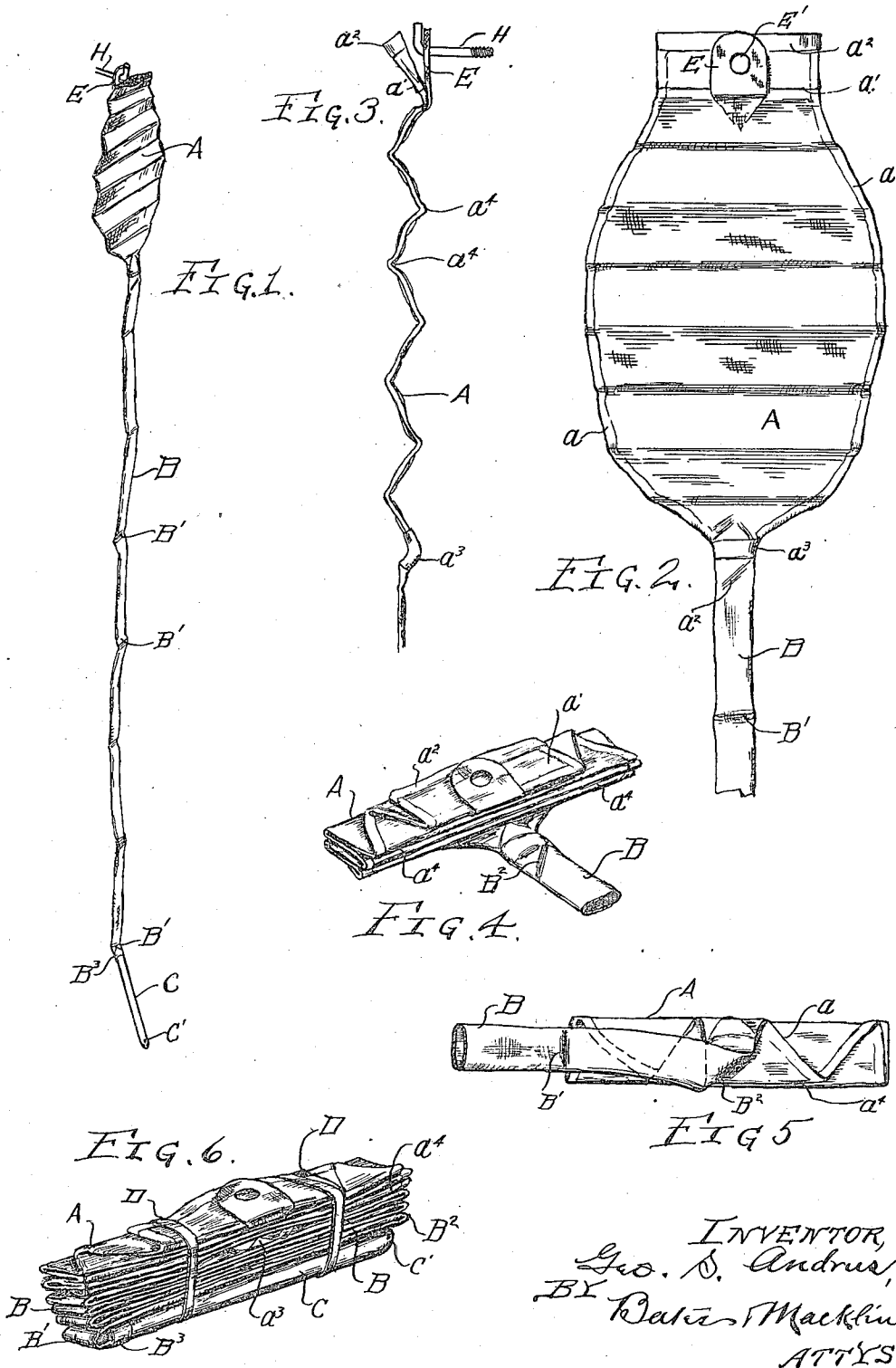


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FOLDING WATER BAG SYRINGE.
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1,294,219.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE S. ANDRUS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Folding Water-Bag Syringes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to water bag syringes of the type having a flexible bag-like reservoir, and a flexible tube leading therefrom to a discharge tube. The essential object of the invention is to provide such a syringe of rubber which shall be capable of folding into a very small compass without injury to the parts, and at the same time be capable of being quickly and conveniently unfolded for use.

My invention is hereinafter more fully described in connection with the accompanying drawings, illustrating the same, and the essential characteristics are summarized in the claims.

Figure 1 is a perspective view of the syringe suspended ready for filling with water or other liquid for use; Fig. 2 is an enlarged elevation of the bag and a portion of the tube; Fig. 3 is an edge elevation of the same showing its normal position when suspended; Fig. 4 is a view showing the folded position the bag tends to take when released; Fig. 5 shows the first step of folding the tube; Fig. 6 shows the syringe completely folded and secured by suitable bands.

