March 13, 1951 P. S. MADSEN ET AL 2,544,929

CLOSURE MEANS FOR THERAPEUTIC APPLIANCES

Filed May 26, 1948 2 Sheets-Sheet 1

Fig. 1.

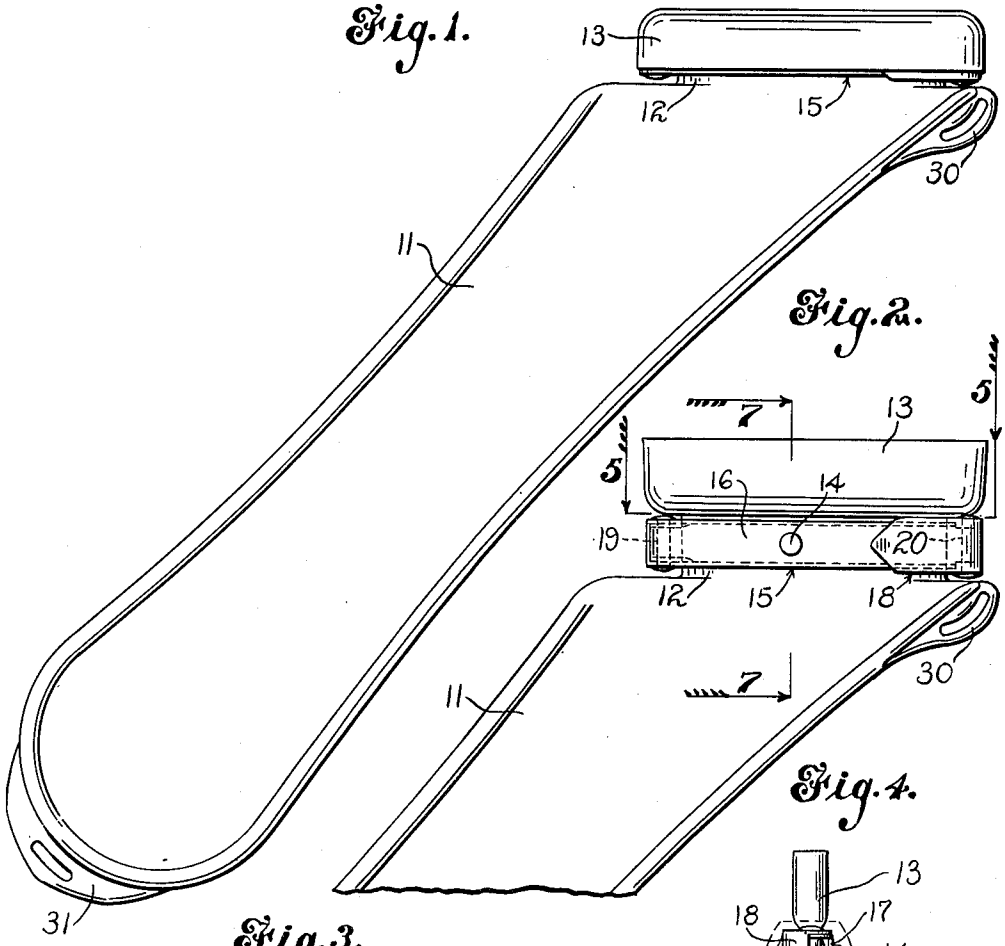


Fig. 2.

Fig. 4.

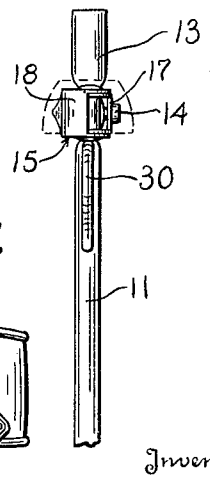


Fig. 3.

