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INFLATABLE BLOOD PRESSURE CUFF

Filed March 11, 1957

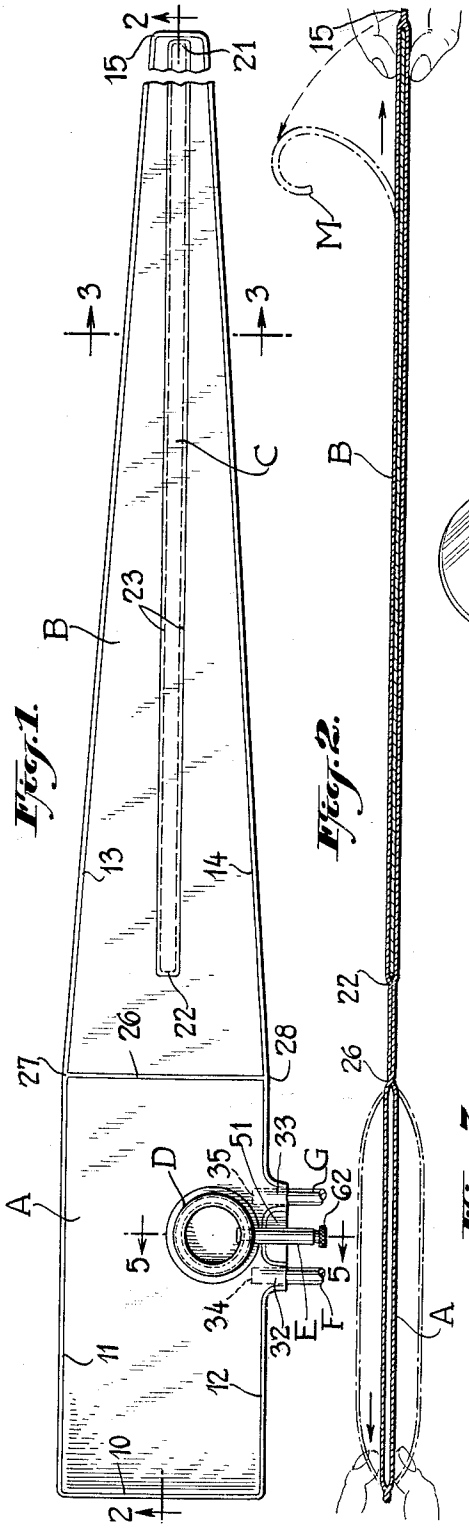

Fig. 1.

Fig. 2.

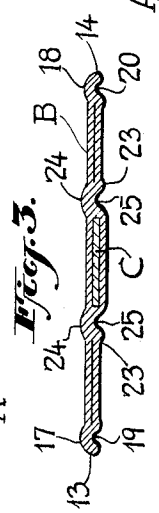

Fig. 3.

Fig. 4.

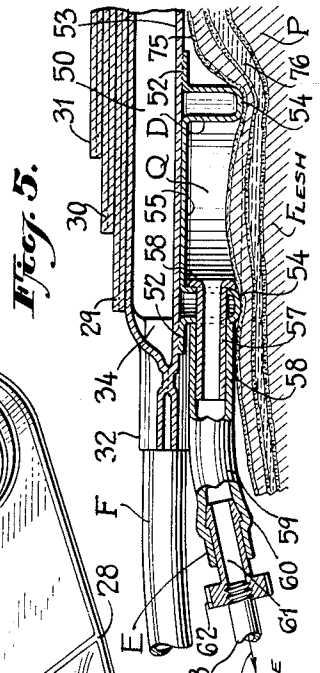

Fig. 5.

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INFLATABLE BLOOD PRESSURE CUFF

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1 Claim. (Cl. 128—2.05)

The present invention relates to an inflatable blood pressure cuff and it particularly relates to an inflatable blood pressure cuff which may be formed of a plastic material.

Although not limited thereto, and although having application to inflatable blood pressure cuffs themselves, the present invention will be particularly described in its application to a combination inflatable blood pressure cuff and stethoscope in which the mounting of the stethoscope will be incorporated in the inflatable blood pressure cuff arrangement.

It is among the objects of the present invention to provide a novel inflatable blood pressure cuff arrangement which may be formed of plastic material and which, when wrapped around the arm will tend to retain its position thereon and will not tend to too readily unwind itself from the arm during measurement of blood pressure.

Another object is to provide a novel blood pressure measuring cuff which may be readily associated with a stethoscope arrangement to permit measurement of both blood pressure and stethoscope readings simultaneously without the need of inserting the stethoscope disc inside of the blood pressure cuff.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

According to the present invention, a flexible, thin sheet metal strip is incorporated in the portion of the blood pressure measurement cuff which is mounted or wrapped around the arm. At the same time in the portion which is directly applied to the arm there may be permanently mounted therein a device which will form a connection to a stethoscope by means of which simultaneous stethoscope readings may be had.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claim hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

Fig. 1 is a plan view of the inflatable blood pressure cuff in extended position with the stethoscope connection mounted thereon and with the resilient steel strip positioned in the wrap-around portion thereof.

Fig. 2 is a transverse vertical sectional view upon the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view upon the line 3—3 of Fig. 1, showing the wrap-around portion with the resilient metal strip therein.

Fig. 4 is a top perspective view showing the wrap-around portion curled up under the influence of the inserted metal resilient strip with the inflatable portion in flattened position and with the stethoscope cup mounted thereon.

