JONES.