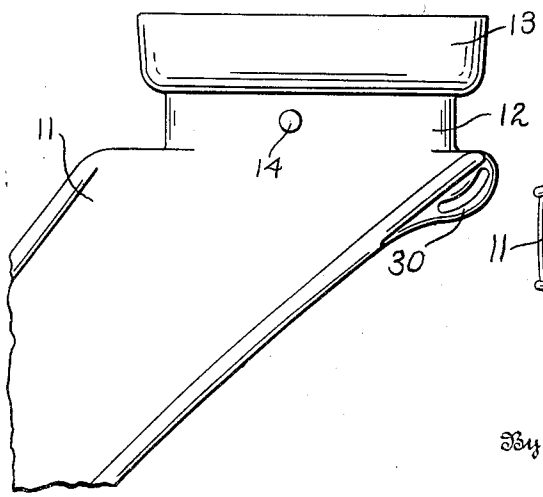
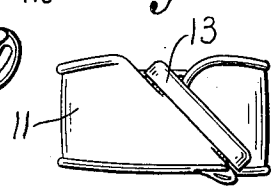


Fig. 4A.



Inventors

Paul S. Madsen

George W. Goodson

By Rockwell & Bartholow

Attorneys

March 13, 1951 P. S. MADSEN ET AL 2,544,929

CLOSURE MEANS FOR THERAPEUTIC APPLIANCES

Filed May 26, 1948 2 Sheets-Sheet 2

Fig. 5.

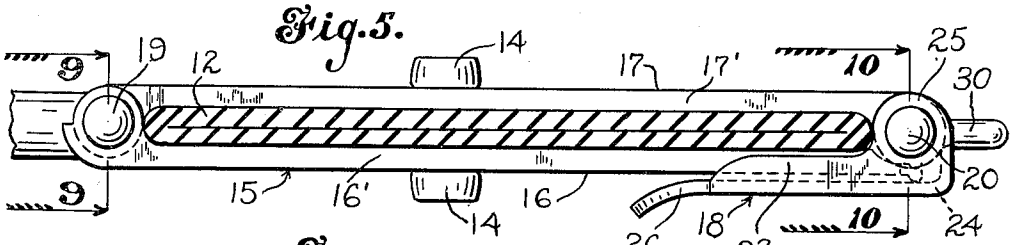


Fig. 6.

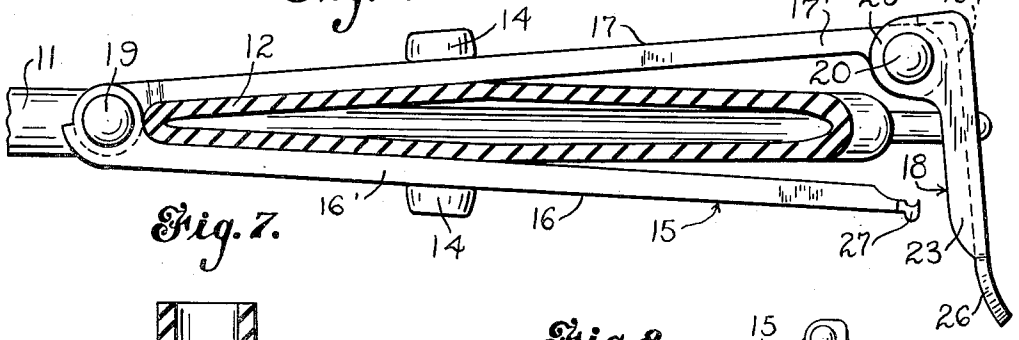


Fig. 7.

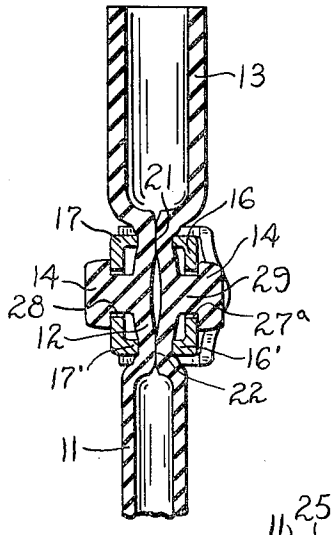


Fig. 8.

