(No Model.)

J. H. LAYMAN.

STRAIGHTWAY VALVE.

No. 533,991. Patented Feb. 12, 1895.

FIG. 1.

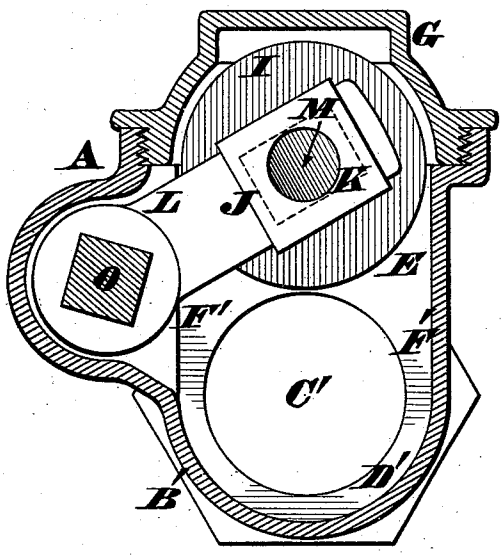


FIG. 2.

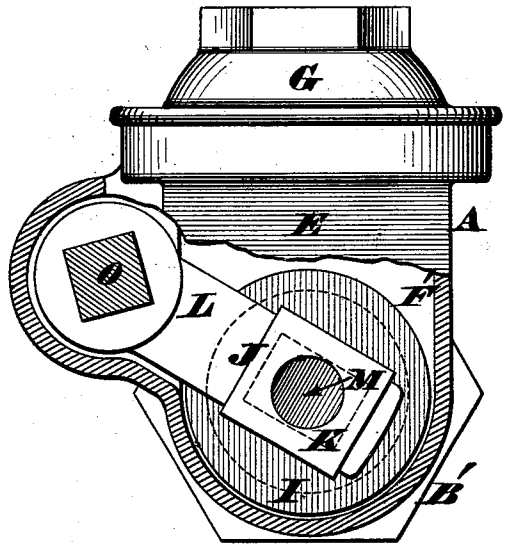


FIG. 3.

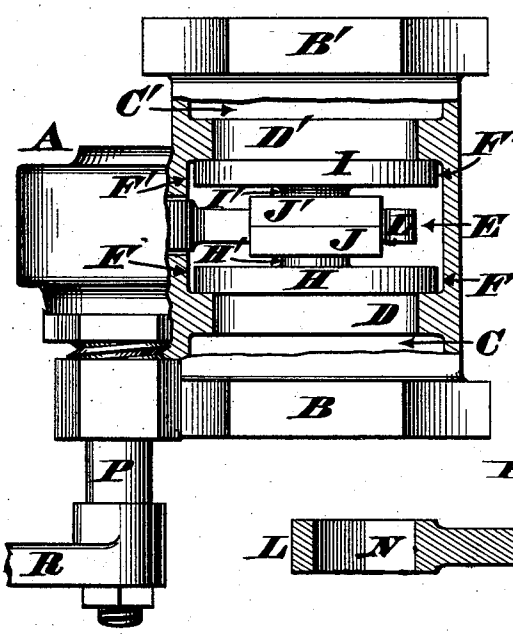


FIG. 4.

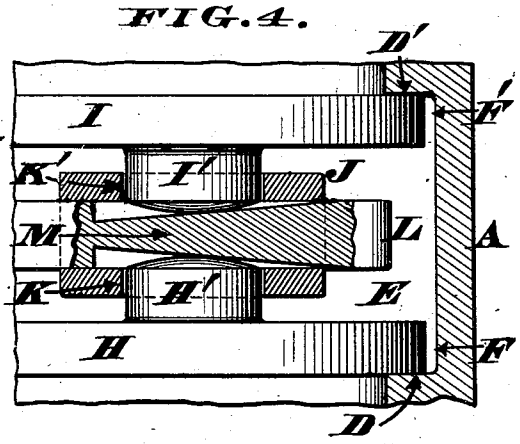
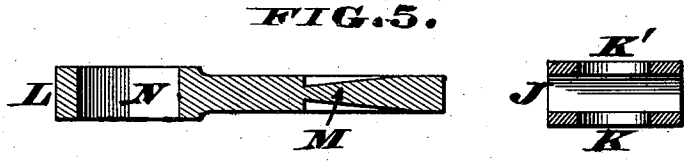


FIG. 5.



Attest.
Chas. S. Speer.
James Moore

Inventor.
James H. Layman.

UNITED STATES PATENT OFFICE.

JAMES H. LAYMAN, OF CINCINNATI, OHIO, ASSIGNOR TO THE WILLIAM POWELL COMPANY, OF SAME PLACE.

STRAIGHTWAY VALVE.

SPECIFICATION forming part of Letters Patent No. 533,991, dated February 12, 1895.

Application filed June 6, 1894. Serial No. 513,642. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. LAYMAN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Straightway Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form part of this specification.

My invention comprises a novel combination of devices wherewith the disks of a straight-way valve can be forced away from each other when closed or thrown wide open. When closed, said disks are forced tightly against their respective seats, so as to completely obstruct the channels or fluid passages, but when opened, said disks then bear against the walls of the valve-chamber proper, as hereinafter more fully described.

