

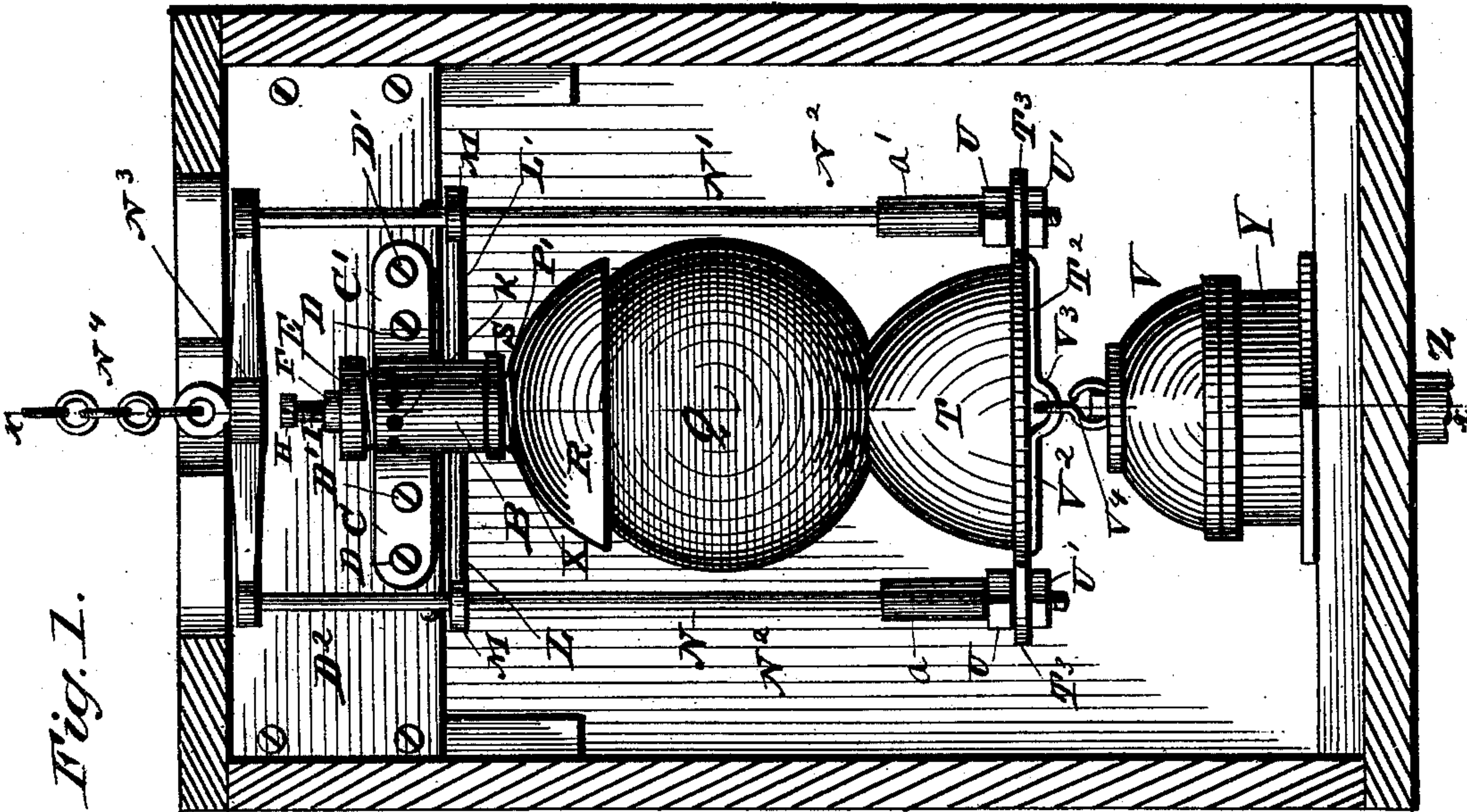
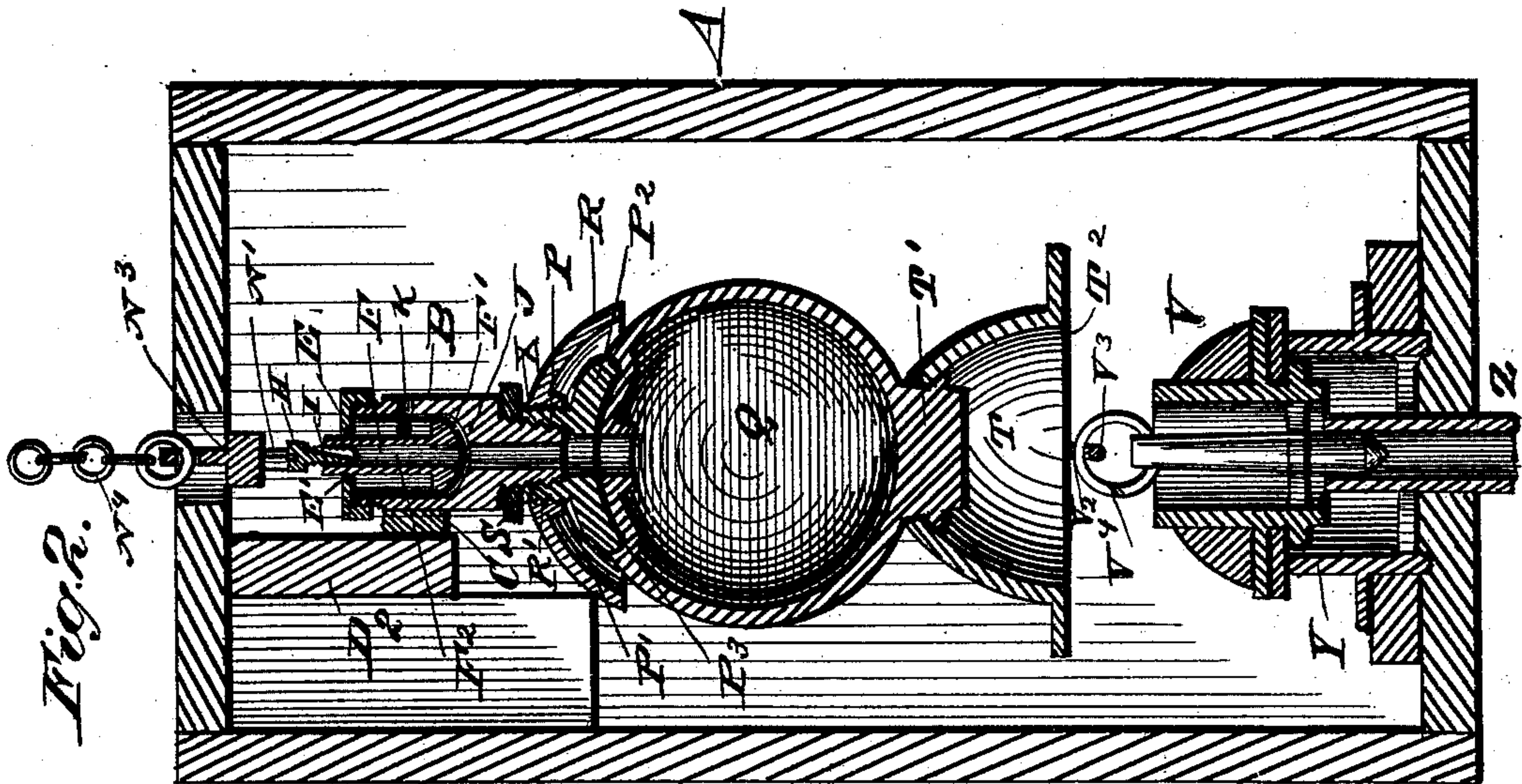
(No Model.)