Describing the invention by the use of reference letters, A indicates the bag portion, B the flexible tube leading therefrom, and C a comparatively non-flexible discharge tube.

The bag is preferably made up of two substantially oval-shaped sheets of soft rubber, vulcanized together at their edges, as indicated at a . The junction is preferably accomplished by causing the edge of one sheet to fold around and overlap the other. The mouth or neck of the bag is made stiffer than the remaining portion by an additional layer of rubber a^1 , a binder strip being provided at a^2 around the opening. At the lower end the strips are vulcanized to a short section at a^3 to which the tube B is connected.

As shown, the bag is formed so that it may fold along transverse creases a^4 dividing the bag into a plurality of sections adapted, when folded to lie one on top of the other after the manner of accordion

pleats. The stiffer neck portion of the bottle preferably has substantially the same vertical dimension as each of the pleats, and these creases a^4 are formed from alternately opposite sides when the rubber is vulcanized, so that the bag tends normally to assume the shape of that in Fig. 4. This formation may be readily accomplished by folding the rubber in a fan-fold before curing. Soap stone powder or like substance may be used to prevent the two sheets, comprising the bag, from adhering, and at the same time preventing the several layers or zones forming the folds, from adhering to each other.

As stated, the tube B is of a soft rubber and is preferably vulcanized substantially flat, as shown, with a series of creases B^1 , positioned so that the tube may be folded in sections substantially as long as the bag is wide. I have shown the discharge tube C as substantially the same length as the width of the bag and the folded tube sections, whereby, when completely folded, the parts are in the position shown in Fig. 6.

In folding the syringe, the bag is first collapsed to the position shown in Fig. 4 with the tube B extending laterally therefrom. This tube is then folded transversely along a crease B^2 extending diagonally across the tube immediately adjacent to the point where it joins the bag, and spaced substantially half the width of the bag from this fold B^2 is the first fold or crease B^1 adjacent the edge of the bundle formed by the folded bag. The several folds B^1 cause the tube to bend normally in successively opposite directions, as indicated in Fig. 1, and it will be seen that after folding the tube at B^2 , as shown in Fig. 5, the several sections of the tube between the creases may be laid against the sides of the package formed by the bag, and, as the last crease B^1 of the tube is adjacent the end of the discharge tube C to which the bag is joined by the end portion of the tube embracing the same, as indicated at B^3 , the tube C may be brought into parallelism with the folds and the entire syringe may be caused to retain this position by the use of rubber bands D surrounding the same, as shown. A suitable soft rubber casing or bag may be provided for inclosing the bundle thus formed.

For convenience in suspending the syringe for use, I provide a tab E, vulcanized to the bottle or bag adjacent the neck and provided with an opening E^1 adapted to em-

brace a hook or other support H. When this tab is grasped by the fingers, the mouth of the bag is caused to stand in an open position, somewhat as shown in Fig. 1, providing for conveniently filling the same with liquid. At C' are indicated outlet openings formed in the end of the discharge tube.

Having thus described my invention, what I claim is:

- 10 1. A water bag syringe, comprising a soft flexible rubber bag, a flexible rubber tube leading therefrom and a discharge nozzle attached to the end of the flexible tube, the bag having a series of parallel transverse
15 creases formed therein during vulcanization, whereby the bag tends normally to collapse into a series of alternately lying flat folds, the tube being adapted to be folded into sections parallel with the folds of the bag.
- 20 2. A water bag syringe, comprising a soft flexible rubber bag, a flexible rubber tube leading therefrom and a comparatively rigid discharge tube attached to the end of the flexible tube, the bag having a series of
25 transverse creases formed therein during vulcanization, and projecting alternately in opposite directions, whereby the bag tends normally to collapse into a series of alternately lying flat fan-folds, the tube being
30 flat and having creases vulcanized therein,

whereby it may fold in sections parallel with the folds of the bag.

3. A water bag syringe, comprising a soft flexible rubber bag, a flexible rubber tube leading therefrom and a comparatively rigid
35 discharge tube attached to the end of the flexible tube, the bag having a series of transverse creases formed therein during vulcanization, whereby the bag tends normally to collapse into a series of alternately
40 lying flat folds, the tube being flat and approximately the width of the folds of the bag, and having creases vulcanized therein, whereby it may fold in alternately lying
45 sections parallel with the folds of the bag, and of substantially the same length, the last crease permitting the discharge tube to lie along the adjacent section of the flexible tube.

4. A folding water bag syringe, comprising
50 a soft rubber bag and a flat tube leading therefrom, there being parallel creases formed in said bag at substantially equal distances and from opposite sides, whereby
55 it may be collapsed in bellows-like folds, the tube being adapted to fold in parallelism with said folds of the bag.

In testimony whereof, I hereunto affix my signature.

GEORGE S. ANDRUS.