April 3, 1956 M. F. WELLS 2,740,565

STRUCTURE FOR AN INFLATABLE ARTICLE OF INELASTIC SHEET MATERIAL

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Fig. 11

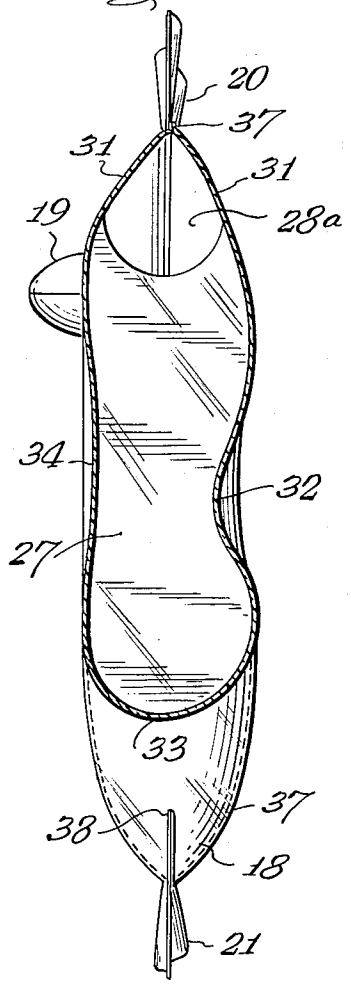


Fig. 1

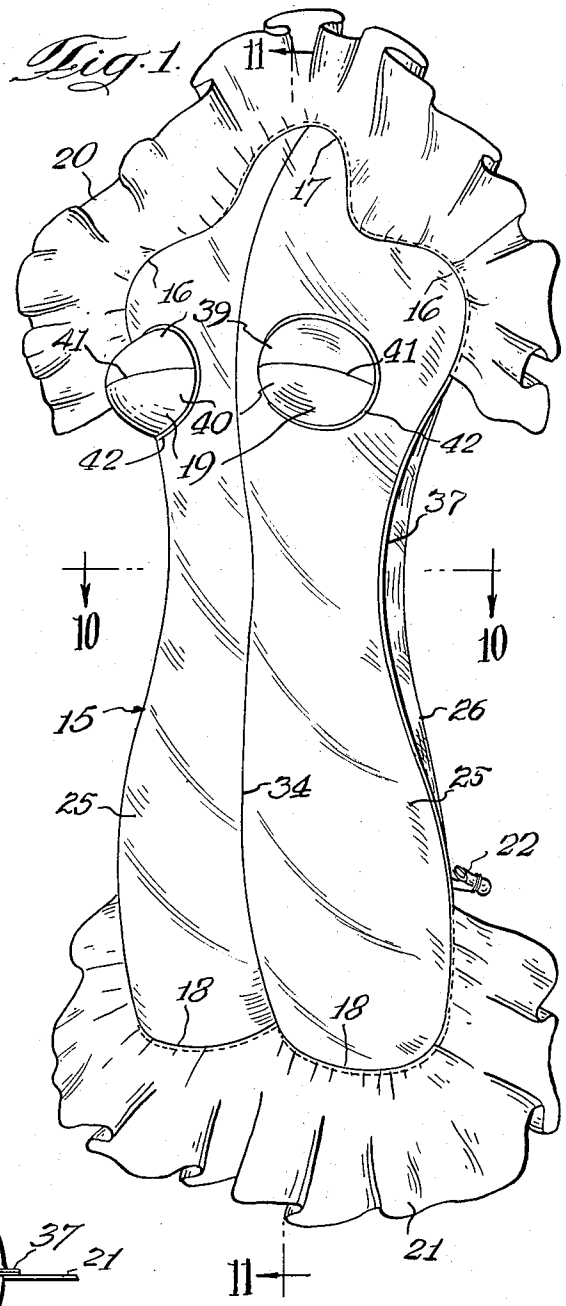
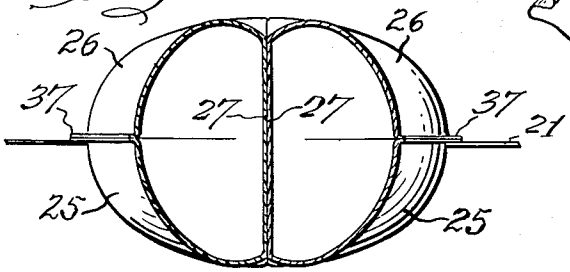


Fig. 10



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Fig. 2.

