Jan. 16, 1923. 1,442,357.

J. W. PATTERSON.

ART OF MANUFACTURING WATER BOTTLES.

FILED DEC. 19, 1921. 2 SHEETS—SHEET 1.

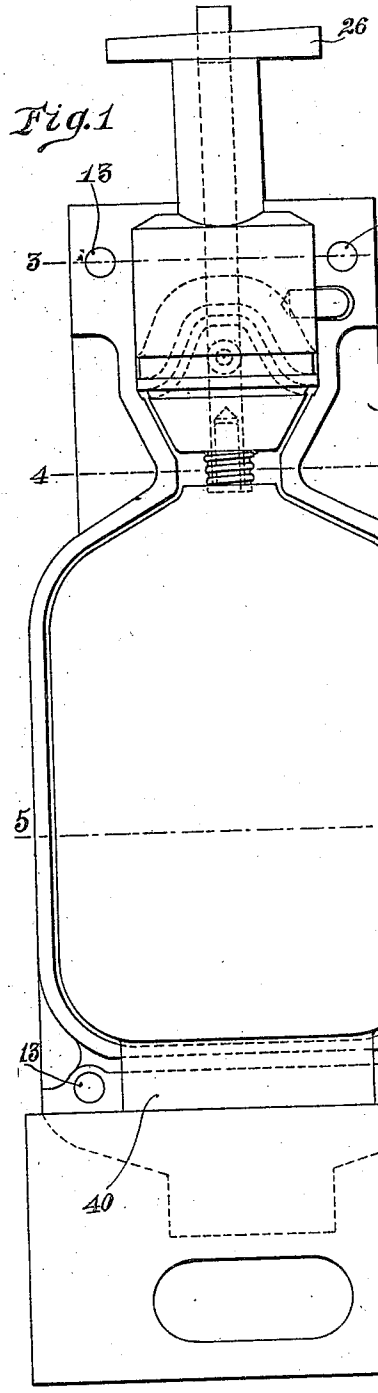

Fig. 1

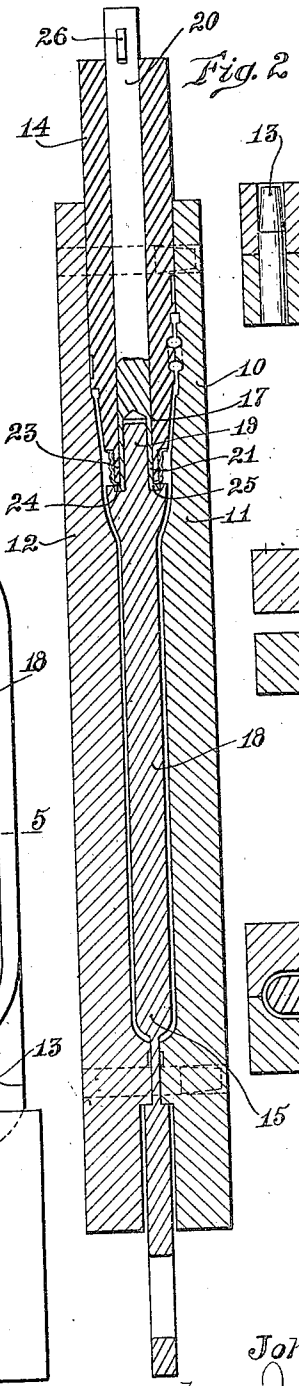

Fig. 2

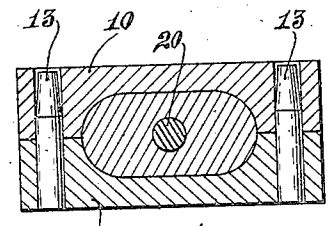

Fig. 3

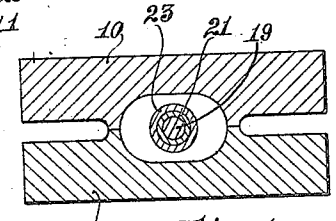

Fig. 4

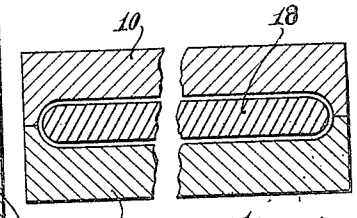

Fig. 5

Inventor
John W. Patterson
by Jesse A. Halton
Atty.

