

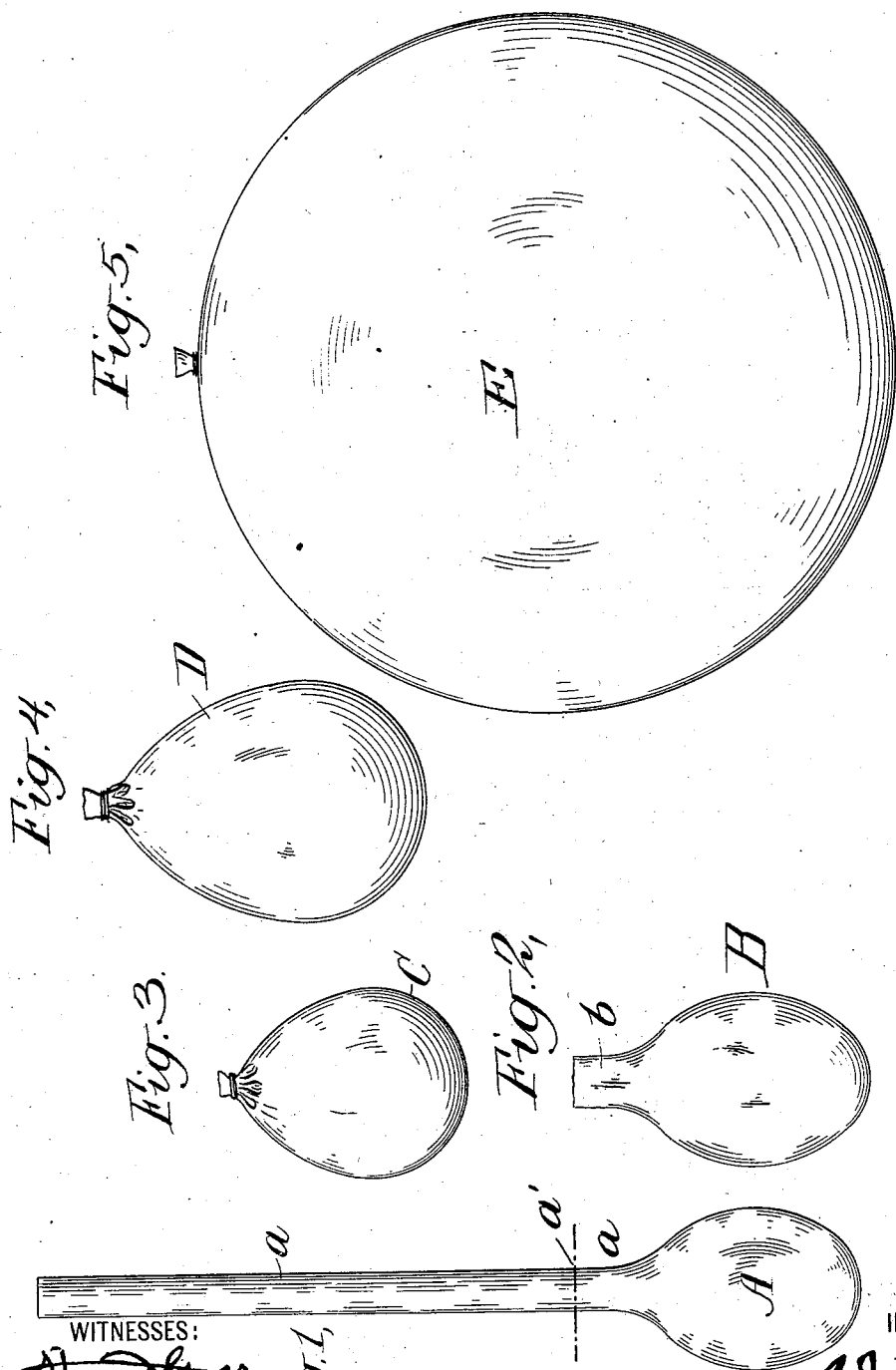
No. 726,009.

PATENTED APR. 21, 1903.

A. J. WHISLER.
TOY BALLOON.

APPLICATION FILED FEB. 18, 1903.

NO MODEL.



WITNESSES:

Harry Cross.

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Fig. 1.

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TOY BALLOON.

SPECIFICATION forming part of Letters Patent No. 726,009, dated April 21, 1903.

Application filed February 18, 1903. Serial No. 143,907. (No model.)

To all whom it may concern:

Be it known that I, ARRAH J. WHISLER, a citizen of the United States of America, and a resident of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Toy Balloons, of which the following is a specification.

