

(No Model.)

G. H. F. SCHRADER.  
VALVED STOPPER FOR WATER BAGS.

No. 476,421.

Patented June 7, 1892.

FIG. 4.

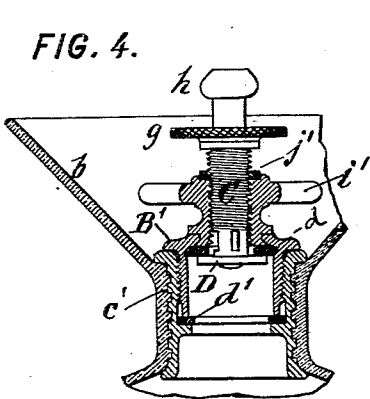


FIG. 1.

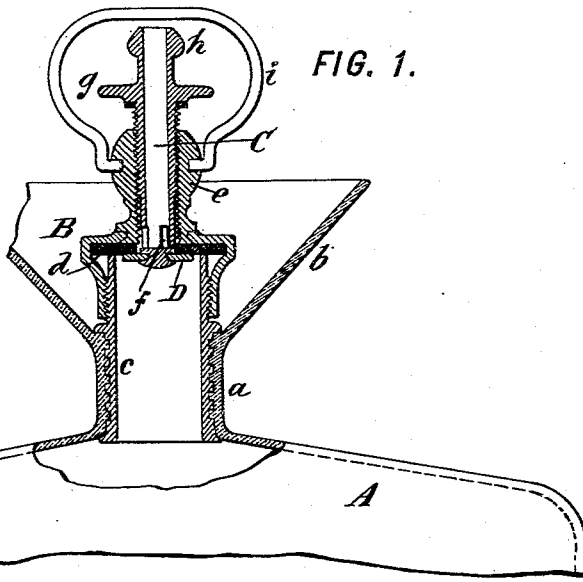


FIG. 2.

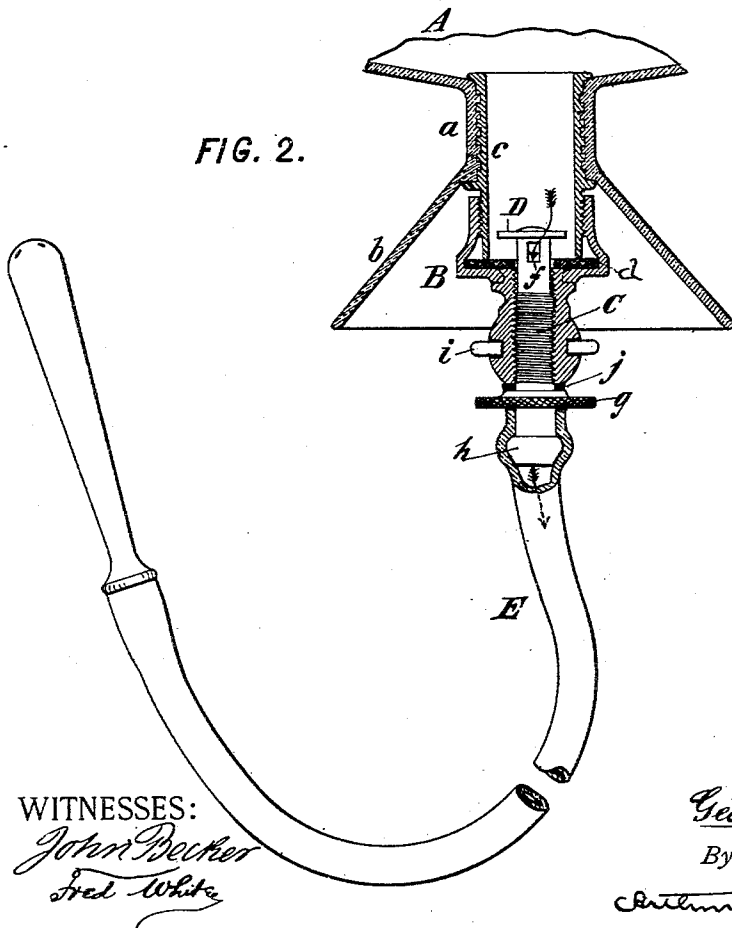
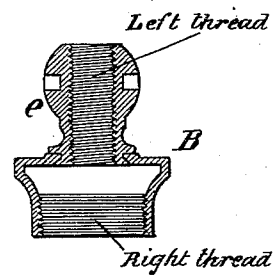


FIG. 3.



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# UNITED STATES PATENT OFFICE.

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## VALVED STOPPER FOR WATER-BAGS.

SPECIFICATION forming part of Letters Patent No. 476,421, dated June 7, 1892.

Application filed December 3, 1891. Serial No. 413,879. (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 Valved Stoppers for Water-Bags, of which the following is a specification.

This invention relates to stoppers for hot-water bags or water-bottles. Such bags are commonly made of flexible india-rubber, provided with a neck through which to fill them and with a stopper for tightly closing the neck.

