T. M. GREGORY.

MEANS FOR MOLDING HOT WATER BOTTLES.

APPLICATION FILED JAN. 20, 1908.

901,093. Patented Oct. 13, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

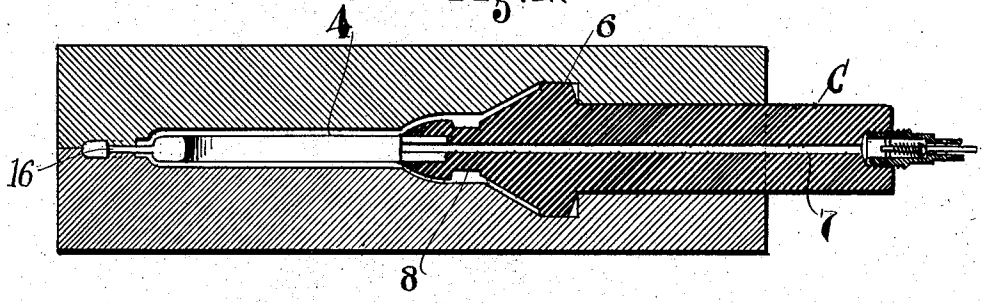


Fig. 2.

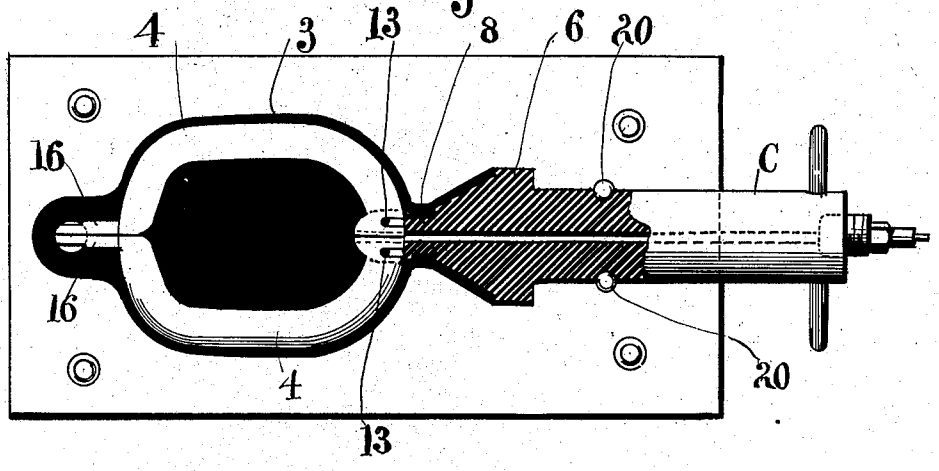


Fig. 3.

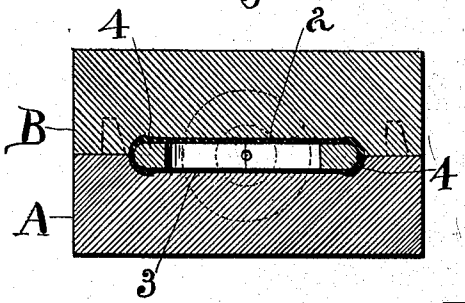


Fig 4

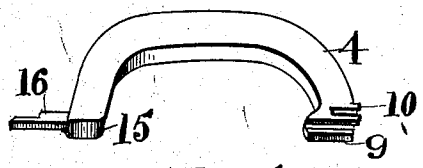


Fig. 5.

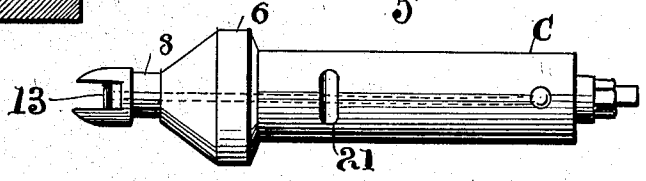
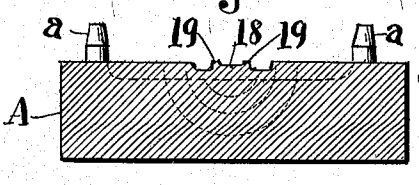


Fig. 6.