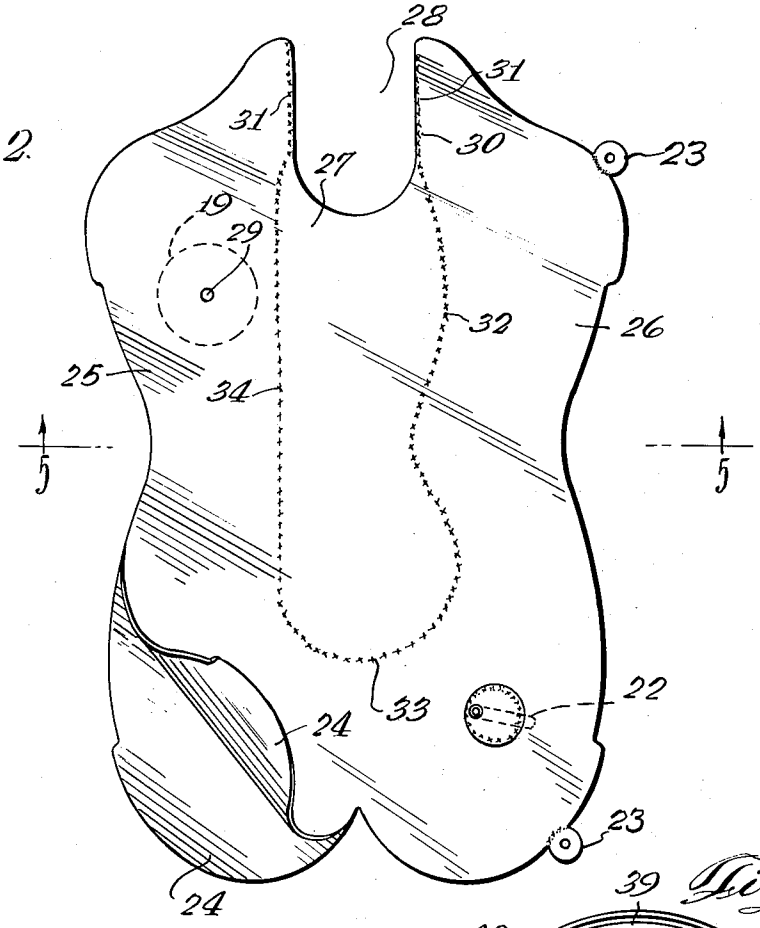


Fig. 9

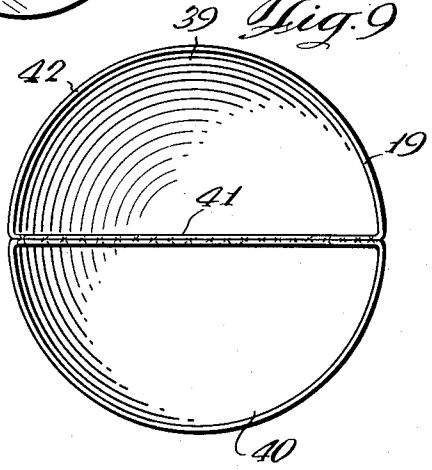


Fig. 8.

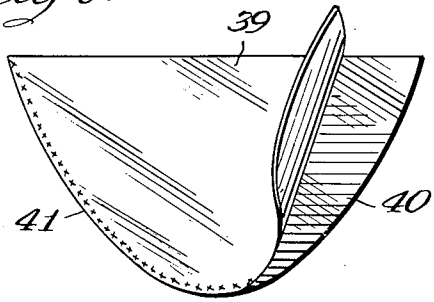
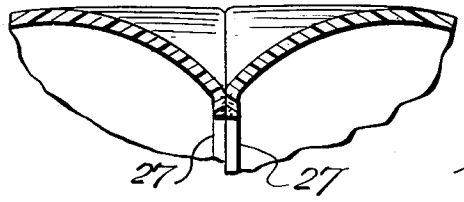


Fig. 12.



