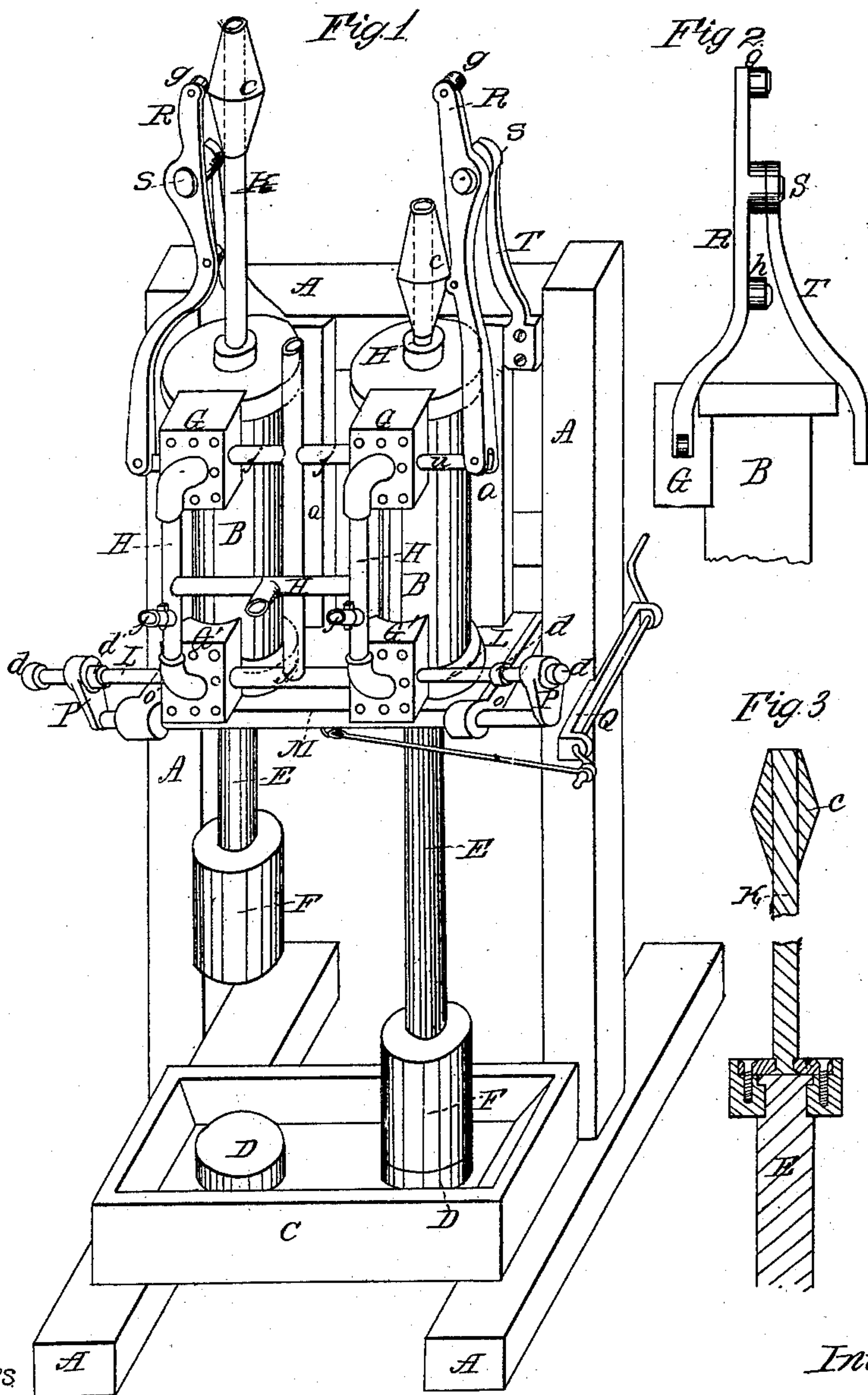


F. R. Wilson,
Steam-Engine Valve-Gear.
No 67,392. Patented July 30, 1867.



Witnesses
Geo. E. Buckley,
Franklin Small

Inventor.
F. R. Wilson

United States Patent Office.

FURMAN R. WILSON, OF NEW YORK, N. Y.

Letters Patent No. 67,392, dated July 30, 1867.

