July 28, 1959 I. A. SPEELMAN 2,896,610

SPHYGMOMANOMETER CUFFS

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FIG.1

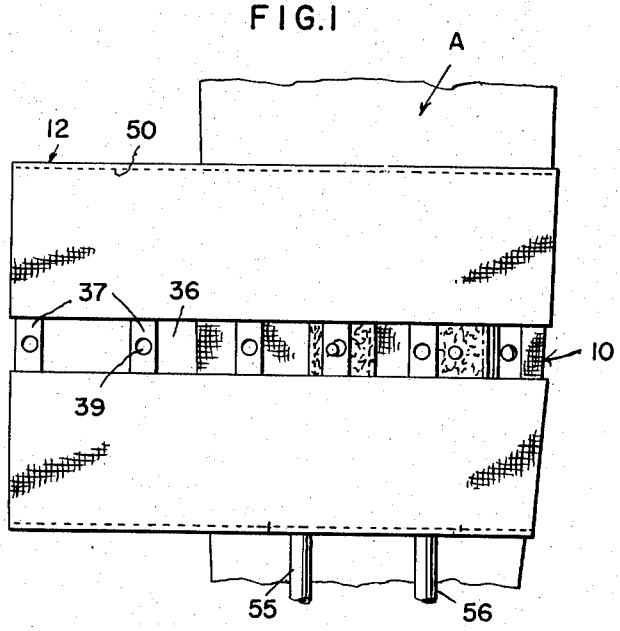


FIG.4

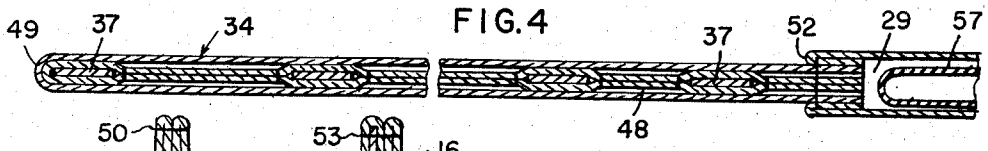


FIG.5

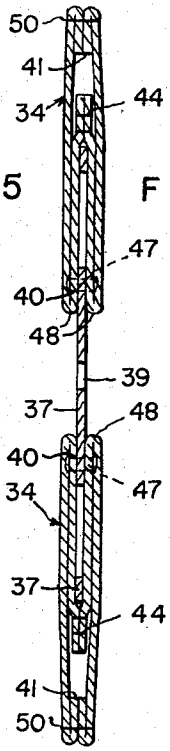


FIG.6

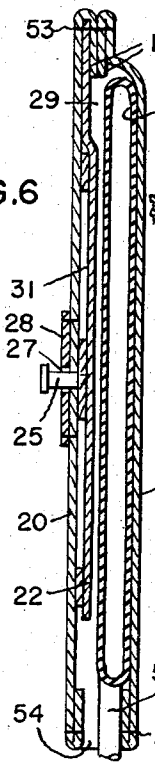


FIG.7

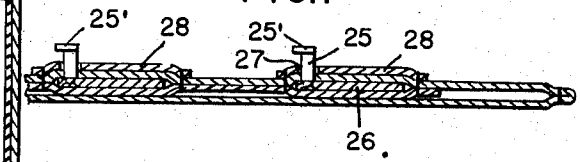


FIG.13

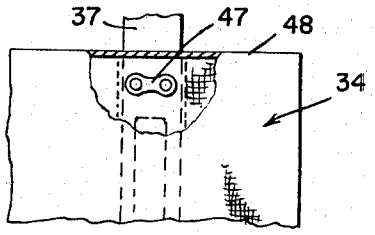
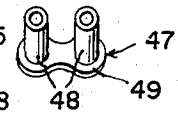


FIG.14



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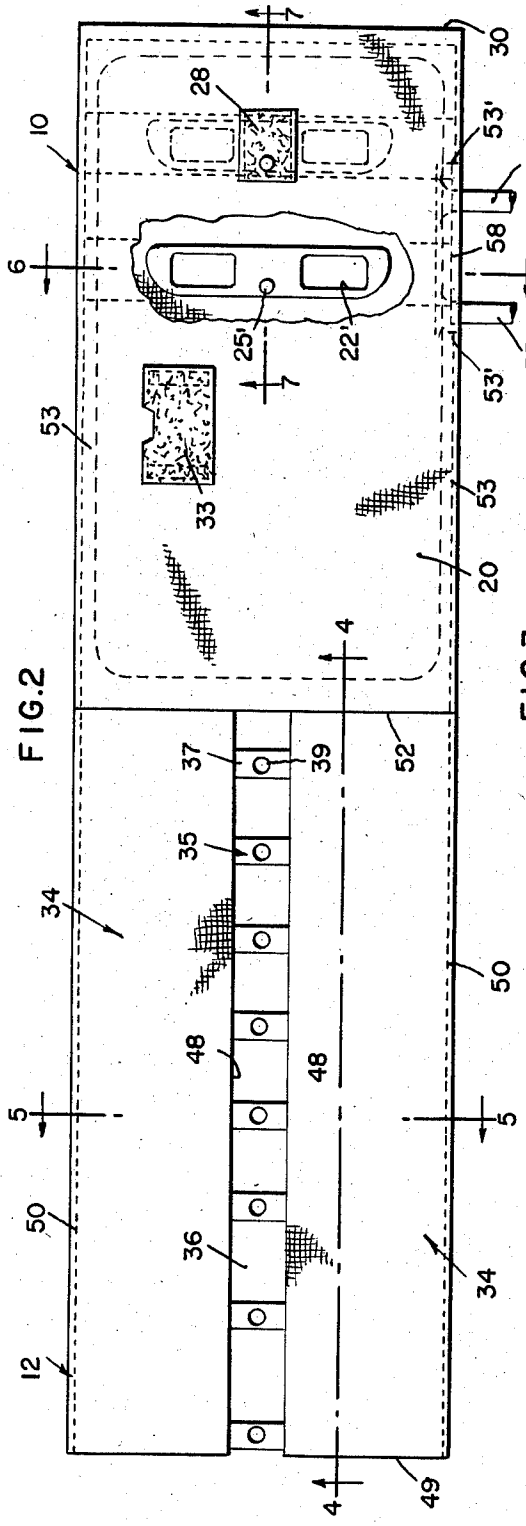