The object of my invention is to provide means whereby a hot-water bag may be conveniently utilized as a fountain-syringe.

It has heretofore been a common practice to construct hot-water bags so as to adapt them to such use. To this end the bag has been provided with two stoppers, one an ordinary stopper for closing it tight when using it as a water-bag and the other a stopper with an opening through it and an external nozzle over which the flexible tube of a syringe may be drawn, so that by filling the bag and screwing in this nozzle-stopper and applying the tube upon the nozzle and then inverting and elevating the bag the water therein is caused to flow out through the tube and syringe. According to another construction the bag has been provided with a single stopper formed with an external nozzle and an opening through it and with a solid screw-plug for closing the opening to make the stopper tight when using the bag as a water-bag; but when using it as a fountain-syringe this plug is removed from the nozzle and the syringe-tube drawn thereover. The valved stopper provided by my present invention affords a more convenient construction and avoids the employment of any additional part which is liable to become lost. I construct the stopper to fit the thimble in the neck of the bag in any usual manner, as by a screw-thread, and form the stopper with a threaded opening through it, in which is screwed a threaded tubular valve-stem, to the inner end of which, within the stopper, is applied a valve-disk, which is adapted to seat against the inner side or face of the stopper and thereby to close the opening. By screwing the threaded neck inwardly this valve-disk may be removed

from its seat, so that an outflow-passage is afforded from the stopper through an opening in the stem into the interior thereof and out through the stem. The outer end of the stem is formed as a nozzle adapted for attachment to a syringe-tube, so that by turning the stem so as to open the valve and applying the syringe-tube upon its outer end or nozzle the water-bag to which the stopper is applied is adapted to be used as a fountain-syringe.

Figure 1 of the accompanying drawings is a vertical section of my improved stopper as applied to a water-bag, showing its valve closed in order to retain water in the bag. Fig. 2 is a similar section showing the bag and stopper inverted, the stopper-valve open, and the syringe-tube applied to the nozzle, thereby adapting the device for use as a fountain-syringe. Fig. 3 is a mid-section of the stopper alone with its valve removed. Fig. 4 is a section showing a modified construction.

Referring to the drawings, let A designate an ordinary rubber hot-water bag or water-bottle constructed, as usual, with a neck *a* and funnel *b*.

Within the neck *a* is fixed, as usual, a thimble *c*, to which is screwed the stopper B. The thimble may be externally threaded and the stopper screwed over it, as shown in Figs. 1 and 2, or it may be internally threaded and the stopper screwed into it, as shown in Fig. 4, both being well-known constructions in the art. In either case a packing ring or washer is provided, (lettered *d* in Figs. 1 and 2 and *d'* in Fig. 4;) or, instead of the stopper being made to screw to the thimble, as shown, it may be attached in any other way known to mechanics.

The stopper B, instead of consisting merely of a cap, as has heretofore been most common, is formed with an upward extension or head *e*, through which is formed an axial opening internally threaded, into which is screwed a tubular valve-stem C. On the inner end of this stem is fixed a valve-disk D, which thus stands within the hollow of the stopper B, and by screwing the stem outward may be brought against the inner surface of the stopper against which it seats itself to close the opening through the head thereof.

In order to make a tight joint where the

valve-disk is closed, a yielding packing *d*, preferably of soft rubber, is introduced between the valve-disk and the inner surface of the stopper, so that when the valve-disk is

5 screwed against its seat this packing shall be compressed between them. The packing may be attached to either the stopper or the valve-disk, but preferably to the former, as shown. Ports or openings *f f* are formed through the

10 inner end portion of the tubular stem, in order that when the valve is unseated, as in Fig. 2, a water-way may be formed from the interior of the stopper through these ports and out through the hollow of the valve-stem.

15 In order to enable the valve to be conveniently screwed out and in, the stem projects at its outer end beyond the head of the stopper and is formed with a milled head or flange *g*. The stem also projects beyond this head

20 and is formed as a nozzle *h*, over which the end of a syringe-tube *E* may be drawn, as shown in Fig. 2. To facilitate screwing down or unscrewing the stopper, and also to provide a means for hanging it up, a looped handle *i* is provided, with its ends pivotally engaged in sockets formed in the head *e* of the

25 stopper, so that it may be turned down sideways to bring it out of the way of the tube *E* when the latter is applied.

30 In order to use the rubber tube *A* as a water-bag, it is filled in the usual manner and the stopper is screwed down, the valve in the latter being closed by screwing the stem *C* outward until the valve *D* is pressed tightly

35 against the rubber packing *d*, as shown in Fig. 1.

If it is desired to fill the bag with air in order to use it as an air cushion or pillow, the stopper is applied to the bag when empty,

40 and being screwed down tight the valve-stem *C* is slightly screwed in sufficiently to unseat the valve *D*, and by applying the mouth to the nozzle *h* air is blown in until the bag is inflated, whereupon, while maintaining the

45 air-pressure, the stem is turned by means of the head *g* to close the valve, thereby confining the air. In this respect the operation is the same as that of any ordinary inflatable air-cushion.

