

(No Model.)

W. L. SAUNDERS.  
STEAM ACTUATED VALVE.

No. 344,991.

Patented July 6, 1886.

Fig. 1.

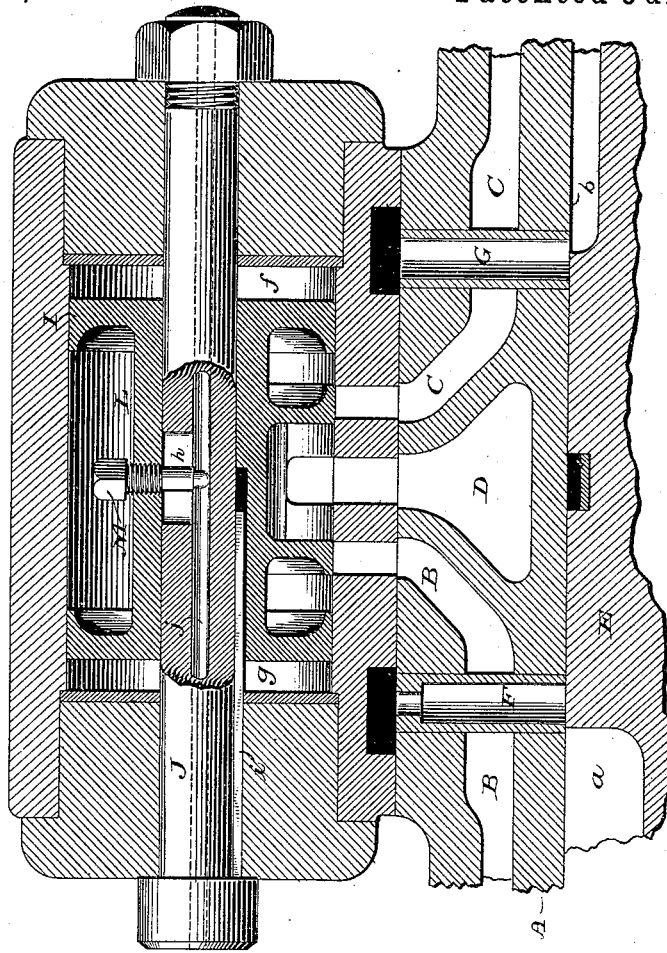


Fig. 2.

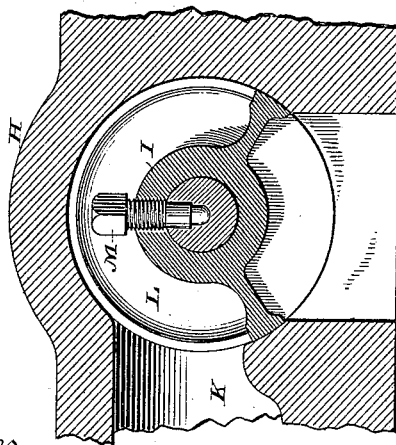
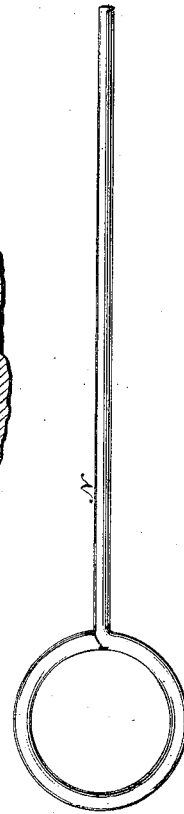


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## STEAM-ACTUATED VALVE.

SPECIFICATION forming part of Letters Patent No. 344,991, dated July 6, 1886.

Application filed April 10, 1886. Serial No. 198,408. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM L. SAUNDERS, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Steam-Actuated Valves, of which the following is a description.

The present invention relates to improvements in steam-actuated valves, and more particularly to valves for reciprocating rock-drilling engines, in connection with one form of which it is here shown and described, although it will be obvious that the improvement is equally applicable to any variety of valve where the steam or air pressure alone is the motive power applied directly to the valve in reversing it during the operation of the apparatus. Valves of the class referred to are liable to stick or get upon a dead-center, which is a source of great trouble under ordinary circumstances. Since the said valves are not readily accessible and the causes of stoppage are many—as, for instance, tight packing, expansion, the presence of dirt and grit, or gum from the steam-hose—some means for moving the valve to the desired starting-point is very desirable.

Having in view the overcoming of these difficulties, my invention consists in providing the valve with an extension or projection at all times accessible from the exterior of the apparatus, the details of construction and arrangement whereof will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of the valve, steam-chest, and a portion of the main cylinder and piston of a drilling-engine, showing parts of the steam and exhaust passages, the through-bolt in the steam-chest being partly broken away to show its construction. Fig. 2 is a transverse sectional view on the line 2 2 of Fig. 1. Fig. 3 is the rod used for moving the valve.

Similar letters denote like parts throughout.

A represents a portion of the shell of the cylinder of a drilling-engine, which is formed with steam-passages B C, in the well-known manner.

D is the main exhaust-passage.

E is a portion of the piston arranged to move

in said cylinder, and *a* and *b* are depressions in the said piston, which at each reciprocation thereof effect communication between the exhaust-passages F and G, which lead through the side walls of the cylinder A, and communicate, respectively, with the extremities *f* and *g* of the cylindrical steam-chest H. A spool-shaped reciprocating steam-valve, I, is fitted to move freely within the steam-chest H, and mounted longitudinally upon a through-bolt, J, passing through said steam-chest. The bolt J is formed with a longitudinal passage, *j*, into which extends a slot, *h*, formed in the upper side of the bolt, the said bolt being also provided with suitable means to prevent it from turning when in position—as, for instance, a key, *i*, which may, as shown, extend also into a recess in the valve I, although its presence there is not essential. Steam enters through the passage K, and at all times fills the upper portion, L, of the valve, pressing it firmly downward upon its seat, and also upon the through-bolt, by which it is partly supported. This prevents steam from entering the slot *h*, and so escaping through the central aperture, *j*, in the bolt J.

In order to be able to move the valve should it refuse to respond to the difference of pressure at its ends, caused by one or the other of its exhaust-passages being opened by the movement of the piston E, I provide a set-screw or plug, M, which is screwed or otherwise fixed firmly into the central portion of the valve L, and projects through the slot H, and into the central aperture, passage, or tube, *j*, where it can be readily reached by means of a rod or wire, N, and moved to any desired position thereby. As shown, the valve H is of a well-known type, the movements of which are controlled by the live steam, by which it is driven first in one direction and then in the other, as the passages F G are successively opened and closed by the reciprocations of the piston E, in the usual and well-understood manner.

My improvement can be applied equally well to valves controlled by separate steam ports and passages—as, for instance, the valve shown and described in the Letters Patent to Francis M. Pierce, No. 340,729, April 27, 1886—in which case it is only necessary to form the tubular passage in the through-bolt below its

longitudinal center, in order that a continuous bore may be formed which will not in any way interfere with the steam-passages in the upper sides of the bolt.

5 Various modifications may obviously be made—as, for instance, the wire N might be permanently attached to the pin M and allowed to move within the aperture, the principle of the invention remaining the same.

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

The combination of a steam-actuated valve, its steam-chest, a tube passing through it and

through the valve, a pin or extension carried 15 by the valve and extending through a suitable slot in the tube, and a rod adapted to be inserted in the tube, and to engage the pin extending thereinto from the valve, whereby the valve can be adjusted as desired, substantially 20 as set forth.

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

WILLIAM L. SAUNDERS.

Witnesses:

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JOHN D. MILLER.