FIG.2

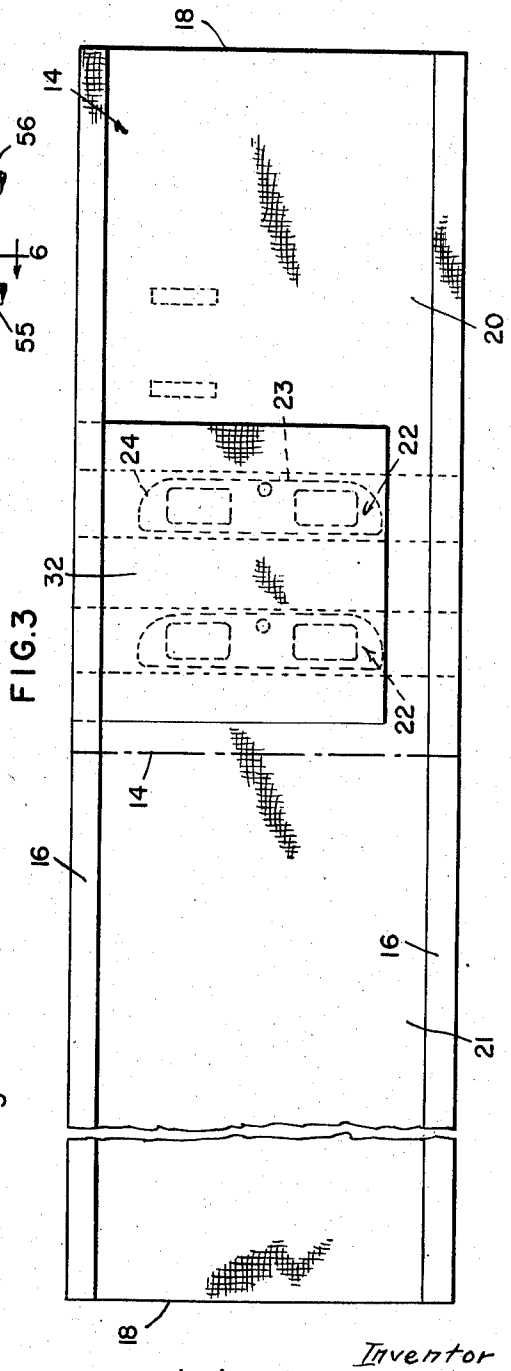


FIG.3

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FIG.8

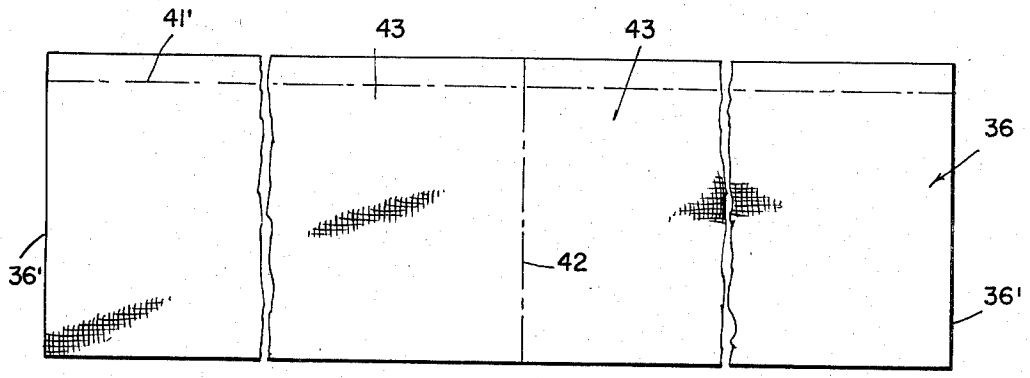


FIG.10

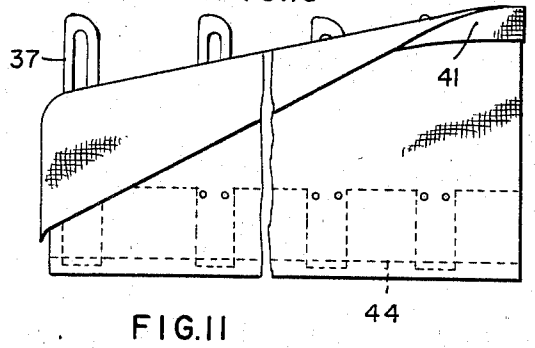


FIG.12

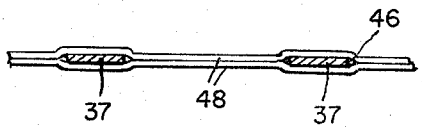


FIG.11

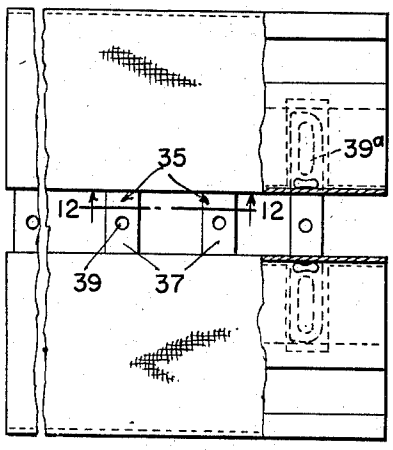
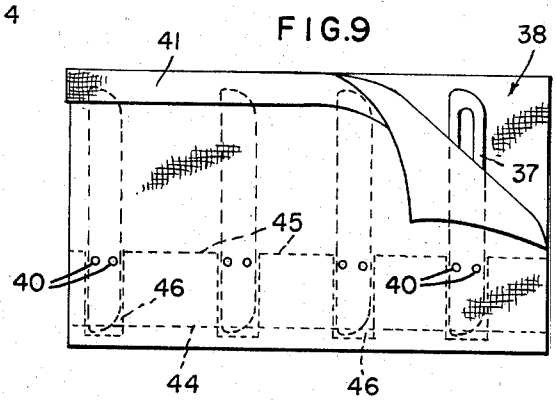


FIG.9



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FIG.15

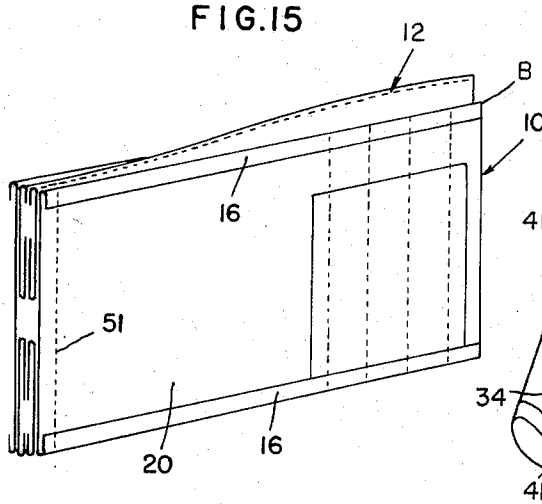


FIG.16

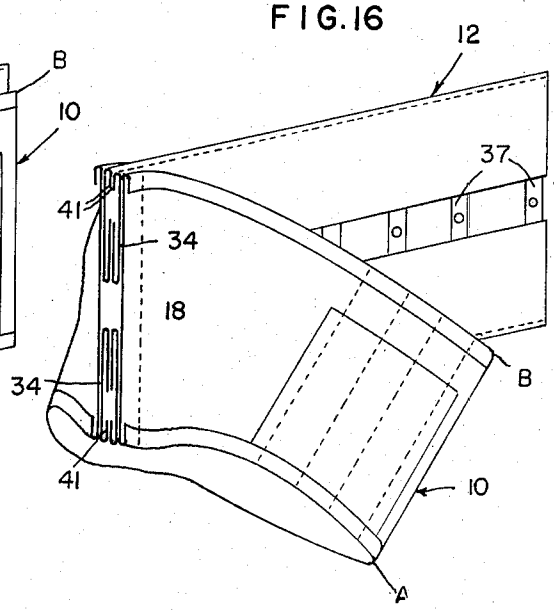


FIG.18

