(No Model.)

G. H. F. SCHRADER.

WATER BOTTLE STOPPER.

No. 504,138. Patented Aug. 29, 1893.

Fig. 1.

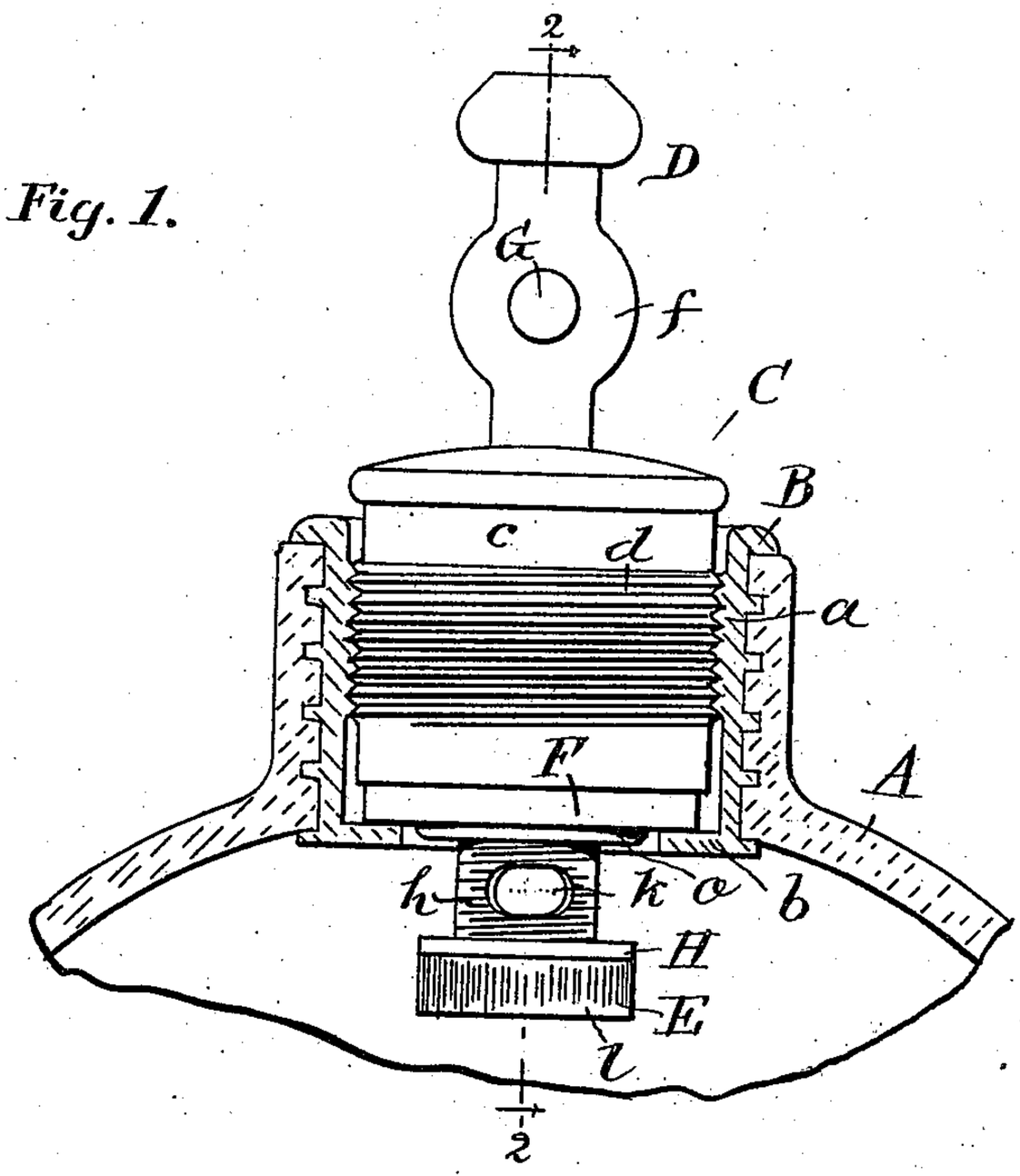
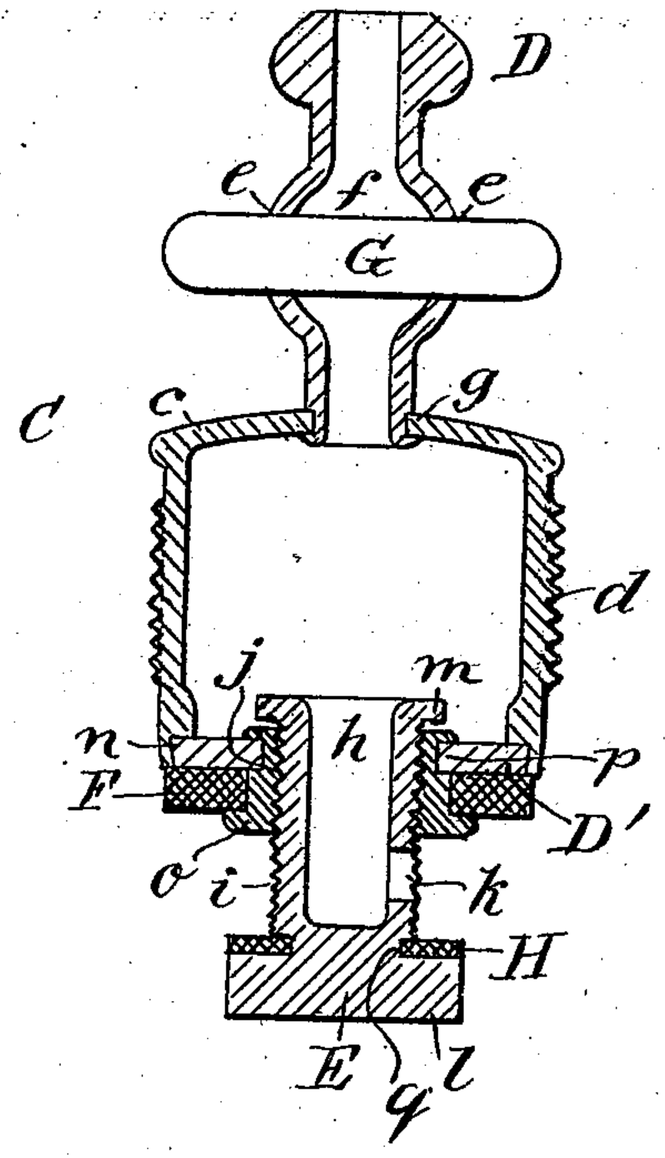