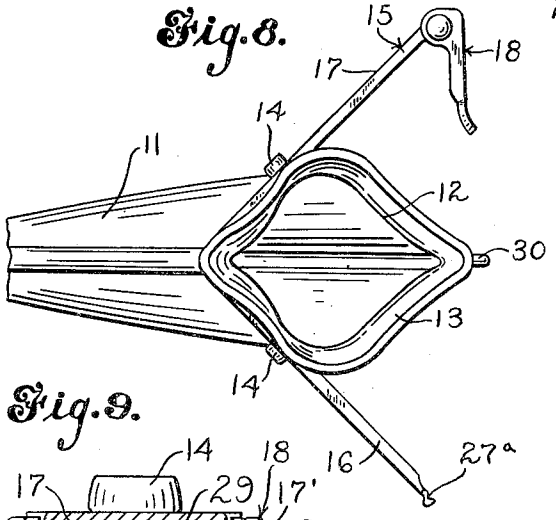


Fig. 9.

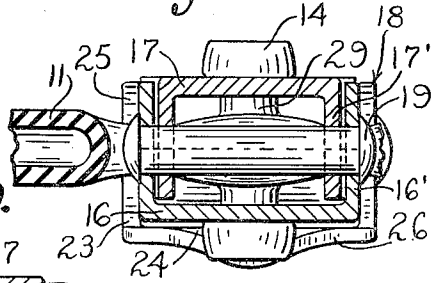


Fig. 10.

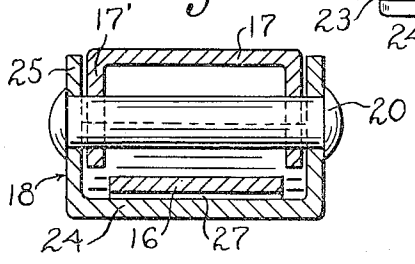
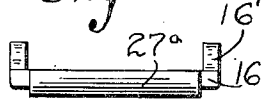


Fig. 11.



Inventors

Paul S. Madsen

George W. Goodson

By Rockwell & Bartholomew

Attorneys

Patented Mar. 13, 1951

2,544,929

UNITED STATES PATENT OFFICE

2,544,929

CLOSURE MEANS FOR THERAPEUTIC APPLIANCES

Paul S. Madsen, Bethany, and George W. Goodson, West Haven, Conn., assignors to The Seamless Rubber Company, New Haven, Conn., a corporation of Connecticut

Application May 26, 1948, Serial No. 29,378

8 Claims. (Cl. 150—5)

1

This invention relates to therapeutic appliances, and more particularly those of the character of water bags. More especially the invention deals with an improved throat bag adapted to receive liquid of appropriate temperature or pieces of ice, adapted to be applied to the neck of a patient for treatment of a throat condition or the like.

One of the objects is to provide a bag of this general nature made of rubber or like elastic material, having improved leakproof closure means, the article being capable of ready opening for receiving the treating medium, and ready and secure closing against liquid leakage.

Another object is to provide a therapeutic receptacle having opposite flexible and resilient walls adapted to be separated to create a receiving mouth and adapted to be clamped in close face engagement with each other to create an effective liquid seal, and having a clamping means which provides such a seal.

Another object is to provide an appliance of this kind in which there is an improved relation and arrangement of the clamping or closing member with respect to the elastic bag member.

Another object is to provide an improved bag particularly suitable for use in embracing relation to the neck of the patient.

In the accompanying drawings:

Fig. 1 is a side elevation of a throat bag embodying our improvements, the same being in the closed condition;

Fig. 2 is a fragmentary view of the upper part of the article shown in Fig. 1, showing the upper part of the bag neck in a raised position;

Fig. 3 is a view similar to Fig. 2, showing the clamp removed from the bag;

Fig. 4 is an edge view of the article as shown in Fig. 2;

Fig. 4A is a somewhat diagrammatic view showing the bag as it appears when in encircling relation to the neck of the patient;

Fig. 5 is an enlarged sectional view on line 5—5 of Fig. 2;

Fig. 6 is a view similar to Fig. 5. showing the bag partially opened;

Fig. 7 is an enlarged section on line 7—7 of Fig. 2;

Fig. 8 is a fragmentary plan view showing the bag opened to a greater extent than in Fig. 6;

Figs. 9 and 10 are sections on lines 9—9 and 10—10, respectively, of Fig. 5; and

Fig. 11 is a view of a jaw end.

