

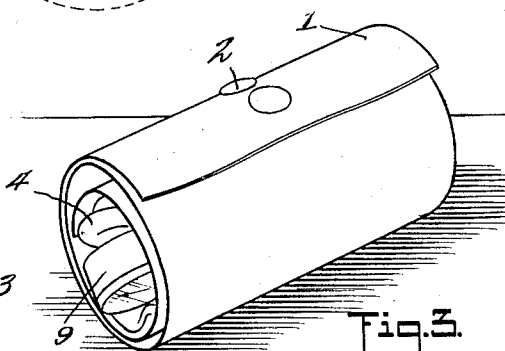
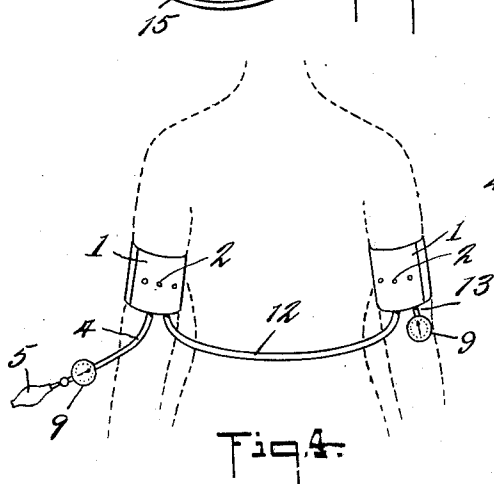
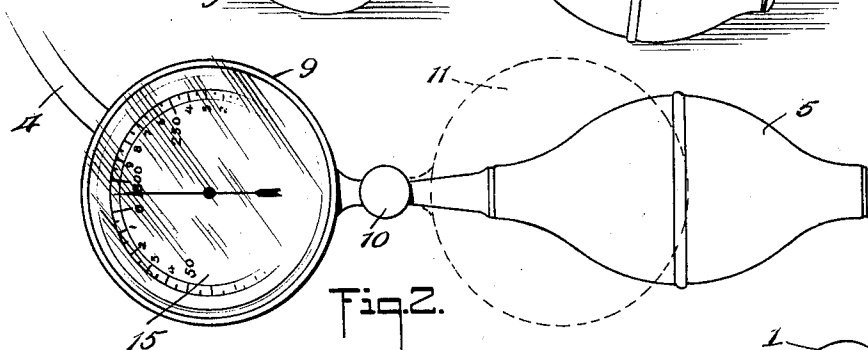
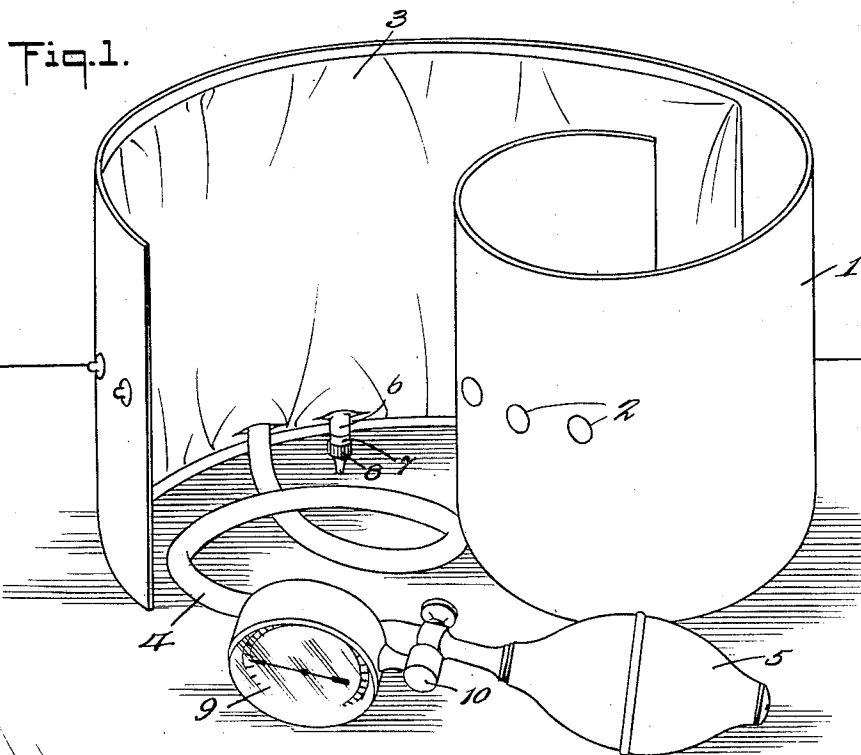
April 3, 1934.