In the annexed drawings Figure 1 is a vertical section of my improved straight-way valve taken in the plane of its vibrating-lever, which latter is swung up to raise the disks and thereby open the channels or fluid passages of the shell. Fig. 2 is a similar section of the operative parts; but showing the disks lowered, to close said passages. Fig. 3 is a sectionized plan of the closed valve. Fig. 4 is an enlarged horizontal section through the devices that force the disks away from each other. Fig. 5 is a horizontal section of the lever and disk-carrier detached from the shell, and separated from each other.

A represents a shell or casing, for an ordinary straight-way valve, and B, B′, are the pipe ends or couplings thereof, said ends being traversed by customary channels or fluid passages C, C′, at the inner ends of which latter are situated seats D, D′, whose ports open into the lower portion of a chamber E, having duplicate guides F, F′, at its opposite sides, and being closed at top by a cap G.

Adapted to be forced against the aforesaid seats are disk-valves H, I, from whose inner faces project short lateral-studs or pivots H′, I′, as more clearly seen in Fig. 4. J, in this illustration, represents a sliding disk-carrier, but in Fig. 3, said carrier is divided longitudinally, thereby affording a pair of counterparts J, J′. Furthermore, this carrier, whether made in one or more pieces, is pierced on its opposite sides, as seen at K, K′, in Fig. 5, to admit the disk-pivots H′, I′, and is free to reciprocate along a vibrating lever L, that portion of said lever concealed by the carrier being shaped like a wedge M. This wedge is formed by cutting away the sides of the lever, in the manner shown, so as to present the point of the wedge toward the axis or bearing of said lever, which latter has an eye N, seen in Fig. 5, to admit the square O, of a rock-shaft P. R is the handle for this shaft.

In constructing this valve, it is necessary that the carrier J should move readily along the free end of lever L for a limited distance, and some little clearance should be permitted between the disks and the sides of said carrier. These precautions having been adopted, the valve is then fitted together in the following manner: Carrier J is first slipped on the free end of lever L, and then the pivots H′, I′, of the disks H, I, are inserted within the perforations K, K′, of said carrier. The carrier, lever and disks are now passed down through the open top of valve-chamber E, said lever being so guided as to bring its eye N to a proper position to receive the square O of rock-shaft P. After this square is inserted within said eye, and cap G screwed home, the valve is at once ready for use, and assuming that the lever is swung up, as seen in Fig. 1, the various parts of the device are situated, as follows: The carrier J, or J J′, now rests upon the upper edge of the steeply-inclined lever, but cannot run down it, because said carrier is held by the pivots of the disks, and the latter cannot shift toward the side of chamber E, because their peripheries are in contact with the vertical guides F, F′. Evidently, these pivots H′, I′, are, at this time, bearing against the thick portion of wedge M, the result being a forcible separation of said disks, and their close contact with the front and rear walls of the valve-chamber. Consequently, said disks are now locked in an open position, and cannot be accidentally closed by any jars or vibrations of the engine or other machine to which the valve is attached, but the disks can be readily brought to a position where they will intercept any flow through the channels C, C′, by

swinging the lever down, as seen in Fig. 2. When this lever first begins to swing down, the wedge M, gradually relaxes its pressure against the disk-pivots, and as soon as said lever reaches a horizontal position, said pivots are about opposite the narrowest portion of said wedge, but as soon as the lever swings below the axis of shaft R, the wedge again gradually comes into action, and by the time said lever has completed its descending stroke, its wedge will once more act against the disk-pivots. Evidently, the disks are again forcibly separated, and held in close contact with their respective seats D, D′, as seen in Fig. 3, and as represented on a larger scale in Fig. 4.

The valve is opened by simply swinging up the lever L, and after it has moved a limited distance, the pivots are again relieved from the pressure of the wedge M, until they almost reach the top of chamber E, and then said wedge operates, as previously described. Finally, by making the carrier of two separate sections J, J′, each disk will have a limited movement independently of the other disk, and, on this account, there will be no need of extreme accuracy in constructing the valve or in fitting the parts together.

I claim as my invention—

1. The combination, in a straight-way valve, of a shell having a pair of channels; a chamber provided with a pair of guides and two valve-seats; a vibrating lever whose free end swings within said chamber and has an integral longitudinal-wedge, with its thin end presented toward the axis of said lever; a carrier, perforated on its opposite sides, and adapted to slide freely along said lever; and a pair of valves having pivots inserted within said perforations; the arrangement of these devices being such as to confine said valves to a rectilineal path within said guide, when the free end of said lever describes an arc of a circle, and to gradually force said valves away from each other as the lever approaches the terminations of its stroke, at which time the thicker portion of said wedge bears against said pivots, for the purpose stated.

2. The combination, in a straight-way valve, of a shell having a pair of channels C, C′; a chamber E, provided with guides F, F′, and valve-seats D, D′; a vibrating lever L, whose free end swings within said chamber, and has an integral longitudinal-wedge M, with its thin end presented toward the axis of said lever; a divided carrier J, J′, perforated on its opposite sides, at K, K′, and adapted to slide freely along said lever; and a pair of valves H, I, having, respectively, pivots H′, I′, inserted within said perforations, the arrangement of these devices being such as to confine said valves, H, I, to a rectilineal path within said guides F, F′, when the free end of said lever describes an arc of a circle, and to gradually force said valves away from each other as said lever approaches the terminations of its stroke, at which time the thicker portion of said wedge bears against said pivots H′, I′, all as herein explained, and for the purpose stated.

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

JAMES H. LAYMAN.

Witnesses:

ARTHUR MOORE,

JAMES MOORE.