

Sept. 29, 1953

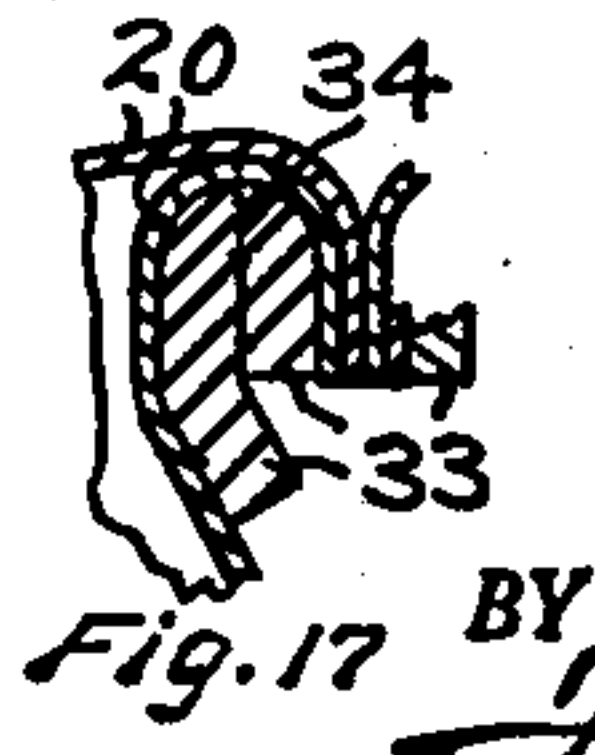
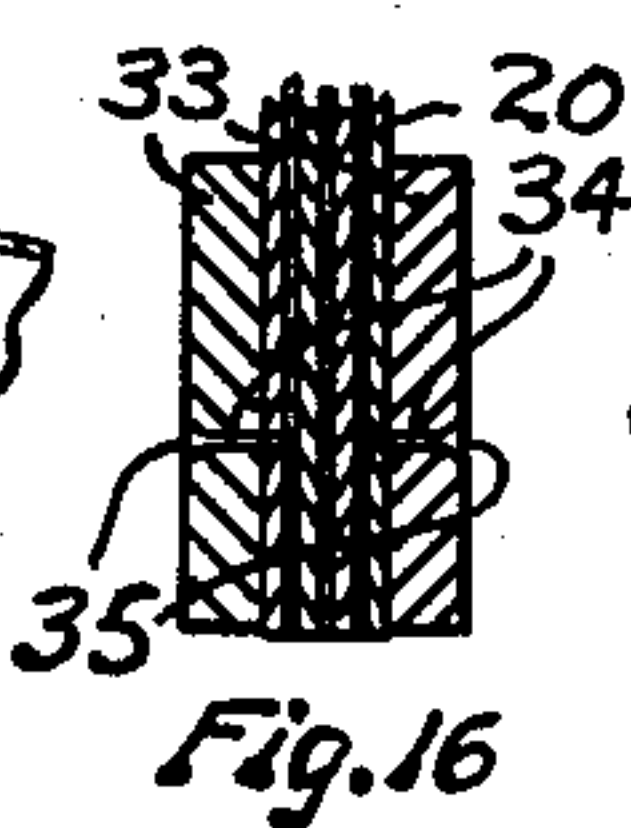
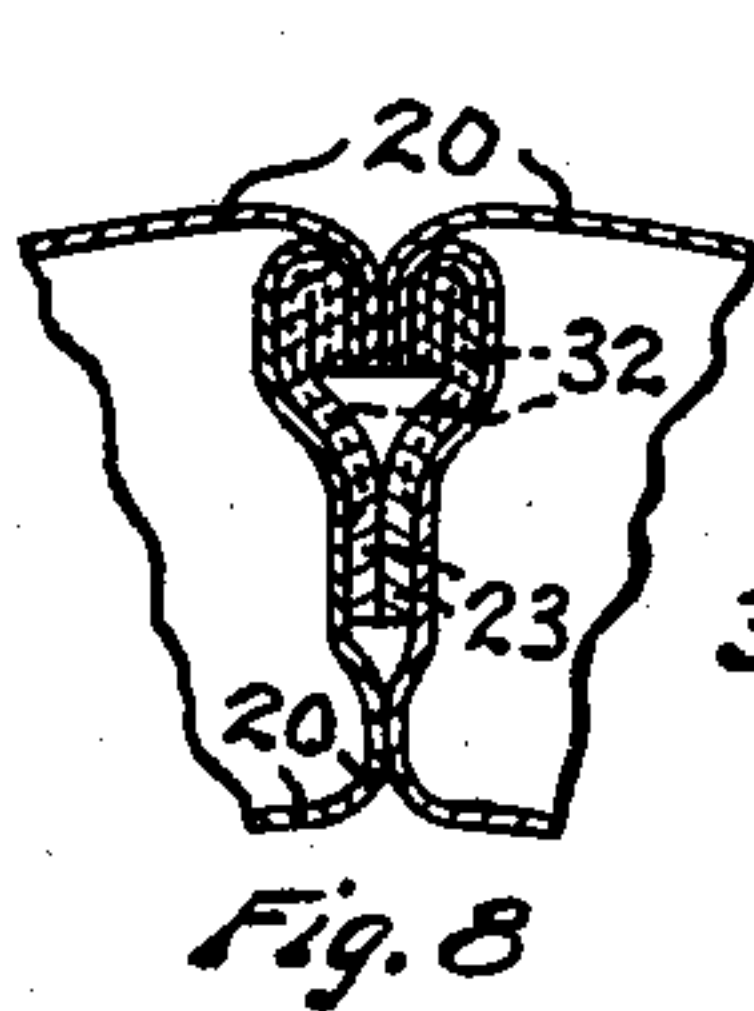
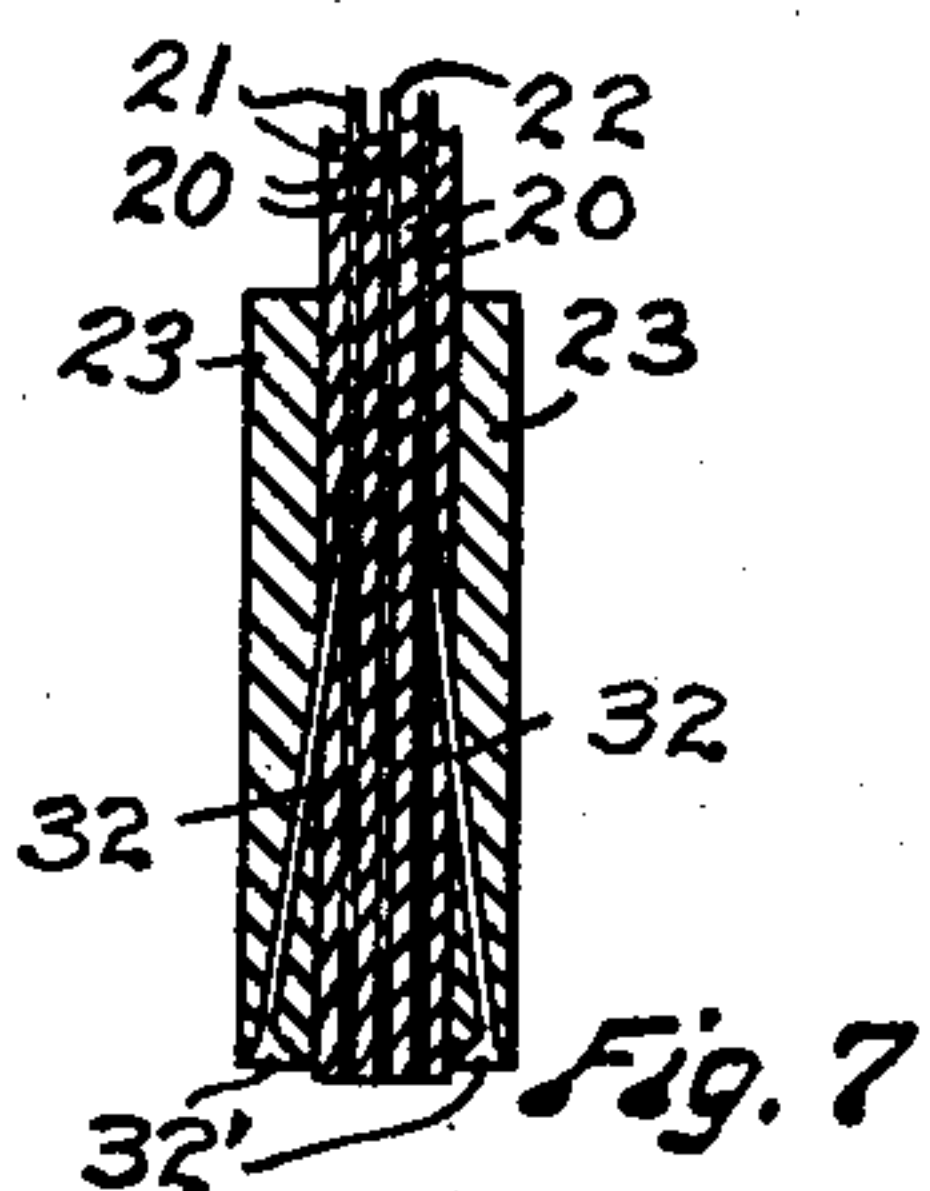