ATTEST

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2 SHEETS—SHEET 2.

Fig. 7.

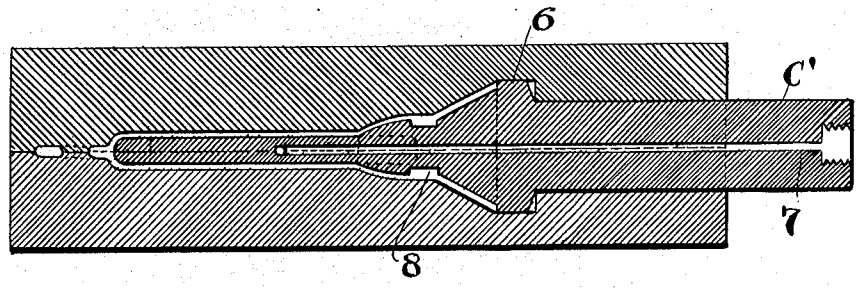


Fig. 8.

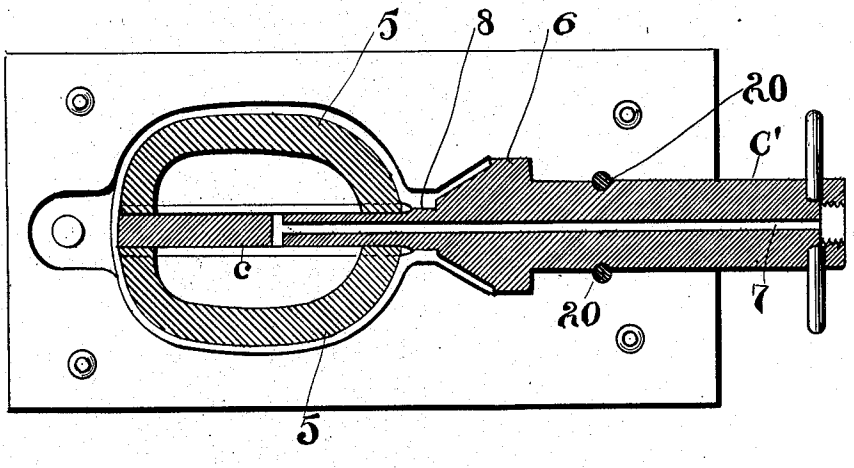


Fig. 9

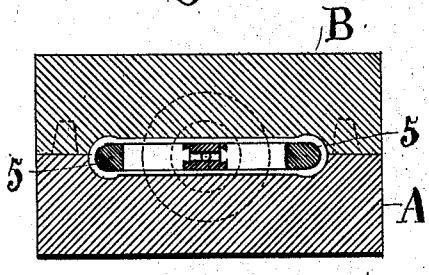


Fig. 10.

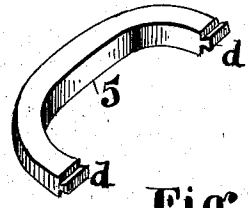
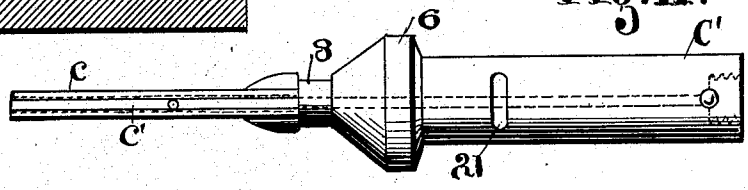


Fig. 11.



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UNITED STATES PATENT OFFICE.

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MEANS FOR MOLDING HOT-WATER BOTTLES.

No. 901,093. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed January 20, 1908. Serial No. 411,802.

To all whom it may concern:

Be it known that I, THOMAS M. GREGORY, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Means for Molding Hot-Water Bottles, and do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to means for molding hot water bottles.