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Fig. 3.

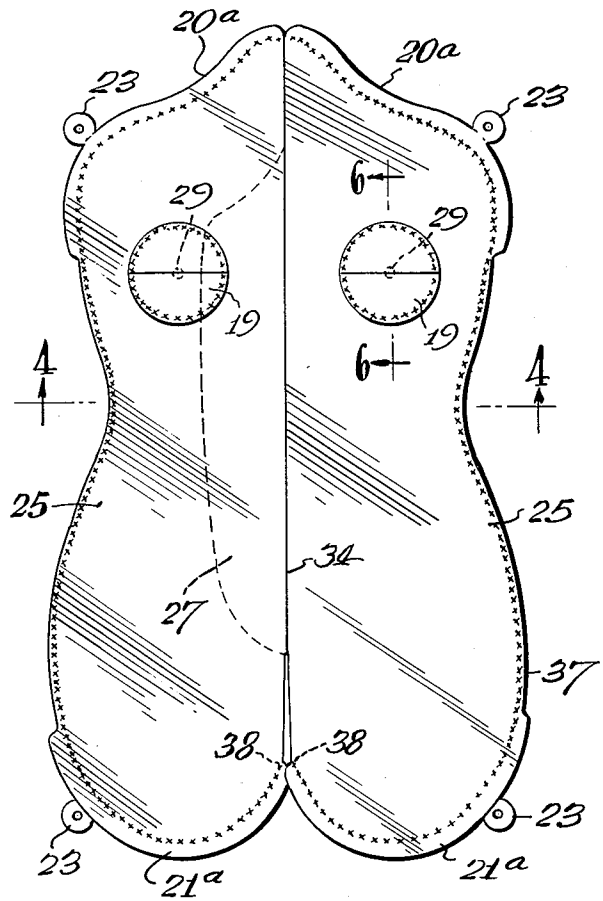
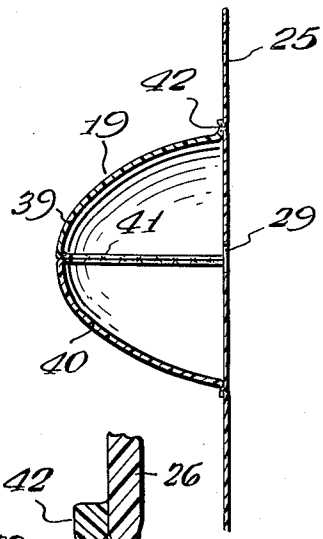


Fig. 6.



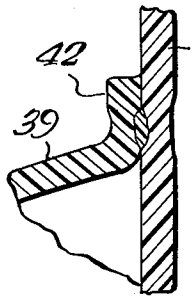


Fig. 7.

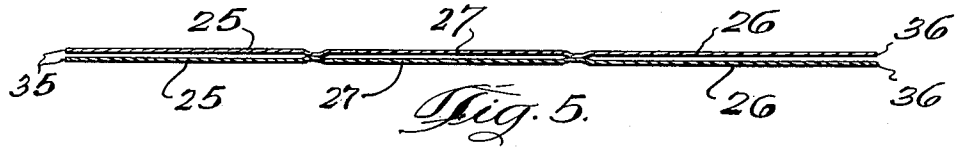


Fig. 5.

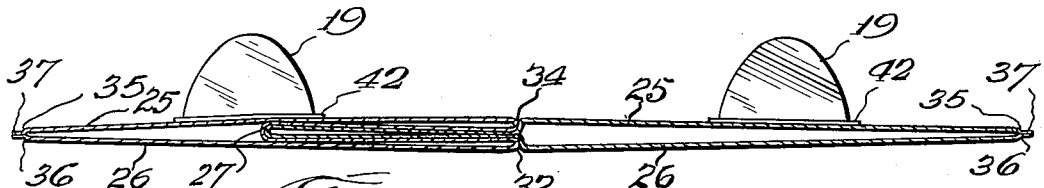


Fig. 4.