In the drawings, the invention is shown as applied to a rubber throat bag having a relatively elongated shallow body adapted to receive liquid or pieces of ice, and having at the upper end a relatively wide mouth provided in a neck portion, which neck portion is adapted to be embraced and acted upon by a clamping device having a pair of elongated clamping jaws which, by engaging opposite face portions of the neck, are adapted to close the neck against the escape of liquid. The neck portion of the bag in this particular case is made in two parts, that is to say, a lower part of less width which is embraced by the jaws of the clamp, and an upper part of greater width which, after the clamp has been secured in the locked position, is adapted to be folded down over the clamp in order to cover and protect the same. The clamp is preferably made of metal having two opposite flat jaws of substantially the same length, provided with inwardly turned ribs or flanges adapted to engage the rubber of the bag neck, said jaws being interpivoted at one end of the clamp, and the clamp structure being provided at the opposite end with a pivoted latch adapted to force the jaws to the clamping position and lock them in that position, as hereinafter described. The clamp is preferably separable from the bag, but in use is attached to the bag in a manner such that when the jaws are moved away from each other the bag neck is opened, thereby increasing the convenience of the filling operation and the emptying operation. In the particular case shown, each side of the bag neck is equipped with an outwardly projecting rubber stud adapted to engage a perforation in the corresponding jaw of the clamp, and these studs, in conjunction with the clamp perforations, provide a means for holding the bag and the clamp in operative relationship in a separable manner.

2

In the drawings, the bag is generally indicated at 11, the lower neck portion at 12, and the upper neck portion at 13, all of these parts being of rubber in an integral structure. The studs which project laterally from the side faces of the neck portion 12 are shown at 14, and the clamp is generally indicated at 15. One of the clamp jaws is shown at 16, the other at 17, and the pivoted latch 18 is pivoted to the jaw 17. The pivot between the jaws 16 and 17 is indicated at 19, and the pivot for the latch 18, at 20.

The neck portion 12 provides the wide mouth of the bag which is to be sealed by the clamping action of the clamp 15, and the height of this bag portion is shown as being only slightly greater than the height of the clamping jaws. The neck portion 13 is of greater width, and this neck por-

tion is adapted to take the upwardly extended position shown in Fig. 3, or to be folded down over the clamp in the manner shown in Fig. 1, and, being of substantially the same height as the clamp, it substantially covers the clamp when said neck portion is folded down. The latch 18 in the closed position of the clamp overlies the clamp jaw 16 to an extent, in close proximity thereto, so that, when the upper neck portion is folded down, it readily encloses the latch portion of the clamp as well as the jaw portions.

As appears from the drawings, the jaws 16 and 17, which may be conveniently made of sheet metal, are provided with inwardly extending upper and lower flanges or ribs which are somewhat longer than the neck portion 12 of the bag, and are adapted to engage this neck portion to create upper and lower seals 21 and 22, respectively (Fig. 7) extending across the full width or length of the neck portion. These flanges or ribs of the jaw 17 are indicated at 17', and the corresponding flanges or ribs of jaw 16 are indicated at 16'. Adjacent the pivot member 19 the jaw 17 is made narrower than jaw 16 so as to be embraced by the latter and provide pivoting or hinging portions which are perforated and engaged by the pivot member 19, the latter preferably having rivet heads at the respective ends, as shown in the drawings. The latch member 18, on the other hand, is made of somewhat greater width or depth than its carrying jaw 17, so as to embrace a portion thereof and provide portions which are perforated and through which the pivot member 20 passes, said pivot member having rivet heads at the respective ends. The latch member 18 is preferably stamped up from sheet metal, and of channeled formation, having upper and lower inwardly extending flanges 23 extending inwardly from a body 24. The flanges 23 are widened at one end to provide pivoting ears adjacent the pivot member 20, one of these ears being indicated at 25 in Fig. 6, and the axis of the pivot member 20 being in inwardly offset position with respect to the body portion 24 of the latch member. At the other end of the latch member, namely, the free end, the body portion is continued, as shown at 26, to provide a manipulating tip which extends generally longitudinally beyond the upper and lower flanges of the latch member, and is preferably curved outwardly to some extent for convenience of manipulation, as shown in Fig. 6. Likewise, as appears from Fig. 2, the upper and lower edges of the tip portion are tapered to provide a pointed end between which and the jaw 16 the finger of the operator can be inserted for releasing the latch.

