

W. Harsens Imp^t in Steam Pumps.

74084.

PATENTED

FEB 4 1868

Fig:1.

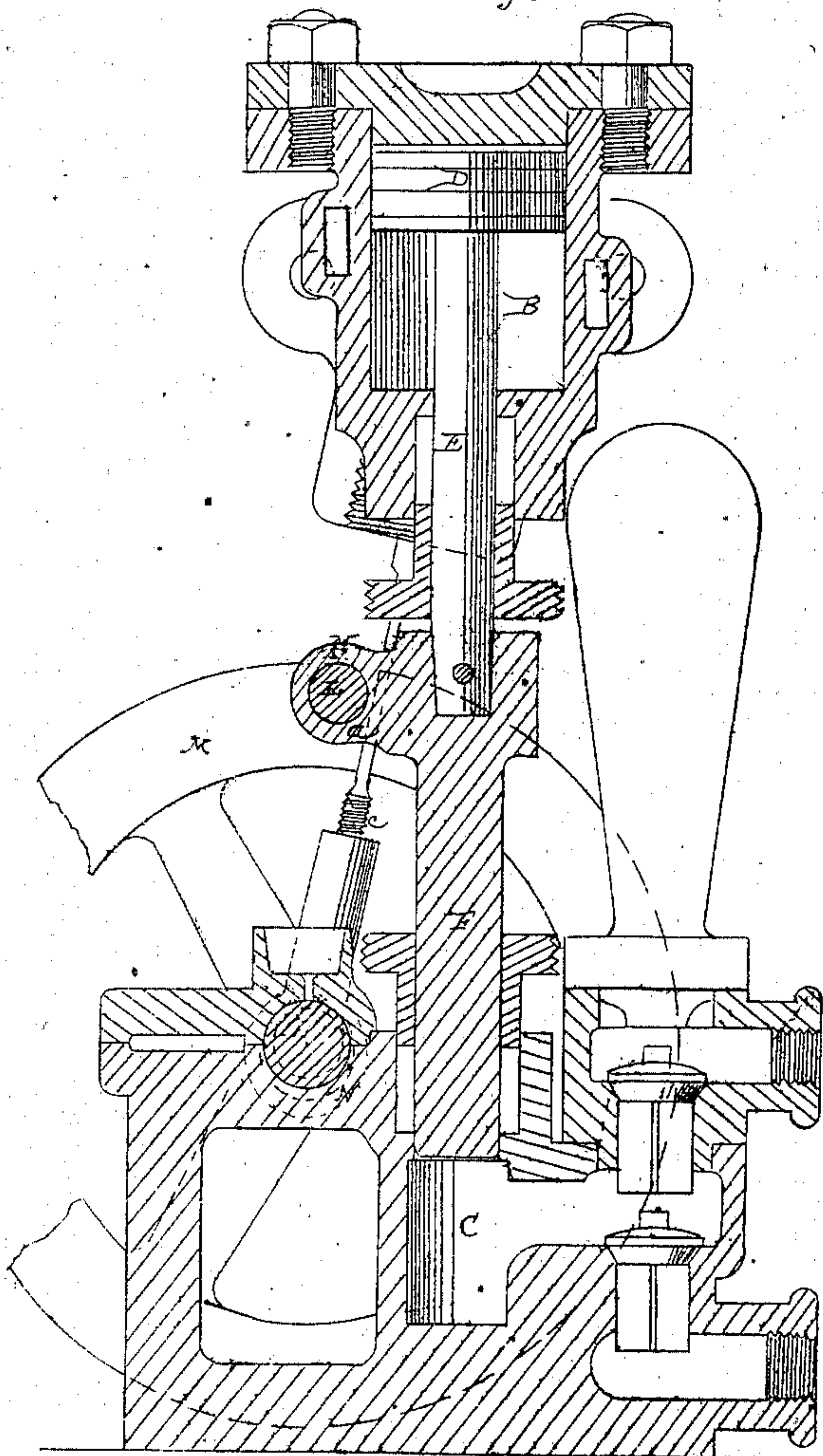


Fig. 2