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STRUCTURE FOR AN INFLATABLE ARTICLE OF INELASTIC SHEET MATERIAL

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Application August 24, 1953, Serial No. 376,147

14 Claims. (Cl. 223—67)

This invention relates to an improved structure for inflatable plastic articles of inelastic sheet material, and in the specific embodiment shown it relates to an improved inflatable mannequin.

Large quantities of inflatable articles are currently being produced from substantially inelastic sheet material such as certain of the plastic films. Such articles are manufactured by die cutting from sheet material a plurality of pieces which form various parts of the finished device, and heat sealing the margins of the pieces together in a sealing die. There is no great problem in obtaining the desired shape of an article where the margins of various pieces are sealed together; but it is difficult to obtain the desired shape intermediate the marginal sealing line. Likewise, problems of die shape and die cost limit the shapes which may be satisfactorily produced by conventional means.

Insofar as applicant is aware it has heretofore been impossible to produce irregular shaped articles, such as inflatable human and animal figures, which reproduce with any accuracy the actual shape. Thus, for example, an inflatable plastic mannequin could be provided with correct shape only in the plane of the peripheral seal, and the intermediate portions would bulge toward a tubular shape.

In accordance with the present invention, an inflatable plastic mannequin which faithfully reproduces the normal contours of a human torso may be produced by forming it from two body members, one of which forms the left hand half of the torso and the other of which forms the right hand half. Each body member has a portion forming one-half of the back, a central portion which serves as a web, or membrane which, when the mannequin is inflated lies in the median plane of the article, and a portion which forms one-half of the front of the torso. The two halves may first be sealed together intermediate their ends along a line which accurately defines the outline of the torso along its median plane, the sealing together of the two body members serving to limit their expansion along the median plane when inflated. An air-tight marginal seal is then made which joins the edge of the back portion of each member to the edge of the front portion thereof. The median membrane is discontinuous, or perforate, so that the entire article may be inflated as a unit.

The same structural principle may be applied to numerous other shapes. In certain articles the irregularity of the shape makes it difficult to reproduce satisfactorily, and the use of a median membrane permits the shape of the articles to be accurately controlled intermediate its sealed periphery. In other types of articles, such for example as beach balls, the problem is principally one of producing suitable dies for sealing together the several body members into an article which will be spherical when inflated.

The ornamental design shown in Fig. 1 of the drawings herein is claimed in Design Patent 169,464, issued April 28, 1953.

The invention is illustrated in a preferred embodiment of a mannequin in the accompanying drawings in which:

Fig. 1 is a perspective view of a mannequin constructed in accordance with the invention;

Fig. 2 is a plan view of a mannequin after the intermediate sealing operation to form the median membrane, but before the peripheral airtight seal is made;

Fig. 3 is a plan view of an uninflated mannequin;

Fig. 4 is an enlarged sectional view taken as indicated along the line 4—4 of Fig. 3;

Fig. 5 is an enlarged sectional view taken as indicated along the line 5—5 of Fig. 2;

Fig. 6 is an enlarged fragmentary sectional view taken as indicated along the line 6—6 of Fig. 3;

Fig. 7 is an enlarged fragmentary sectional view showing the attachment of the bust piece to the front portion of a body member;

Fig. 8 is an enlarged fragmentary elevational view of a partially sealed bust piece with one of the members forming the bust piece turned back to show the construction more clearly;

Fig. 9 is an internal plan view of a bust piece;

Fig. 10 is a section taken as indicated along the line 10—10 of Fig. 1;

Fig. 11 is a section taken as indicated along the line 11—11 of Fig. 1 on the median plane of the mannequin; and

Fig. 12 is an enlarged fragmentary section showing the seal where the body members come together.