The latch member coacts with the free end of the jaw 16, and this end of said jaw is preferably shaped as illustrated in the drawings, the jaw being provided with a short tip on its body which is extended beyond the flanges 16' and is adapted to engage the inner face of the body 24 of the latch member. This tip portion of the jaw is indicated at 27, and it has a portion offset somewhat in a forward direction from the front face of the jaw (Fig. 6), and this portion is rounded, so that, as the latch member is swung into engagement with it, the right-hand ends of the jaws (Fig. 6) will be brought toward each other by a camming action. As the latch member is swung on its pivot, the jaw members continue to be brought together until the locked position of Fig. 5 is reached, in which position the body of the latch member and the body of jaw 16 are substantially parallel and in close proximity to each other, the tip 27 being in locking position because it is extended to the right (Fig. 5) somewhat beyond the axis of the latch pivot. When the parts are in this position the jaws cannot be moved in a separating direction.

The studs or buttons 14, which project from the side of the bag, are of relatively soft, compressible rubber, and their heads are adapted, when compressed, to pass through perforations in the bodies of the clamping jaws. The perforation in the jaw 16 is indicated at 27a, and that in jaw 17 is indicated at 28. The diameter of each perforation is slightly larger than the diameter of the neck portion 29 which which each stud is provided, and the neck is slightly longer than the thickness of the jaw body, and the head of the stud, when in the operative position, has a flat under surface somewhat overlying the outer surface of the jaws, as shown in Fig. 7. The studs act as buttons, and in the assembly operation the clamp jaws are buttoned to the sides of the neck so as to bring about control of the opening and closing of the neck by movement of the jaws without the jaws being dislocated from the neck. On the other hand, however, the clamp may be readily removed from the bag when desired.

It is preferable to have the elongated bag body disposed at an angle of approximately 45° to the neck axis, as shown in Fig. 1, and this brings about a slanting disposition of the neck and the clamp with relation to the bag body such that, when the appliance is in embracing relation to the neck of the patient, the mouth portion of the bag, instead of being more or less in line with the patient's neck, is disposed obliquely, as shown in Fig. 4A. Thus the neck portion, with its clamp, takes less vertical space, which is more comfortable and desirable, especially when the bag closure is under the patient's chin.

For the purpose of tying or strapping the bag in various positions, slotted tabs or the like can be made integral with the body, and in the case illustrated there is one such tab 30 at one side of the body adjacent the neck, and another one, indicated at 31, at the remote end of the bag.

It is believed that the manner of manipulating the appliance will be apparent from the foregoing description. When the jaws of the clamp are spread apart to a substantial degree, as shown in Fig. 8, the mouth is spread apart to an extent such that the bag can readily be filled with liquid or ice pieces. The manner of closing will be evident from the foregoing description. In closing, the necessary pressure for compressing the rubber and sealing the mouth can be produced by exerting pressure on the swinging latch to swing the jaws, and when a certain point is reached the jaws are locked by the position of the latch.

As shown particularly in Fig. 6 of the drawing, the mouth portion of the bag, which cooperates with the clamping jaws, is formed at the ends of the mouth recess or orifice to provide relatively sharp points or angles when in the position shown, so that when the mouth is closed the opposite walls will be in flatwise engagement throughout the length of the mouth. In this manner leakage of liquid at the ends of the opening is prevented. If the interior of the mouth were too much rounded at the ends, there would be a tendency of the clamping jaws to create spaces between the rubber faces which would permit leakage.

A very effective double seal is provided by the construction described, one seal being pro-

vided in a location between the upper flanges of the two jaws and the other in a location between the lower flanges, as shown in Fig. 7.