IMPROVEMENT IN VALVE-GEAR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FURMAN R. WILSON, of the city and State of New York, have invented certain new and useful Improvements in Steam Stamping-Mills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, forming part hereof, and to the letters of reference marked thereon, in which drawings—

Figure 1 is a perspective view of a stamping-mill, with my improvements added.

Figure 2, a side view of lever R, and of some of the parts immediately connected with it.

Figure 3, a vertical section of the piston, piston-rod, cam-rod, and cam.

The nature of my invention consists of a combination of mechanism for operating the valves which admit steam into the cylinder below the piston, and also a combination of mechanism for operating the valves which admit steam into the cylinder above the piston, for the double purpose hereinafter mentioned.

To enable others skilled in the art to make and use my improvements, I will proceed to describe their construction and mode of operation.

The drawings represent a mill of two stamps, but it is to be understood that a mill may comprise either a single stamp, or any number of stamps desired. With a view to clearness, I shall describe my improvements as applied to the parts which constitute a single stamp, premising that the same description will apply to each stamp employed.

In fig. 1, A is a strong frame of wood; B a steam-cylinder, with lugs *a*, through which it is bolted to the frame A. C is the mortar. D, the die. E is the piston-rod or stamp-rod, which has the stamp F attached to its lower end in the usual manner. G and G' are steam-chests. H, pipes which convey the steam into the steam-chests. I I', cocks for regulating the supply of steam. J, pipes through which the steam exhausts. K is the cam-rod, which is attached to the piston, as shown in fig. 3. The rod K extends through a stuffing-box in the cylinder-head, and has a cam, *c*, screwed or otherwise fastened on its upper end. The cam *c* must have sufficient swell in the middle to bring it in contact with the lever R, as hereinafter described; but it is not necessary that it should be of the exact form shown; it may be curved continuously from end to end, so that a longitudinal section of it would be about elliptical. L is the rod attached to the lower valve, which is an ordinary sliding-valve. The rod L has two shoulders or collars *d d'*, which limit the play of the lever M. The lever M slides through ordinary journal-boxes, which are attached to supporting standards or arms O O', the latter being firmly secured to the frame A. A reciprocating motion is given to the lever M by means of a crank, Q. The effect of this arrangement is such that the valve-rod L is moved intermittently, pausing in its motion while the arm P of lever M traverses from shoulder *d* to the shoulder *d'*, and *vice versa*. This pausing of the valve-rod L causes the valve-port for admitting steam to remain open for a time sufficient to secure the full stroke of the piston upward. R is a lever turning on a fulcrum-pin, S, and supported from the frame A by the standard T. The lower end of lever R is attached by a flexible joint to the valve-rod U, which is attached to an ordinary sliding-valve for the admission of steam above the piston. The lever R works automatically, and is provided with friction-rollers *g h*.

When the piston is at the limit of its downward stroke the lever R is in such position that the exhaust-port of the upper valve is open, and it is allowed to remain open until the piston has nearly reached the limit of its upward stroke, when the cam *c* comes in contact with the friction-roller *g* of lever R, forcing the upper end of this lever outward and its lower end inward, thereby closing the exhaust-port and opening the supply-port of the upper valve. The steam thus admitted operates both to cushion the piston and start it with force on its downward stroke. The supply-port of the upper valve remains open until the piston has travelled about two-thirds of its downward stroke, when the cam *c* comes in contact with roller *h* of lever R, drawing out the valve-rod U, thereby closing the supply-port and opening the exhaust-port of the upper valve.

The cylinder B is made longer than the stroke which the piston is intended to have when the stamp is new or unworn, there being a space of from four to six inches in depth between the piston when at the limit of its downward stroke and the lower head of the cylinder, the object being to obviate the striking of the piston, in its downward stroke, against the head last mentioned when the stamp F shall have become worn by use.

This mechanism, when supported by a properly-constructed frame, may be employed as a steam-hammer.

Having thus described my improvements, I claim, and desire to secure by Letters Patent—

1. The combination of the crank Q, sliding-lever M, and valve-rod L, in the manner and for the purpose substantially as set forth.
2. The combination of rod K, cam *c*, lever R, and rod U, in the manner and for the purpose substantially as set forth.

F. R. WILSON.

Witnesses:

FRANKLIN SMALL,
GEO. E. BUCKLEY.