B. F. CORWIN

1,953,466

APPARATUS FOR DETERMINING BLOOD PRESSURE

Filed Feb. 17, 1930



Benjamin F. Corwin
INVENTOR

BY *Darby & Darby*
ATTORNEYS

UNITED STATES PATENT OFFICE

1,953,466

APPARATUS FOR DETERMINING BLOOD PRESSURE

Benjamin F. Corwin, Brooklyn, N. Y.

Application February 17, 1930, Serial No. 428,927

1 Claim. (Cl. 73-44)

My invention relates to an apparatus for determining blood pressure and particularly to that type of apparatus in which there is an inflatable arm band adapted to be wrapped around the arm of the patient associated with means whereby it may be inflated and a suitably calibrated gauge or indicator from which the blood pressure may be read directly.

Among the objects of my invention is the provision of an apparatus of this kind which is more compact than usual, remains completely assembled at all times, may be adjusted more quickly and readily than usual, may be applied to two arms simultaneously, if desired, in which the indicator is located in a more convenient position for reading and in which the indicator may be readily compared with and adjusted to conform to a standard.

How these and other objects are obtained will appear in the following description.

In order that my invention may be more readily understood, I will now describe one form thereof which is illustrated by the accompanying drawing. It will be understood, of course, that I do not intend to thereby limit myself to the exact form shown and described, but include all modifications to which my invention is fairly susceptible.

In the drawing;

Figure 1 is a view in perspective of the device completely assembled;

Fig. 2 is a view in perspective of a convenient form of inflating and indicating assembly;

Fig. 3 is a view of the device rolled up for carrying; and

Fig. 4 is a view illustrating the application of my invention to taking the blood pressure of both arms simultaneously.

The device comprises an arm band 1 preferably made of some comparatively nonstretchable material such as leather, provided with a series of fastenings 2 so that it may be wrapped snugly and fastened about the arm of any patient. Affixed to the inner side of this arm band is an inflatable bag 3 which is connected by means of an air tube 4 to an air bulb 5 or other means whereby it may be inflated. The air bag 3 is also provided with a second short tube 6 which terminates in a valve 7 and a coupling 8 by means of which it may be connected to a duplicate device when the blood pressure of both arms is to be taken simultaneously.

In the type of apparatus for taking blood pressure which has been in use for many years, the arm band has been in the form of a strip

of fabric long enough to wrap several times about the arm and fastened by tucking an end under one of the folds. It has been customary to inflate the air bag with which this sort of arm band is provided by means of an air bulb similar to mine, but the indicator has always been connected to a separate tube and suspended from a hook sewed to one edge of the arm band. The application of this sort of band of the arm is inconvenient and takes considerable time, and unless care is taken the hook will be found to be in a position from which the indicator cannot be easily observed. This necessitates removing the arm band and rewinding it. Obviously, this is anything but convenient and when it is desired to take the blood pressure in both arms, which can only be done by consecutive rather than concurrent operations, it means a lapse of perhaps several minutes between the two readings during which the conditions may change so greatly as to render the comparative readings valueless.

The ease and speed with which my device may be applied is obvious and the position of the indicator 9 is entirely independent of the adjustment of the arm band for the reason that it is associated not with the band 1 but with the inflating bulb 5 which, of course, is always held in the hand. Thus the indicator is always in the same and most convenient position.

Devices of this sort are rather fragile, particularly the indicator. In the old form of device it is the usual practice to simply roll up the arm band and either to remove the indicator and inflating bulb, or to gather the several parts together and stow them in the doctor's bag without protection. In my device there is no need to disassemble the apparatus. As shown in Fig. 3, the bulb and indicator may simply be rolled up inside of the arm band which, if it is made of leather or other similar material, forms a highly satisfactory case which will protect the indicator from breakage even if it is dropped on the floor.