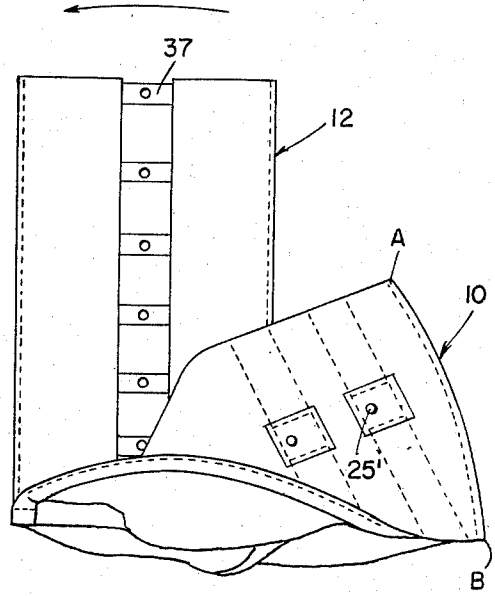
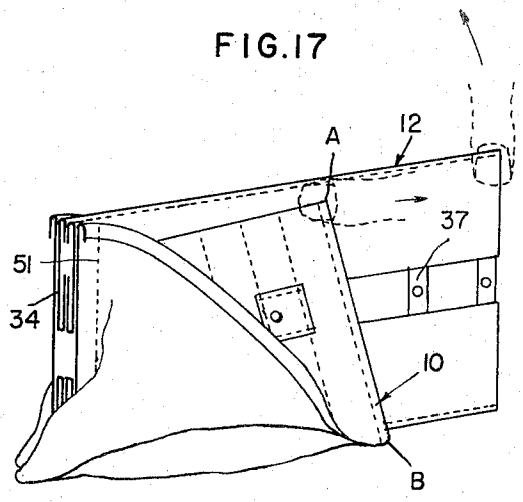


FIG.17



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United States Patent Office 2,896,610 Patented July 28, 1959

2,896,610

SPHYGMOMANOMETER CUFFS

Irving A. Speelman, Brooklyn, N.Y., assignor to Propper Manufacturing Company, Inc., Long Island City, N.Y., a corporation of New York

Application December 19, 1956, Serial No. 629,308

10 Claims. (Cl. 128—2.05)

This invention relates generally to improvements in sphygmomanometer cuffs.