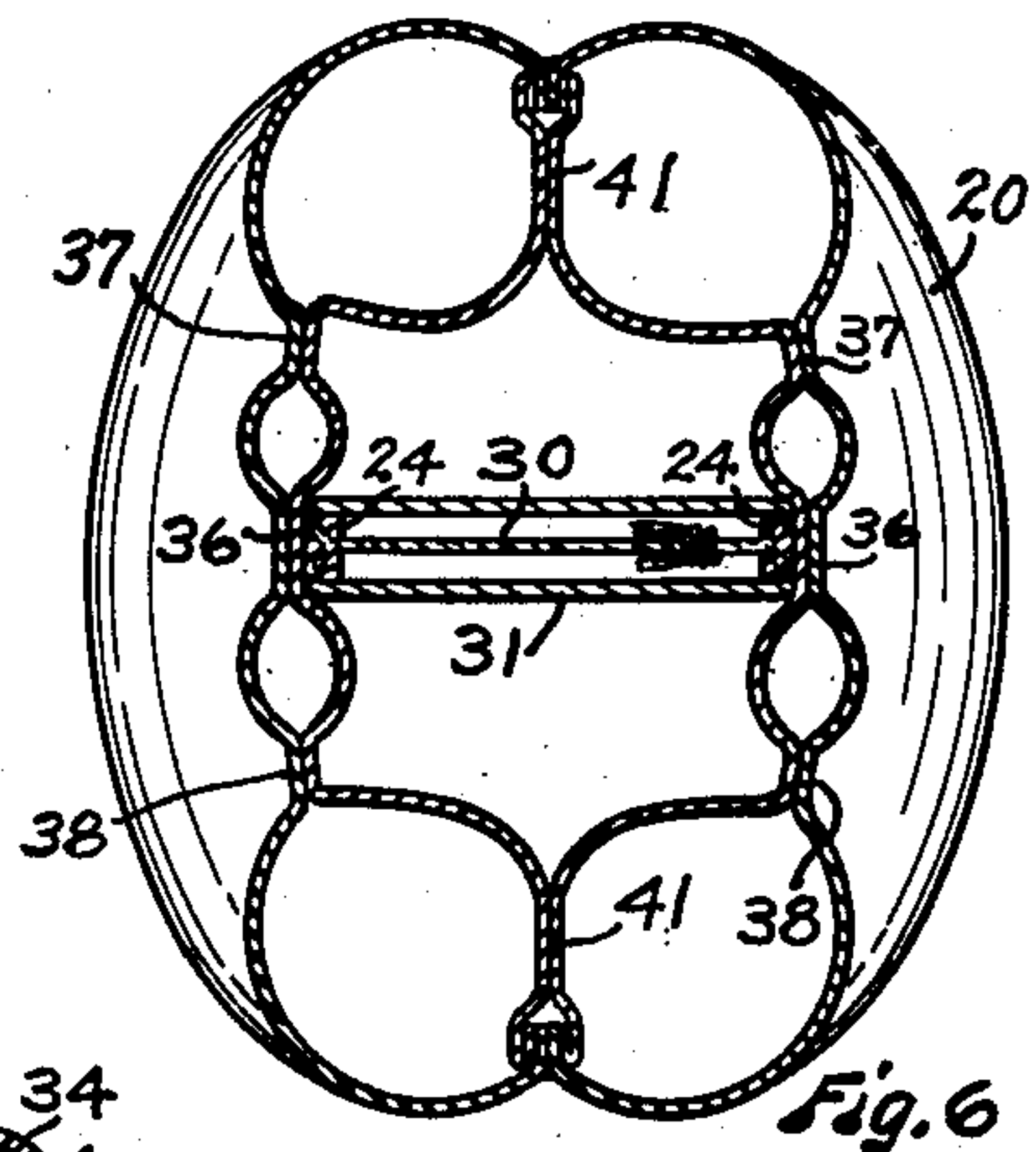
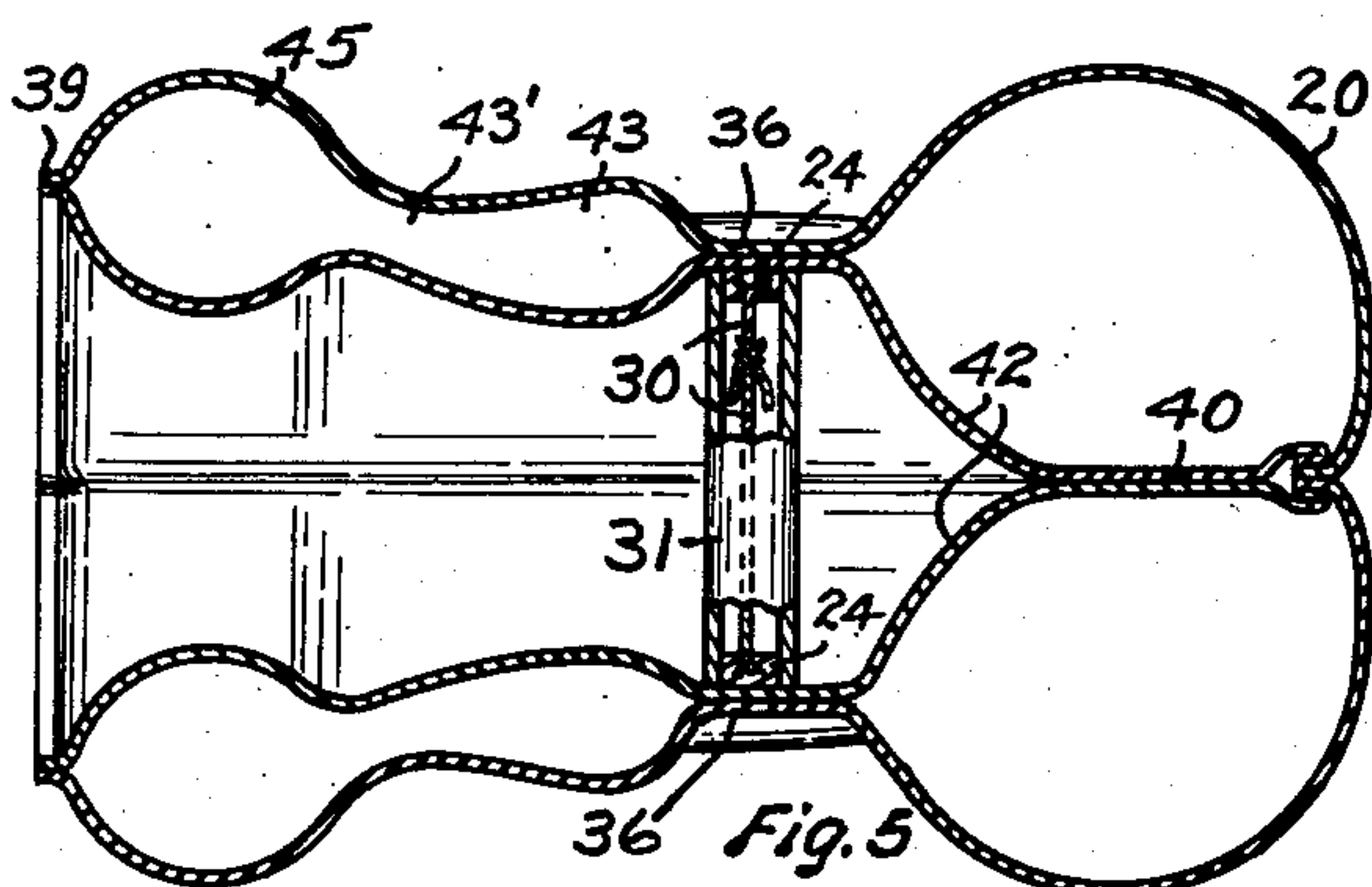
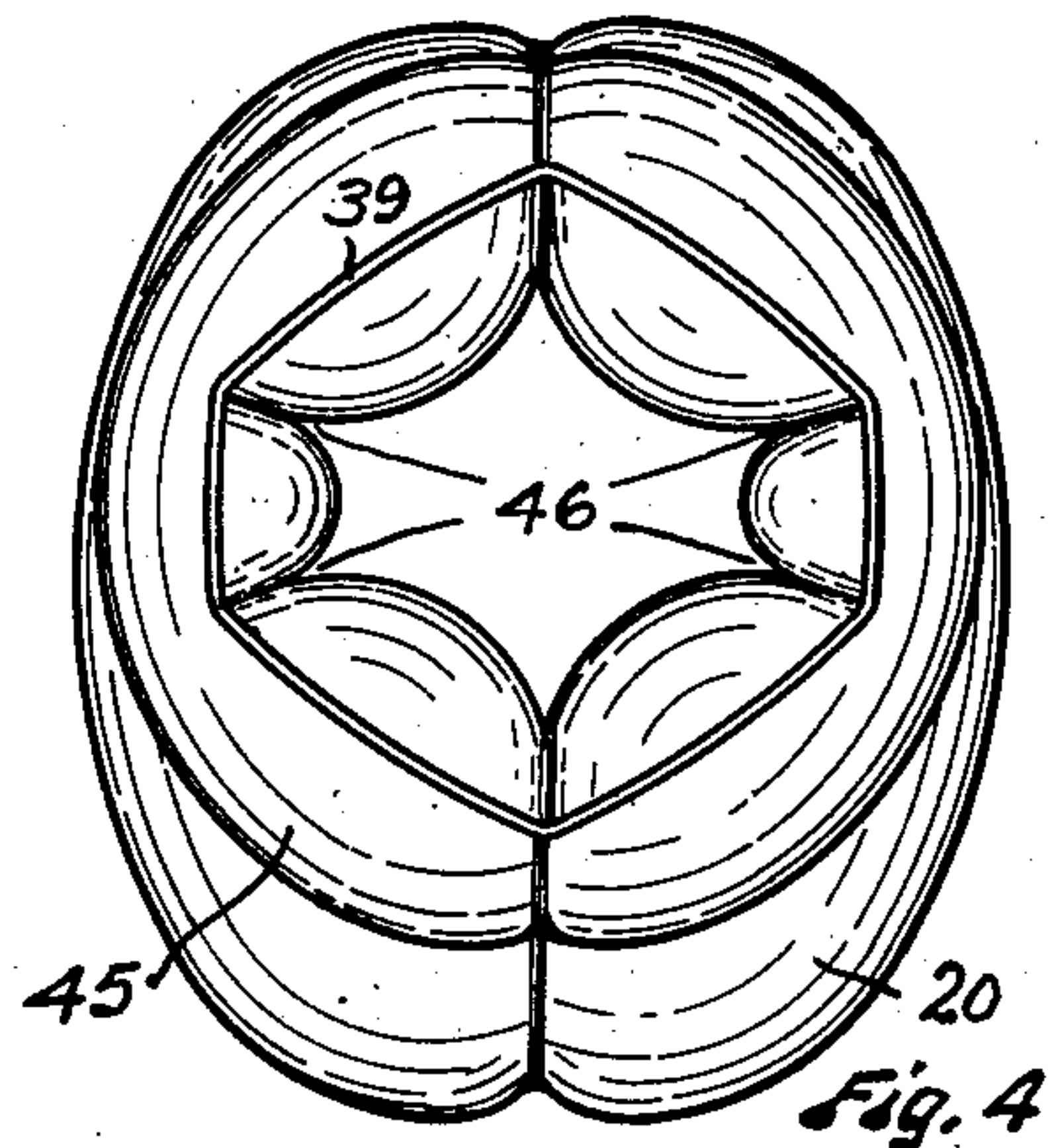
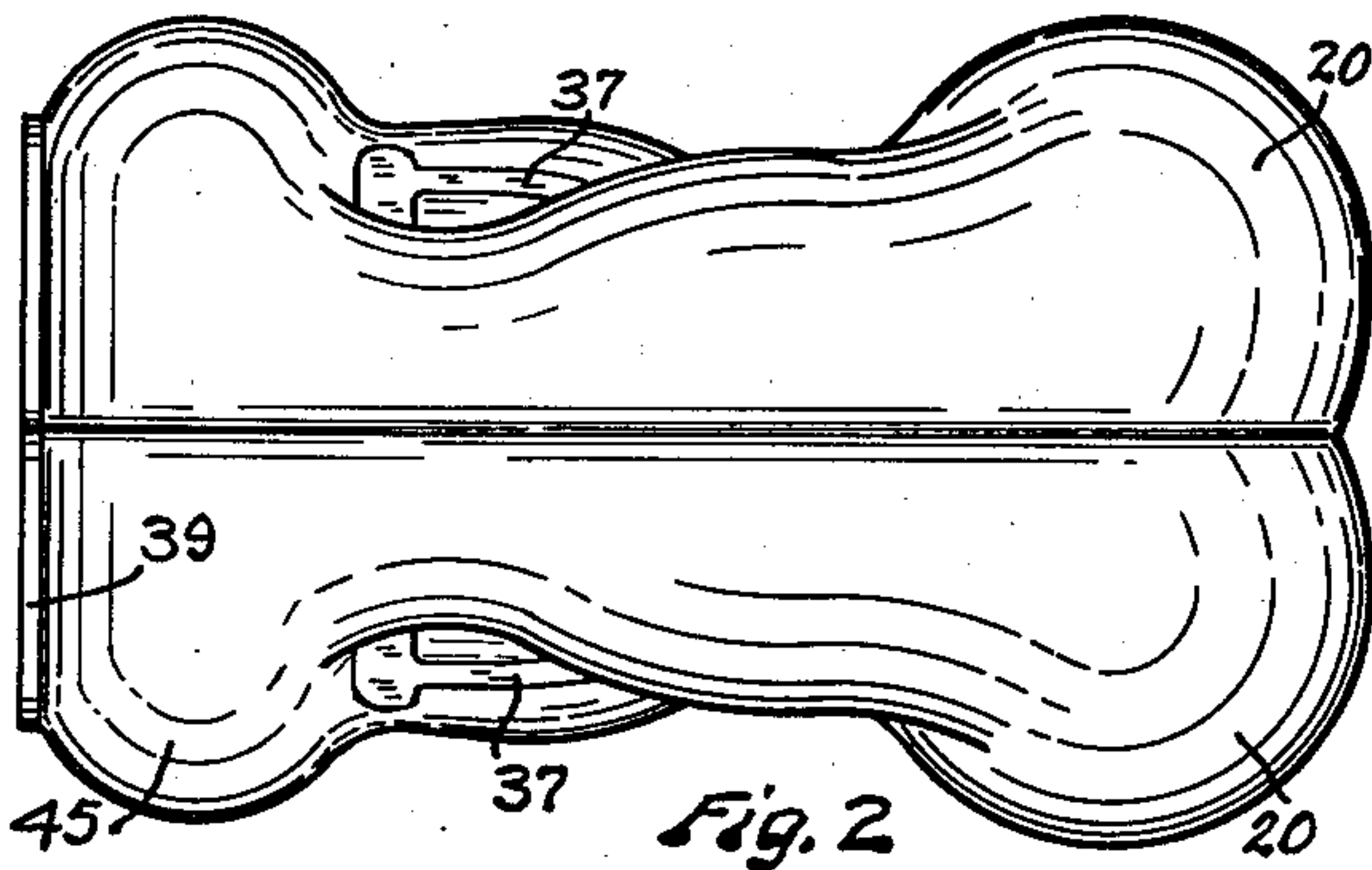