It will be noted that I thus also secure great compactness and in order to achieve the maximum in this respect the indicator may, if desired, be swiveled, as shown at 10 in Fig. 2 so that it may be swung around into the position shown by the dotted lines 11. I show no particular form of fitting to accomplish this, since it is quite within the skill of the art.

Another feature of decided value which is included in my invention is the ease with which the indicator may be calibrated to a known standard. In the devices for determining blood pressure heretofore known this has not been so

easy, with the result that there has never been any certainty as to the accuracy of the indications, since it is well known that the best types of indicator will get out of adjustment. With my device, wherein the indicator is associated with the inflating bulb, all that is necessary to compare it with the known standard is to disconnect the bulb from the air tube 4, connect it to the standardizing device and set the adjustable dial 15 to correspond.

If the condition of the patient is such that the blood pressure in one arm is substantially different from that in the other, in order to obtain an accurate reading of the actual blood pressure in each arm, the air pressure to which the arm bands are inflated should be different. For example, let it be assumed that the arm band should be inflated until the flow of blood is entirely stopped. If the arterial conditions in the arms are different, then this will occur at a different air pressure on each arm. It is, of course, impossible to obtain a different pressure where the two bands are connected as above described. However, since absolutely simultaneous readings are not essential and readings only a few seconds apart are perfectly satisfactory, accurate comparative readings may be obtained by my device in the following manner. By operating the inflating bulb in the usual manner the air pressure is built up in both bags, until the conditions desired are produced in one arm whereupon the reading of the indicator is taken, then instantly the degree of inflation of the other arm band may be increased or decreased until the same condition is produced in the other arm and the blood pressure reading immediately taken from the same indicator. Thus the two readings, while not strictly simultaneous, may be made so quickly that they are substantially as accurate and useful as if they were.

Another use to which my invention employing the two arm bands may be put relates particularly to the instruction of medical students in the art of taking blood pressure. It will be noted that the air bag of the second arm band is equipped with a short tube 13 similar to tube 6 of the single arm band shown in Fig. 1. By a suitable coupling 14 a second indicator not shown may be attached thereto. Then selecting as a patient one having uniform blood pressure in both arms and applying an arm band to each of his arms as indicated above, plus the second indicator attached to the second arm band and equipping

the student with a stethoscope or other means for ascertaining the proper conditions, the instructor, also equipped with a stethoscope, may inflate the arm bands and, applying his stethoscope to one arm, indicate by a simple motion to the student, who has applied his stethoscope to the other arm, when the proper condition has been gained for an accurate reading of blood pressure. The student, listening through his stethoscope and watching the second gauge will thus have illustrated to him in a most graphic way the proper procedure to pursue. The employment of the second gauge enables the student to observe the blood pressure under the given conditions with the greatest ease and eliminate the difficulty of the instructor and the student attempting to read the single gauge at the same time.

I thus provide an apparatus for determining blood pressure which is an improvement upon those heretofore known in that it is completely assembled at all times, may be made ready for use instantly, which forms its own carrying and protecting case, which may be applied more easily and speedily, in which the indicator is associated with the inflating bulb rather than with the arm band so that it is in a more convenient position for reading and in the same position at all times irrespective of the exact adjustment of the arm band, in which the indicator may be calibrated to a fixed standard with the greatest of ease and which may be applied to the taking of blood pressure in both arms quite as readily as in one with the duplication of only the arm band and inflating bag, so that the blood pressures of both arms can be taken almost simultaneously from the readings of a single gauge thus eliminating any errors which might result from the use of two gauges and saving the time consumed in transferring the device from one arm to the other.

I claim:

An apparatus as described comprising an adjustable band, an inflatable bag mounted on the inside of said band, a pear pump connected to said bag for inflating it, and a pressure indicating device in communication with said bag and pivotally mounted on said pear pump so as to be swingable to a position to overlie the pear pump, whereby the pear pump and gauge may be compactly arranged for wrapping within said band.

BENJAMIN F. CORWIN.

55

130

60

135

65

140

70

145

75

150