As is well known, it is a practice in connection with the taking of blood pressure readings by physicians to place around a limb of the patient, usually the upper arm, a cuff carrying an inflatable bag which, when inflated, stops the flow of blood in the brachial artery. Such a cuff not only must be readily attachable to and detachable from the patient's arm but it is important that the construction of the same be such that the placement of the cuff in position and its attachment of one end to the other to hold it in place be effected easily and quickly in order that the physician's time be not wasted and also for convenience of the physician and the comfort of the patient.

It is, accordingly, a particular object of the present invention to provide a new and improved cuff of the character stated which is designed in a novel manner whereby the physician or person applying the cuff can locate without difficulty the hook elements carried by one end portion of the cuff to facilitate the attachment of the other end portion thereto after the cuff has been wrapped around the patient's limb.

It is also important in connection with taking blood pressure readings that the cuff employed be so designed that a relatively large extent of the encased limb be covered since it has been found that a greater accuracy in the making of blood pressure readings is had when a wide area is encompassed to thereby apply pressure to a substantial length of the artery to be compressed.

It is, accordingly, a further object of the invention to provide an improved blood pressure cuff which is of substantial width in the fabric portion thereof and which also embodies stiffening elements extending across the width which apply the desired pressure over a wide extent of the encircled limb and it is a further object to provide such stiffening elements in a form which will not add materially to the weight of the cuff and also, which will not cause pain or discomfort to the patient.

It is a further object of the present invention to provide an improved cuff of the character stated which is formed to combine in a novel manner an improved construction with a structural design having aesthetic value.

A still further object of the invention is to provide in a blood pressure cuff of the character stated a novel construction wherein there is provided a sight window through a substantial length of the cuff and across which are disposed at spaced intervals coupling elements for selective engagement with hooks carried by the opposite end portion, whereby the physician can readily observe the position of the hooks to enable him to easily and quickly secure the cuff in applied position.

A still further object of the invention is to provide an improved blood pressure cuff of the above described character comprising an inner end bladder casing section and an outer end hook bar carrying section wherein the outer end section is formed in a novel manner to provide a

longitudinal sight opening or window with the hook bars supported transversely thereof and in spaced relation longitudinally of the window opening, with the parts of the hook bar carrying section on opposite sides of the window opening formed in a novel manner to provide pockets for receiving the ends of the hook bars and in which the ends of the bars are fixed or held by concealed means.

Still another object of the invention is to provide a cuff of the above described character which is designed in a novel manner whereby the inner and outer sections, which are formed of stitched together fabric parts, are joined or coupled together in such a manner as to completely conceal the major portion of the stitching and to completely conceal the stitching which connects the two parts transversely of the cuff.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents, are therefore intended to be embraced by those claims.

In the drawings:

Fig. 1 is a view illustrating a cuff constructed in accordance with the present invention in applied position on an arm and showing the sight opening of the outer portion by which the engagement of a hook is facilitated;

Fig. 2 is an elevational view of the front side of the improved cuff in opened-out position;

Fig. 3 is a view of the inner side of the strip of fabric from which the bladder encasing inner end section is formed showing the same before folding, a portion of the strip being broken away;

Fig. 4 is a section taken longitudinally of the outer end or hook section substantially on the line 4—4 of Fig. 2, the layers of fabric being on an enlarged scale or exaggerated to facilitate showing details;

Fig. 5 is a sectional view on an enlarged scale taken substantially on the line 5—5 of Fig. 2;

Fig. 6 is a sectional view on an enlarged scale taken substantially on the line 6—6 of Fig. 2;

Fig. 7 is a fragmentary section on an enlarged scale taken substantially on the line 7—7 of Fig. 2;

Fig. 8 is a view of one of the strips of fabric, prior to folding, from which is formed one of the two longitudinal parts of the outer end or hook carrying section;

Fig. 9 is a view showing the fabric part of Fig. 8 folded once across its medial portion after forming a border hem and illustrating the hook bar pocket forming stitching and the hook bars each secured in a respective pocket;

Fig. 10 illustrates the manner in which one part of the hook bar section is turned from the condition shown in Fig. 9 to cover the pocket stitching;

Fig. 11 is a plan view of the inner end of the completed outer end section prior to its attachment to the inner end section, with portions cut away to show details of construction;

Fig. 12 is a sectional view taken substantially on the line 12—12 of Fig. 11 looking in the direction of the arrows;

Fig. 13 is a detail on an enlarged scale illustrating more clearly the riveting means for securing an end of a hook bar in a pocket;

Fig. 14 is a perspective view of the double prong rivet used for securing the hook bar in position; and

Figs. 15, 16, 17 and 18 illustrate the several stages of reversing the inner and outer end sections of the cuff after stitching the sections together whereby to effect

concealment of the stitching between the two ends of the sections.