Referring to the drawings in greater detail, and referring first to Fig. 1, the inflated mannequin is formed in simulation of an armless female torso, and has a main torso portion, indicated generally at 15, shoulder portions 16, a neck portion 17 and leg portions 18. On the front of the torso are bust pieces 19. Preferably the neck and shoulder area and the leg area are decorated with ruffles 20 and 21 of marquisette or the like which are secured to continuously extending narrow rims, or flaps, 20*a* and 21*a*, respectively; and as seen in Fig. 3 on the flaps 20*a* and 21*a* behind the ruffles are integral hanging rings 23 by means of which the mannequin may be suspended for display purposes. A flexible tube 22 for inflating the mannequin is secured to the device in the conventional fashion.

Referring now particularly to Figs. 2 and 3, the mannequin is formed from a pair of identical body members 24 each of which is die cut from a sheet of substantially inelastic, limp plastic material and includes a front panel portion 25, a back panel portion 26, and a central median membrane portion 27, the latter portion being cut away at its upper end to form a U-shaped recess 28. The front portions 25 of the body members 24 are also provided with small apertures 29 through which air may pass from within the torso 15 to inflate the bust portions 19. The lateral margins of the body portions 24 are cut to define the outline of the mannequin in a longitudinal plane which extends transversely of the torso.

The first step in assembling a mannequin is to lay the two body members 24 in registering, superposed relationship as seen in Fig. 2, and place them in a sealing die which seals them together to form a line of sealing 30 which has neck portions 31 along the side margins of the U-shaped recess 28, a back portion 32, a crotch portion 33 and a front portion 34. The line of sealing 30 defines the outline of the mannequin along its median plane.

Following the sealing of the two body members 24 along the line 30, they are rearranged so that the edge 35 of each front portion 25 is in register with the edge 36 of each back portion 26 and said edges 35 and 36 are sealed together (compare Figs. 4 and 5) to form an air-tight line of sealing 37 which extends continuously from

the inner point 38 of one leg portion 18 transversely around the margin of the mannequin to the inner point 38 of the other leg portion 18 (see Fig. 3).

The construction of the bust pieces 19 is shown in detail in Figs. 6–9, inclusive, and consists of an upper bust element 39 and a lower bust element 40 which are fastened together by a line of sealing 41 so that they are cup shaped, and have a continuous peripheral flange 42 by means of which they may be sealed to the front portion 25 of each of the body members 24 surrounding one of the apertures 29.

As best seen in Figs. 10 and 11, when a mannequin constructed in accordance with the present invention is inflated the continuous airtight seal 37 defines the shape of the sides of the torso portion 15, the margins of the shoulder portions 16 and neck portions 17, and the lower margins of the leg portions 18. There is no seam from the crotch portion 33 of the seal 30 to the inner end 38 of each leg portion where the continuous seal 37 terminates. The median membrane 27 is perpendicular to the plane of the continuous line of sealing 37, and confines the inflation of the body members along the median plane of the mannequin so as to give it the desired shape along that plane. The U-shaped recess 28 at the upper end of the median membrane 27 forms an opening 28a so that the membrane is discontinuous and air may fill the entire mannequin without obstruction from the median membrane. The apertures 29 permit air to pass into the bust pieces 19.

It is apparent from the foregoing description that the construction of the mannequin with a median membrane 27 bounded by a line of sealing 30 which defines the outline of the mannequin along its median plane permits the mannequin to have the desired shape, without bulging along the median plane. It is also apparent that the basic structural principle could be equally well applied to any other regular or irregular three dimensional curved shape.

The term "limp" as used herein is intended to include any material which is sufficiently pliable that it can hold any desired shape only under tension.

The foregoing detailed description is given for clearness of understanding only and no unnecessary limitations are to be understood therefrom, as some modifications will be obvious to those skilled in the art.

I claim:

1. An inflatable mannequin comprising: a pair of body members of substantially inelastic, limp sheet material, each of said body members forming both the front and back of one-half of the outer skin of the mannequin and having a central portion affording a perforate median membrane; a line of connection joining said central portions to define the outline of the mannequin along its median plane and substantially separate the two halves thereof; and a peripheral airtight seal joining the margins of the front and back portions of each body member and any common marginal portions of said body members to form a closed body which may be inflated to simulate a portion of a human body.

2. The inflatable mannequin of claim 1 in which each body member is provided with an aperture, and a projecting bust piece has its periphery saeled to the body member surrounding the aperture.

