R. W. SAMPSON.

FLEXIBLE CONTAINER.

APPLICATION FILED MAY 20, 1920.

1,433,303.

Patented Oct. 24, 1922.

3 SHEETS—SHEET 1.

Fig. 1

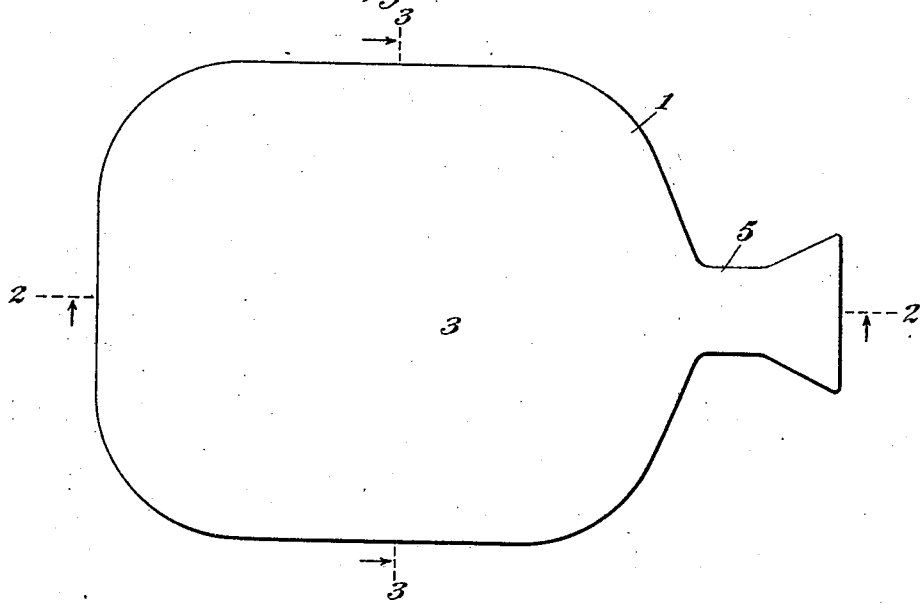


Fig. 2

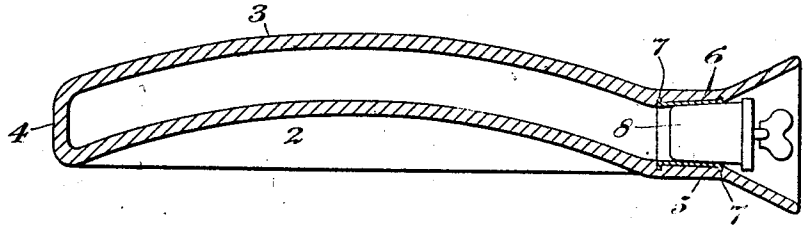
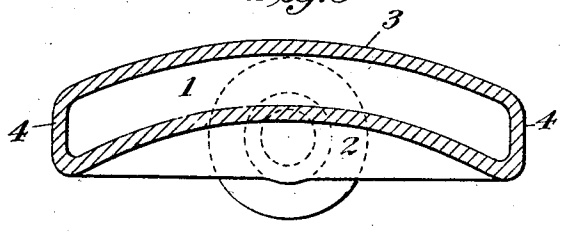


Fig. 3



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3 SHEETS—SHEET 2.