Referring now more particularly to the drawings, it will be seen upon reference to Fig. 2 that the improved cuff of the present invention comprises broadly two sections which are designated **10** and **12** and may be defined respectively as the inner end section **10** and the outer end or hook section **12**, this definition of the two sections being selected for the reason that the section **10** carries the hereinafter described inflatable bag and is first applied to the limb of the person whose blood pressure is being taken, while the section **12** lies on the outside of the section **10** when it is wrapped around the limb and secured.

The inner end section embodies initially a single long strip of fabric material shown in Fig. 3 and generally designated **14**. In this figure, the inner face or wrong side of the material is shown and this strip of fabric material is folded transversely midway of its ends to form the envelope for the hereinafter referred to inflatable bladder, after having the longitudinal edge portions turned in to form the hems **16**.

The opposite end edges of the strip of fabric **14** are designated **18** and these are brought together to form the envelope referred to and are secured in the manner hereinafter described to the outer end section **12**.

The cuff as illustrated in Fig. 2 presents the front or outer side to the view and before the strip **14** has been folded as described to form the front and rear halves which are designated **20** and **21**, there are secured to the inner face or wrong side of the front half **20**, the two transversely disposed hook or pin carrying ribs **22**. Each of these ribs **22** comprises a flat strip of metal of an over-all length materially less than the width of the material to which they are secured and each has one side edge **23** which terminates in a rounded corner portion **24**, while at the opposite side edge the rib terminates in a relatively sharp angle and the ribs are located against the inner surface of the half **20** adjacent to the fold line **14'** so that they will be adjacent to the free end of the inner end section of the completed cuff as shown in Fig. 2. The ribs **22** each carries a holding or retaining pin **25** and these pins project through suitable apertures in the half **20** of the fabric material as indicated at **26** in Fig. 7 and also through apertures **27** in patches of reinforcing material **28** which preferably are of leather and are stitched to the front or right side of the material half **20** as shown in Fig. 2.

Each pin **25** carries a flat head **25'** and the head is positioned on the end of the pin to have one side flush with the side of the pin and to project at the opposite side beyond the side of the pin as is clearly shown in Fig. 7. The projecting sides of the heads **25'** are adjacent to the edge **23** of the rib to which the pin is secured and the ribs are positioned so that when the strip of material is folded to form the bladder encasing envelope **29**, the heads will project from the pin away from the fold which, in Fig. 2, is designated **30** and the reason for this arrangement will become apparent in the hereinafter set forth description of the manner of applying the cuff.

In addition to the pins holding the ribs in position by extending through the apertures **26** and **27** of the material and the reinforcing patches, they are secured against turning movement from their position transversely of the cuff by a covering piece of material which is designated **31** which is positioned as shown in Fig. 3 against the inner surface of the front half **20** to cover the ribs. This covering piece has one edge secured by stitching hereinafter particularly identified beneath a hem **16** and transverse lines of stitching are extended across the width of the front half **20** of the strip of material along the longitudinal sides of the ribs as indicated at **32**, thus forming, in effect, pockets in which the ribs **22** are retained.

The ribs **22** may be formed of any suitable material but preferably formed of metal of suitable strength and rigidity and in order to reduce the weight the ribs have cut-out areas as indicated at **22'**, on opposite sides of the metal portion in which the pins **25** are secured by riveting or in any other suitable manner.

The numeral **33** designates a loop of material such as leather or the like which is stitched to the outer face or right side of the front half **20** of the fabric strip, which loop **33** provides the conventional means for attaching to the cuff the gauge which is used in connection with the operation of taking blood pressure.

While the bladder encasing envelope has been referred to and indicated by the reference character **29** in Figs. 4 and 6, this envelope is actually not formed until the two sections **10** and **12** of the cuff are joined together in the manner hereinafter described.

Referring now to the outer end section **12** of the cuff, it will be seen that this embodies two long panels, each of which is generally designated **34** and a plurality of apertured hook bars or pin engaging bars each of which is generally designated **35**. The panels **34** are disposed in spaced parallel relation to provide between them a window or sight opening S across which the hook bars **35** extend and which hook bars are disposed in spaced apart relation longitudinally of the outer end section or of the panels **34** to which they are secured or attached in the manner about to be described.

In the assembled relation of the panels **34**, the over-all width of the outer end section of which they form a part is the same as the over-all width of the bladder encasing envelope or inner end section **10**.

Each of the panels **34** comprises a single length of fabric material **36** which is initially slightly more than twice the length of the completed panel and the manner of forming each panel from this long strip of material **36** and forming pockets therein to receive the ends of the hook bars **35** is illustrated particularly in Figs. 8 to 10 to which figures reference will be made following a description of the hook bars **35**.

Each of the hook bars **35** comprises a long relatively narrow plate **37** or rib member or rib of metal or other material of suitable strength and rigidity. The length of the hook bars is less than the over-all width of the outer end section of which they form a part as is clearly shown in Fig. 11. Each of the hook bar plates has one corner at each end rounded as indicated at **38** and midway between its ends the plate is provided with an aperture **39** which is of a size to receive the head **25'** of a pin **25**. If the hook bars **37** are of metal, they may be lightened by having portions thereof cut out adjacent to their outer ends as indicated at **39*a*** and adjacent to the inner ends of these cut out portions. At properly located portions on opposite sides of the opening **39** the hook bar has two transversely spaced holes formed therethrough as indicated at **40** for the reception of the hereinafter referred to securing rivet.

