July 27, 1948. J. M. MALLORY 2,445,917

BLOOD PRESSURE STETHOSCOPE

Filed Jan. 24, 1945

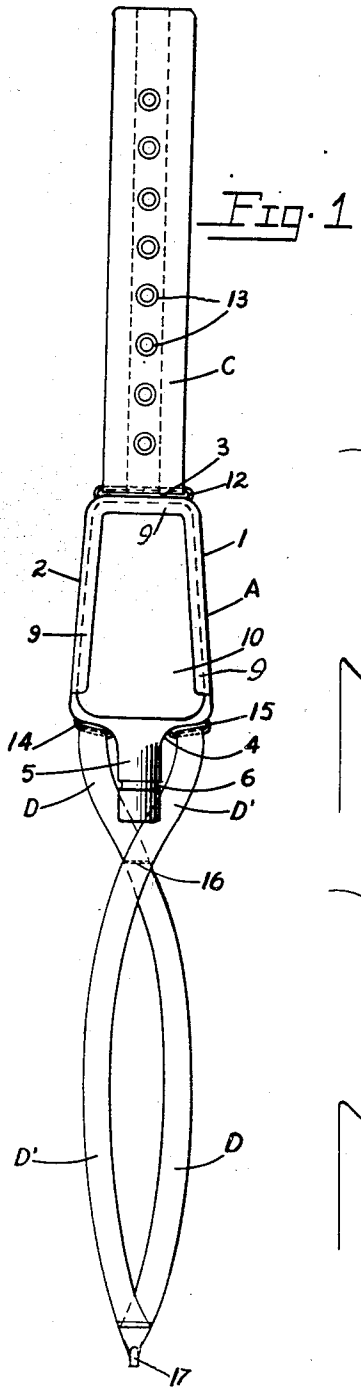


Fig. 1

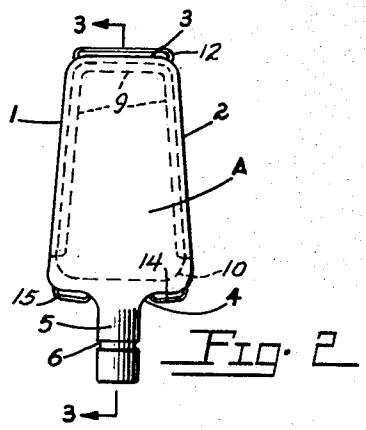


Fig. 2

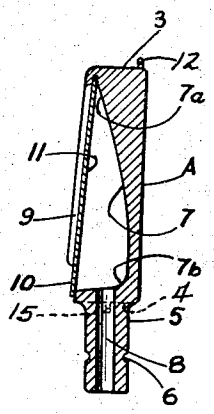


Fig. 3

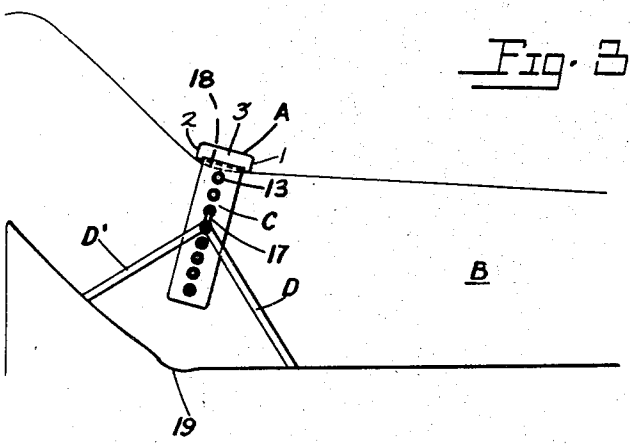


Fig. 4

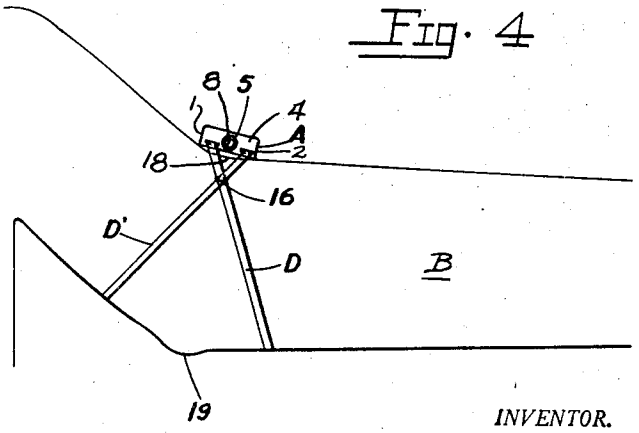


Fig. 5

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BLOOD PRESSURE STETHOSCOPE

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3 Claims. (Cl. 181—24)

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The present invention relates to improvements in a blood pressure stethoscope, and it consists of the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a blood pressure stethoscope in which the sounding chamber is designed to fit more accurately in the groove of the elbow joint of the arm. This causes the sounding chamber to detect pulsations of the blood to a greater degree.

A further object of my invention is to provide a device of the type described in which the straps for securing the sounding chamber to the arm are formed in two parts so as to go around the elbow point rather than over it. This permits the device to be held in place while giving freedom of arm movement. Novel adjustable means is used in connection with the attaching device to permit the attaching means to encircle arms of different sizes.

A further object of my invention is to provide a device of the type described which is simple in construction and durable and efficient for the purpose intended.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawing forming a part of this application, in which:

Figure 1 is a plan view of the device;

Figure 2 is a plan view of the sounding chamber and shows the opposite side of the chamber from that shown in Figure 1;

Figure 3 is a longitudinal section taken along the line 3—3 of Figure 2;

Figure 4 is a view showing the device attached to an arm; and

Figure 5 shows the opposite side of the arm and further illustrates the attaching means.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit and scope of the invention.

