

No. 718,121.

PATENTED JAN. 13, 1903.

D. HARRIS.
SEAMLESS RUBBER BALLOON.
APPLICATION FILED JAN. 7, 1902.

NO MODEL.

Fig. 2.

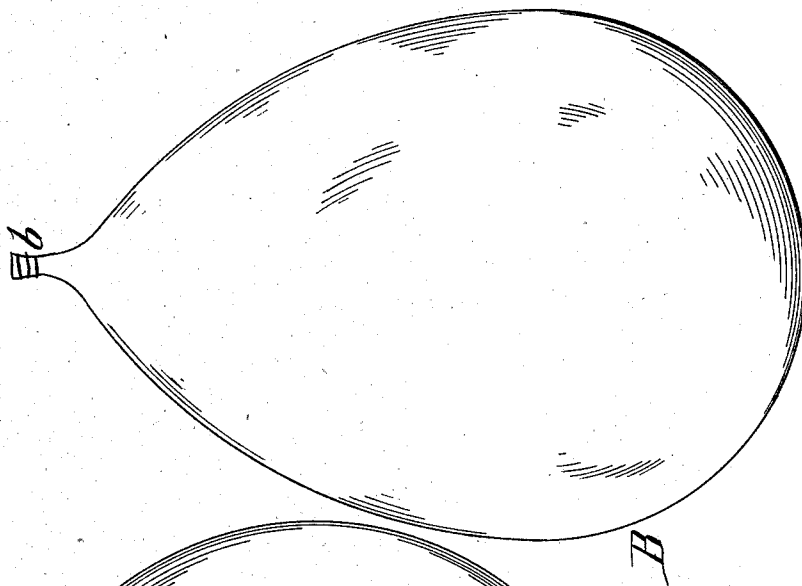


Fig. 1.

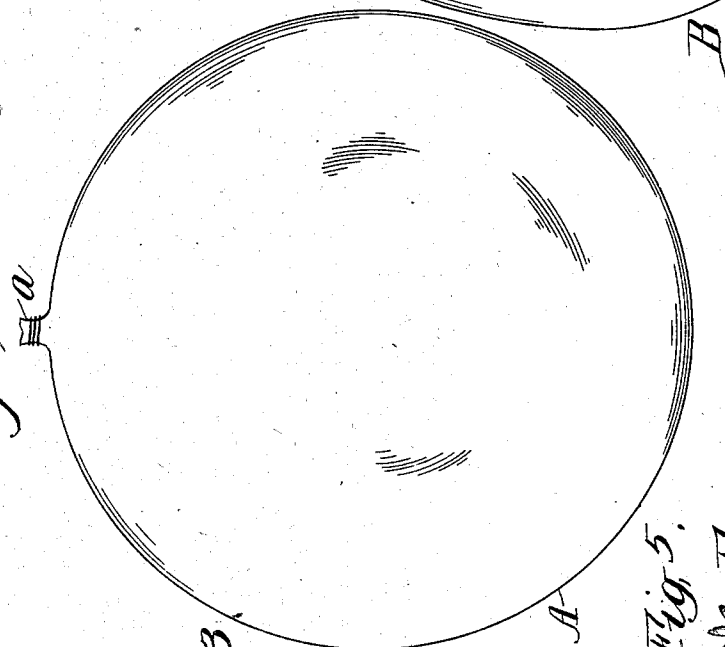


Fig. 3.



Fig. 5.

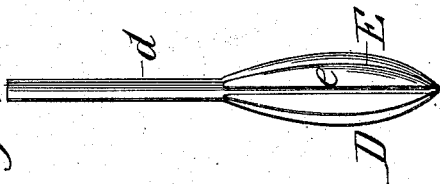


WITNESSES:

Harry Goss.

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Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID HARRIS, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO RUBBER BALLOON COMPANY OF AMERICA, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

SEAMLESS RUBBER BALLOON.

SPECIFICATION forming part of Letters Patent No. 718,121, dated January 13, 1903.

Application filed January 7, 1902. Serial No. 88,724. (No model.)

To all whom it may concern:

Be it known that I, DAVID HARRIS, a citizen of the United States of America, and a resident of the borough of Brooklyn, city of New York, county of Kings, State of New York, (post-office address 367 Pacific street, Brooklyn, New York,) have invented certain new and useful Improvements in Seamless Rubber Balloons, of which the following is a specification.

My invention relates to spherical or spheroidal bags or pouches composed of elastic material and provided with a contracted opening or neck, through which they may be inflated by forcing into them suitable quantities of aeriform fluid or gas. The bags when inflated may assume some particular or desired shape for which they have been previously designed, or they may be in the form of an attractive object, such as the well-known "toy balloon," which is usually filled with gas sufficiently light to enable the balloon to rise or float in the atmosphere.