Referring now to Figs. 8 to 10, the panels **34** are fashioned as follows.

The fabric strip **36** shown in Fig. 8 is illustrated as presenting to the view the inside face or wrong side of the material and the numeral **36'** designates the raw end edges thereof. This strip is first provided with an inturned hem **41** along one longitudinal edge by folding in against the inner inside face or wrong side a narrow portion of the material approximately along the fold line **41'** and the strip is then folded approximately midway between its ends on the transverse fold line **42**, forming the two halves **43** with the outside or right faces thereof together. When the strip **36** is folded to bring the two halves into back-to-back relation as described the inside face or wrong side of the material will be exposed and the two halves are then stitched together adjacent the longiutdinal edges opposite from the hem **41** along the line **44**. In addition to this line of stitching, the two

halves of the material are stitched as indicated at 45 to form a series of pockets 46 which open away from the line 44.

Each of the pockets now has extended therethrough one end of a hook plate 37 and they are then put through the two halves of the material and through the rivet apertures in that end of each hook plate which is in a pocket, a rivet such as that illustrated in Fig. 14 and generally designated 47.

The rivet 47 as shown comprises the two short tubular pin portions 48 which are connected at one end by a strip or plate 49 and when the pins 48 are forced through the fabric material, the plate 49 will be disposed across the width of the hook bar and the exposed free ends of the pins 48 at the opposite side of the fabric pieces will be mashed or swagged in the conventional manner to secure the rivet in place.

After one panel has been formed in the manner described with the hook plates fixed in position, each with an end secured in a pocket 46, the material is reversed as shown in Fig. 10 by drawing the hem edge or hem portion 41 toward the edges of the two halves which are secured by the stitching 44, thus turning out the right side of the material in the two halves 43 thereof and producing in each of the two halves a fold 48 extending across hook bars 37 approximately along the line of or slightly outwardly of the line of the rivets 47. The other or second panel is formed in a like manner and it will be seen that when the two halves of the material of the second planel are reversed or turned in the manner described, it being understood that the other ends of the hook bars will be fixed thereto in the same manner as described above, there will be obtained the two complete panels joined together in spaced relation by the transversely extending hook bars as illustrated in Figs. 1, 2 and 11 and there will thus be obtained or produced the central longitudinal window or sight opening 36 hereinbefore referred to.

In joining the two panels 34 together in the manner described, it will be understood that the raw edges 36' of the halves of the two panels will be adjacent to one another and in line across the end of the section, the opposite or outer end of this outer end section being defined by the fold 49.

After the two halves of each of the panels 34 have been reversed or turned as described, the portions of the hem 41 extending along the turned halves of the panel will be brought into abutting relation as illustrated particularly in Fig. 5 and these inturned hems are then stitched together by a line of stitching 50 which extends throughout the length of the two remote or outer edge portions of the panel as shown in Figs. 1, 2 and 11. The completed outer end section is then ready for attachment to the bladder envelope and this attachment is accomplished so as to conceal all of the stitching between the inner and outer sections or, in other words, between the outer end hook section and the inner end bladder encasing section, in the manner about to be described.

In describing the manner of joining together the inner and outer end sections, reference will be had to Figs. 15 to 18 inclusive where the various elements of these sections have been illustrated conventionally by single lines to designate material thickness.

The fabric strip 14 of which the outer end section is formed to provide the hereinbefore referred to bladder encasing envelope is folded so as to bring the outer faces or right sides of the front and back halves 20 and 21 together. Thus the wrong sides of these two halves will be exposed to view and in Fig. 15 the inner face or wrong side of the front half 20 is shown. Between these two halves 20 and 21 the completed outer end hook section 12 is placed so that the raw edges 36' of the two halves of the two panels lie along the raw edges 18' of the two halves 20 and 21 as shown in Fig. 15.

The several thicknesses of the material making up the front and back halves of the fabric strip 14 and making up the two panels are then stitched together by a line of stitching or by several lines of stitching as may be preferred as indicated at 51. Thus the two sections will be secured together with the material of the inner end section turned inside out while the outer end section is complete and requires no further stitching or other operation.

It will be remembered that the adjacent longitudinal edges of the front and back halves 20 and 21 of the strip 14, along which the hems 16 are formed, have not up to this time been stitched together.

Fig. 15 shows a portion of the free end of the outer end section drawn out slightly from between the two halves of the inner end section ready to be grasped to be withdrawn from between the halves of the inner end section.

The outer end section 12 is then pulled out from between the two halves of the inner end section, Fig. 16 illustrating a partial removal of the same, with the inner and outer halves of the inner end section bowed out or separated. With the parts in the position shown in Fig. 16, the lower corner of the inner section designated A is grasped by reaching through between the two halves 20 and 21 and pulled up to the position shown in Fig. 17, thus reversing the corners A and B as this Fig. 17 illustrates. It will be seen now that by continuing to pull the two sections apart, that is by pulling the free end of the outer end section 12 in the direction designated by the arrow and pulling the section 10 downwardly away from the free end of the section 12, the inner end section will be completely reversed or turned right side out. Thus the portions of the several pieces of fabric at the raw end edges thereof and lying between the stitch line 51 and such raw end edges will be covered by the two sides or halves 20 and 21 of the fabric strip 14, thus giving a completely hidden seam and showing only a rounded fold edge across the attached end of each of the front and back halves 20 and 21 as indicated at 52.