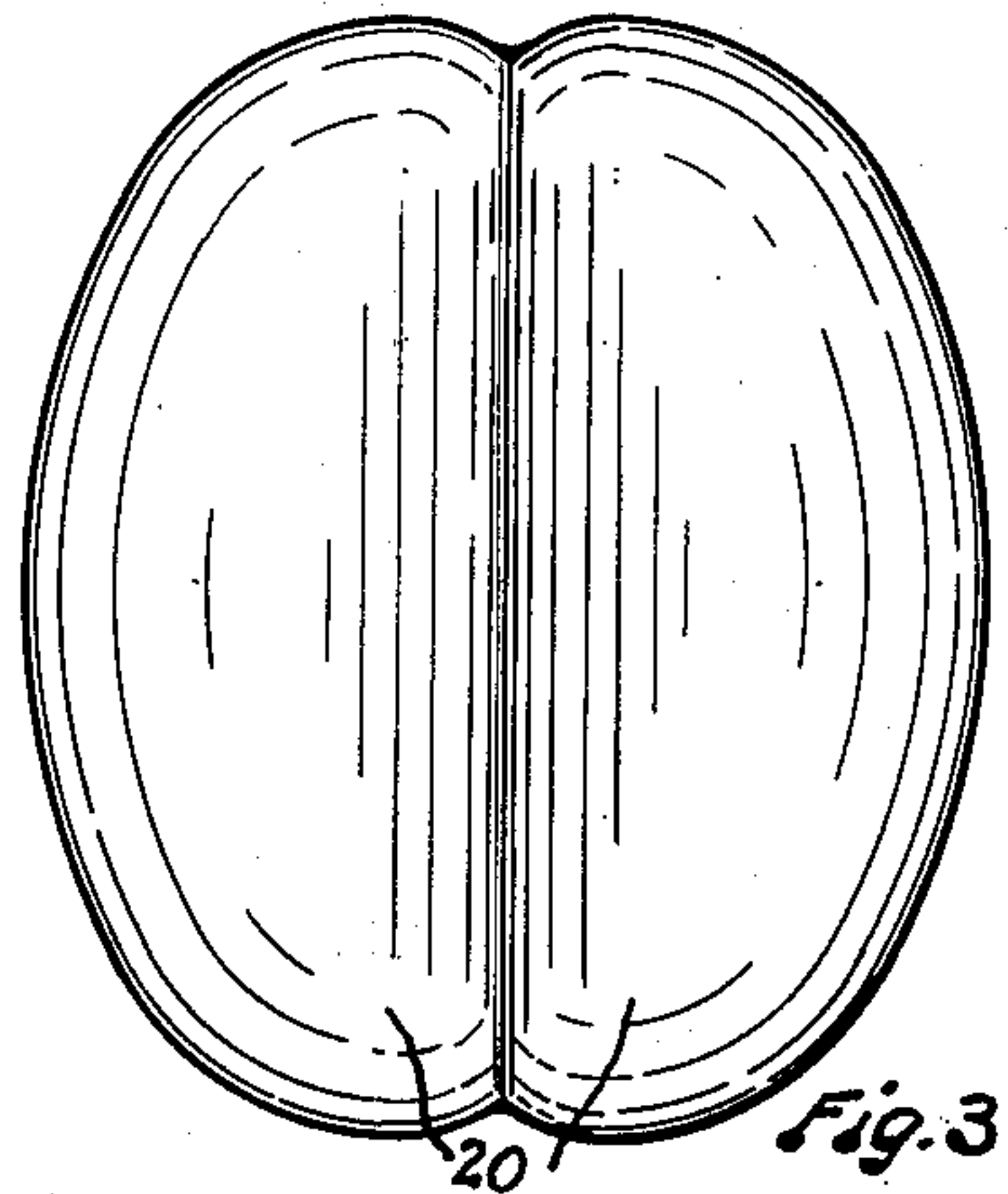
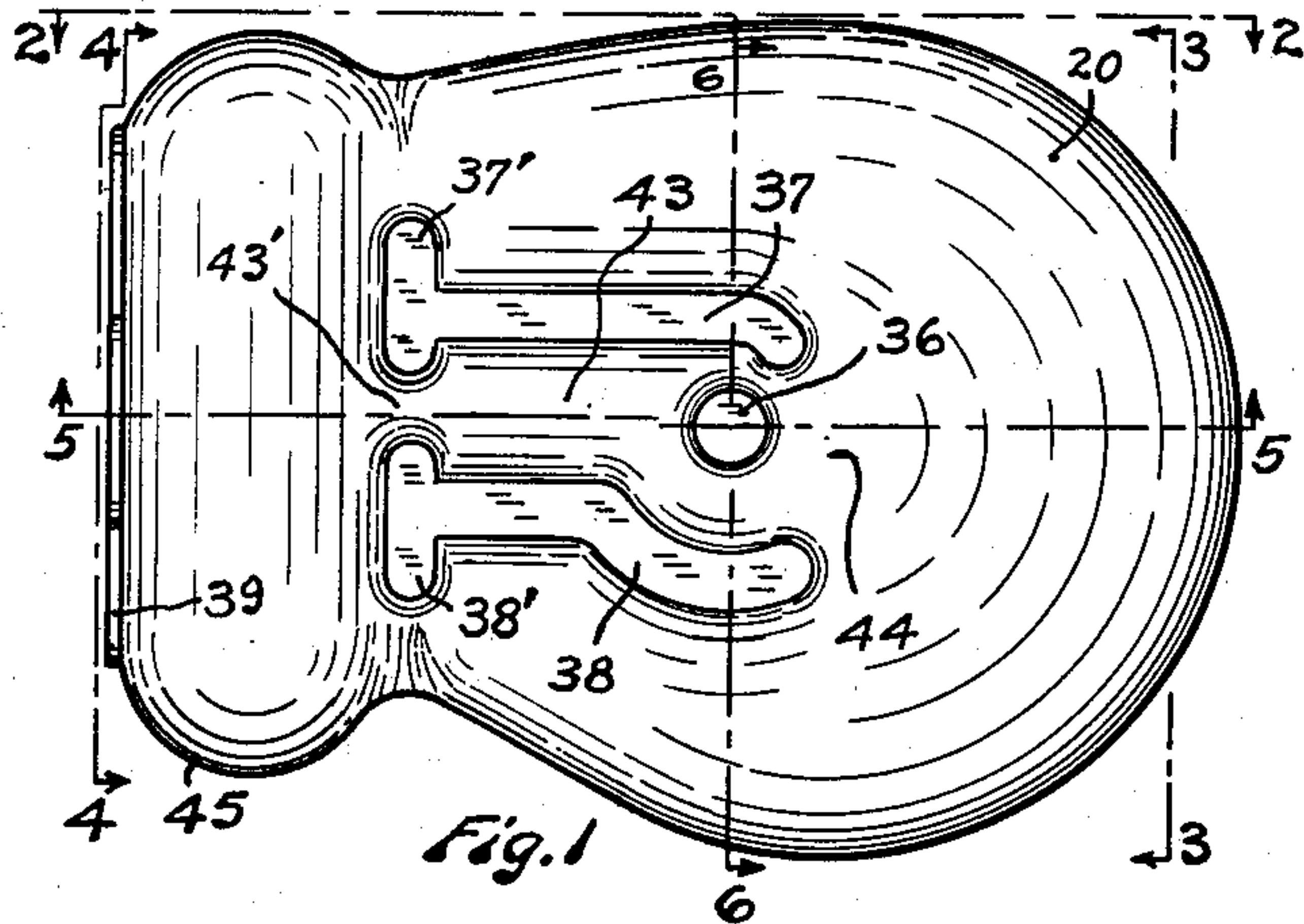
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2,653,319