Fig. 4

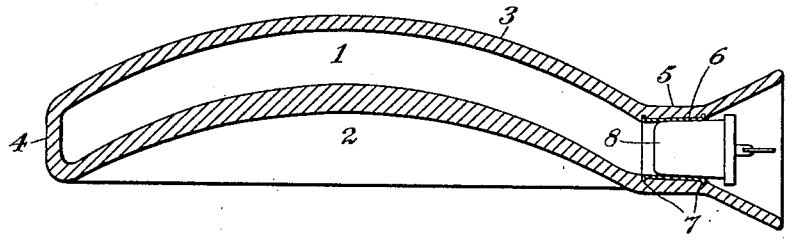


Fig. 5

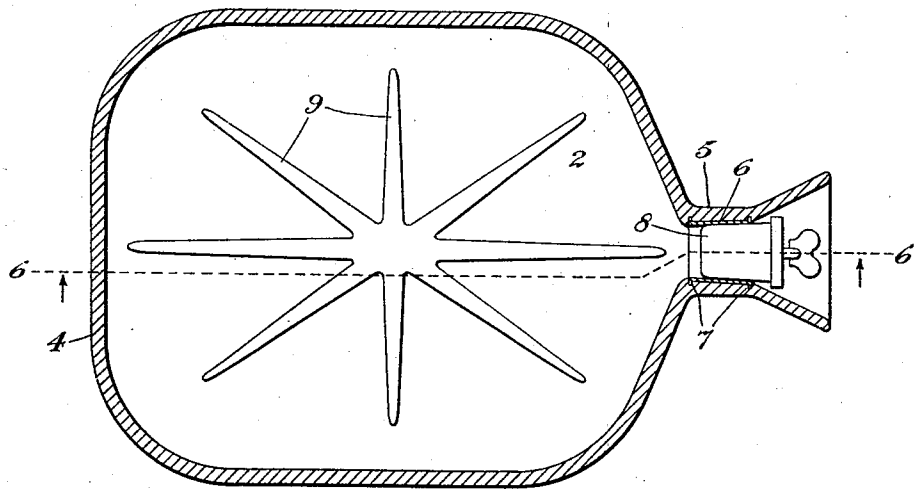
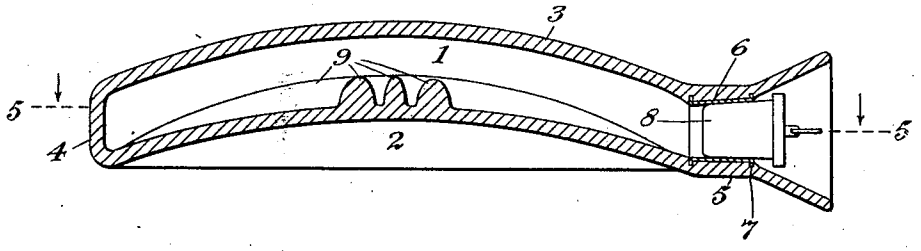


Fig. 6



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3 SHEETS—SHEET 3.

Fig. 7

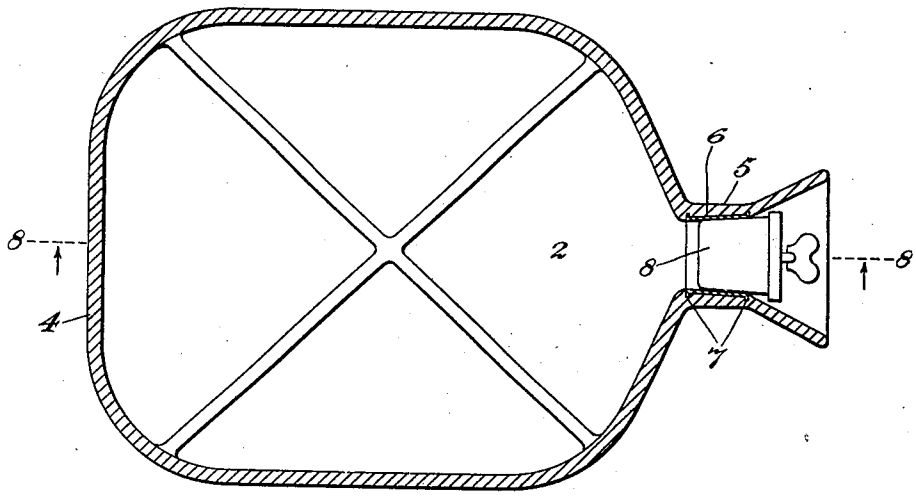
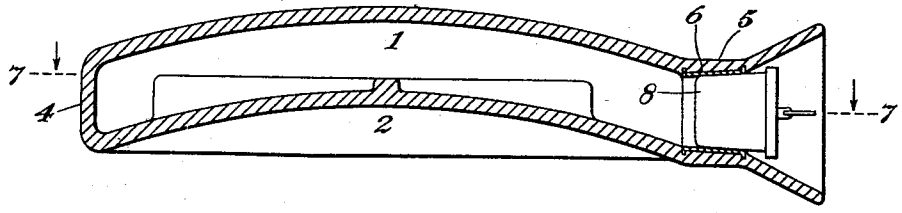


Fig. 8



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UNITED STATES PATENT OFFICE.

ROBERT WILLIAM SAMPSON, OF MALBA, NEW YORK.

FLEXIBLE CONTAINER.

Application filed May 20, 1920. Serial No. 382,711.

To all whom it may concern:

Be it known that I, ROBERT WILLIAM SAMPSON, a subject of the King of Great Britain, and resident of Malba, Queens County, Whitestone, Long Island, New York, have invented certain new and useful Improvements in Flexible Containers, of which the following is a specification.

My invention relates to flexible containers intended for holding liquids, and is particularly applicable to such containers as hot water bottles which are intended to be applied to and to transmit their heat to the human body. And my improvements are directed to means for so forming the containers that they will more readily adapt themselves to the contours of those parts of the body to which they may be applied and will distribute their weight and temperature more uniformly and satisfactorily than is done by the types of such containers in common use, which have the disadvantage of attenuated edges and bulging central portions resulting in configurations which, do not readily adapt their surfaces to the convexed surfaces of the human body.