Fig. 2.



WITNESSES:
C. K. Fraser.
Fred White

INVENTOR:
George H. F. Schrader,
By his Attorneys,
Arthur O. Fraser & Co.

UNITED STATES PATENT OFFICE.

GEORGE H. F. SCHRADER, OF NEW YORK, N. Y.

WATER-BOTTLE STOPPER.

SPECIFICATION forming part of Letters Patent No. 504,138, dated August 29, 1893.

Application filed July 9, 1892. Serial No. 439,511. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. F. SCHRADER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Water-Bottle Stoppers, of which the following is a specification.

This invention relates to stoppers for water bottles or bags, and to analogous closures and particularly to valved stoppers, such as are used for fountain syringe bags.

The object of my invention is to provide an improved valved stopper which shall be of cheap and simple construction, and convenient and effective in operation.

Heretofore various constructions of valved stoppers have been employed, among which may be cited that shown in my United States Letters Patent No. 476,421, dated June 7, 1892, in which the stopper proper of the water bag was traversed by a tubular screw threaded stem having at one end a valve and at the other end a nozzle for receiving the tube of a syringe, the stopper operating when the valve is closed as an ordinary water bag stopper, and when the valve was open as an outlet through which the contents of the bag might flow to the syringe.

In carrying out my present invention I provide certain improvements in the construction and arrangement of the stopper and its valve and nozzle and handle, all of which will be fully hereinafter set forth.

In the accompanying drawings, which illustrate one adaptation of my invention, Figure 1 is a side elevation of my improved stopper constructed according to the preferred form of my invention, the thimble and neck of water bag to which it is applied being shown in section, and Fig. 2 is an axial section of the stopper cut on the line 2—2 in Fig. 1, the valve of the stopper being shown open in both views.

Referring to the drawings I will now describe the preferred form of my invention.

Let A designate the neck of an ordinary rubber hot water bottle, or other vessel with which the stopper is to be used.

Let B indicate the usual thimble or socket carried by the neck of the vessel A for receiving the stopper.

Let C indicate the stopper as a whole, D its nozzle, and E its valve.

The vessel A and socket B may be of any well known construction. In the construction shown the socket is a tubular thimble about which the neck of the vessel A is molded, which is constructed with an internal screw thread *a* and at bottom with an annular valve seat *b*.

The stopper C may be of any known construction. That shown is my improved stopper consisting of a hollow inverted cup *c*, to which the nozzle D is secured at top, which is closed at bottom by some suitable provision, as for example the lower disk or piece D′. The stopper has an external screw thread *d* adapted to engage the screw thread *a* of the thimble whereby by rotating the stopper it can be adjusted toward and from the seat *b*. At bottom it carries the packing washer F for engagement with the seat. At top it may have any well known handle, but I prefer to construct it with my improved handle G, which consists of a short bar or rod fixed within the nozzle D by passing it through holes *e e* in an enlarged portion *f* of the nozzle and then soldering it in position as best seen in Fig. 2, whereby the handle traverses the conduit through the nozzle and the latter serves to support it and connect it to the body of the stopper.

