(Specimens.)

R. PARKER.

MANUFACTURE OF LONGITUDINALLY FOLDED TUBES.

No. 352,656. Patented Nov. 16, 1886.

Fig. 1.

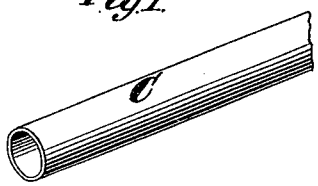


Fig. 2.

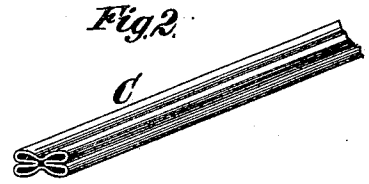


Fig. 3.

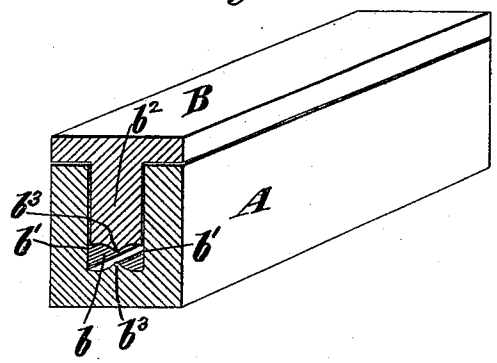


Fig. 4.

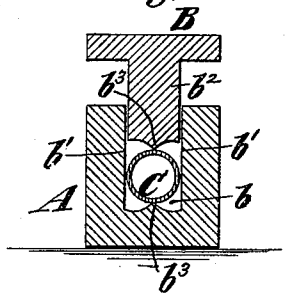


Fig. 5.

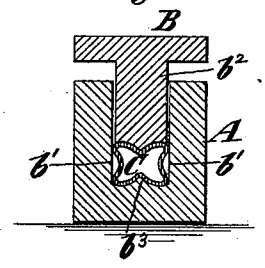
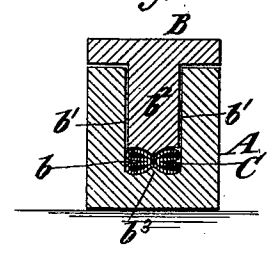


Fig. 6.



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UNITED STATES PATENT OFFICE.

RUSSELL PARKER, OF BROOKLYN, N. Y., ASSIGNOR TO HIMSELF, JAMES H. STEARNS, AND BENJAMIN F. SUTTON, ALL OF SAME PLACE.

MANUFACTURE OF LONGITUDINALLY-FOLDED TUBES.

SPECIFICATION forming part of Letters Patent No. 352,656, dated November 16, 1886.

Application filed June 12, 1886. Serial No. 205,025. (Specimens.)

To all whom it may concern:

Be it known that I, RUSSELL PARKER, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in the Manufacture of Longitudinally Folded or Collapsed Tubes, of which the following is a specification.

In United States Letters Patent No. 319,937, granted June 9, 1885, to Benjamin F. Sutton, is shown and described a syringe tube of india-rubber which in its normal condition is collapsed in longitudinal folds or corrugations, and which, by the collapsible or contractile tendency that it has when expanded by pressure of water within it, serves to produce a nearly-continuous discharge.

The object of my invention is to provide a method whereby tubes of the character above described for syringes and other purposes may be uniformly, quickly, and cheaply folded or collapsed after they are produced in cylindric or other simple shape of vulcanizable india-rubber or analogous material, and before they are subjected to heat or other treatment which will permanently fix their shape.

My invention is a method of making longitudinally folded or collapsed or corrugated tubes, consisting in first producing a tube of simple form of vulcanizable india-rubber or other analogous compound or material, and in then subjecting it to pressure on opposite sides while preventing its expansion in a direction transverse to the line of pressure.

In the accompanying drawings, Figure 1 represents a piece of tube of simple form, and Fig. 2 represents the same tube after being collapsed in longitudinal folds according to my improved method. Fig. 3 is a perspective view of a mold, consisting of a box and a presser or follower, whereby my method may be carried out; and Figs. 4, 5, and 6 are transverse sections of the mold and a tube, illustrating the change of form which the tube undergoes by the action of the presser or follower upon it.

Similar letters of reference designate corresponding parts in all the figures.

The mold here represented for carrying out my invention consists of a box or bed-piece, A, having in it a channel or groove, *b*, with upright parallel side walls, *b'*, and a presser or follower, B, having upon its under side a rib or flange, b^2, which is of a size to fill the channel or groove *b*, and yet small enough to pass readily downward thereinto. These two parts may be of cast-iron or other suitable material.

As here shown, the bottom of the channel or groove *b* and the bottom or under side of the rib or flange b^2 are slightly raised at the center, or, in other words, have their surfaces composed of two slight concaves meeting in a ridge or projection, b^3. Such a construction is not essential to my invention, but is useful, for a reason hereinafter described.

In carrying out my invention I first produce in any well-known and suitable manner a tube, C, of simple form—cylindric, for example—as shown in Fig. 1, and of a vulcanizable compound of india-rubber or other material which will readily assume a different form, which it will retain after being vulcanized or subjected to other suitable treatment, according to its character. I then place the tube C in the channel *b* of the box A, and by forcing the presser or follower B down upon it the tube is subjected to pressure on opposite sides while it is confined by the walls *b'*, and prevented from expanding in a direction transverse to the line of pressure. As the pressure is applied the tube C first takes an approximately square or rectangular form, as shown in Fig. 5, and the continuance of the pressure causes the opposite sides to fold inward laterally and between the underlying and overlying folds, which are in contact with the bottom of the channel *b* and rib or flange b^2, until the tube C is brought to desired shape shown in Figs. 2 and 6. The follower or presser B may then be secured by clamps and the tube subjected in the mold to the heat necessary for vulcanization; or the tube may be removed from the mold and vulcanized after removal.

The ridges b^3, with which the mold is provided, as above described, give the opposite sides of the tube a permanent set inward at a point just beyond and between the lateral folds, and thereby reduce the internal transverse area of the tube and enable it to better retain its shape.

It is obvious that the bed A might have a number of channels *b*, side by side, and that

the follower or presser might have a corresponding number of projecting ribs or flanges b^2, so as to operate on a large number of tubes at once.

What I claim as my invention, and desire to secure by Letters Patent, is—

The method herein described of making a longitudinally folded or collapsed tube, consisting in first producing a tube of simple form of vulcanizable india-rubber or analogous material, and in then subjecting it to pressure on opposite sides while preventing its expansion in a direction transverse to the line of pressure, substantially as herein set forth.

RUSSELL PARKER.

Witnesses:

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