In the accompanying drawings, Sheet 1 illustrates my invention in one form, and Sheet 2 is a modified form, and Figure 1, Sheet 1, is a longitudinal section of the mold and core complete. Fig. 2 is a plan view of the lower section of the mold with the core members lying therein. Fig. 3 is a cross section of the complete mold with a bag therein. Figs. 4 and 5 are views of details of the core. Fig. 6 is a cross section of the bottom mold member or section. Fig. 7 is a longitudinal section of a modification of the entire mold corresponding otherwise to Fig. 1, and Fig. 8 is a plan view of the bottom member of the mold and a horizontal longitudinal section of the core pieces. Fig. 9 is a cross section of Fig. 7, and Figs. 10 and 11 are details of the core as will hereinafter more clearly appear.

The idea of the invention as thus shown is to make a rubber bag or bottle from two sheets of suitably prepared rubber cut to the requisite shape to form a complete bag or bottle when brought together in the mold and at their meeting edges. The invention therefore contemplates the use of two similar sheets or halves of a complete bag of a suitable size, and various sizes of bags can of course be made in this way, and said sheets or halves are indicated herein by 2 and 3 respectively. The mold members proper, A and B, are designed to bring the said halves or sheets of the bag together edge to edge all around and to so confine them in such contact at their edges that when the requisite vulcanizing heat is applied to the molds the said edges will run together and blend or unite as one, so that the edges as such will disappear and a unified bag without a seam will be the product. To these ends, said member A has centering pins *a* in its top and corresponding holes or cavities are formed in member B to engage said pins therein and bring said sections together in exactly the same relations at all times upon their meeting surfaces. Said sections also have corresponding depressions in their opposed surfaces conforming exactly to the outline of the bottle to be formed, the relative depth of such depressions or recesses and the shape and fashion thereof being clearly shown in both sheets of the drawings and are alike in all essential particulars in both, excepting as to certain details which will hereinafter be more definitely referred to and which differentiate the parts in Figs. 7 to 11 from the form shown in Figs. 1 to 6.

Now, as to the particulars of construction of the said core, it is seen to consist of three separate parts, the body C and the two sides 4 engaged therewith as appears in Figs. 1 to 6, and the body C′ and sides 5 seen in Figs. 7 to 11. In both these forms the core body part is substantially cylindrical in cross section and has a head 6 between its ends conforming to the shape or contour of the funnel of the bag, and a central bore 7 through which a fluid of some suitable kind may be injected to distend the sides or side pieces of the bag and keep them apart by inflation during the process of molding. The said core rests on the periphery of head 6 in the molds while its tapered portion gives shape to the funnel of the bag, and the neck 8 to the neck of the bag in which the thimble of the finished bag which holds the stopper is engaged. From this point on the said cores C and C′ differ, as do also the spreading members 4 and 5. Thus, in Figs. 1 to 6 the inner ends of the spreaders 4 are shown as having a channel or groove 9 in one end and a parallel open slot 10 adapted to engage in the open slotted end of part C, in which is a cross pin 13 corresponding to each slot 10 and which brings the outer ends of said spreaders 4 into definite working positions with said grooves 9, forming a continuation of air or fluid channel 7. At the opposite ends the said spreaders 4 are held in right working relations to each other and the mold members by abutting closely on their opposed faces 15 and being otherwise centered and held laterally by the fingers 16 thereon projecting far enough outward to engage their reduced extremities firmly together on the boss 18 between the side shoulders 19 thereon, said boss being formed on the die member A and

wholly outside the bag proper, being set into the midst of the space which forms the usual tab by or through which the bag is hung up. The place of the said boss or elevation 18 corresponds also to the usual eyelet in the tab, and it follows that when the side members 4 are withdrawn and the bag is otherwise finished the narrow space occupied by said fingers or projections 16 is cemented and this closes the bag perfectly and durably at said place.