50 In order to use the bag as the reservoir of a fountain-syringe, it is filled with water and the stopper applied and screwed down tight, whereupon the stem *C* is screwed in to the position shown in Fig. 2 and the end of the

55 syringe-tube *E* is drawn over the nozzle *h*, as shown. Thereupon by inverting the bag and elevating it the water that it contains is caused to flow out through the syringe. In so doing the water flows through ports *f* and

60 through the bore of the tubular stem *C* into the rubber tube *E*.

In order to prevent any leakage of water by flowing between the screw-threads between the opening in the stopper and the exterior of the stem *C*, I provide a packing-washer *j*, which, when the stem is screwed fully in, is compressed between the head *g* or any suit-

able flange or collar on the tubular stem and the end of the stopper, thereby making a

70 tight joint.

The stopper *B* is screwed to the thimble *c* with a right-hand thread; but the stem *C* is screwed within the stopper by means of a left-hand thread. This is an important provision for two reasons: First, habit has made it

75 second nature to almost every one to turn a screw valve or faucet to the right in order to close it, while with a right-hand thread it would be necessary to turn the stem *C* to the left in order to close the valve; but by using a left-

80 hand thread the valve is closed when it is turned in the direction in which it will instinctively be turned. Second, if the stem had a right-hand thread and were turned to the left to seat the valve *D* the final twist given

85 to tighten this valve against its seat would be liable to unscrew the stopper *B*; but by making the stem with a left-hand thread and turning it to the right to seat the valve the torsional pressure imparted to seat the valve

90 tightly tends to tighten the seating of the stopper *B* by turning it also to the right. The right and left hand threads of the stopper are clearly shown in Fig. 3.

The construction shown in Fig. 4 differs

95 from that already described only in that the stopper *B'* is constructed to screw inside the thimble *c'* instead of upon the exterior thereof, and consequently has outside threads, and the thimble is provided with a separate pack-

100 ing *d'* instead of utilizing the one rubber washer *d* as the packing both between the stopper and the thimble and between the stopper and the valve *D*, as in the construction first described. I have also shown in this fig-

105 ure the packing-ring *j* (here lettered *j'*) as carried in the top of the stopper-head in lieu of being carried on the exterior of the stem *C*. In this figure, also, the pivoted handle *i* is omitted and projecting arms *i'* are substituted

110 as means for facilitating the screwing in of the stopper.

My invention provides a very simple and convenient construction, whereby any ordinary rubber water-bag may be used also as a

115 fountain-syringe and, if desired, as an air-cushion, and this without the addition of any interchangeable parts, which are liable to be mislaid or lost.

I make no claim to a combined water-bag

120 and fountain-syringe, but claim only my improved construction of valve-stopper as hereinafter defined.

I claim as my invention the following-defined novel features, substantially as herein-

125 before specified, namely:

1. A stopper for water-bags, having a threaded opening through it, combined with a threaded tubular valve-stem passing through said opening, having a head by which to turn it

130 and having on its inner end within said stopper a valve-disk adapted by screwing out said stem to seat itself against the inner side of the stopper and thereby close said opening.

2. A stopper for water-bags, having a right-hand thread for attaching it to the neck of the bag and an opening through it with a left-hand thread, combined with a left-threaded tubular valve-stem passing through said opening and having on its inner end a valve-disk adapted to seat itself against the inner side of the stopper to close said opening, whereby by turning the stem to the right it screws outwardly and seats said valve-disk and the seating thereof tends to tighten the attachment of the stopper.

3. A stopper for water-bags, having a threaded opening through it, combined with a threaded tubular valve-stem passing through said opening, having on its outer end a nozzle adapted for the attachment of a syringe-tube and on its inner end a valve-disk, whereby by screwing said stem outwardly said valve-disk seats against the inner side of the stopper and closes the outlet through said opening and by screwing the stem inwardly and applying a syringe-tube to the nozzle thereof the valve is opened and water may flow out through said stem and syringe-tube, thereby converting the water-bag into a fountain-syringe.

4. A stopper for water-bags, having a threaded opening through it and constructed with a valve-seat at the inner end of said opening and with a shoulder at the outer end of said

opening, combined with a threaded tubular valve-stem passing through said opening, having on its outer end a nozzle for the attachment of a syringe-tube and a shoulder for engagement with said shoulder on the stopper and on its inner end a valve-disk adapted to seat against said valve-seat in the stopper to close said opening when the stem is screwed out, and a packing-ring surrounding said stem, interposed between said shoulders on the stem and stopper and adapted to be compressed between them when the stopper is screwed fully in for use with a syringe, whereby the leakage of water around the stem is prevented in either position of the latter.

5. A stopper for hot-water bottles, having a threaded opening through it, combined with a threaded valve-stem passing through and irremovable from said opening, said stem constructed to leave a conduit through said opening, and a valve carried by said stem and adapted to close said opening and thereby to prevent a flow through said conduit.

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

GEORGE H. F. SCHRADER.

Witnesses:

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CHARLES K. FRASER.