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[54] **INFLATABLE BANDAGE FOR BLOOD-PRESSURE GAUGE**
2 Claims, 8 Drawing Figs.

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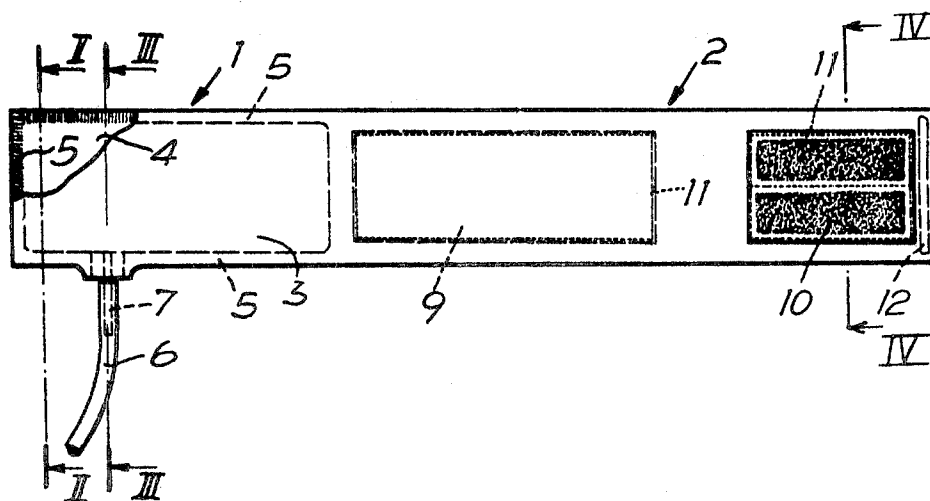
[50] Field of Search 128/2.05

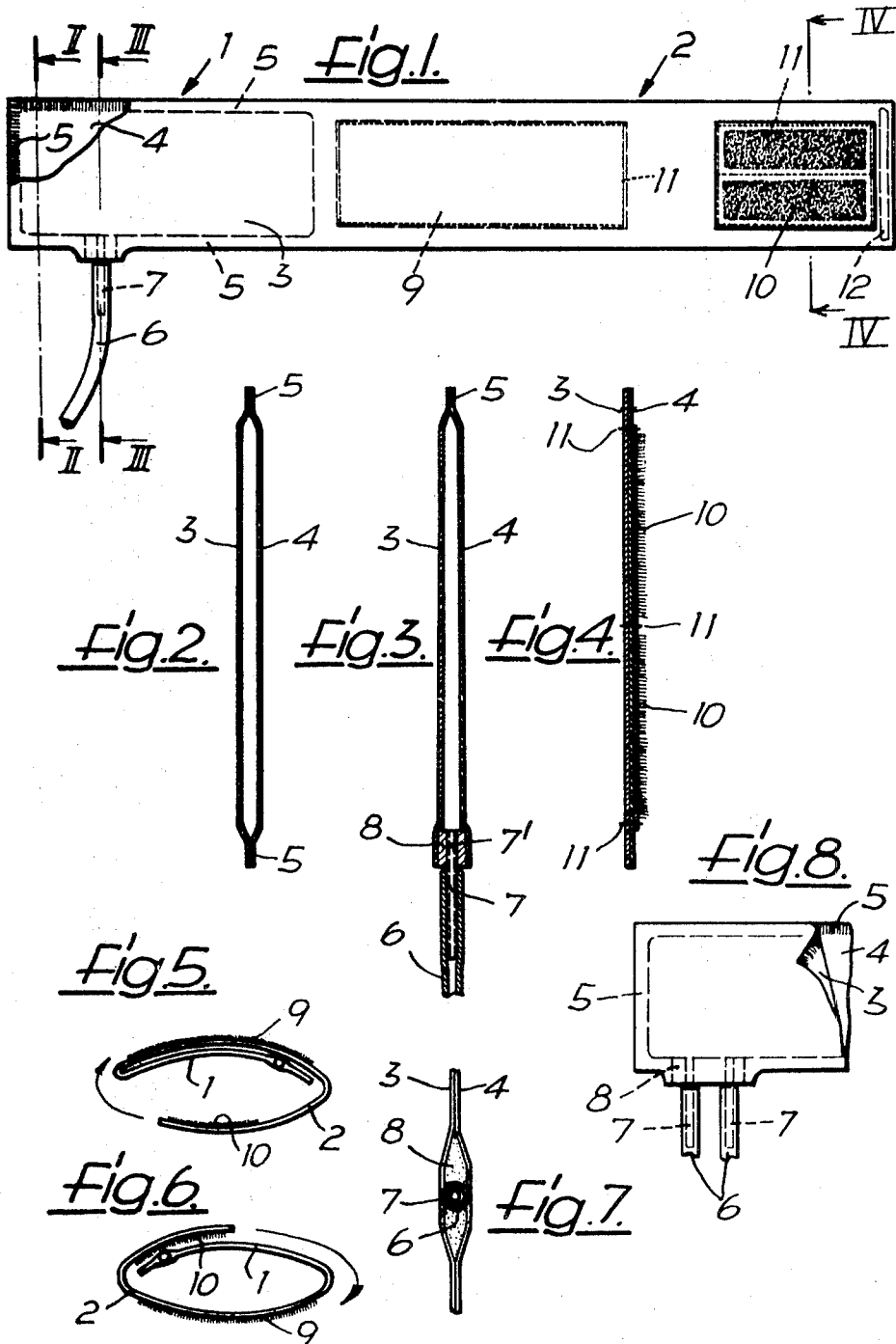
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ABSTRACT: The improvement in an airtight bandage which comprises an inflatable bag and is adapted to be wrapped around a limb of a person or animal for damming up the blood therein to permit blood pressure and other measurements to be made, wherein for attaining more accurate measurement the bandage consists of two strip-shaped layers of fabric which are coated with an air-impermeable layer at least on the inner sides facing each other which are completely bonded together with the exception of an area where merely the edges of the two layers are bonded together like a frame so as to form the inflatable bag.