It may be advisable in some cases to give the jaws a slightly arcuate shape in a lengthwise direction so as to compensate for a slight bending of the metal in the closing action. In other words, in the jaws as released from the bag walls, the central portions may be slightly advanced with respect to the end portions along a curve of relatively large radius.

It is noted that in the structure illustrated the pivot by which the jaws are hinged together is located in the median plane of the bag, or substantially so, and that the other end of the jaw which carries the latch is brought to an extent around the neck so that the pivot member for the latch is also in the median plane of the bag.

The turning over of the free extremity of the neck so that it encloses the clamp is of advantage because, among other things, it prevents the skin of the patient from being exposed to the metal, which might cause burning. Also an additional function is performed by this turned-over neck in that, in covering the latch member, it will prevent the latter from moving to the releasing position. Through its resiliency the neck portion tends to remain in the clamp-covering position when it has once been placed in that position.

There is a certain amount of channeling of the clamp structure which effectively maintains the alignment of the clamping flanges of one jaw with those of the other jaw. This channeling is provided, as will be evident, at the pivoted ends of the jaws, where one is fitted within the other, and it is further provided by the channeling of the latch member. The latch member receives closely within its channel a channeled portion of jaw 17, and also receives closely within its channel the adjacent channeled end of jaw 16.

The fastening buttons projecting from the bag are shown as being in a position slightly offset from the center of the mouth length (Fig. 6), and preferably this arrangement is used, so that in opening the mouth by swinging of the jaws there will be effective opening of the mouth by spreading apart substantial portions of the bag walls, as shown in Fig. 8. However, other dispositions of the buttons may be used if desired, and the jaw perforations which receive the buttons, instead of being closer to the interpivoted ends of the jaws, may be closer to the other ends, and it is apparent, of course, that if desired the arrangement of parts may be such that in the assembled position the latch, instead of being adjacent the right-hand edge of the bag (Fig. 2), may be adjacent the left-hand edge.

In this description the term "rubber" is used in a broad and general sense.

Various modifications and changes in the details may be made without departure from the principles of the invention or the scope of the claims.

What we claim is:

1. A therapeutic appliance comprising a flat elongated bag adapted to contain liquid having at one end a projecting neck which extends at a substantial angle to the axis of the bag body, said neck being relatively wide and having a portion attached to the bag body which is of a predetermined width and a free end portion integral with the first portion and of greater width

adapted to be folded down so as to be in covering relation to the first portion, and a clamp removably secured to the bag in embracing relation to said first neck portion adapted to close and seal the bag mouth by pressing together opposite walls of said neck, said clamp having a pair of interpivoted clamping jaws arranged with the pivot at one side of the neck, and the clamp also having in association with free ends of said jaws a fastening latch pivoted to one jaw and arranged to engage the other jaw to move it to the bag-closing position, said latch being disposed so that in the operative position it extends over the jaw engaged thereby through a portion of its length, said clamp being substantially covered by said second neck portion when the latter is folded down, and said neck portion in such position being engaged with said latch so as to prevent displacement thereof.

2. In a therapeutic appliance, a bag body of elastic material having integral therewith a wide planar neck presenting opposing elastic portions adapted to be forced into contact with each other for closing and sealing the bag, a clamp adapted to extend across and embrace said neck and having opposing jaws, said jaws being formed to create a double seal in the neck, each having upper and lower edge flanges, the flanges of one jaw being opposed to those of the other jaw, and means located between the flanges of each jaw for fastening the clamp removably to the sides of the neck, said means comprising compressible elastic buttons having shanks integral with the neck engaging perforations in the clamp.

3. In a therapeutic appliance, a bag of elastic material having a body, an integral short but wide neck portion formed on the body and a second and wider neck portion integral with and extending upwardly from the first neck portion and adapted to be turned downwardly to cover the first neck portion, said first neck portion adapted to be closed by forcing together opposite wall portions thereof to place them in sealing contact with each other, and a clamp for effecting the action just mentioned embracing said first neck portion and having clamping jaws pivoted together at one end of the clamp and a pivoted closing latch at the other end of the clamp which in the operative position extends over a portion of the length of one of the jaws in substantially parallel relation thereto, said clamp being of a depth approximating that of said first neck portion and adapted to be covered by said second neck portion when the latter is turned downwardly whereby said clamp is covered and said closing latch maintained in the closed or operative position.