As a final step to the completion of the cuff structure, the opposing inturned hem portions 16 are joined together by a line of stitching 53 extending along the longitudinal edges of the inner end section and this line of stitching may be continued to join the line of stitching 50 which extends along the outer sides of the panels 34. However, in running the line of stitching 53 along one longitudinal side of the cuff, which would be the lower side or lower edge of the cuff when it is applied to a limb for use, the stitching is interrupted at the spaced points 53' to provide an entrance opening as indicated at 54 in Fig. 6 through which the tubes 55 and 56 of the inflatable bladder may project when the bladder, which is designated 57, is in position in the envelope 29.

When the hem 16 is first turned along that longitudinal side of the fabric strip 14 which will extend across the tubes 55 and 56 and form the two sides of the opening 54, a stitching may be made to hold the hem in place as indicated at 58 in Fig. 6.

After reversing the inner end or bladder envelope forming section 10 in the manner described in connection with Figs. 15 to 17, the stitching of the hereinbefore described final step is applied.

It will be seen from the foregoing that there is provided a new and unique blood pressure cuff structure having as a particularly important and valuable feature thereof the means by which the physician or other person applying the cuff can observe the location of the hooks 25 to facilitate the engagement of a selected hook bar therewith. Heretofore in cuffs of this character, the portion of the cuff corresponding to the outer end section 12 of the present invention has always been unbroken or of a construction such that when the section is wrapped around the portion of the cuff which carries the inflatable bladder, such outer end section completely hides the hook and the physician or other person applying the cuff must fumble around until the desired engagement of the outer

end section with the hook is accomplished. With the present cuff structure this is completely avoided because the person applying the cuff can, as previously stated, see at all times through the window opening **36** the location of one or the other of the hooks and the securing of the cuff is thereby made easy.

With the present invention, it is also pointed out that the inflatable bag or bladder **57** is always located between the hooks and hook ribs or bars and the arm or limb of the person whose pressure is being taken and thus when the bag is inflated and the cuff is constricted to compress the limb, the hook carrying ribs or bars will not be pressed into the flesh.

The hook engaging ribs carried by the outer end section **12** are of a length materially less than the width of the cuff but they function to distribute the load or pressure over a wide extent of the limb to which the cuff is applied and since the bladder is of a width substantially equal to the width of the cuff, there is no reduction in the effective compression of the limb encircled by the cuff. In other words, the desired compressive action will be extended over the full width of the cuff.

By providing the ribs **37** with curved corners at the ends of the longitudinal edges nearest to the end of the section **12** which is attached to the envelope section **10**, there is avoided the possibility of any discomfort to the patient such as might occur if the corners were not rounded and would, therefore, dig into the flesh when pressure is built up.

It will also be seen that by the provision of the hook pins **25** with the heads which are flush with the side of the pin nearest to the free end of the inner section and extending beyond the side of the pin farthest from the free end of the inner section, the possibility of the cuff becoming detached accidentally while being inflated is avoided while at the same time, when it becomes necessary to remove the cuff the physician or other person using the same has only to pull the outer end section to bring the side of the aperture **39** against that side of the pin opposite from the offset head, whereupon disengagement becomes easy by just pulling outwardly on the section **12**.

In view of the provision through approximately half or a little more than half the length of the cuff of the longitudinal row of hook pin engaging apertures in the ribs **37**, it will be seen, upon reference to Fig. 1, that it is only necessary to have the cuff encircle the patient's arm, designated A in this figure, once for use.

While the cuff has been described as being for use in connection with a sphygmomanometer, it will be readily apparent that it may also be effectively used as a venous constriction treatment cuff or as a tourniquet.

In addition to the foregoing, it will be seen that the novel manner in which the present cuff is constructed gives to it a neat and attractive appearance as a considerable amount of the stitching required to join the parts together is completely hidden or covered and there are no raw edges of material exposed at any place.

In the present cuff structure a further feature of advantage associated with the use thereof resides in the relationship between the spacing of the hook pins and the spacing of the apertured rib bars. Adjustment of the cuff to the best or most desirable fit on the patient's limb, or to the proper snugness, is obtained by placing the hook pins and the ribs so that the distance between the pins is greater than the spacing between the ribs but less than one and one-half times the rib spacing.

I claim:

1. A sphygmomanometer cuff or similar blood flow restricting device comprising an elongate body of flexible material and having a substantial width, the body comprising an inner end section and an outer end section, the inner section being in the form of a flat envelope, an inflatatable bag within the envelope, the outer end section comprising two elongate band portions in spaced apart relation providing an elongate window opening therebetween, a plurality of ribs disposed across the opening in spaced apart relation longitudinally thereof, and co-operative attaching means provided on the ribs and on the inner end section respectively whereby a selected one of the ribs may be attached to the inner end section when the sections are placed in over-lapping relation, said ribs being of a length less than the width of the body and having their ends disposed within and covered by as well as secured to the band portions, and said co-operative attaching means comprise an aperture in each rib in the part thereof exposed in the window opening with a hook secured to and projecting from one side face of the outer end section, and in which cuff each of said band portions comprises a front side lamination and a rear side lamination, said laminations having secured together outer longitudinal edges and having infolded inner longitudinal edge portions lying together between the laminations, with said infolded portions being joined to form a longitudinal series of transverse pockets in each of which an end portion of a rib extends and is secured.