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INFLATABLE BANDAGE FOR BLOOD-PRESSURE GAUGE

The present invention relates to an airtight bandage which contains an inflatable bag and is adapted to be wrapped around a limb of a person or animal for damming up the blood therein so as to permit blood pressure and other measurements to be made.

The conventional bandages of this type consist of an inflatable rubber bag which is enclosed within a cloth cover which extends beyond the rubber bag and forms the main part of the bandage. Thus, the air which is blown into the rubber bag and serves for carrying out the measurements is separated from the skin of the limb upon which the bandage is applied by two layers, namely, the rubber wall of the bag and the wall of the cloth cover, between which there is also another layer of air. These layers subdue considerably the pulsations of the blood which are to be transmitted to the air within the rubber bag and therefore limit the degree of accuracy of the measurements as well as the medical value thereof.

It is an object of the present invention to provide a bandage of the type as first described which is designed so as to permit larger and therefore more accurate values to be measured and may even be employed for attaining useful measured results on body portions on which the previous insensitive bandages did not permit any measurements to be made.

This object is attained according to the invention by providing a bandage which consists of two superimposed strip-shaped layers of a fabric which are provided with an air-impermeable coating at least on their inner sides facing each other which are completely bonded together with the exception of an area around which merely the surrounding edge portions of the two layers are bonded together so as to define or enclose the inflatable bag which is provided with at least one connecting socket for an air line.

Consequently, in place of the two separate layers of the conventional bandages which are interposed between the air within the rubber bag and the skin of the patient and which are further separated by an intermediate layer of air, the present invention attains the result that now there is only a single double layer and that therefore the pulsations of the blood will be more directly and effectively transmitted to the air within the bag.

Aside from this principal feature, the invention further provides that the two textile strips of which the new bandage is made preferably consist of synthetic fibers and are as thin and unstretchable as possible, and that the coating on each of these fabric layers consists of a material of the group of air-impermeable coatings which comprises natural and synthetic rubber and plastics. These coatings are securely bonded together at the desired parts by vulcanizing, welding or gluing.

The combined features of the invention as described above have the result that the bag can be inflated only to a relatively small extend and therefore has a relatively small air capacity. Such a smaller air chamber has the advantage that it will be more strongly affected by the pulsations of the blood than one of a larger capacity and that therefore more accurate measurements may be carried out.

The inflatable bag only takes up a small part of the entire bandage. The much longer part in which the two layers are fully combined with each other are stiffer and more stretch-resistant than the corresponding part of the conventional bandages. This has the advantage that the air which has been pumped into the bag of the bandage according to the invention will exert its effect more toward the skin of the patient than toward the outside and that therefore the accuracy of the measurements will be further improved. The manner of and means for closing and securing the new bandage may be the same as those of the conventional bandages.

