No. 722,322. PATENTED MAR. 10, 1903.

F. PALM.

VALVE.

APPLICATION FILED NOV. 22, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

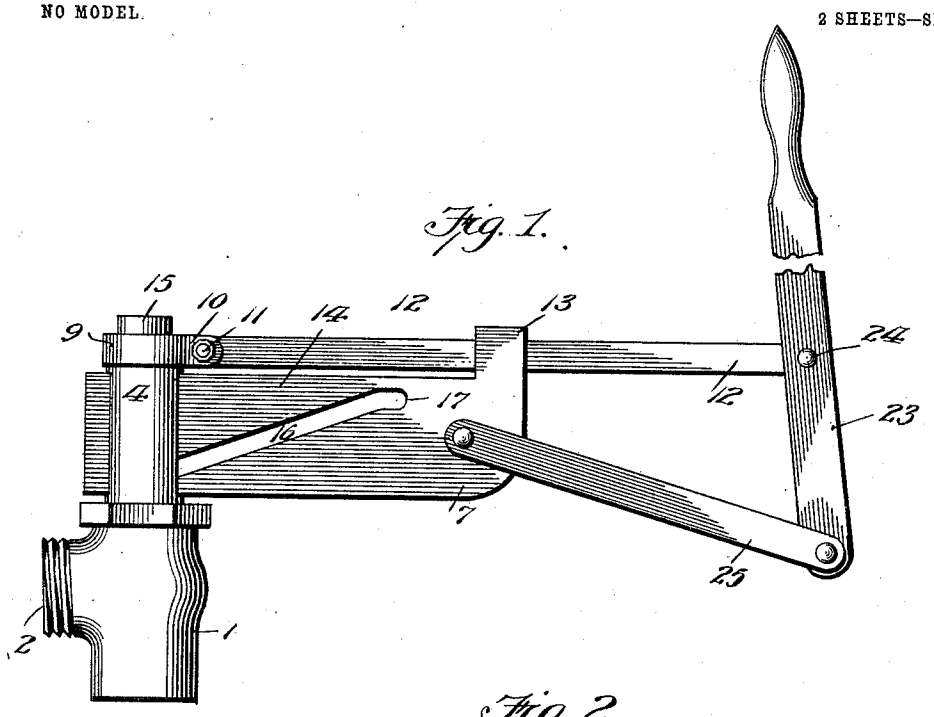
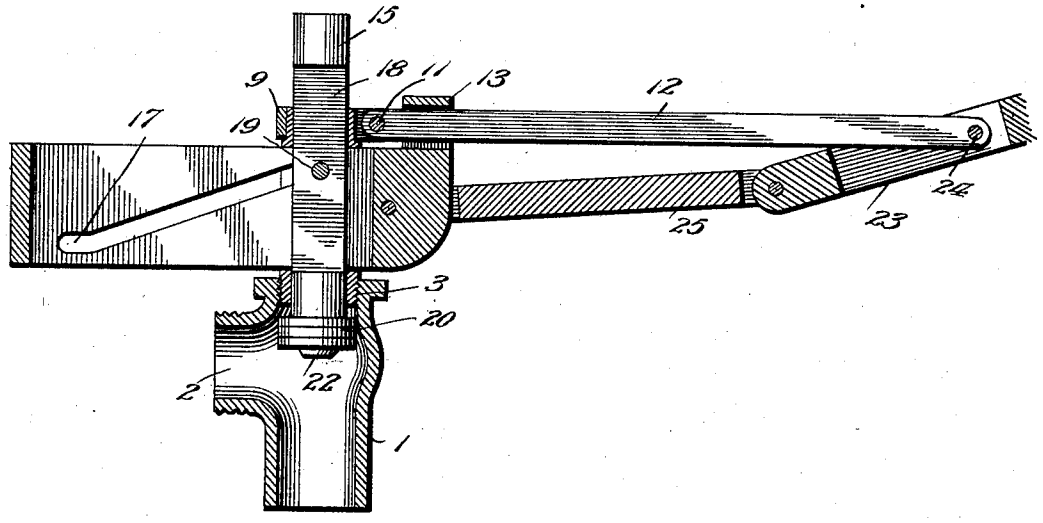


Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

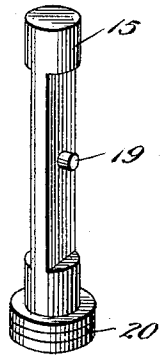


Fig. 3.