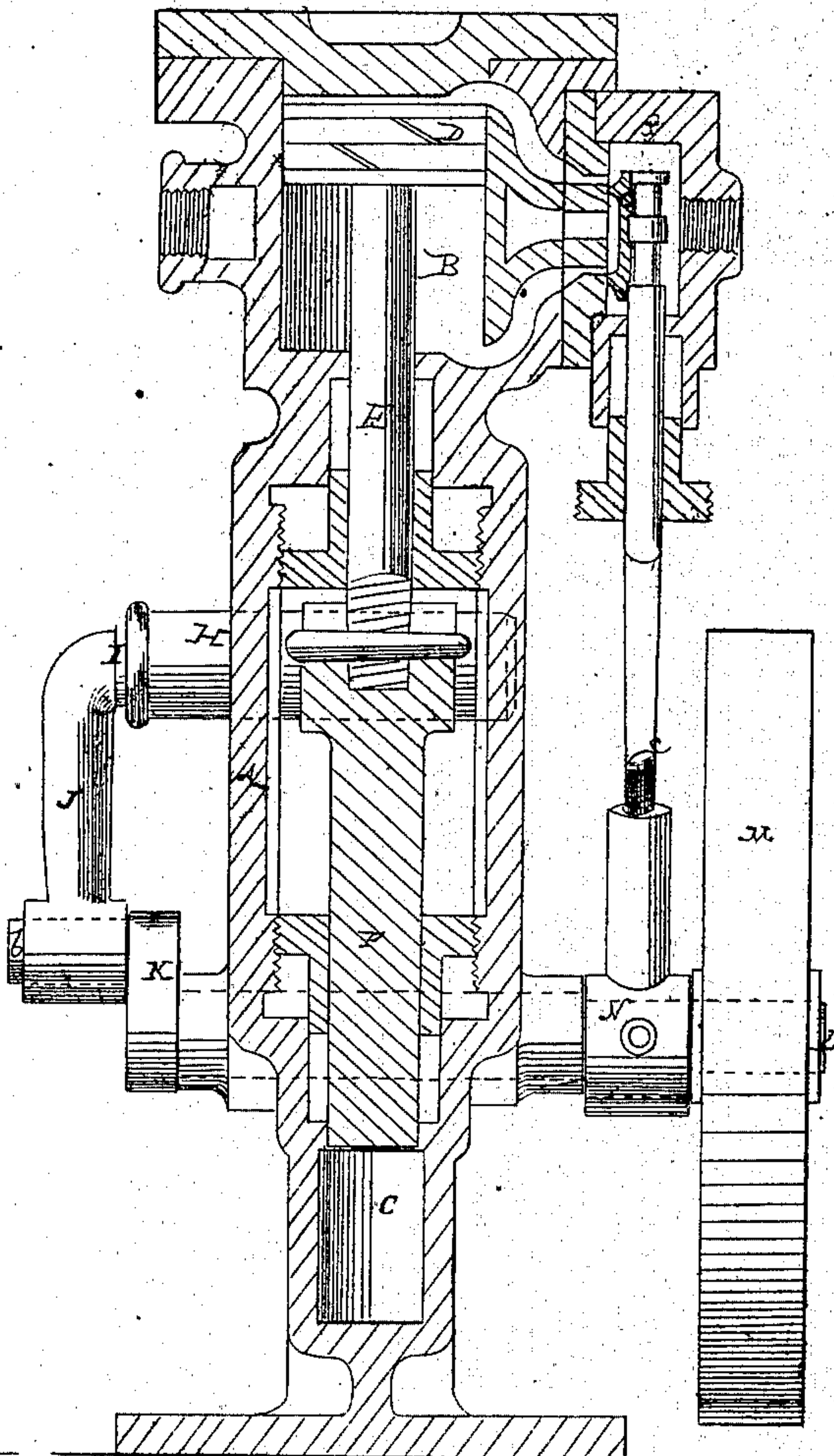
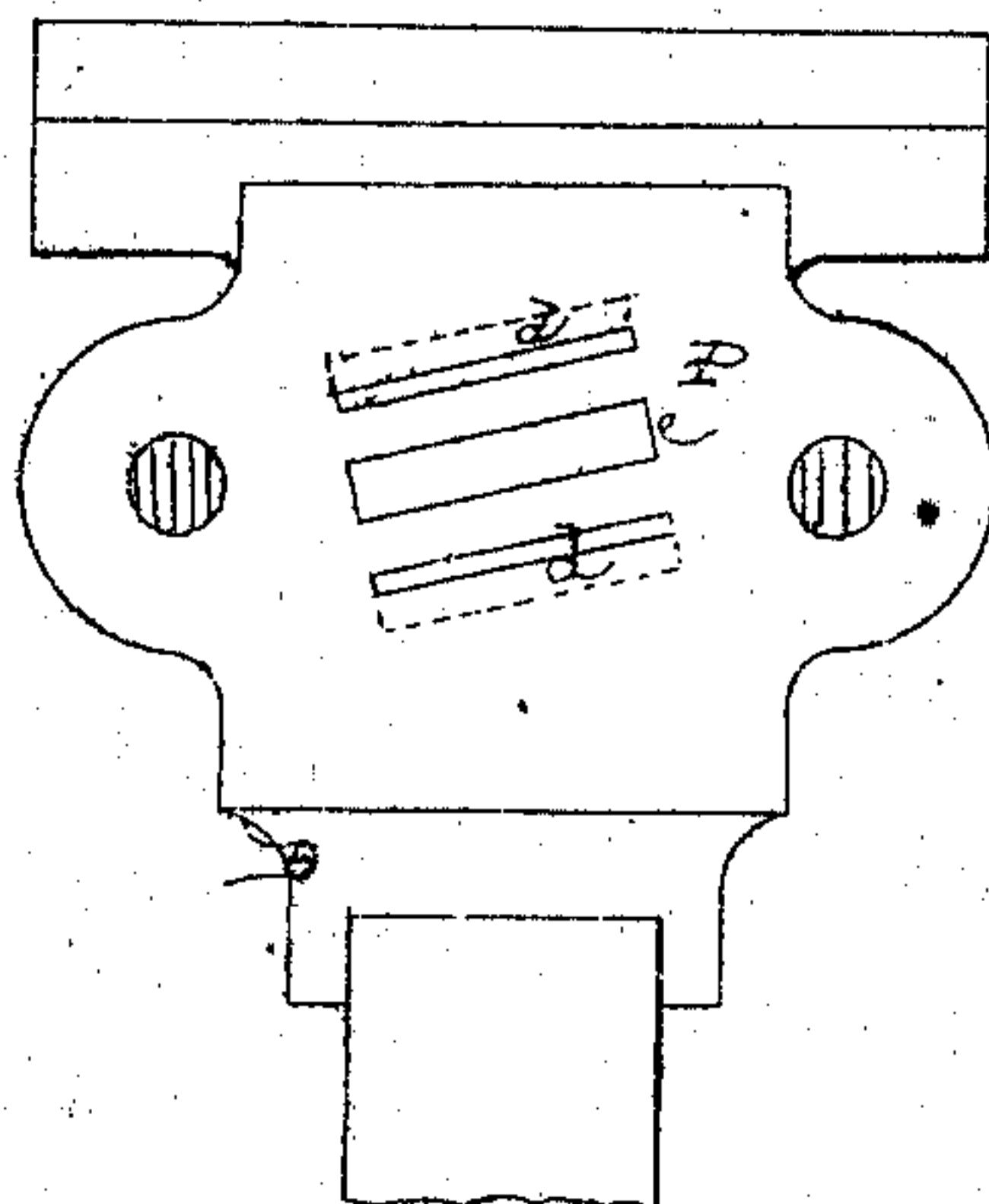