While my invention is applicable to other forms, I will here describe it in connection with toy balloons. These devices have been manufactured for years; but so far as I am aware they have always been constructed by joining or welding together the edges of a plurality of suitably-shaped pieces of the desired material, (sheet-rubber,) the said balloons, therefore, each having a plurality of seams. Toy-balloon bags so constructed are unreliable on account of the seams and expensive in requiring a large amount of labor to make them. When blown up to put them in condition for sale, many of the balloon-bags so constructed develop small defects in the seams and become a total loss. The greatest possible advance in this particular art would therefore reside in the production of such an article as a toy-balloon bag which was entirely free from seams of any kind and in which the material was so equally distributed that it could be inflated and expanded as much as desired while presenting the form which it was originally designed to have.

My invention is not confined to a sphere, but may assume the well-known pear-shaped

form of a balloon as well as other forms. This result I am able to secure by means of a specially-constructed mold, as will appear.

In the accompanying drawings, Figure 1 illustrates an inflated spherical seamless rubber balloon. Fig. 2 represents a similar balloon of pear shape. Fig. 3 is a view of the balloon-bag before inflation. Fig. 4 is a view in elevation showing the mold on which spherical balloons are made. Fig. 5 is an end view of the mold shown in Fig. 4.

My improved balloon resembles the well-known toy balloons of commerce and when made are—say, one-twentieth of the size to which they may be inflated for sale. The balloons formed of sections joined by seams, although made with the greatest care from material which has been reduced as nearly as possible to equal thickness, are never entirely symmetrical, their defects being particularly apparent when inflated. My improved balloon, however, is made by depositing an even coating of solution containing rubber upon a suitable mold to the desired thickness, which should be substantially equal, except that it may be somewhat thicker about the neck. The balloon so formed is dried and vulcanized and is then ready for use.

In the drawings, A, Fig. 1, is a spherical seamless rubber balloon formed with a contracted neck *a*. B, Fig. 2, is a similar balloon of a pear shape having a contracted neck *b*.

C, Fig. 3, indicates the approximate size of the balloon before inflation.

In Fig. 4, D is the mold upon which the balloon shown in Fig. 1 is made. This mold is desirably formed of hard wood, although other well-known materials may be used, and is of elongated deeply-fluted form, as indicated in Figs. 4 and 5, in which E are the ribs and *e* the depressions between them. The mold D is provided with a stick or handle *d*, by which it is manipulated, and upon the portion of which immediately adjoining the inner ends of the ribs E the neck of the balloon is formed. The shape of the balloon when inflated is determined by the form of the mold D upon which it is made. A seamless spher-

ical or pear shaped balloon cannot be made upon a mold which is of the shape and size of the balloon before inflation for the reason that as these well-known articles of commerce are made the neck is too small to permit of sufficient expansion to strip it from the mold over its largest diameter, and, furthermore, with a spherical mold when coated with liquefied rubber and hung up to dry the material will run toward the lower end, leaving the walls of the balloon of unequal thickness and consequent irregular and uneven expansibility. I have found that by constructing a mold substantially in the form shown that in the finished article the portions of the balloon formed in the recesses *e* are continuous with the portions formed upon the ribs *E* and expand equally therewith, and that the liquid material is so well supported by the surfaces of the ribs and depressions that a coating of even thickness can readily be applied thereto and subsequently dried thereon without becoming uneven or thinner upon portions of their surfaces. The mold is dried with stick *d* downward, so that the slight running at first will make the neck of the balloon a trifle thicker than the body. The exact shape of the mold will vary somewhat from that shown, which is adapted for a spherical balloon; but the principle of its construction is that the ribs and recesses taken together equal the total surface of the balloon, the neck of which is formed by that portion of the liquid

rubber which adheres to the stick *d* just beyond the termination of the ribs *E*. A balloon formed upon the mold *D* by dipping in liquid rubber is readily removed therefrom, since the expansion required of the neck in passing over the ribs *e* is but a fraction of that which would be necessary to remove a balloon-bag of similar size from a mold of the exact shape or configuration of the bag before inflation, that is, of its interior capacity and form when the ribs are expanded or opened out.

Having described my invention, what I claim is—

1. A balloon-bag of rubber constructed in partially collapsed or folded form and adapted when inflated to acquire the desired shape.

2. A balloon-bag made of rubber and having a contracted neck and constructed in the desired shape in partially-collapsed form, without seam and of substantially even thickness throughout its body portion.

3. An expansible rubber balloon-bag of substantially even thickness throughout, having a contracted neck and constructed in partially-collapsed form as one integral piece.

Signed by me at Brooklyn, New York, this 18th day of November, 1901.

DAVID HARRIS.

Witnesses:

WILLIAM H. RENZ,
FRANKLAND JANNUS.