PNEUMATIC BOXING GLOVE

Filed July 7, 1949

2 Sheets-Sheet 1



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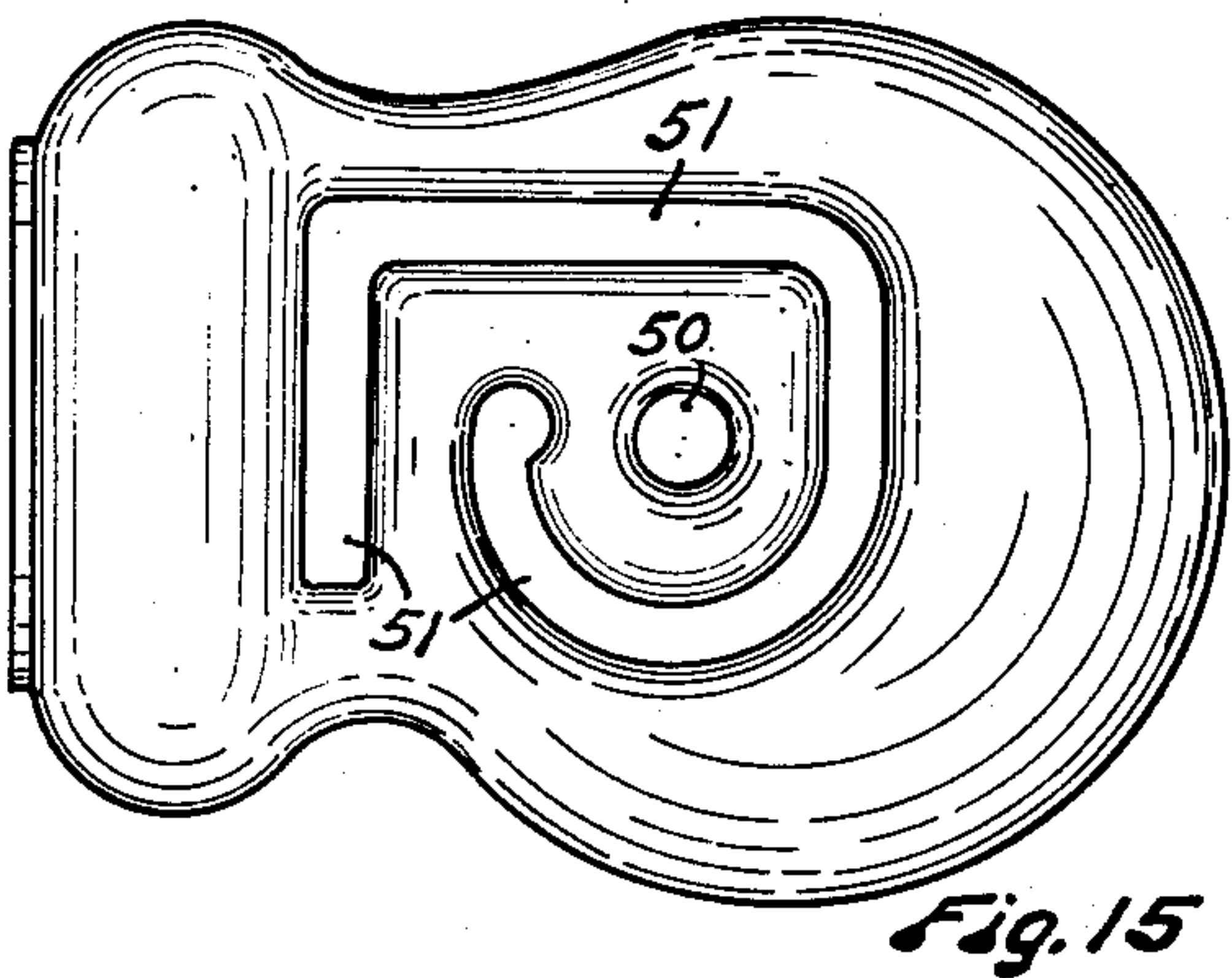