P. A. RIORDAN.

AUTOMATIC ATTACHMENT FOR CISTERN CLOSET VALVES.

No. 357,033.

Patented Feb. 1, 1887.



WITNESSES
Philip Maci.
Villette Anderson.

Fig. 4.

Fig. 3.

INVENTOR
P. A. Riordan
by *Anderson & Smith*
Attorneys

UNITED STATES PATENT OFFICE.

PATRICK A. RIORDAN, OF GARDNER, MASSACHUSETTS.

AUTOMATIC ATTACHMENT FOR CISTERN-CLOSET VALVES.

SPECIFICATION forming part of Letters Patent No. 357,033, dated February 1, 1887.

Application filed July 24, 1886. Serial No. 208,963. (No model.)

To all whom it may concern:

Be it known that I, PATRICK A. RIORDAN, a citizen of the United States, residing at Gardner, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Automatic Attachments for Cistern-Closet Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a front elevation, partly in section. Fig. 2 is a vertical transverse section on line $x\ x$, Fig. 1. Fig. 3 is a detail view. Fig. 4 is a detail view.

My invention relates to automatic attachments for cistern-closet valves; and it consists in the construction and novel combination of parts, as hereinafter described, and pointed out in the claims.

Referring by letter to the accompanying drawings, A designates the frame in which the automatic attachment for cistern-closet valves is built.

B designates a sleeve, which is provided at its upper end with integral laterally-extending flat arms C C', which are provided with screw-holes D, through which screws D' are passed into a cross-piece, D², of the frame A, to secure said sleeve B in place. The sleeve B is provided with external screw-threads at its upper end to receive an internally-threaded screw-cap, E, provided with a central opening, E', in which the hollow valve-stem F, having an integral valve, F', at its lower end, works. Said valve F' is convex on its lower face, and is provided with a central opening, F², which is aligned with the longitudinal opening of the valve-stem F. At its upper end the hollow valve-stem is internally threaded, and in this threaded portion a screw-plug, H, provided with a tapering groove, I, in one side, is screwed, said groove intersecting the threads of the screw-plug H and having the wider portion of said groove at what may be termed the "point" of the screw-plug H, said screw being a straight untapered screw. This groove I is to regulate the admission of air

to the valve-stem F. The screw-plug H is provided in its head with a nick for the point of a screw-driver, so that said screw-plug may be readily turned in or out, as may be necessary.