4. In a therapeutic appliance, a bag body of elastic material having a short but wide integral elastic neck portion having planar opposing wall portions adapted to be forced into contact with each other and having a second and wider neck portion integral with the first adapted to be turned down over the first neck portion, and a clamp in embracing relation to the first neck portion and of a depth approximating that of the first neck portion adapted to be covered by said second neck portion, said clamp having jaws pivoted together at one end of the clamp adapted to be held in closed position by a pivoted latch at the other end of the clamp, said jaws having upper longitudinal flanges opposing each other and lower longitudinal flanges opposing each other and spaced downwardly from said

upper flanges, said flanges acting to press the neck wall portions together along spaced parallel lines to effect complete sealing of the neck, said first neck portion being removably fastened to the clamp by elastic button members integral with said neck portion having shanks engaging perforations in the clamp jaws located between said flanges.

5. A therapeutic appliance comprising a flat planar elongated bag body having substantially parallel side edges, a short flat neck of only slightly less width than said body and in the same plane having its axis at approximately 45° to the longitudinal axis of the bag body, the neck being integrally joined to the bag body at a portion of the bag body which is of full width and presents shouldered inwardly extending surfaces leading to the base of the neck, said neck being provided with an upward extension integral therewith which is of greater width than the neck and is approximately of the same depth as the neck, said extension being foldable downwardly over said neck so as to lie substantially parallel thereto in outwardly spaced relation to the neck, and an elongated clamping member embracing the neck and extended generally in the plane of the bag body and engaging the neck to close and seal the bag by pressing opposite neck walls together, said clamp in the operative position being conformed to by said downwardly folded extension and being thereby enclosed and concealed.

6. In a therapeutic appliance, a flat planar bag body of elastic material having an upper transverse boundary line which is at least as wide as the middle portion of the body, a short planar neck integral with said body at said boundary line and of only slightly less width than and lying in the same plane as the body, said neck having an upper integral extension which is also short and somewhat wider than said neck, said extension being foldable downwardly over the exterior of said neck so as to follow the contour of said neck exteriorly at a slight spacing from the neck permitting the interposition of an elongated clamping device, an elongated clamping device embracing the neck in the space under and within the neck extension, said clamping device in the operative position sealing the neck portion of the bag by pressing two opposite portions thereof together, and fastening means between the opposite face portions of the neck and the respective portions of the clamp whereby the clamp is removably held to the neck and bag in a manner to allow the clamp to be removed when said extension is folded upwardly.

7. In a therapeutic appliance, a bag body of elastic material and of flat planar shape having an integral upwardly projecting flat planar neck which is relatively wide, an elongated clamp having opposing jaw members engageable with the neck to seal the same by forcing into close contact opposing wall portions of the neck, said clamp having at a portion of its external surface a holding latch, and a downwardly foldable bag portion above the neck integral therewith which when folded downwardly closely conforms to the clamp and holds the latch closed.

8. In a therapeutic appliance, a planar bag body of elastic material having an upwardly extending integral flat planar neck, a clamp having jaw members at the sides extending across the faces of the neck so that the clamp embraces the neck and lies substantially in the plane of the neck and bag body, said clamp when closed closing the neck by forcing opposite wall surfaces of the neck against each other, and a downwardly and outwardly foldable portion at the upper part of the neck which conforms to the outer surface of the clamp and conceals it and holds the clamp in the closed position.

PAUL S. MADSEN.
GEORGE W. GOODSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
255,922	Bradford	Apr. 4, 1882
285,908	Ludington	Oct. 2, 1883
636,436	Lankford	Nov. 7, 1899
670,878	Hogan et al.	Mar. 26, 1901
1,277,327	Lundqvist	Aug. 27, 1918
1,488,864	Canady	Apr. 1, 1924
1,671,385	Strayer	May 29, 1928
2,055,695	MacDonald	Sept. 29, 1936
2,225,764	Beal	Dec. 24, 1940