Preferably the nozzle D consists of a separate tubular piece riveted or otherwise secured in an aperture *g* in the head of the stopper. It is shown in Fig. 2 as constructed with a reduced lower end fitting this aperture having a shoulder abutting against the top surface of the stopper and having its lower end swaged against the inside thereof. At its other end it is preferably constructed with a small head or lip for engagement with the syringe tube.

According to my invention the valve E is preferably constructed as a tubular stem *h* traversing the inner end or wall of the stopper, screw threaded externally at *i* to engage corresponding screw threads *j* in the wall of the stopper, having an inlet aperture *k* without the stopper, whereby a continuous conduit exists through the wall of the stopper

when the valve is open, and having a head *l* exteriorly of the stopper by means of which it can be rotated to adjust it on its screw threaded connection with the stopper to open or close it. Preferably the head *l* is knurled. Preferably the valve is fixed to the stopper with its inner end within the hollow body thereof, whereby this end is concealed, and preferably it is made irremovable from the stopper, by some provision such for example as swaging its inner end at *m* to overlap the adjacent surface of the stopper. Preferably I construct the lower edge of the stopper *c* with a rabbet *n* into which the disk D′ fits, and which is swaged against the disk to make the necessary joint to connect the parts together. Preferably the washer F is carried by the stopper, and connected thereto by a headed stud *o* over which it is sprung. Preferably this stud is a thimble united to the disk D′ by having its reduced neck passed through the perforation *p* in the disk and riveted therein, and the screw thread *j* is formed on the inner side of this thimble. Preferably the outer face of the thimble constitutes the seat for the valve E, and the latter is provided with a packing ring H sprung into a groove *q* above its head for insuring a tight joint when the valve is closed.

In assembling the stopper when constructed as shown the cup *c* and nozzle D are first riveted together; the thimble *o* is riveted to the disk D′; the valve stem *h* is screwed into the thimble and its ends swaged outwardly; the disk is then united to the cup, whereupon the packing washers may be sprung into their respective positions or they may be located before connecting the parts together as desired.

In operating my improved stopper the valve E is ordinarily screwed to the closed position, and its seat being of less diameter than the internal diameter of the seat *b* pass within the latter as the stopper is screwed into the socket B until its washer F makes contact with the seat *b* for closing the vessel A. When it is desired to use the bag for a fountain syringe the stopper is removed, the valve screwed to the open position, the stopper replaced, and the syringe tube passed over the end of the nozzle D, whereupon on inverting the bag A its contents can flow through the aperture *k* and stem *h* of the valve E into and through the hollow interior of the stopper, and through its nozzle F to the syringe tube.

It will be understood that my invention is not limited to the particular details of construction and arrangement shown and described nor to use with the particular stopper shown, as it may be variously applied without departing from its essential features. Any hollow stopper may be utilized, and the invention may be applied to stoppers having female screw threads engaging externally screw threaded thimbles if desired.

What I claim is, in water-bottle stoppers and analogous devices, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. In a stopper for water bottles, the combination with a hollow body having an aperture at its upper end and a screwthreaded aperture at its lower end, of a nozzle carried by the upper end of said body and in communication through the upper aperture thereof with the interior of said body, and a valve, consisting of an externally screwthreaded tubular stem provided with a port in the body thereof and having a head on its lower end, whereby it is adapted to enter the lower screw-threaded aperture of the hollow body, be concealed therein, exteriorly close said aperture and thereby control communication through said body, substantially as set forth.

2. A screw stopper consisting of two parts, the one constituting the outer end of the stopper and having a nozzle, and the other united thereto, constituting the inner end of the body, and carrying a valve constructed when in one position to permit communication through the body to the nozzle, and when in the other position to close such communication.

3. In a screw stopper, a body having an internal conduit from its inner end to its outer end, and consisting of two parts united together, the one part forming the outer end of the body and the other part forming the inner end thereof, in combination with a tubular thimble as *o*, carried by the latter of said parts, and communicating with the conduit in said body, a packing washer as F carried by said thimble at the inner end of said body, and a valve as E, traversing said thimble, and adjustable therein for closing communication therethrough, substantially as and for the purpose set forth.

4. In a screw stopper a body consisting of the cup *c* constituting the outer part thereof, the disk D′ united to said cup to close its bottom and constituting the inner end of the body, a tubular thimble *o* riveted to said disk and communicating with the interior of the body, a washer F carried by said thimble at the inner end of the body, and a valve E having a stem *h* traversing said tubular thimble, and swaged outwardly within said cup, and having the head *l* at its outer end exteriorly of the inner end of said body, substantially as and for the purpose set forth.

5. In a screw stopper, the hollow cup *c*, in combination with the tubular nozzle D united thereto and having perforated enlargement *f*, and the handle G consisting of a bar traversing the enlargement of said nozzle and fixed in the perforations thereof.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE H. F. SCHRADER.

Witnesses:
GEORGE H. FRASER,
CHARLES K. FRASER.