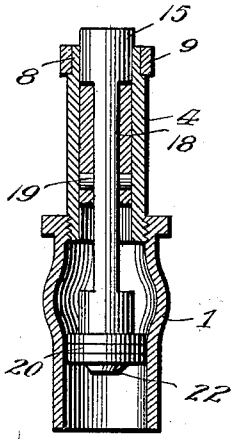


Fig. 5.

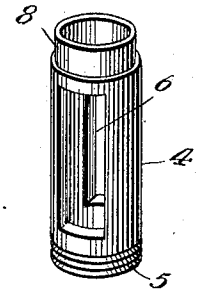


Fig. 6.

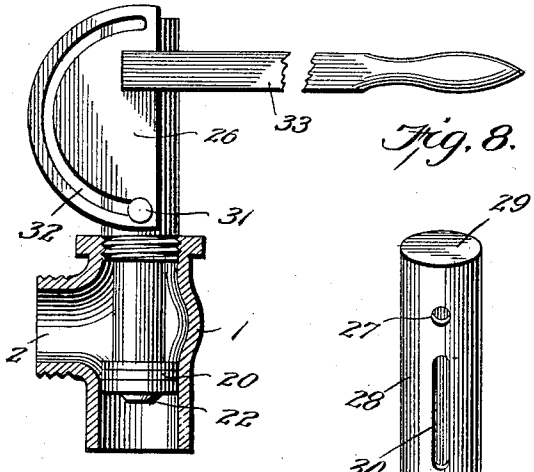
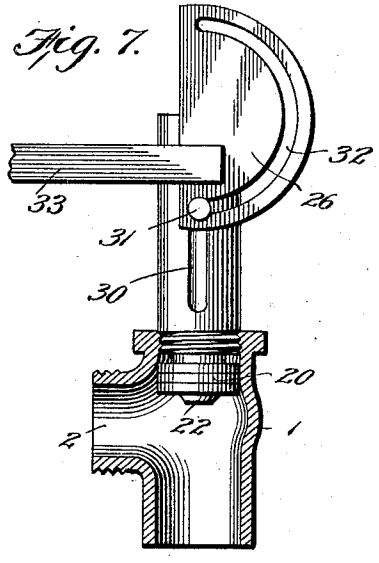


Fig. 8.

Fig. 7.



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UNITED STATES PATENT OFFICE.

FREDRICK PALM, OF PUEBLO, COLORADO.

VALVE.

SPECIFICATION forming part of Letters Patent No. 722,322, dated March 10, 1903.

Application filed November 22, 1901. Serial No. 83,320. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK PALM, a citizen of the United States, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves, and particularly to that form of reciprocatory valve which is used in connection with hydrants and the like.

The primary object of the invention is to provide a construction of valve which will permit the packing of the valve to be renewed or adjusted in a short space of time and without the aid of special tools and without requiring the services of an expert mechanic or one familiar with the construction of the hydrant or valve mechanism thereof.

A further object of the invention is to provide simple valve-operating means not liable to get out of order and by which the valve may be held locked at either end of its stroke.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a hydrant, showing the improved valve mechanism applied thereto. Fig. 2 is a vertical longitudinal section through the same. Fig. 3 is a vertical cross-section taken at right angles to Fig. 2. Fig. 4 is a detail perspective view of the valve and valve-stem. Fig. 5 is a similar view of the guide or housing for the valve-stem. Fig. 6 is a longitudinal section similar to Fig. 2, showing modified valve-operating means with the valve closed. Fig. 7 is a similar view showing the valve open. Fig. 8 is a detail perspective view of the guide or housing for the valve-stem.

Similar numerals of reference designate corresponding parts in all the figures.

Referring to the drawings, 1 designates a hydrant-stock or rather a sufficient portion thereof to illustrate the application of the improved valve thereto. The stock 1 is shown as provided with a nozzle-receiving elbow 2, which extends substantially at a right angle to the body of the stock, the stock terminating at its upper end in an internally-threaded opening 3, into which is screwed the guide 4, forming part of the present invention.