Fig. 5 is a transverse sectional view of the device in position on an arm taken upon the line 5—5 of Fig. 1 upon an enlarged scale as compared to Fig. 1.

Referring to Figs. 1 to 5, there is shown an inflatable blood pressure cuff with the inflatable portion and an elongated wrap-around portion B having inserted therein the resilient spring member C. The inflatable portion A may be provided with the circular channel member D which enables attachment to a stethoscope connection E. The inflatable portion A may be inflated or deflated through the air connections F and G, which may be connected to a bulb or other source of air pressure.

In the preferred form, the entire cuff is made of two sheets of transparent plastic material, which, although flexible, is durable and resistant to tearing.

The two strips of material are cut the same width and length, with the rectangular portions forming the inflatable portion and the trapezoidal or trinagular portions forming the wrap-around portion B.

These two elements are heat-sealed together along the edges so that a substantially permanent unit is formed.

It will be noted in the cross section in Fig. 3 that the edges 13 and 14 are sealed so that they will be curved outwardly with ridges 17 and 18 on one side and channels 19 and 20 at the other side. Between the two layers of material is inserted a thin steel strip C which terminates at 21 substantially at the end of the wrap-around portion B.

At the other end 22 it terminates substantially short of the inflatable portion A. Around the metal strip C the two sheets of plastic are agian sealed together, as indicated at 23, to form the threads or ridges 24 on the same side as the ridges 17 and the channels 25 on the same sides as the channels 19 and 20.

These ridges 17, 18 and 24 and the channels 19, 20 and 25 will strengthen the wrap-around portion B and also aid in the wrapping effect of the steel strip C, which is thus held firmly in position in the cuff and prevented from movement therein or dislodgment therefrom.

The wrap-around portion B is separated from the inflatable portion A by a smaller sealed portion or strip 26 which extends substantially across the cuff from edge 27 to edge 28, as shown in Figs. 1 and 4.

The inflatable portion A may have extra thicknesses of plastic material applied thereto, as indicated at 29, 30 and 31 in Fig. 5 for strengthening purposes, said extra thicknesses being applied to the side thereof away from the arm to which the cuff is to be applied.

Adjacent the air connections F and G, the inflatable portion A is provided with the tubular outlets and inlets 32 and 33 in which the inside ends 34 and 35 of the tubes F and G are sealed. It will be noted that the ends 34 and 35 of the tubes F and G communicate with the open space 50 inside of the inflatable portion A.

Between the tubular portions F and G will be a sealed plate portion 51 which will strengthen the structures where the tubular connections F and G are made.

The stethoscope connection D may be made of thicker or more rigid plastic than the thin flexible plastic which forms the body of the inflatable portion A and the wrap-around portion B.

This element D has the flanges 52 which are sealed to the central portion 53 of the inflatable portion A (see Fig. 5).

Inward from flange 52 will be the channel 54. Inside

of the channel will be the flat face 55 which may be sealed to or loose from the face 53 of the cuff portion A.

Through one side of the channel 54 there will project the tubular element 57 which has the out-turned end at 58.

This tubular element 57 will telescope into the extension 58 of the stethoscope tube 59. The other end of the tubing 59 at 60 engages the inlet thread 61 which is attached to the enlarged portion 52 and the tube 63 which leads to the stethoscope, as indicated by the arrow 64.

The enlarged portion 62 consists of a knurled nut which may be used for tightening or adjustment purposes.

Under the influence of the resilient strip C, the wrap-around portion B will normally curl up, as indicated at M in Fig. 2, or N in Fig. 4, and retain its wrapped around position upon the arm. In application, a portion of the arm is shown diagrammatically at P with the outer skin indicated at 75, a blood vessel at 76.

It will be noted that when the cuff is applied to the arm the ridge 54 will be applied down against the flesh and the sounding space or open space at Q will enable very accurate and sensitive stethoscope readings.

However, the cuff, as indicated, is just as effective without the stethoscope attachment D, and the important feature of the present invention resides in the resilient spring insert C which holds the cuff in wrap-around position.

Although various types of flexible, pliable sheet materials may be employed, it has been found most satisfactory to employ thin sheet polyethylene of flexible nature for the cuff body of A and B and a more rigid structure for the channel D and the tubes F, G and 57.

As many changes could be made in the above inflatable blood pressure cuff, and many widely different embodiments of this invention could be made without departure from the scope of the claim, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

An inflatable blood pressure cuff with an elongated wrap around portion having a centrally positioned coiled up thin strip of resilient metal extending substantially the full length thereof and embedded therein and an inflatable base portion, both portions being formed of two equally dimensioned sheets of a thermoplastic transparent sheet material heat-sealed together at locations to form said inflatable base and embed said strip and said wrap around portion having longitudinally extending reinforcing ribs at the edges thereof and adjacent each edge of the metal strip, said base portion having a circular cup mounted on and projecting outwardly from said base portion on the side thereof opposite said ribs, said cup having an opening in the wall thereof, a tubular element extending laterally from said opening communicating with the interior of said cup, a flexible tube enveloping the end of said tubular element, and a rigid member engaging the other end of said tube and having a knurled nut positioned thereon adapted to connect said cup to a stethoscope tube, said cup having an open face adapted to directly engage the flesh of a patient.

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