Another advantageous feature of the invention consists in providing at least one plug of rubber or a similar material which is inserted and sealed between the two layers forming one edge of the inflatable bag and is provided with a bore

which terminates into the bag. Into this bore one end of a small metal tube is tightly fitted, while the other end of this tube which projects outwardly from the plug insert and thus also laterally from the bag serves for attaching the end of a flexible tube leading to the pump for inflating the bag.

The features and advantages of the present invention will become further apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which --

FIG. 1 shows, partly in section, an elevation of the bandage according to the invention;

FIG. 2 shows an enlarged cross section which is taken along the line II—II of FIG. 1;

FIG. 3 shows an enlarged cross section which is taken along the line III—III of FIG. 1;

FIG. 4 shows an enlarged cross section which is taken along the line IV—IV of FIG. 1;

FIG. 5 shows diagrammatically one manner of applying the bandage;

FIG. 6 shows diagrammatically another manner of applying the bandage;

FIG. 7 shows in cross section the manner of securing a flexible tube to the bandage for pumping up the bag; while

FIG. 8 shows an elevation of a part of a bandage to which two flexible tubes are attached.

As illustrated in the drawings, the bandage according to the invention consists of a pocketlike part 1 and a band part 2 both of which consist of two strip-shaped layers 3 and 4 of a textile fabric which is rubber-coated on one side. The coated sides of the layers 3 and 4 face each other, and while along the pocket part 1 they are bonded together merely along their edges 5, as shown particularly in FIGS. 2 and 3, their entire opposite surfaces are bonded together along the band part 2, as shown especially in FIG. 4. Thus, the pocket part 1 is completely sealed along all of its edges and forms an inflatable bag.

The fabric of the two layers 3 and 4 preferably consists of synthetic fibers and is made as thin and nonstretchable as possible. The thin coating may consist of natural or synthetic rubber, and the respective edges and surfaces of the two layers may be bonded to each other either by vulcanizing or by gluing. For inflating the bag or pocket 1 by means of a hand pump, one longitudinal edge 5 of the pocket part 1 carries at least one flexible tube 6 (or two tubes 6 in FIG. 8) which is secured to the pocket by means of a metal tube 7 which is inserted into the end of the flexible tube 6 and the projecting end 7' of which is secured within a plug 8 of rubber of a suitable shape, as shown in FIGS. 3 and 7, which is inserted and vulcanized between the layers 3 and 4 of the edge 5 of pocket 1.

One layer of the band part 2, for example, the layer 3, is provided with a longer fastening strip 9, while the other layer, for example, the layer 4, is provided with a shorter fastening strip 10. These fastening strips 9 and 10 are spaced from each other in the longitudinal direction for such a distance that, when the bandage is wrapped, for example, around an arm, they will substantially cover each other. They may be of a conventional type and consist, for example, of textile strips one of which is provided with loops and the other with hooks of plastic which when applied upon each other will cling to each other like burs.

The fastening strips 9 and 10 may be secured to the band part 2 by stitched seams 11 or by being vulcanized or glued thereto. The outer end of the band part 2 may be reinforced by a stiffening member 12.

The bandage according to the invention may be wrapped, for example, around an arm of a patient, and this is preferably done in the manner as illustrated in FIG. 5, although it may also be done in the manner as shown in FIG. 6.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of these embodiments but is capable of numerous modifications within the scope of the appended claims.

3

Having thus fully disclosed my invention, what I claim is:

1. An airtight bandage adapted to be wrapped around a limb of a person or animal for damming up the blood therein so as to permit blood pressure or other measurements to be made, comprising a band consisting of two superimposed layers of a fabric coated at least on the inner sides facing each other with an air-impermeable coating, said band having a shorter part adjacent to one end and a longer part continuous with said shorter part and extending to the other end, said coated layers of said longer part being completely bonded together along their entire inner surfaces, and said coated layers of said shorter part being bonded together only along their edges so

4

that the central area forms an inflatable bag between said layers adapted to be applied at least partly around said limb, while said longer part is adapted to be wrapped around said limb, said bag having at least one small opening adapted to be connected to an air pump.

2. A bandage as defined in claim 1, wherein said fabric consists of synthetic fibers and is thin and stretch-resistant, said coating consisting of a substantially air-impervious coating material selected from the group consisting of natural and synthetic rubber.

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