2. The invention according to claim 1, wherein each of said band portions comprises a single strip of material folded transversely midway of its ends to provide a front side lamination and a rear side lamination, said laminations having the outer longitudinal edges secured together and having infolded inner longitudinal edge portions lying together between the two side laminations, said infolded portions being secured by concealed stitching to form a series of transverse pockets opening into the window opening between the band portions, and said ribs having their ends secured in said pockets.

3. The invention according to claim 2, wherein the said cooperating means comprises an aperture in each of said ribs in the part thereof exposed in the window opening and a hook secured to and projecting from one side face of the outer end section.

4. A sphygmomanometer cuff or similar blood flow restricting device comprising an elongate body of flexible material and having a substantial width, the body comprising an inner end section and an outer end section, the inner end section comprising a single length of fabric folded transversely midway of its ends to form an envelope having a front side and a rear side, the sides being joined throughout along one longitudinal edge of the envelope and joined through a part of the other longitudinal edge to provide an edge opening, an inflatable bag within the envelope insertable through said opening, the outer end section comprising two elongate band parts each formed of a single strip of fabric folded transversely midway between its ends to provide a front side lamination and a rear side lamination, said laminations of each band part having the outer longitudinal edges secured together and having infolded inner longitudinal edge portions lying together between the front and rear forming sides, said infolded portions being secured together to form inner longitudinal edge pockets, the free ends of the folded length of material forming the envelope and the free ends of the folded strips forming the band parts being joined by stitching with the outer longitudinal edges of the band parts each being coextensive with the adjacent longitudinal edge of the envelope and the inner longitudinal edges of the band parts being spaced from each other to form a window opening longitudinally of the outer end section, a plurality of flat rigid ribs disposed across said window opening with their end portions in said oppositely located pockets, means securing each of said rib end portions to only the infolded edge portions of the laminations between which it is positioned, a hook member secured to the front side of the envelope, and means provided on said ribs for detachable connection with the hook member.

5. The invention according to claim 4, wherein the last stated means comprises an aperture in each rib in the portion thereof exposed in the window opening.

6. The invention according to claim 4, wherein the hook member comprises a pin having a head flush with the side of the pin remote from the outer end section and projecting from the pin toward the outer end section, and the last stated means comprises an aperture in each rib in the portion thereof exposed in the window opening to receive the pin.

7. The invention according to claim 4, wherein the stitching joined ends of the folded strips making up the inner end section and the outer end section are concealed by the disposition of the ends of the outer end section strips between and joining them by the stitching to inturned end edge portions of the front and rear sides of the envelope.

8. A sphygmomanometer cuff or similar blood flow restricting device comprising an elongate band body of flexible material and of substantial width, the body comprising an inner end section and an outer end section, the inner end section being characterized by front and back face portions associated to form a bladder encasing envelope, an inflatable bladder in the envelope, a pair of hook pins secured to and projecting outwardly from said front face section and disposed in spaced apart relation on approximately the longitudinal center line of the body, the outer end section comprising two elongate band portions in spaced apart relation providing a longitudinal window opening, a plurality of hook pin engaging ribs disposed across said window opening in spaced apart relation longitudinally thereof, said ribs having an aperture approximately in the said center line of the body for selective connection with one of the pair of pins, and said hook pins being spaced apart a distance greater than the spacing between two adjacent ribs and less than one and one-half times the distance between two adjacent ribs.

9. In a sphygmomanometer cuff comprising an elongate flexible body of substantial width having an inner end portion containing an inflatable bladder and an outer end portion adapted to overlie and to be attached to the inner end portion to be used as a blood-flow-restricting device or the like, the improvement in which the

inner end portion comprises a length of flat material of said substantial width forming a loop for receiving the bladder having a pair of inturned transverse edge portions constituting the ends of the loop, and the outer end portion comprises a length of band structure having the transverse edge portion of its inner end interposed between the inner edge portions with all such thus associated edge portions being invisibly disposed within said loop, said loop when wrong-side out and with the band structure then within the loop presenting the associated edge portions freely accessible as outward edges aligned with one another stitched together by a seam, and after stitching adapted to be turned right-side out for concealment of the seam within said loop, in which said band structure comprises a pair of component bands of the material spaced parallel from one another so that their outer longitudinal edges align with those of the loop, each band comprising a length of strip having one longitudinal edge portion turned in and the length folded over to half length with the respective half portions of the turned-in edge portion facing each other and the free end portions of the bands sewn in between the inturned edge portions of the loop, and a series of transverse parallel ribs traversing the spacing between the bands and having their end portions disposed between and fastened to the respective associated half portions of respective turned-in edge portions of the bands, with said fastening of the ribs being effected before the longitudinal edge portions of the bands are turned in.

10. The improvement according to claim 9 in which the associated half portions are sewn together by a meandering seam providing transverse pockets for the positioning therein of the head portions of the ribs, and being applied prior to the sewing together of the band structure and the loop.

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