In the drawings Fig. 1 is a side view; Fig. 2 a longitudinal sectional view on the line 2—2 of Fig. 1; and Fig. 3 a cross sectional view on the line 3—3 of Fig. 1, looking to the left, of a hot water bottle embodying my improvements; Fig. 4 is a longitudinal sectional view of a modification; Fig. 5 is a longitudinal sectional view, as on the line 5—5 of Fig. 6; Fig. 6 is a longitudinal sectional view, as on the line 6—6 of Fig. 5, of another modification; Fig. 7 is a longitudinal sectional view, as on the line 7—7 of Fig. 8, and Fig. 8 is a longitudinal sectional view as on the line 8—8 of Fig. 7 of another modification.

Similar parts are designated by similar reference numerals in all the figures.

The body 1 of my improved container, is preferably considerably longer and wider than it is thick; and it may conveniently be made of about uniform thickness throughout. In the illustration I have shown it as being made of a homogeneous substance, such as rubber, which has the advantages of flexibility and of imperviousness to water. The opposed sides 2 and 3 are connected by an edge wall portion 4, extending transversely between them at such an angle as to keep the sides 2 and 3 normally separated; the edge wall being preferably disposed substantially at right angles to the chords of the curves upon which the sides are formed; so that the openings between the convexed side and the lateral portions of the side wall will be substantially greater than a right angle, and that between the concaved side and said portions of the edge wall will be materially less than a right angle. This results in the lateral parts of the edge wall and the adjacent portions of the concaved side approximating a V-shaped formation, which materially stiffens the container and assists it in retaining its shape; and the fact that the edge wall is substantially flat, vertically, also causes it to hold the sides of the container in properly spaced relation to each other under ordinary conditions of use.

Preferably the lines of junction between the sides and the edge walls are rounded over on an easy curve so as to avoid all sharp angles which might be uncomfortable to one using the container, and also might cause points of weakness. A neck 5 is formed integral with one end of the bottle, a suitable method of construction being to use a stiff tubular section 6, of metal or the like, preferably provided with terminal flanges 7, 7, and embedded in the material of the neck to form a suitable bearing for a stopper 8.

The side 2 of the bottle is curved, preferably so as to present a dishing concavity on its outer face, as shown, the transverse curvature being greater than the longitudinal curvature; and the opposed side 3 is preferably formed with a correspondingly outwardly curving convexity, so that the completed bottle, taken as a whole shall be concavo-convex in form.

If desired, the concaved side may be reinforced either by thickening it toward its center, as shown in Fig. 4; or by providing it with a system of radial ribs 9, 9, as shown in Figs. 5 and 6; or by ribs extended so that their ends may merge with the web 4, as shown in Figs. 7 and 8; or by similarly operating strengthening elements so disposed that they shall not interfere with the free distribution of the liquid within the bottle to the different parts thereof, but shall give such support to the concaved side as will help it to resist the outward pressure of a contained liquid.

It will be seen that a container thus formed will accommodate itself to the outwardly curved portion of the body, so that practi-

cally the whole surface of one side may be brought into contact with such a surface as the abdomen without creating undue pressure at any localized point thereagainst, as would be the case with the ordinary bulging bag, the contained liquid being allowed to distribute itself substantially evenly out to the edges of the bottle, in consequence of which the concaved side may adjust itself to its normal curve without puckering or distortion of the material of the bag. And, in case it is desired to use a convexed surface, the convexed side of the bag may be employed, the contained liquid again distributing itself so that the bag may assume and retain its normal shape.

The formation of the container so that its thickness as a whole is substantially uniform, permits the contained liquid to lie as a body of substantial thickness in all its portions, thereby helping it to retain its desired temperature and avoiding the tendency to cool rapidly which is present when such body of liquid runs out to an attenuated edge, as in the common forms of hot water bags.

Obviously the degrees of curvature given to the sides of the containers may be varied, as is found desirable for the particular uses for which the containers may be intended, and other details of my invention may be modified by the use of equivalents and the like without departing from the spirit of my invention as described and claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:

1. A flexible liquid-holder having one side dishingly concaved and the other side complementarily convexed, and having a substantially flat edge wall, between the edges of the sides, disposed substantially at right angles to the chords of the curves upon which the sides are formed.

2. A flexible liquid-holder having one side dishingly concaved, the transverse curvature being greater than the longitudinal curvature, and the other side complementarily convexed, and having a substantially flat edge wall, between the edges of the sides, disposed substantially at right angles to the chords of the curves upon which the sides are formed.

3. A flexible liquid-holder having one side dishingly concaved and the other side complementarily convexed, and having a substantially flat edge wall, between the edges of the sides, disposed substantially at right angles to the chords of the curves upon which the sides are formed, the edges connecting the sides and edge walls being rounded.

4. A flexible liquid-holder having one side dishingly concaved and the other side complementarily convexed, and having a substantially flat edge wall, between the edges of the sides, disposed substantially at right angles to the chords of the curves upon which the sides are formed, the interior openings between the lateral portions of the edge walls and the convexed side being greater than a right angle, and those between such portions of the edge walls and the concaved side being materially less than a right angle.

ROBERT WILLIAM SAMPSON.