Fig 3



Witnesses:

Moore

Abellere

Wm. Hansen

United States Patent Office.

WILLIAM HARSEN, OF GREENPOINT, NEW YORK.

Letters Patent No. 74,084, dated February 4, 1868.

IMPROVEMENT IN STEAM-PUMPS.

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, WILLIAM HARSEN, of Greenpoint, in the county of Kings, and State of New York, have invented a new and useful Improvement in Steam-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figures 1 and 2 represent sectional elevations, at right angles to each other, of a steam-pump constructed according to my improvement, and

Figure 3 a face view of the valve-seat to the steam-cylinder, showing the arrangement of its ports or passages relatively to the latter.

Similar letters of reference indicate corresponding parts.

My invention consists in a novel combination or arrangement with or relatively to the steam-cylinder and barrel of the pump of a rocking-way shaft, having a lengthened bearing within a socket or sleeve, forming a lateral projection from the ram, at its junction with the piston-rod, and occupying a crosswise relationship to such parts, and the way-shaft running therethrough, carrying a lever or arm, which serves, by direct attachment through a crank, to rotate the main or revolving shaft, that is also situated laterally relatively to the ram, and on which the eccentric for operating the steam-valve is hung, whereby space is economized, and other advantages obtained; also, my invention consists in a novel arrangement of the ports or passages to the steam-cylinder, by disposing the same obliquely to the axis of the latter, in combination with a corresponding oblique arrangement to or action of the valve, and lateral position of the main or eccentric-shaft relatively to the ram, and whereby a direct action is secured to the valve, under such lateral position of the operating-shaft.

Referring to the accompanying drawing, A represents the frame of the pump, having cast with or secured to it, the steam-cylinder B, above, and pump-barrel C, below; or the position of these parts may be reversed, and, though the improvement is here shown as applied to a single-acting pump, it is equally applicable to a double-acting one. D is the steam-piston, E its rod, and F the ram, secured to the latter, and working within the pump-barrel C, that is provided with any suitable arrangement of valves and passages to effect ingress and delivery. Carried by the ram, at or near its top, by or through a projection, *a*, therefrom, is a lateral sleeve or socket, H, the axis of which lies transversely to a line that is parallel to the axis of the ram, which gives said socket a crosswise position relatively to the ram. Being on one side, or out of the way, as it were, it may be made of considerable length, and as it is reciprocated with the ram, will not interfere with or restrict its action. This socket serves to carry a rocking-way shaft, I, fitted therein or through, and bent to form, or carrying, at its one end, a lever or arm, J, that is connected in a direct manner to the wrist-pin *b* of a crank, K, which, by the reciprocating movement of the way-shaft I, in common with the ram, and freedom to turn on or round its own axis as well, serves to give rotary motion to the main or eccentric-shaft L, that has a similar lateral position relatively to the ram or its axis that the way-shaft occupies below the latter. By this combination or arrangement of parts, not only is a simple and efficient driving-mechanism established, but, by the lateral position of the shafts I and L, within the length or height of the ram-stroke, space is largely economized, and general steadiness of action secured, alike by the compact position of the parts as by the length of the socket or sleeve H, afforded by such arrangement, and lengthened bearing which such secures to the shaft I, that is thus restrained from twisting or working loose. A long bearing also is secured to the shaft L, which carries a fly, or, it may be, driving-wheel, M; also has hung on it the eccentric N, for operating the slide-valve O, to the steam-cylinder B, and which I effect in a direct manner from the lateral shaft L, through a rod, *c*, by giving to the valve an oblique action across its seat, P, relatively to the axis of the cylinder, and obliquely arranging, transversely to said axis, the ports or passages *d d*, through the seat, as seen more clearly in fig. 3.

The importance of a direct action of or motion to the valve, and freedom from multiplicity of working parts, which, but for the oblique arrangement of the steam-ports and valve, it would be difficult or impossible to secure, will be readily understood, when it is borne in mind that the throw of the eccentric and valve should, to make an efficient steam-pump, be very limited or contracted, in proportion to the stroke of the ram, so that to secure correct action of the valve relatively to the ports, there must be both general-steadiness and freedom from shake of the valve-mechanism. So small is the throw or stroke of the valve, in the present instance, that, in order to make the steam-ports *d d* sufficiently narrow or fine, which it would be difficult or impossible to do

by casting them with the general passages to or through the cylinder, I make the valve-seat P of a separate plate, interposed between the portion of the cylinder containing the passages and valve-box or cover, Q, as seen in fig. 2.

What I claim, and desire to secure by Letters Patent, is—

1. The arrangement and combination of ram and piston with the lateral socket H, the rocking-way shaft I, arm J, crank K, and shaft L, substantially as shown and described.
2. The arrangement and combination of the lateral shaft L, the eccentric N, the oblique ports *d d* and *e*, relatively to the axial line of the steam-cylinder, and the sliding valve O, substantially as set forth.

WM. HARSEN.

Witnesses:

J. W. COOMBS,

A. LE CLERC.