3. The inflatable mannequin of claim 2 in which the bust piece is composed of two transversely joined segments.

4. The inflatable mannequin of claim 2 in which the aperture is of substantially smaller diameter than the bust piece and the bust piece is sealed to the outer surface of the body member.

5. The inflatable mannequin of claim 1 in which the body members include a stub neck portion and stub leg portions, and the median membrane terminates short of said neck portion.

6. An inflatable mannequin comprising: a pair of body members of substantially inelastic, limp sheet material, the margin of each of said body members being cut along a line which defines the inflated shape of the mannequin in a transverse plane extending longitudinally of the mannequin, each of said body members forming both the front and back of one-half of the outer skin of the mannequin and having a central portion affording a perforate median membrane; a line of connection joining said central portions to define the outline of the mannequin along its median plane and substantially separate the two halves thereof; and a peripheral airtight seal joining the margins of the front and back portions of each body member and any common marginal portions of said body members to form a closed body which may be inflated to simulate a human torso.

7. An inflatable mannequin comprising: a pair of body members of substantially inelastic, limp sheet material, each of said body members forming both the back and front of one-half of the outer skin of the mannequin and being shaped to provide a stub neck portion, a shoulder portion, a torso portion and a stub leg portion, and each of said body members having a central portion affording a median membrane which terminates below the stub neck portion of said body member; a line of sealing joining said central portions and joining the adjacent edges of said body members from the upper ends of said central portions to the tops of the stub neck portions to define the outline of the mannequin along its median plane; and a peripheral airtight seal joining the margins of the front and back portions of each body member and any common marginal portions of said body members to form a closed body which may be inflated to simulate a human torso.

8. The inflatable mannequin of claim 7 in which a narrow flap which is integral with the body portions extends beyond the peripheral airtight seal around the shoulders and the stub neck portion, and a continuous flap which is integral with the body portions extends beyond said seal around the lower end of each stub leg portion to receive decorative ruffles.

9. The inflatable mannequin of claim 8 in which the flaps are provided with a plurality of integral tabs by means of which the mannequin may be suspended for display purposes.

10. An inflatable article comprising: a plurality of body members of substantially inelastic, limp sheet material, each of said body members having two outer skin sections forming two different portions of the outer skin of the article and having an integral, internal membrane portion extending across the body in facing juxtaposition to a similar membrane portion of an adjoining body member; a line of connection along the juncture of each internal membrane portion and the outer skin sections of said body member which joins a pair of facing, juxtaposed membrane portions, said line of connection defining the shape of the article in the plane of said membrane portions; and an airtight seal extending around the margins of said body members to form a closed body.

11. An inflatable mannequin comprising: a plurality of body members of substantially inelastic, limp sheet material, each of said body members forming a portion of the outer skin of the mannequin and being shaped to provide a torso portion and a pair of stub leg portions meeting in an upwardly closed crotch portion; an airtight seal extending around the margins of said body members to form a closed body; perforate internal median membrane means extending from front to rear of said closed body above the crotch; and a line of connection along the juncture of said membrane means and said outer skin to define the shape of the closed body along its median plane.

12. The device of claim 11 in which each body member forms both the front and back of one-half of the

outer skin of the mannequin, and has a central portion forming part of the median membrane means.

13. An inflatable display device, comprising: a sealed body of substantially inelastic, limp sheet material provided with a pair of apertures; and a pair of projecting bust pieces of said inelastic, limp sheet material sealed to said body, one surrounding each of said apertures, each of said bust pieces being composed of two segments having abutting marginal portions which define the outline of the bust piece along a median plane generally perpendicular to the body and said segments being sealed together along said abutting marginal portions.

14. An inflatable display device, comprising: a sealed body of substantially inelastic, limp sheet material provided with a pair of apertures; and a pair of projecting bust pieces of said inelastic, limp sheet material sealed

to said body, one surrounding each of said apertures, each of said bust pieces being composed of two segments having abutting transversely extending marginal portions which define the outline of the bust piece along its transverse median plane generally perpendicular to the body and said segments being sealed together along said abutting marginal portions.

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