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ART OF MANUFACTURING WATER BOTTLES.

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2 SHEETS—SHEET 2.

Fig. 7

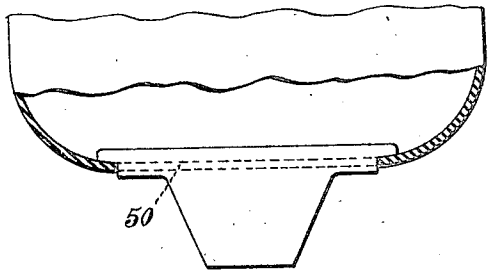


Fig. 8

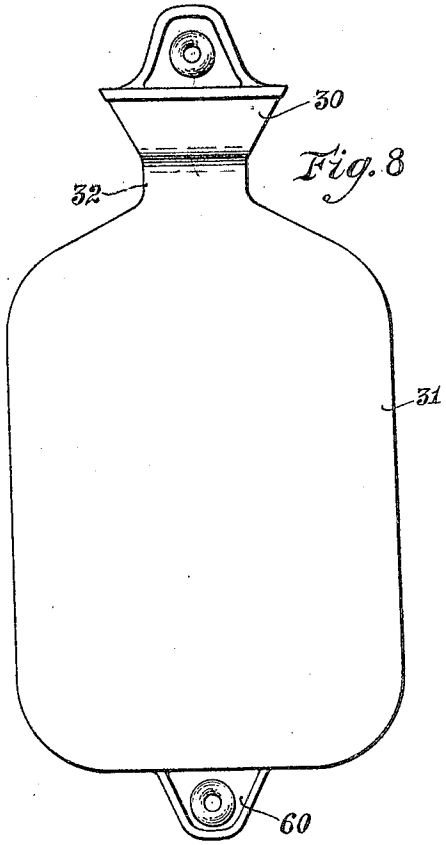
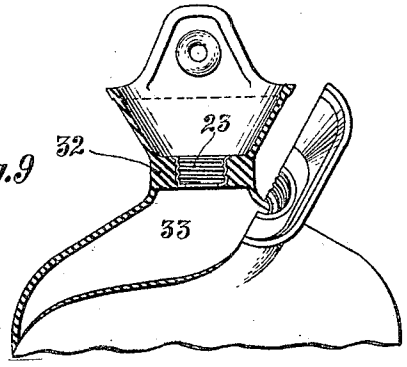


Fig. 9



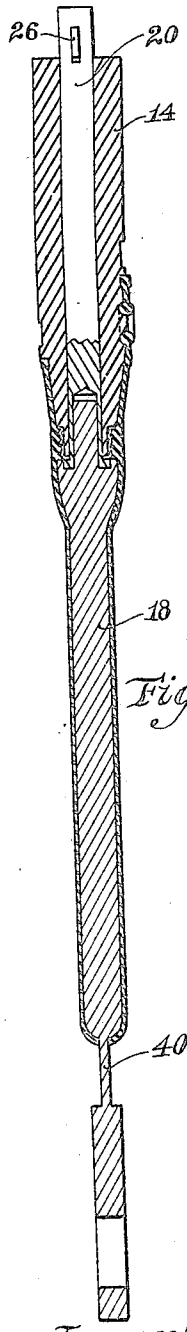


Fig. 6

Inventor
John W. Patterson
by Jesse A. Halton
Atty.

Patented Jan. 16, 1923. 1,442,357

UNITED STATES PATENT OFFICE.

JOHN W. PATTERSON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE SEAMLESS RUBBER COMPANY, INC., OF NEW HAVEN, CONNECTICUT, A CORPORATION OF MASSACHUSETTS.

ART OF MANUFACTURING WATER BOTTLES.

Application filed December 19, 1921. Serial No. 523,418.

To all whom it may concern:

Be it known that I, JOHN W. PATTERSON, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in the Art of Manufacturing Water Bottles, of which the following is a full, clear, and exact description.

This invention relates to the art of manufacturing water bottles out of rubber or analogous substances and with regard to certain more specific features thereof it relates to the process of producing a rubber container or bottle having a constricted neck of particular form and homogeneous relation with the body and filler spout of the bottle.