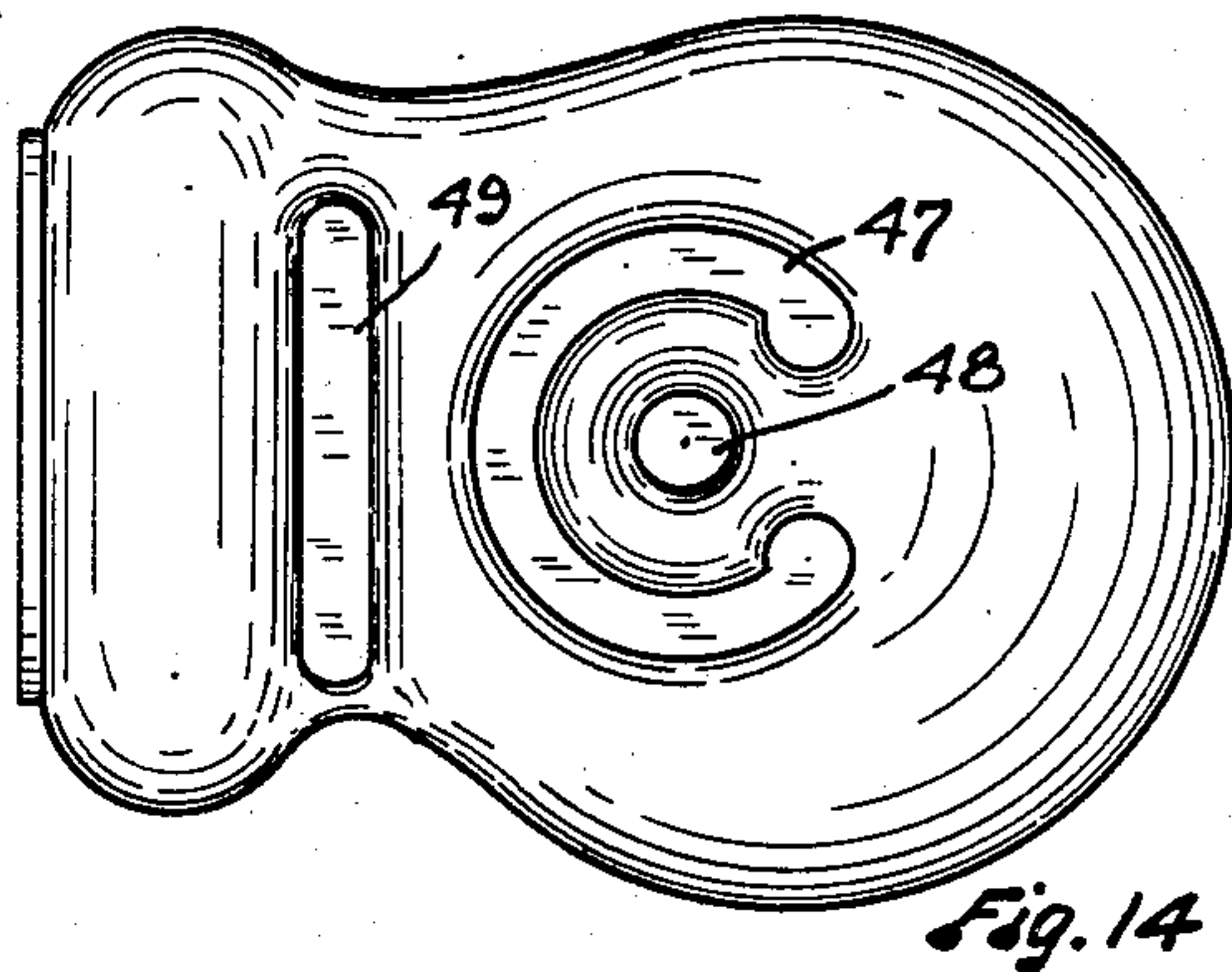
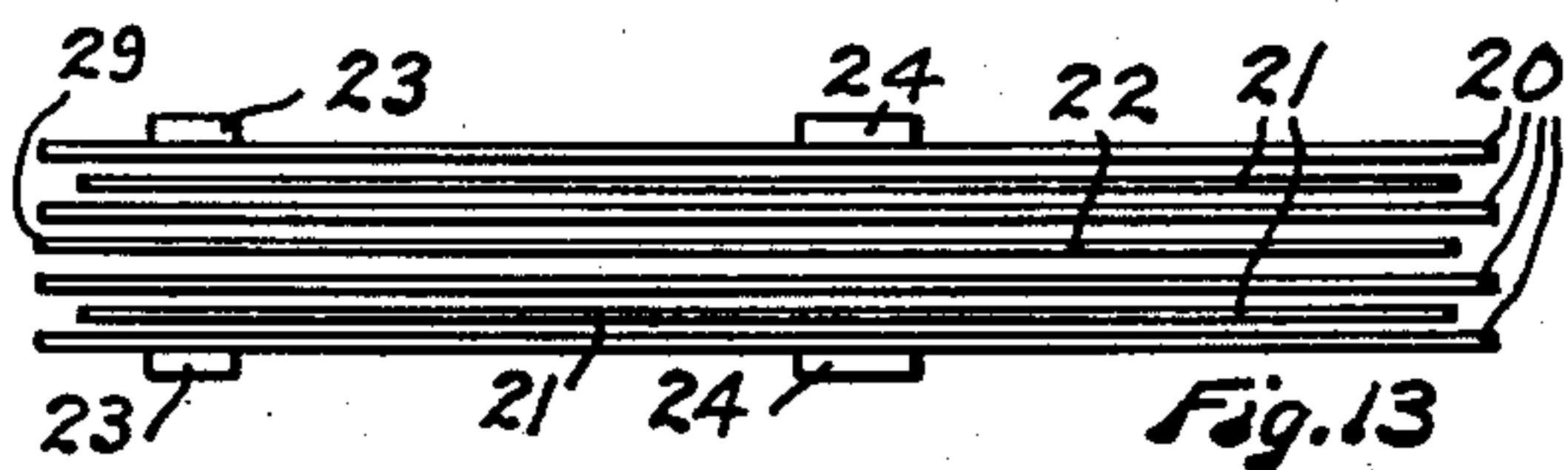
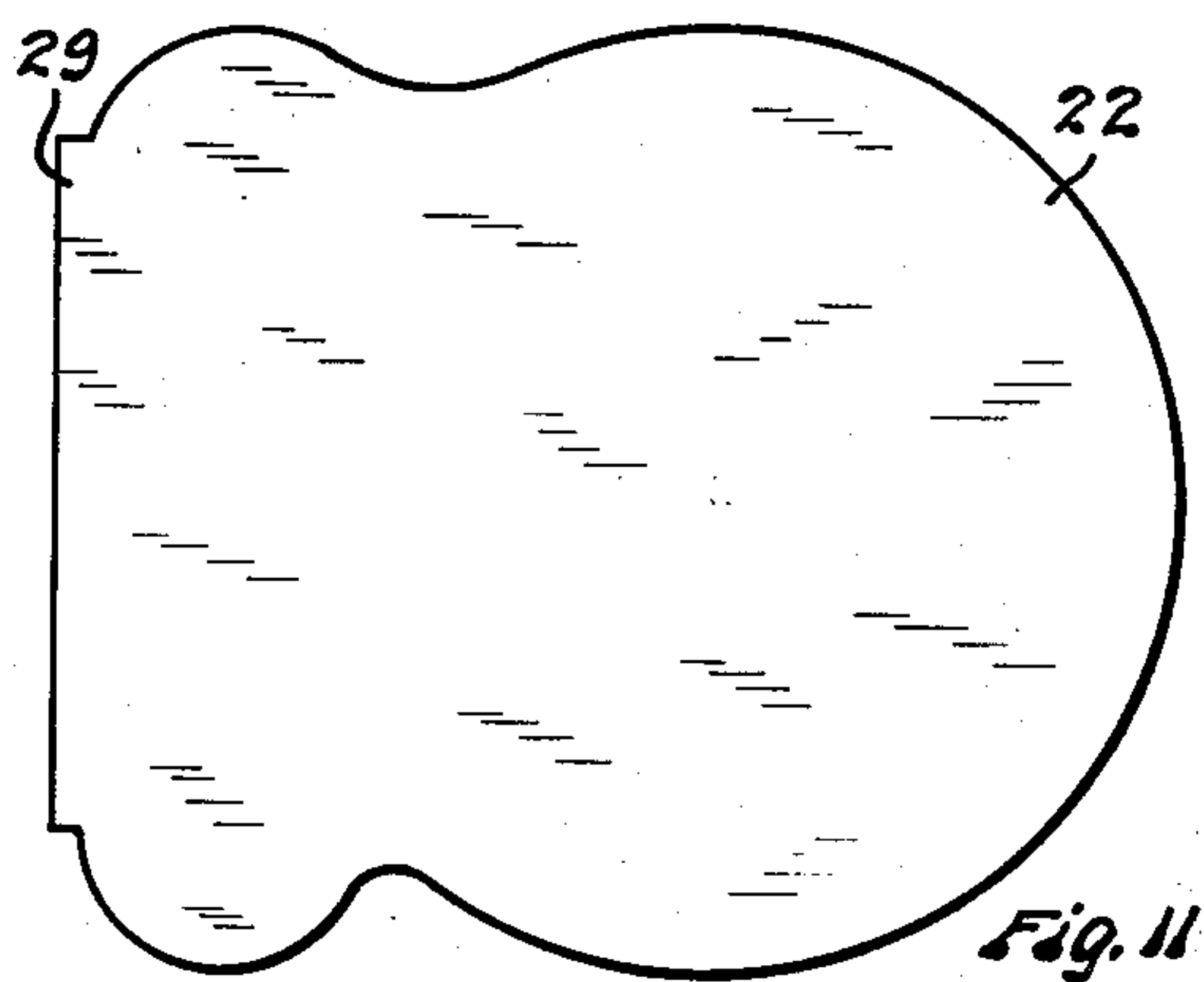
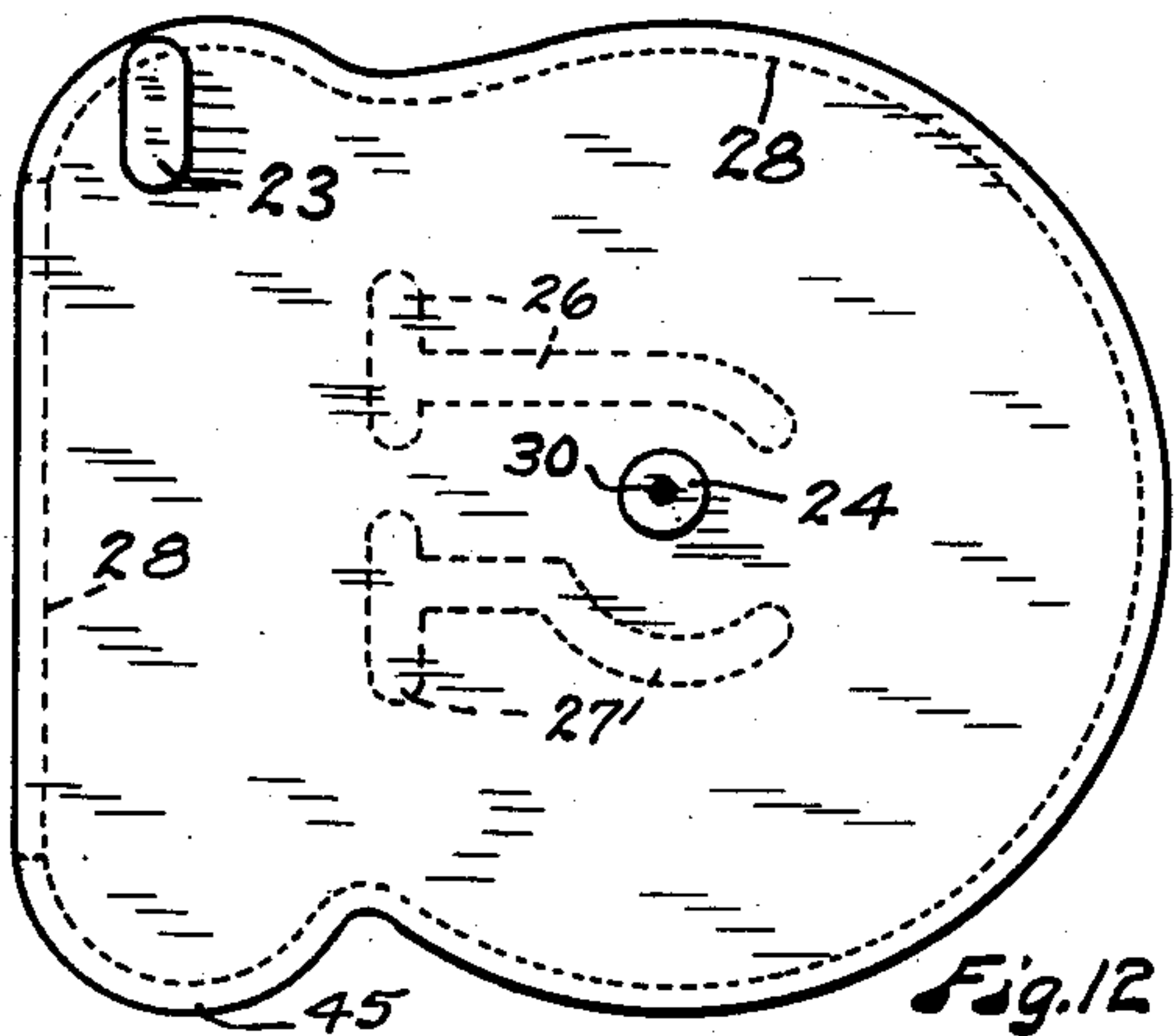