In carrying out my invention I provide a sounding chamber indicated generally at A and this chamber may be made of any material desired such as plastic, rubber or the like. Figure 2 shows the sounding chamber with inclined sides 1 and 2 that make the end 3 of the body of less width than the end 4. The end 4 has a neck

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portion 5 with an annular groove 6 formed in its outer surface.

Referring to Figure 3 it will be noted that the sounding chamber has a recess 7 therein for picking up pulsations from the arm in a manner hereinafter described. The neck 5 has a bore 8 that communicates with the recess. The recess is shallow at 7a which is adjacent to the end 3 and is deeper at 7b which is adjacent to the bore 8. The body A has a flange 9, see Figure 1, that extends along the sides 1 and 2 and the end 3. A diaphragm 10 is moved under the flange 9 and is designed to cover the recess 7. The diaphragm is actually removably received in a groove 11 and the top of the groove is formed by the flange 9.

The means for securing the body A to an arm B comprises a cloth strap C that is secured to the end 3 by a wire brad which has its ends embedded in the body A. The strap C pivots about the brad 12 and has a central row of eyelets 13 extending along its length. The opposite end 4 of the body has a pair of elastic straps D and D' which are secured to small wire brads 14 and 15 that in turn are attached to the end 4 of the body and on opposite sides of the neck 5. The straps D and D' are crossed over each other and are stitched together at their juncture 16. The free ends of these straps D and D' carry a hook 17 and the hook may be removably secured in any one of the eyelets 13 desired.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

The sounding chamber A is placed on the inner side of the elbow 18 with the diaphragm 10 positioned against the arm. The strap C is extended around one side of the arm and the straps D and D' are extended around the other side of the arm so as to straddle the point 19 of the elbow. The hook 17 is then secured in the required eyelet 13 to yieldingly hold the device in place. Figure 4 illustrates how the stitching 16 causes the straps D and D' to cross each other and to spread apart sufficiently to straddle the elbow point 19.

A main tube, not shown, of the stethoscope is mounted on the neck 5 and is held in place by the groove 6 in the usual manner. The tube connects with ear tubes, not shown. The pulsations of the blood pressure in the arm are transmitted to the diaphragm 10 and this will flex the diaphragm for causing the air within the recess 7 to pulsate in accordance with the blood pulsations. The pulsations of the air in the recess 7 are conducted by the bore 8 and the tubes of the stethoscope to the ears of the doctor. In this

way the doctor can keep a track of the patient's blood pressure during the operation.

The conventional type of sounding chamber A is circular in shape and it is difficult for this type to be received in the groove 18 of the arm and to transmit blood pressure pulsations when the arm is flexed. The substantially rectangular type of sounding chamber A shown in my device insures a better result than the round type when the arm is flexed because my position stays in closer position and there is a better and a more constant adherence of the body to the groove 18 of the elbow regardless of the degree of flexion of the elbow. The pulsations are more accurately and consistently carried through to the ear pieces.

The straps D and D' are preferably made of elastic material and yieldingly hold the sounding chamber A down upon the curve or groove of the elbow. As already stated the elastic straps pass around both sides of the elow point 19, rather than over it. In the conventional type of blood pressure stethoscope, one large wide strap is used and is passed directly over the elbow point. This strap has a marked tendency to slip off the elbow tip 19 when the elbow is bent and this will cause the strap to loosen and the sounding chamber A will adhere less tightly to the groove of the elbow.

Furthermore in the conventional stethoscope for blood pressure checking, the manner of securing the ends of the straps is unsatisfactory because the strap ends are usually bent or tied together. In my present device the metal hook 17 permanently joins the free ends of the elastic straps D and D' together and is removably secured to any one of the eyelets 13 in the cloth strap. The device will stay in place on the arm.

I claim:

1. A blood pressure stethoscope comprising a rectangularly-shaped body having a sounding chamber, said body being adapted to fit transversely in the inner groove side of the elbow joint and to receive pulsations from the blood vessels in the arm, a strap extending from one end of the body and having a central row of eyelets therein arranged along the length of the strap, a pair of elastic straps secured to the other end of the body and being crossed over each other a short distance from the body, said elastic straps passing around the arm and being spaced from the elbow point and having their free ends secured together, and a hook carried at the ends of the elastic straps and being removably receivable in the desired eyelet for yieldingly holding the body in the elbow groove while permitting flexing of the arm.

2. In a blood pressure stethoscope, a rectangularly-shaped body having a sounding chamber and adapted to fit transversely in the inner groove side of the elbow, a strap secured to one end of the body and extending transversely around the arm, the strap having a row of eyelets, and elastic straps secured to the other end of the body and extending around the arm in the opposite direction and lying on both sides of the elbow point, and a hook securing the free ends of the elastic straps to the desired eyelet.

3. In a blood pressure stethoscope, a rectangularly-shaped body having a sounding chamber and adapted to fit transversely in the inner groove side of the elbow, a strap secured to one end of the body and extending transversely around the arm, the strap having a row of eyelets, and elastic straps secured to the other end of the body and extending around the arm in the opposite direction and lying on both sides of the elbow point, and a hook securing the free ends of the elastic straps to the desired eyelet, said elastic straps crossing each other and being stitched at their point of crossing to aid in positioning the straps away from the elbow point and to follow the natural contour of the arm near the elbow.

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