I am aware of the fact that bottles of this character have been previously constructed with a constricted neck and flared filler spout, but in each instance of previous construction the neck has been formed in a piece separate from the body and filler spout of the bottle and has been cemented in position, wired about the exterior of the bottle and covered with a rubber band. I am also aware that bottles of this general character have been constructed by means of a process which comprises the formation of the bottle within mold sections and around a core, and subsequently drawing the core through an aperture in the base of the bottle. My invention makes it possible to form a bottle with a one-piece heat insulating neck, flared filler spout, and body of substantial capacity, in a manner which is quick, inexpensive and highly reliable and produces an extremely durable bottle and one in which the possibility of leakage is eliminated. I produce by my process a bottle which is highly desirable in a commercial way by reason of the fact that it can be gripped at the neck by the fingers in such manner that the filler spout may be fully opened to receive the hot water without possibility of discomfort to the person filling the bottle on account of heat penetration to the outer surfaces of the bottle at the neck region. Yet, at the same time when the bottle is filled and the metal stopper has been inserted, the flared filler spout may by its resiliency resume its normally flat condition so that when in use it will be comfortable and because of the elimination of cemented joints it will be non-leakable. My invention accordingly consists in the various steps and combinations of steps of the process by which my improved bottle is produced.

In the drawings there is shown one of various possible means of effecting my process and in these drawings:

Fig. 1 is a view of one female mold element with the two-part core assembled therewith.

Fig. 2 is a view in vertical central section through Fig. 1.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1.

Fig. 6 is a view taken in cross section along the central line of the core elements with the female mold sections removed, showing the molded bottle assembled around the core elements.

Fig. 7 is a view of the bottle showing the rubber insert which is vulcanized with the body of the bottle to seal the aperture at the base and provide a tab by which the bottle may be suspended from its bottom end.

Fig. 8 is a view in front elevation of the completed bottle.

Fig. 9 is a view of the upper part of the bottle split centrally and flatwise to show clearly the integral flange of rubber and the metal thimble associated with the body and filler spout of the bottle during the molding operation.

Referring now more particularly to the drawings there is indicated at 10 one of the female or external mold elements with which, in the formation of the bottle a core assembly 11 and an opposed female or external mold element 12 are associated. Suitable dowel pins and apertures are provided for correctly associating the molding elements and these are indicated generally at 13.

The core assembly 11 is composed of two main elements 14 and 15. The element 14 consists of a skirt or sleeve having a reduced cylindrical end 16 and is internally bored as at 17. The core element 15 comprises the flat and wide body member 18, having a tongue or upwardly extending pin 19 asso-

ciated with a shaft extension 20 adapted for easy sliding fit within the bore 17 of the sleeve or skirt 14.

In assembling the apparatus to make ready for the vulcanizing operation a threaded metal thimble is introduced over the reduced end 16 of the core element 14. This metal thimble has an inwardly extending flange 24 which is located opposite the end of the reduced portion 16 of the sleeve. In the use of the device this flange 24 serves as a register or stop for the sealing stopper of the bottle, but in connection with the process of manufacture of the bottle the flange 24 serves to hold the metal thimble 23 in assembled position on the core element 14 by reason of its engagement with flange 25 on the shaft extension 20. With the thimble in place on the sleeve 14 and the shaft 20 in position with its flange 25 registering against the flange 24 of the metal thimble a wedge member 26 is introduced in a slot in the upper end of the shaft 20 to draw and hold the thimble and parts in molding relation.

The core element 15 is preferably associated with the element 14 by engaging the pin or tongue 19 with an assembly comprising the sleeve 14, the shaft 20, and the wedge 26, although it may be associated by first assembling the shaft 20 upon the core member 18 and then introducing the shaft 20 to the sleeve 14.

With the core assembly complete and the metal thimble contained thereon, suitable strips or portions of rubber stock are laid on the lower female or external mold element 10 and the core assembly in turn superposed. Then additional rubber strips and portions are positioned upon the core assembly and the upper female or external mold element is placed in position completing the mold assembly. Suitable locking means (not shown) may be employed, if desired, and then the complete assembly is introduced to the action of a vulcanizing press. It should be noted at this point that the molding elements are so constructed and associated that between the flared filler spout and the body 31 of the bottle there is provision for producing a constricted neck 32 having an interiorly extending flange 33 which terminated in the metal thimble 23. These mold elements are further constructed and associated so that the flange 33 of the neck portion 32 will be of substantial dimension in a direction flatwise of the bottle and will be considerably less in dimension crosswise of the bottle. This configuration will be clearly seen in Figs. 4, 6, and 9 of the drawings.