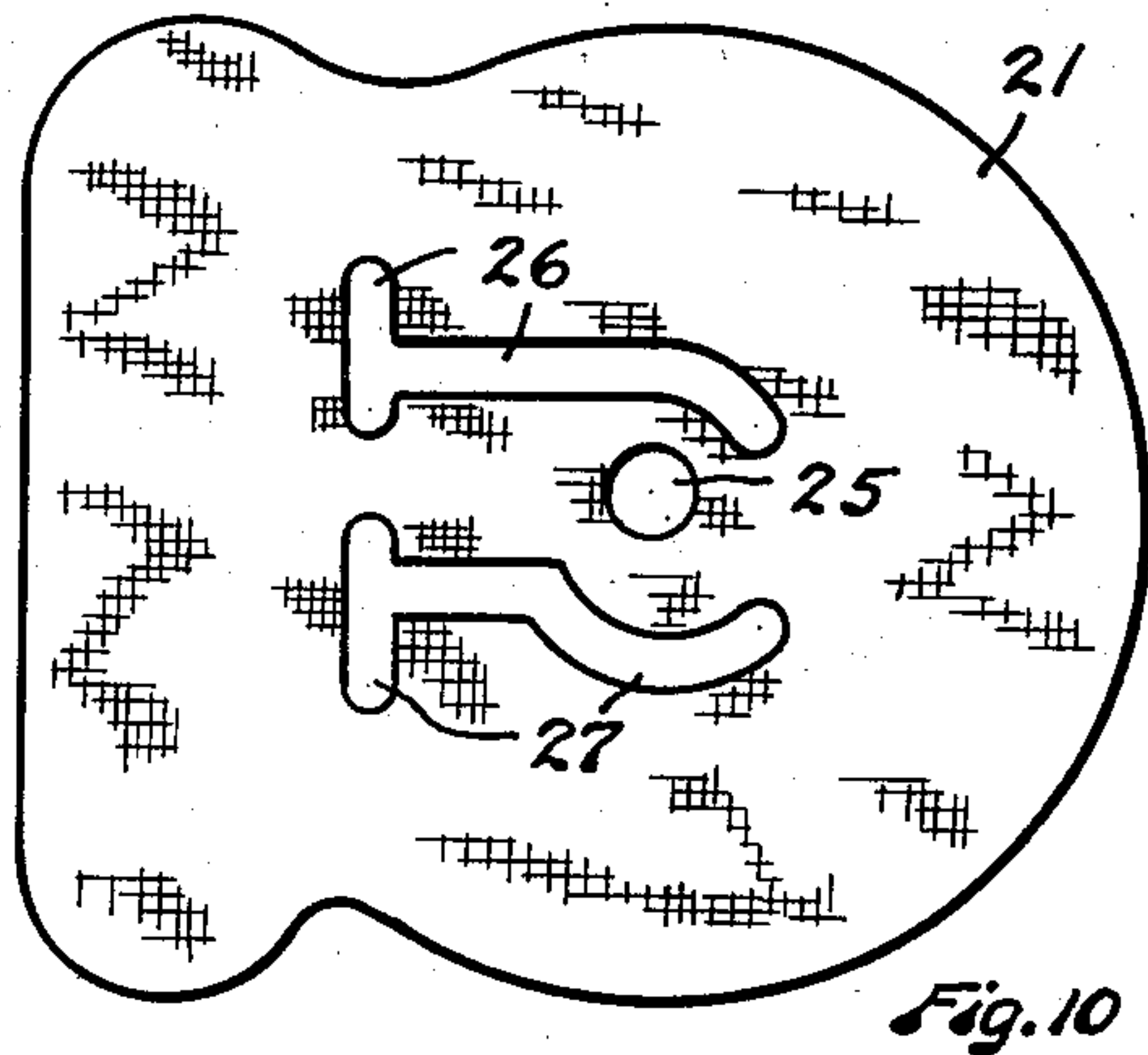
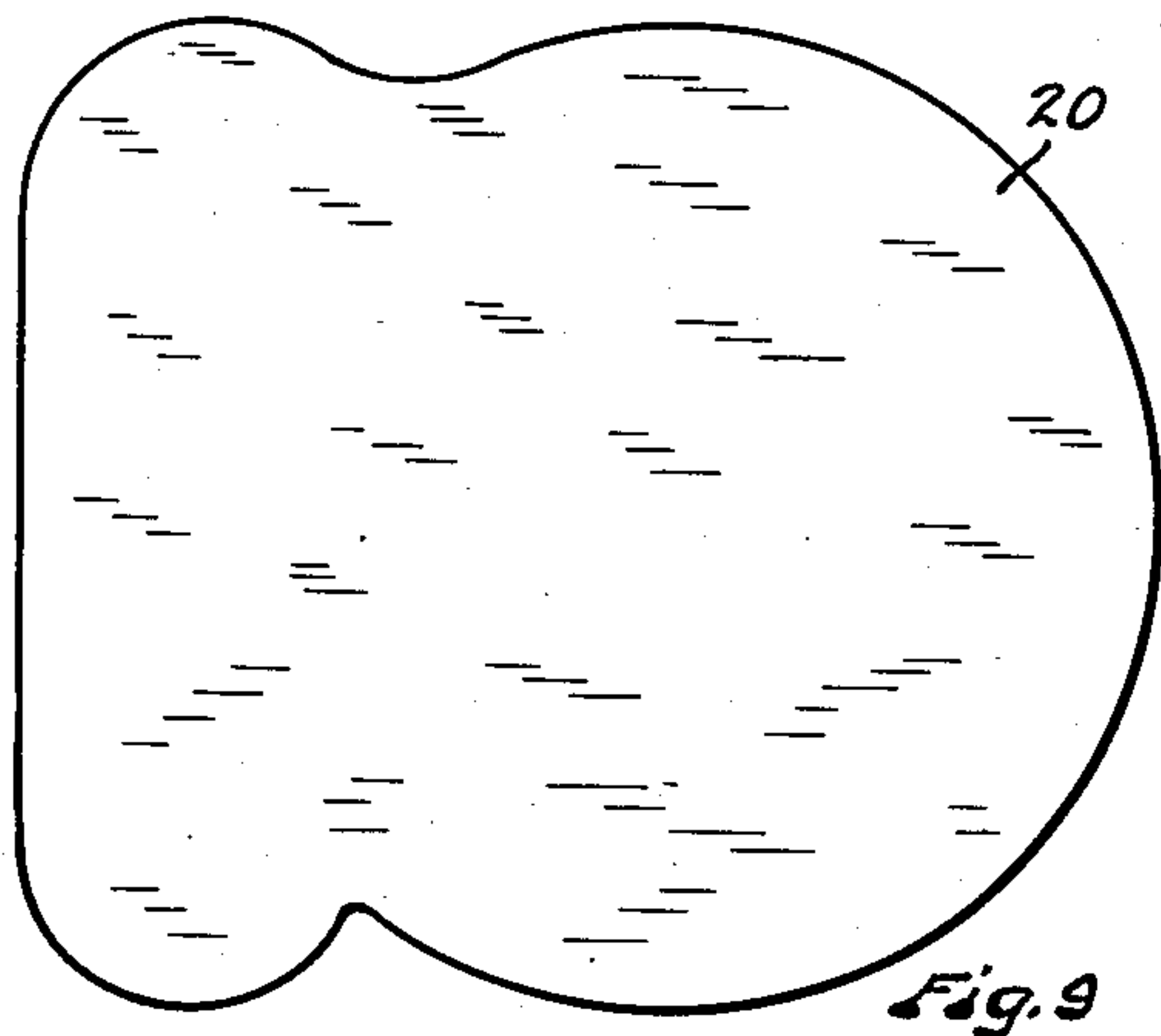
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2,653,319