The sleeve B is provided with an internal valve-seat, J, which is concave in its upper face to receive the convex face of the valve F'.

Immediately below the screw-cap E the sleeve B is provided with a row of perforations, K, which admit air to the sleeve B above the valve F', so that the latter will work readily in the sleeve B, which would not be the case were the sleeve air-tight. The sleeve B is also provided with two integral laterally-extending arms, L L', each of which is provided at its outer end with an eye, M, through which the vertical rods N N' of the frame N² work. These rods N N' are connected at their upper ends by a metal cross-head, N³, which cross-head N³ is provided with an integral upwardly-projecting ear, to which a chain, N⁴, is attached, by which to raise the frame N².

The lower end of the sleeve B is slightly tapered, and has external threads cut thereon, and this tapered threaded lower end enters an internally-threaded seat, P, in the externally-threaded sleeve, P', on the convexo-concave disk or plate P², seated in an opening, P³, in the upper portion of the hollow rubber ball Q. On the external threads of the sleeve P' a convexo-concave compressor-plate, R, having a central threaded opening, R', is screwed, and then the rubber ball Q is turned to screw the tapering end of the sleeve B into the seat in the convexo-concave disk P². The externally-threaded portion X of the sleeve P' is of larger diameter than the internally-threaded lower portion of the same, and a washer, S, is interposed between the lower shoulder of the sleeve B and the upper end of the sleeve P', to render the connection at this point air-tight.

The rods N N' are provided with friction-sleeves a a, which slide up and down thereon when the rubber ball is expanded by being compressed, said friction-sleeves thereby preventing the rubber ball Q from coming in contact with the rods N N', which contact, if permitted, would tend to wear through the rubber and render the ball worthless.

To the lower side of the rubber ball Q a convexo-concave metal compressor, T, is connected

by a rubber plug, T'. This compressor T is provided with a base-flange, T², having ears T³, through which the lower ends of the vertical rods N N' are passed and secured by nuts U U' both above and below said ears T³, so that when the frame N² is raised the rubber ball will be compressed and most of the air it previously contained will be expelled therefrom. When the compressor T is carried up in lifting the valve V, the sleeves a a are also carried up therewith, and by the time said sleeves have reached points opposite the horizontal diametrical line of the rubber ball 2 they will be between the said ball and the rods N N', and will prevent the material of the ball from coming in contact with the rods N N', so that the sleeves will receive the wear from the rods, and thus protect the surface of the ball, which, were the sleeves omitted, would come in contact with the rods N N', and would in a short time become worn through by use.

A weighted valve, V, is connected to the plug T' in the lower portion of the rubber ball Q by a split ring, V', or, as a modification, a cross-bar, V², is secured to the lower side of the compressor T, and is provided with a middle bend, V³, which is engaged by a hook, V⁴. This valve V rests normally on a valve-seat, Y, and closes the upper end of the delivery-pipe Z. When the chain is drawn upon, the ball is compressed and the weight-valve is lifted and the delivery-pipe is opened. As soon as the chain is released the air will commence to enter the rubber ball through the hollow valve-stem. By turning the grooved screw in the upper end of the hollow valve-stem, the time consumed by the rubber ball in expanding may be varied and rendered a longer or shorter period, as may be deemed necessary—that is to say, when the grooved screw is turned out or unscrewed the opening will be larger and the air can enter more rapidly than when the grooved screw is turned in, as in the latter instance the groove becomes nearly closed and the air cannot enter so rapidly, so that it will take the compressed ball longer to expand.

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

1. The combination, with the perforated hollow sleeve, threaded internally at its upper and lower ends and provided with the guide-arms and attaching-arms, of the open valve having the hollow stem provided with the grooved regulating-screw in its upper end, the screw-caps, the rubber ball, the upper compressor-plate on the hollow sleeve, the lower compressor connected to the rubber ball and to the lower end of the sliding frame, and the weighted valve connected to the lower compressor and adapted to open and close the delivery-pipe, substantially as specified.

2. The combination, with the sliding frame, compressor-plates, hollow rubber ball, and weighted valve, of the hollow perforated sleeve with screw-cam, the hollow valve having the axially-bored stem, and the grooved untapering regulating-screw in the upper end of the valve-stem, substantially as specified.

3. The combination, with the hollow rubber ball, upper and lower compressors, and perforated sleeve having the hollow valve with grooved regulating-screw in its hollow stem, of the sliding frame provided with the friction-sleeves on its arms, the weighted valve suspended below the lower compressor, and the lifting-chain for operating the sliding frame, substantially as specified.

4. The combination, with the hollow rubber ball, sliding frame, and compressors, of the hollow sleeve and the hollow valve with a hollow stem provided with the untapered screw having a tapered groove intersecting its threads, substantially as specified.

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

PATRICK A. RIORDAN.

Witnesses:

H. W. CONNET,
JULIAN P. DUNN.