My invention relates to improvements in toy balloons, and more particularly to balloon-bags which are seamless—that is, formed of the desired initial shape in a single piece. It has been proposed to form these balloon-bags upon a mold having the exact configuration of the desired article. I find, however, that it is impracticable to make a spherical balloon-bag upon a mold of the same form and to remove the same therefrom without injury and to have the same retain its spherical form when inflated to the size for which it was designed.

I have discovered and the gist of my invention is that a balloon-bag made upon a mold materially different in form from the article to be produced, but upon which the material is properly distributed, will when inflated to the extent for which it was designed change from its original to the desired form. The reason for this is that where a spherical mold is used the material will be improperly distributed and will be so thin about its central zone that when inflated it will produce a balloon circular at its middle portion, but flattened at each end, and as far as possible from a spherical balloon.

According to my invention the mold is made in oval or egg-shaped form, and the coating of rubber from which the bag is made is so distributed thereon that when inflated to the desired size the original shape of the bag is lost, and the parts merge into spherical form by reason of the relative distribution of the material and the tension due to the stress of inflation.

In the accompanying drawings, Figure 1 is a view in elevation, showing the mold upon which the balloon-bags are formed. Fig. 2 is a view, also in elevation, of one of the bags when removed from the mold. Figs. 3 and 4 are views in elevation showing balloon-bags

similar to Fig. 2 in different stages of initial inflation. Fig. 5 shows a balloon inflated to proper size, the scale being somewhat reduced.

In carrying out my invention I provide the mold A, which has a stem or handle *a* extending from one end thereof. The mold A is substantially oval in form and is of about the size of an ordinary hen's egg, this size being suitable for the production of a balloon-bag which when properly inflated would result in a balloon of the ordinary size, between six and eight inches in diameter, as shown on reduced scale at E, Fig. 3.

In the manufacture of the balloon-bags the mold A is dipped into a solution of rubber or any equivalent material and is then so manipulated that the said material in drying upon the mold will be properly distributed—that is, in zones of different thickness. The dipping is repeated until a coating of the desired thickness is formed upon the mold and upon a portion of the stem *a*, after which said coating is dried to the necessary extent and then vulcanized. After vulcanization the bag B is stripped from the mold A, the neck *b* of the bag B being capable of being expanded so as to pass over the widest part of the mold A without injury, due to the fact that the largest diameter of said mold is small as compared to the largest diameter of the inflated balloon. The largest diameter of the mold is very little more than one-half of its length.

In practice the mold is dipped into the rubber or other solution, withdrawn in a substantially vertical position, and then inverted. While solidification is occurring, due to evaporation of the solvent, some of the solution runs down from the highest point, the inverted end opposite the neck, distributing itself upon the bag so formed. The sloping portions adjacent the neck carry more of the solution from the mass than does the central portion, due to their approximation to the horizontal, while the central zone, due to its approximation to the vertical, carries a somewhat thinner coating. The end portion being last withdrawn carries with it the thickest coat, due to the attraction attending its withdrawal from the solution. This part of

the coating, however, still possessing fluidity will when the mold is inverted distribute itself sufficiently to prevent the formation of extra thick spots or lumps, which would result in a bulge or protuberance in the wall of the bag when inflated. With this construction an expansible bag is produced the material of which is distributed in zones of different thickness, which when inflated will result in a balloon or the like having the ultimate shape due to the enlarged primary expansion of its thinnest zone. The thicker zones expand to a less degree and merge with the thinner to produce the desired shape.

15 In Fig. 3 is seen the bag C in a partially-inflated state, and in Fig. 4 the bag D has been somewhat more inflated. Complete inflation results in the substantially spherical bag E, Fig. 5.

20 The mold A, together with its stem *a*, is preferably made of glass; but it may also be made of hard rubber, polished wood, celluloid, porcelain, or other suitable materials to which the rubber coating will not adhere, all as set forth in my concurrent application for Letters Patent upon said mold.

25 Having described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. A seamless expansible bag, having an inflatable body portion and a neck integral therewith, and adapted to assume a substantially different shape when inflated and formed of different thickness in zones in angular relation to the neck.

2. A seamless rubber balloon-bag made in substantially oval or egg-shaped form and of different thickness in different zones, whereby it is adapted when inflated to assume spherical shape.

3. A seamless rubber balloon-bag for a spherical balloon of different thickness in different zones and formed with its median diameter substantially less than the length between its ends, and having a neck at one end of materially-reduced dimensions, said bag adapted when inflated to assume spherical form.

Signed at New York, N. Y., this 17th day of February, 1903.

ARRAH J. WHISLER.

Witnesses:

FRANKLAND JANNUS,
JOSEPH V. MITCHELL.