As to the process of molding the body the same proceeds by first laying a sheet of the rubber in the bottom mold and then placing the body of the core with the spreaders over said sheet, the body of the core having side grooves 21 engaging side pins 20 and by which said body is centered and held from rotation. In the first form of the device the outer ends or projections 16 of the parts 4 are held definitely at a given elevation by boss 18 and from spreading laterally by projections 19. The next or upper sheet of rubber is then laid in position and the top section of the mold is placed thereon. The mold is now ready for the atmospheric or like inflation of the bag through channel 7 to keep the sides of the bag apart and for the heating necessary to melt the edges of the sheets into perfect fusion, as shown to be in Fig. 3. The bottle is now ready to be removed from the mold and the core from the bottle. As to this operation, all the core parts are removed through the mouth of the bottle, and this is made possible by reason of the sectional construction of the core and the shape of the parts. Thus the body C is first withdrawn and then the spreaders separated, and one of said parts is taken out at a time. Obviously the pieces of the core are built with this manner of removal in view. The bag is then ready for inserting the thimble (not shown) in the neck thereof and such slight finishing touches as it may require, but is finished as a bag in the manner described.

The same steps are taken in the molding and in the separation and removal of parts in the modification, Figs. 7 to 11, except that in this instance the spreaders 5 have no direct rest upon the mold as in Figs. 1 to 6 but are carried and upheld exclusively by member C′ except as they rest naturally on the rubber in the dies A and B. To this end member C′ has a stem *c* in the opposite sides of which are longitudinal dovetailed grooves *c′* adapted to be engaged by correspondingly shaped tenons *d* on the ends of spreaders 5′. Hence when core C′ is withdrawn the stem *c* goes out with it, releasing it from the spreaders 5 which are thus freed and can be separately removed. This construction of core does not leave a hole or opening of any kind in the bottom of the bottle and holds the spreaders 5 in right working relations at both ends in the mold. The said spreaders have substantially the same cross section throughout so as to be easily withdrawn through the mouth of the bag.

What I claim is:—

1. A mold for hollow rubber articles comprising two opposite mold members having corresponding cavities on their inside for the article to be molded, in combination with a core consisting of a tubular body and separate substantially semi-circular spreading members having end connections oppositely with said body at one end and with each other at the other end and adapted to occupy the outer portions of said cavities, said members being separately removable.

2. Means for molding rubber bottles comprising external mold members and a core consisting of separate internal parts comprising a body part having a longitudinal bore for the introduction of fluid and separate side parts operatively engaged therewith and shaped to the sides of the bottle internally.

3. In the manufacture of rubber bottles, a two part external mold, and parts to shape the bottle internally adapted to be confined in said external mold and consisting of a body having a central bore and a reduced annular projection corresponding to the neck of the bottle, and two separate side core members curved lengthwise between their ends and separately interlocked with the said body at the inner extremity thereof.

4. In the manufacture of rubber bottles, a core therefor consisting of a substantially tubular body having a longitudinal bore for the introduction of fluid and provided with a head adapted to mold the funnel of the bottle and a projection next beyond said head, and two corresponding spreading parts for the inside of the bottle separably engaged at opposite sides with said projection.

5. In the manufacture of rubber water bottles, a set of outer mold members and inner members consisting of a main part having a central bore and a reduced projection at its inner end, a pair of spreading parts curved between their ends and interlocked with said projection, said spreading parts having slots to engage with said projection and said parts constructed to withdraw said main part bodily and leave said spreading parts in the bottle.

6. A mold for hollow rubber articles, such as water bottles, comprising three several core members consisting of a tubular body having a bore through its center to introduce air, and two curved side parts having corresponding ends engaged with the extremity of said body and their opposite ends together, and a two part mold constructed to engage said opposite ends and hold them together.

7. A mold for rubber bottles comprising separable mold members, a substantially

ring shaped core constructed in two pieces oppositely positioned at their ends and removably mounted in said mold members, and a tubular core body constructed at its inner end to shape the neck and flaring mouth of the bottle.

8. A mold for manufacturing rubber bottles comprising two outer members and a separable substantially semi-circular core member in two parts adapted to be inclosed by said outer members, and a separate body constructed to mold the neck and flaring mouth of the bottle and having its inner end constructed to interlock with said core members and to be withdrawn independently therefrom.

In testimony whereof I sign this specification in the presence of two witnesses.

THOMAS M. GREGORY.

Witnesses:

R. B. MOSER,

H. W. ROBERTS.