PNEUMATIC BOXING GLOVE

Filed July 7, 1949

2 Sheets-Sheet 2



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2,653,319

PNEUMATIC BOXING GLOVE

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Application July 7, 1949, Serial No. 103,389

5 Claims. (Cl. 2—18)

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This invention relates to a pneumatic boxing glove and is in the nature of an improvement on the glove disclosed in Patent Number 2,135,853, issued November 8, 1938, to myself and Milton Kairis.

Objects of this invention are to improve the shape and construction, simplify the process of manufacture and reduce the cost of production of pneumatic boxing gloves of this type.

Another object is to provide a pneumatic boxing glove comprising two oblong air tight elastic bags or receptacles each having a rounded outer end portion and each having the medial portion of opposed walls thereof adhered together, said two bags also having their marginal portions permanently united as by vulcanizing or otherwise adhering these marginal portions together around the outer end and along the two sides of the glove but leaving the wrist forming portions of said two bags unattached so as to provide a wrist opening, said two bags being adapted, when inflated, to press against each other and push each other apart in such a manner as to broaden and flatten the outer or striking end portion of the glove and to spread apart the side wall portions of the two bags so as to provide within the glove ample hand room and a satisfactory knuckle engaging internal wall portion.

Other objects are to provide a pneumatic boxing glove which has an inflated wrist portion shaped so that it protects the wrist of the user and is convenient to slip the hand through and fits snugly enough to hold the glove in proper position on the hand and to provide a pneumatic glove having novel and efficient means for securing therein a hand hold member.

Another object is to provide a pneumatic boxing glove made from four flat oval shaped pieces of elastic material vulcanized or otherwise adhered together around their marginal edges but leaving a wrist opening between the two medial pieces, and which have parts of each medial piece adhered to an adjacent outside piece, and which are turned inside out after they are sealed together to conceal or bury the seams of the glove and to cause the glove to assume a better shape when it is inflated.

Another object is to provide, in a pneumatic glove of this type, a valve formed entirely of elastic material and in which the elastic valve forming part is positioned and arranged in such a manner that, after the glove has been turned inside out in the process of making the same, and when said glove is inflated the valve forming part will be bent double thereby efficiently sealing the same against the loss of air.

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Other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings Figure 1 is a side elevation of a preferred type of boxing glove of pneumatic construction, made in accordance with this invention and showing the same as it may appear when inflated.

Fig. 2 is an edge view looking in the direction of broken line 2—2 of Fig. 1 and showing the back edge of the glove.

Figs. 3 and 4 are end views looking in the direction of broken lines 3—3 and 4—4 respectively and showing respectively the outer or striking end and the wrist end of the glove.

Figs. 5 and 6 are sectional views taken substantially on broken lines 5—5 and 6—6 respectively of Fig. 1.

Fig. 7 is a fragmentary sectional view of the valve portion of the glove showing the valve forming parts as they may appear before the glove has been turned inside out in the process of manufacture and with no inflation or air pressure in the glove.

Fig. 8 is a fragmentary sectional view similar to Fig. 7 but showing the valve forming parts as they may appear after the glove has been turned inside out and inflated.

Figs. 9, 10, and 11 are plan views respectively of a piece of elastic material, a perforated pliable separator member and a non-perforated separator member which are used in making up this glove.

Fig. 12 is a plan view showing one side of a completed glove after it has been made up and subjected to a curing process but before it has been turned inside out in the process of finishing the same.

Fig. 13 is an exploded edge view illustrating the manner of positioning pieces of elastic material and separator members and other parts preparatory to subjecting these parts to a curing process.

Figs. 14 and 15 are side elevations of inflated pneumatic boxing gloves and showing two different modified designs for the sides of the gloves.

Figs. 16 and 17 are two fragmentary sectional views showing a self closing valve structure of modified form.

Like reference numerals designate like parts throughout the several views.

The parts used in the construction of this glove are best shown in Figs. 9 to 13 inclusive. The glove is formed of four flat pieces 20 of elastic material, such as rubber or plastic material, of a shape shown in Figs. 9 and 13. Two perforated

separator members 21, see Figs. 10 and 13, and one non-perforated separator member 22, Figs. 11 and 13, are used in making up the glove. Also two oblong valve forming pieces 23 of elastic material and two small hand-hold attaching discs 24 of elastic material, see Figs. 12 and 13, are used.

The perforated separator members 21 are made of pliable material to which the elastic material will not adhere. When the gloves are made of rubber by vulcanizing processes these separator strips or members 21 can be made of starched cloth of a type commonly called "Holland." Each perforated separator member 21, has openings, such as the openings 25, 26 and 27, Fig. 10, provided in the medial portion thereof. These openings may be of the shape shown in Fig. 10 or they may be of other shapes to provide side patterns as illustrated in Figs. 14 and 15, hereinafter described. The perforated separator members shown in Fig. 10 are of the same shape as the pieces 20 of elastic material but are of smaller size so that the separator members 21 will not extend entirely to the margin of the pieces 20 but will terminate at a location as indicated by the dotted line 28 in Fig. 12 when the several pieces are properly positioned relative to each other.

The non-perforated separator member 22 can be made of aluminum foil or it can be made of a piece of thin smooth sheet metal, either of which are smooth enough to impart a smooth surface to rubber which is in contact therewith at the time it is subjected to a vulcanizing or curing process. If this member 22 is made out of foil then a new separator piece will ordinarily have to be provided for each glove made. If the member 22 is made of thin sheet metal having some strength and stiffness then the same separator member can be used repeatedly. Each non-perforated separator piece 22 is also of smaller size than the pieces 20 of elastic material but each piece 22 is provided with an extended wrist forming portion 29. In making up a glove the margin of the separator piece 22 will coincide with the dotted line 28 in all places except that the part 29 thereof will be flush with the wrist portion edge of the two medial pieces 20 of elastic material. This will prevent the fusing together of the two medial pieces 20 of elastic material at the wrist location and will provide a wrist opening in the finished glove.

In making up a glove the pieces 20 to 24 inclusive are preferably assembled in a suitable mold in the order in which they are shown in Fig. 13 with a separator member 22 interposed between the two medial elastic pieces 23 and a separator member 21 interposed between the two elastic pieces 20 at each side of the medial separator member. A valve forming piece 23 is positioned in contact with each outside piece 20 of elastic material at the location of the wrist and with one end portion thereof substantially flush with the margin of the assembled pieces 20, 21 and 22 so that when the glove is later turned inside out and inflated each of these valve forming pieces will be bent double. Also a disc 24 is positioned against each outside elastic piece 20 near the center of the piece 20 and in a position at which it is desired to attach a hand hold in the process of finishing the glove, as hereinafter described. After the several pieces 20 to 24 inclusive are all properly assembled a cover is applied to the mold and the assembled parts are subjected to a vulcanizing or curing process.

Obviously if the glove is to be made of plastic material a process of sealing or adhering the parts thereof together other than vulcanizing may be used.

The marginal portions of the elastic parts 20, except at the location of the wrist opening, and the portions of the elastic parts 20 which make contact with each other through the openings 25, 26 and 27 of members 21 will be securely fused or adhered together in the curing process. Also the valve members 23 and small discs 24 will be securely adhered to the then outermost elastic members 20. The medial separator member 22 can be removed through the wrist opening left between the two medial elastic members 20. The two elastic members on each side of the medial separator member 22 will be adhered or fused together entirely around their marginal or peripheral portions and at the locations of the openings in the separators 21 to provide two air tight elastic bags or receptacles each with connecting air chambers therein. The separator members 21 are pliable and can be left in the glove.

The extension member 29 on the medial separator member 22 does not extend entirely across the cuff portions of the elastic pieces 20. This allows the adhered together marginal portions of the two air bags to extend partially around the cuff end of the glove and helps to cause the cuff to assume a rounded rather than an oblong shape when the glove is inflated. Also it reduces the size of the wrist opening and keeps the wrist seam 39 closer to the wrist of the person using the glove.

A tubular resilient hand-hold member 31 is attached to the two discs 24, preferably after the glove is taken out of the mold and before said glove is turned inside out. This may be done by passing a piece of cord 30 which is connected with one disc 24 through the tubular hand-hold member, pressing the hand-hold member against the outer end portion of the glove and if necessary bending said hand-hold member and tying the said cord 30 which passes through the hand-hold member to another cord 30 of a disc 24 on the opposite side of the glove. When the glove is later turned inside out through the wrist opening the discs 24 and hand-hold member and valve forming members 23 will be inside of the glove and the surfaces of the elastic members 20 which were in contact with the smooth medial separator member 22 and acquired a smooth finish will be on the outside of the glove. Also this buries the seams which were initially formed on the outside of the glove, except as to the wrist seam 39, and thus provides on the top and bottom sides and outer end of the glove smooth surfaces. The wrist seam 39 is shielded by the cuff portion of the glove and is not objectionable.

Turning the glove inside out after curing it makes it possible to construct the glove in a flat mold from four flat pieces of elastic material and this greatly simplifies and reduces the cost of construction of the glove.

Preferably after curing and before inverting the glove and while the valve forming members 23 are straight and flat, as shown in Figs. 12 and 7, a sharp needle like instrument is thrust longitudinally and at an angle into each valve forming member 23 from the outer end portion thereof inwardly far enough to enter the space between the two elastic members 20 adjacent the valve forming member which is being perforated to thereby provide an opening 32, Figs. 7 and 8, for inflation purposes. If desired the instru-

ment used for making the opening 32 can be flat in shape so that the opening 32 which it makes will be wider in the plane of the member 23 than it is in the direction of the thickness of said member 23. The size of the openings 32 is necessarily exaggerated in Fig. 7. Preferably a conical depression 32' is provided at the mouth of each opening 32 to facilitate the later insertion of a tubular inflation needle through which compressed air is admitted to the two bags or compartments of the glove.

In inflating this glove the valve forming members 23 are held substantially straight while an inflation needle is being used but as soon as the inflation needle is withdrawn from a valve member 23 the valve member will be bent double by the air pressure within the glove and the opening 32 in the valve forming member will be effectively sealed against leakage. The separator pieces 21, which remain within the glove help to prevent perforating a second elastic member 20 when making the opening 32 or when later inflating the glove. Obviously other shielding means to limit the penetration of a needle point into the material of which the glove is formed could be incorporated in the glove at the time the same is molded.

After both side compartments of the glove have been inflated the two valve forming members 23 will be doubled over and will abut against each other, as shown in Fig. 8, and the valve opening 32, which is indicated by dotted lines in Fig. 8, will be effectively sealed against air leakage. As the two valve forming members 23 are in the wrist portion of the glove they are readily accessible and can be manually straightened out if more compressed air is to be introduced.

Figs. 16 and 17 show another way of providing a self sealing valve in a glove of this type. In these figures two valve forming members 33 similar to the members 23 are applied to the wrist portion of a glove in a position such that the members 33 will be bent double when the glove is inflated after it has been turned inside out. A straight hole 34 is made in each member 33 in the plane in which the member 33 is to be bent double and extends into the compartment into which air under pressure is to be introduced. Preferably a needle guiding recess 35 is formed at the mouth of the hole 34. Compression of the elastic material of the valve forming member 33 will seal the hole 34 when the member 33 is bent double, as shown in Fig. 17.