The guide 4 is primarily in the form of a hollow cylinder, being shown in detail in Fig. 5. Said hollow cylinder has its lower end threaded at 5 to connect with the hydrant-stock, as shown in Figs. 2 and 3, and is further provided at opposite sides with longitudinal slots 6, which permit the passage therethrough and sliding engagement of a compressor or operating-cam 7, the slots 6 being in alinement with and opposite each other. The upper end of the cylindrical guide 4 is rabbeted, as at 8, to receive a collar 9, which encircles the guide and is provided with oppositely-located lugs or ears 10, between which is secured, by means of a bolt or pivot 11, a guide-bar 12 of suitable length.

The operating-cam or compressor 7 is mounted to slide on the guide-bar and for that purpose is provided with a loop or runner 13, extending upward from the cam and embracing the guide-bar, as shown in Figs. 1 and 2. The cam 7 is composed of a pair of parallel plates 14, spaced a distance apart equal to the thickness of the central portion of the valve-stem 15. These plates are firmly connected at their opposite ends and are provided with oppositely-located oblique slots 16 in transverse alinement with each other, said slots terminating at their opposite ends in dwell extensions 17, which serve to lock the valve-stem in a manner hereinafter set forth.

The valve-stem is substantially cylindrical to fit and slide within the guide 4, and the central portion of said stem is cut away at opposite sides to provide opposite flat surfaces 18, reducing the width or thickness of the stem sufficiently to enable it to slide up and down between the plates of the compressor or operating-cam 7. At a suitable point the stem 18 is provided with a transverse pin 19, the ends of which project on opposite sides of the stem and enter and work within the grooves 16 of the cam. The valve proper consists, by preference, of one or more disks or washers 20, of leather, rubber, or analogous

material, the same being fastened to the end of the stem by means of a clamping-screw 22.

It will be understood that by reciprocating the cam 7 the valve will be raised and lowered or opened and closed. The cam is reciprocated by means of a hand-lever 23, fulcrumed at 24 intermediate its ends on the projecting extremity of the guide-bar 12 and connected, by means of a pivotal link 25, with the cam. It will now be understood that in the vibration of the hand-lever 23 the cam is moved back and forth, thus operating to raise and lower the valve-stem and valve. At either limit of the movement one of the dwell portions 17 of the slot 16 embraces the pin 19, and thereby prevents the accidental movement of the valve and operating-cam.

Instead of employing a reciprocatory compressor or cam a segmental compressor or cam 26 may be used, the same being fulcrumed at the point 27 on the cylindrical guide 28, which is screwed into the hydrant-stock in the same manner as the guide 4, but which differs from the first-named guide in that the upper end thereof is closed, as shown at 29. The said guide 28 is provided in one side only with a longitudinal slot 30, through which passes a pin 31, carried by the valve-stem and received in a curved cam-slot 32, formed in the segmental cam 26, as clearly shown in Figs. 6 and 7. In the construction just described the hand-lever 33 may be attached directly to the cam, preferably in line with the fulcrum-pin 27.

In view of the above description it will be understood that by turning the cylindrical guide in the proper direction with the aid of the hand-lever or any convenient portion of the operating mechanism said guide, together with the valve-stem and valve, may be unscrewed and removed from the hydrant-stock, thus giving immediate access to the valve for the purpose of repairing, cleaning, or renewing the same. The valve may thus be kept in perfect working order at a minimum expense and without serious loss of time.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a hydrant-stock having a nozzle-receiving elbow which extends substantially at a right angle to the body of the stock, the stock terminating at its upper end in an internally-screw-threaded opening, a tubular guide having its lower end secured in the said screw-threaded opening and formed with a slot extending longitudinally thereof, a valve-stem vertically slidable through the guide and carrying a valve on its lower end movable downwardly into the stock, the said valve-stem being formed with one or more projections at an intermediate point and exposed for engagement by the slot formation in the guide, an operating-cam having one or more slots therein to engage the one or more projections of the valve-stem and slidable over a portion of the guide and having an exterior exposure in relation to the guide, and means for operating the said cam.

2. The combination with a hydrant-stock, and a reciprocatory valve and valve-stem associated therewith, of a cylindrical guide detachably connected with the stock and into which the said stem slidingly extends, a guide-bar secured to the guide and extending outwardly from the latter, a slotted cam movable through the guide and engaging the valve-stem in the latter, the said cam having a runner embracing the guide-bar, and means connected to the guide-bar and the cam for actuating the latter.

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

FREDRICK PALM.

Witnesses:
S. J. MOYER,
D. B. SULLIVAN.