When the molding assembly is withdrawn from the vulcanizing press there is formed therein a rubber water bottle with a thickened rubber flange at its neck region which obviously will prevent withdrawal of the large core element 15 through the neck portion of the bottle. Therefore, the core element 15 is provided with an extension 40 which co-operates with the female mold elements to leave in the molding operation a sizable aperture at the base of the bottle through which the core section 15 may be withdrawn by slightly stretching the body of the bottle at the base region. Consequently, when the assembly is removed from the vulcanizing press and the external mold elements separated, the lower half section of the core assembly is withdrawn through the base of the bottle and the upper half 14 of the core assembly is withdrawn from the neck and filler spout of the bottle. The thimble 23 is of course retained in the molded bottle due to the fact that the rubber in the flange portion of the neck has formed itself in the vulcanizing operation in and around the threads of the thimble.

While, as hereinbefore noted, the assembly of the core elements may consist in associating the shaft 20, the sleeve 14, and the wedge 26 so that the thimble 33 will be arranged and held in position and subsequently the core element 15 may be joined to the assembly by engaging the pin 19 with the shaft 20 at a bore in the lower end of the shaft, it is desirable in dismantling the core elements that the body member 15 and the shaft 20 be removed through the aperture at the base of the bottle. This is on account of the shoulder 25 on the shaft 20 which prevents its removal through the neck 33 and thimble 23.

After the removal of all of the molding elements the bottle is subjected to a second molding operation whereby a blank of unvulcanized rubber 50 (Fig. 7) is vulcanized with the base of the bottle to close the aperture through which the core was withdrawn, and provide a tab 60 by means of which the bottle may be suspended in inverted position.

My improved process of manufacturing wide-mouthed water-bottles increases the speed with which bottles of this type may be manufactured, eliminates many labor operations heretofore necessary in connection with the manufacture of bottles of this general type and produces a bottle which is sightlier and more durable than has heretofore been produced.

As changes might be made in the various steps and actions hereinbefore specified as a preferred form of carrying out my process, without departing from the actual scope of the invention it is intended that the foregoing description and accompanying drawings be interpreted as illustrative and not in a limiting sense. It is to be noted particularly that other methods of withdrawing the principal core elements may be employed, as, for example, by withdrawing

the core elements through the side walls or edges of the body of the bottle, or any other suitable method.

I claim the following:

1. The process of making flat water bottles which consists in assembling a metal thimble upon a core element, assembling female mold elements with suitable rubber stock around said core element and said thimble, the shape and assembly of said female mold elements being such that a mold cavity of substantially elliptical form is provided around the thimble with the major axis of the ellipse extending flatwise, and vulcanizing the rubber stock of said mold elements to produce a flat rubber bottle having an integral flange forming the neck portion.

2. The process of making flat water bottles which consists in the assembly of rubber stock with male and female mold elements, the female mold elements being shaped to provide a mold cavity at the neck portion of the bottle which cavity is substantially elliptical, the male mold element comprising a core on which a thimble is arranged, the mold elements being correlated in assembly so as to centrally dispose the male element in the elliptical cavity provided by the female mold elements, and the vulcanizing of the said rubber stock, with the mold elements so assembled, to produce a flat rubber bottle having an integral rubber flange forming the neck portion.

3. The process of making flat water bottles which consists in assembling a metal thimble upon a core element, attaching a detachable core element with the first said element, assembling two female mold elements with suitable rubber stock around said core elements and said thimble, the shape and assembly of said female mold elements being such that a mold cavity of substantially elliptical form is provided around the thimble with the major axis of the ellipse extending flatwise, vulcanizing the rubber stock of said mold elements to produce a flat rubber bottle having an integral rubber flange forming the neck portion, withdrawing the first said core element from the thimble leaving the thimble in the rubber flange of elliptical form, withdrawing the second core element through an aperture in the body of the bottle, and sealing the bottle at the aperture through which the second core element was withdrawn.

JOHN W. PATTERSON.