The two elastic members 20 at each side of the hand compartment of the glove are adhered to each other entirely around their marginal portions and further have their medial side portions adhered to each other at the locations 36, 37 and 38, as shown in Figs. 1, 2, 5, 6 and 12. When both of the air tight bags or compartments which cooperate to form the glove are inflated the inner walls of these two bags or compartments will press outwardly against each other throughout their contacting areas, see 40 and 41, Figs. 5 and 6, and this will cause the medial peripheral seam of the glove to have a hinge like action with the inflated parts of the glove tending to roll outwardly around the hinge formed by this seam. This action will tend to flatten the outer end portion of the glove and will tend to open up and hold in an open position a hand receiving compartment within the glove. The hand receiving compartment will be held open in such a

manner as to provide, at the forward end of said hand receiving compartment and within the glove, elastic wall portions 42 against which the knuckles of the user can abut with comfort and without danger of forcing themselves between the two elastic bags when a blow is struck against an adversary.

The adhered together side wall portions 36, 37 and 38 are necessarily flat but these parts are surrounded by inflated air pockets indicated by 43, 43' and 44 in Figs. 1, 2 and 5. These inflated air pockets protect the sides of the hand from direct and uncushioned contact with an adversary.

The inflated air pocket 43, Fig. 1, between the flat portions 37 and 38 tends to shorten the over all distance across the glove at the location of the hand compartment and this tends to make the inflated cuff portion 45 of the glove assume a more round shape. This air pocket is preferably narrowed, as indicated at 43', but extends entirely to the cuff portion 45 of the glove. Extending this air pocket 43, 43' entirely to the cuff portion 45 of the glove at each side of the glove causes two bends or creases 46 to be formed in the inside wall of the wrist or cuff portion 45 and this gives a better and more round shape to the cuff 54. If this air pocket 43, 43' is not extended entirely to the cuff 45 then there will be only a single crease or break in the inside wall of the cuff 45 at each side of the glove and the cuff will assume a more square shape. Extending the air pocket portion 43, 43' entirely to the cuff 45 permits a slight enlargement of the cuff in alignment with this air pocket portion 43, 43' and this causes two creases 46 to be formed at each side.

The flat side wall parts 37 and 38 have widened portions 37' and 38' at the ends thereof adjacent the cuff 45. This helps to give the glove a better shape. At the same time it allows fairly large air spaces at the back and front edge of the glove adjacent the cuff 45 and these fairly large air spaces allow more enlargement of the cuff at the front and back edge portions of the glove and result in a rounder cuff, better protection for the wrist and better shielding of the cuff seam 39.

The forward end portions of the adhered together parts 37 and 38 terminate near the circular flat part 36 and are spaced apart a substantial distance to allow an expanding air space at 44. This helps to broaden the forward end portion of the glove in sidewise directions but does not allow bulging or over elongation of the glove at the forward end. Also this expanding air space provided at 44 helps in shaping up the knuckle engaging surfaces 42 within the glove.

Figs. 14 and 15 show pneumatic boxing gloves which are similar to the gloves shown in Figs. 1 to 13 inclusive except that the adhered together side wall parts thereof are of a different pattern. These different patterns are obtained by varying the shape and patterns of the openings in the separator members used between the two outside pieces of elastic material which enter into the construction of the gloves. The glove shown in Fig. 14 has a disc shaped flat portion 48 with a C-shaped flat portion 47 concentric thereto and has a bar shaped flat portion 49 extending across the small of the wrist portion of the glove. The glove shown in Fig. 15 has a medial disc shaped flat portion 50 and has another flat portion 51 which extends continu-

ously in a curve around the flat portion 50 then toward the cuff of the glove then across the small of the wrist portion of the glove. The adhered together flat portions 47, 48, 49, 50 and 51 shown in Figs. 14 and 15 function in the same general manner as do the flat portions 36, 37 and 38 in Fig. 1 except that they do not provide the double creases at the sides of the wrist portion of the glove, such as the creases 46, shown in Fig. 4.

The air pockets within the cuff portions of all of these gloves are of substantial size and this provides ample protection for the wrist of the user. At the same time these cuff portions fit snugly and help to prevent displacement of the glove on the hand.

The hinge like attachment of the two pneumatic bags or compartments to each other along their marginal portions in such a manner that they will press each other outwardly when inflated and the adhering together of parts of the medial side wall portions of the two sides of each bag makes it possible to provide ample hand room in the glove and help to broaden and square up and flatten the front end portion both as respects the outside striking surface and the inside knuckle engaging surfaces. Also it helps to provide a broader cushion surface both at the back edge portion and the front edge portion of the glove. The adhering together of substantial portions of the side walls of each bag member flattens the side walls but leaves ample air pockets to shield the side of the hand. The tubular air compartments which extend along the back edge and the front or palm edge of the glove will, when inflated, broaden these portions of the glove transversely and narrow the glove from front to rear edge thereof and serve to provide ample cushioning of the back and palm portions of the hand and wrist.

Each air bag, if unrestrained, would tend to assume a circular shape but the marginal adhering of the two bags to each other and the adhering or sealing together of the medial or side wall portions of the two walls of each bag cooperate to prevent the bags from assuming a circular shape and cause the bags to be flattened against each other thus giving a desired shape to the glove and providing adequate cushioning at all points including the medial plane in which flattened walls of the two bags press against each other, as at 40 and 41 in Figs. 5 and 6.

If it is desired to provide on any or all surfaces of this glove a soft and velvet like finish and a finish which resembles cloth or leather then flock or fine fluffy fibrous material may be applied thereto. This can be done by first applying a cement like coating to the glove and then dusting or blowing the fine fluffy fibrous material onto the glove and allowing the cement like coating to set.

I claim:

1. A pneumatic boxing glove comprising two oblong elastic bags positioned side by side in adjoining relation, each bag having a rounded forward end portion and two rounded lateral edge portions and a wrist portion, the marginal portions of the two bags being adhered together around the forward end and along both lateral edges leaving the two bags disconnected across the wrist providing a wrist opening; and adhered together sections connecting medial parts of the two side walls of each bag holding the medial parts of the two side walls of each bag relatively close together when the bag is inflated and leaving a relatively large peripheral air chamber in each

bag outwardly from said adhered together medial sections and extending around the forward end and along both lateral edge portions of each bag, the adhered together marginal edge portions of the two bags providing a hinge like marginal connection between the two bags around the forward end and along both lateral edges, whereby inflation of the two bags will cause the peripheral air chambers of the bags to press against each other and to tension and spread apart the medial portions of the bags thereby providing in the glove between the two bags a relatively large hand opening to receive a clenched hand without subjecting the hand to undesirable pressure resulting from inflation of the bags.

2. A pneumatic boxing glove comprising two oblong elastic bags positioned side by side in adjoining relation, each bag having a rounded forward end portion and two rounded lateral edge portions and a wrist portion and each bag having a peripheral air chamber extending around the forward end and along both edge portions and the side walls of the medial portion of each bag around which said peripheral air chamber extends being adhered together in spots and having air chambers between the adhered together spots, said medial wall portion with the adhered together spots therein forming a connecting web tying together the peripheral air chamber portions of the bags; and a marginal seam securing together the marginal portions of said two elastic bags around the outer end and along the two sides thereof providing a hinge like connection of the marginal portions of the two bags and leaving an opening between the two bags at the wrist portion thereof, whereby when the two bags are inflated the reaction of the bags against each other will spread the medial side wall portions of the bags apart to provide a hand receptacle and will tension and tend to broaden and flatten the marginally connected portions of the two bags.

3. A pneumatic boxing glove comprising two oblong elastic bags positioned side by side in adjoining relation, each bag having a rounded forward end portion and two rounded lateral edge portions and a wrist portion and each bag having a peripheral air chamber extending around the forward end thereof and along both edge portions and across the wrist portion and the side walls of the medial portion of each bag around which said peripheral air chamber extends being adhered together in spots and having air chambers between the adhered together spots, said medial wall portion with the adhered together spots therein forming a connecting web tying together the peripheral air chamber portions of the bags; and a marginal seam securing together the marginal portions of said two elastic bags around the outer end and along the two sides thereof providing a hinge like connection of the marginal portions of the two bags and leaving an opening between the two bags at the wrist portion thereof, whereby when the two bags are inflated the reaction of said bags against each other will spread the medial side wall portions of the bags apart to provide a hand receptacle and will tension and tend to broaden and flatten the marginally connected portions of the bags.

4. A pneumatic boxing glove comprising four oblong pieces of flat elastic material of substantially equal size positioned face to face in registering relation; a marginal seam sealing together the peripheral portions of all of said pieces around two sides and the outer end thereof to provide a seam common to the marginal portions of all four

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pieces; and other marginal seams sealing the margin of each outside piece to the adjacent piece across the wrist end thereof to provide between each outside piece and the adjacent piece a pneumatic bag and to leave a wrist opening between the two medial pieces, whereby the glove may be turned inside out through the wrist opening to conceal the seam which is common to all four pieces and thereby provide a glove with a smooth external surface.

5. In a pneumatic boxing glove, two air bags of elastic material positioned side by side and having intumed adhered together marginal seam portions, whereby the walls of each bag adjacent the seam portions are adapted to be bent double when said bag is inflated; and a valve forming member sealed to each air bag and extending across the portion thereof which is adapted to be bent double when the bag is inflated, said valve forming member and the wall of the air bag to which it is sealed having therein a perforation which extends from the exterior of the valve form-

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ing member to the interior of the bag, at least a portion of said perforation extending across the plane in which the bag is bent double, whereby the perforation will be sealed when the valve forming member is bent double.

JOSEPH SLIZUS.

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