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F. G. BRATHWAITE

1,970,042

CUFF FOR USE WITH SPHYGMOMANOMETERS

Filed July 11, 1932

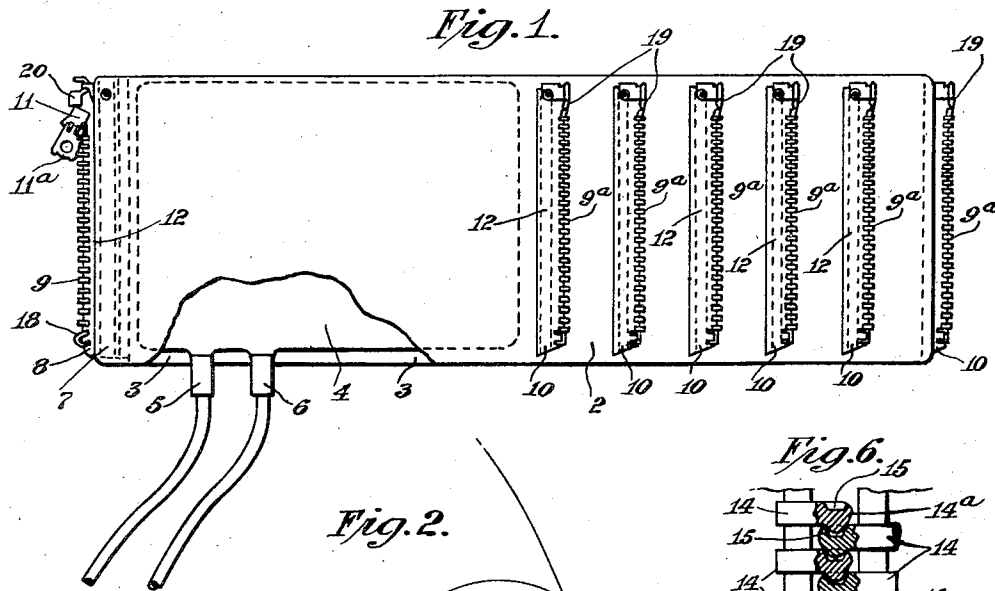


Fig. 2.

Fig. 6.

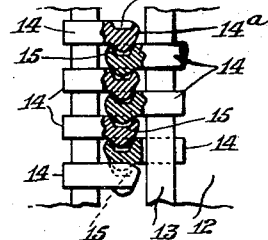


Fig. 3.

Fig. 7.

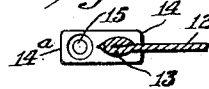


Fig. 8.

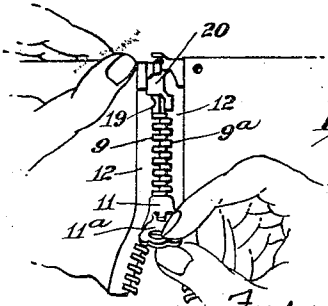
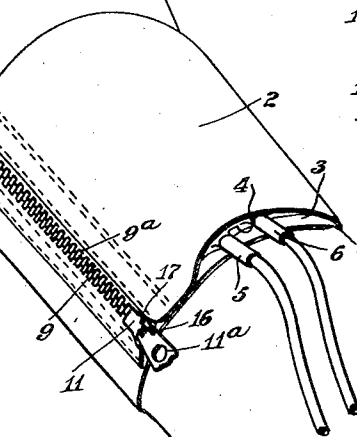
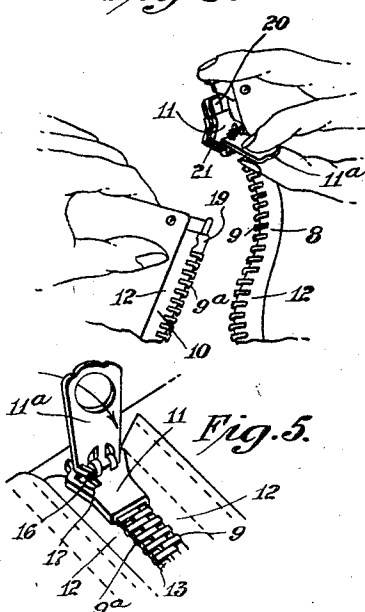
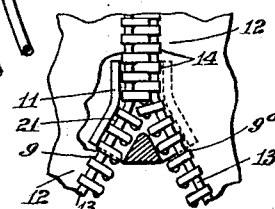
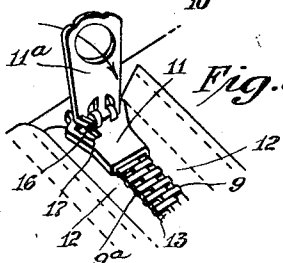


Fig. 4.

Fig. 5.



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CUFF FOR USE WITH SPHYGMOMANOMETERS

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2 Claims. (Cl. 128—327)

This invention relates to sphygmomanometers, and in particular to the arm band thereof, which carries the air bag forming part of or connected to recording apparatus, such as a mercury or aneroid manometer or an oscillometer.

The band has an important bearing in the reading of blood pressure characteristics in sphygmomanometry. With refinement of construction in recording apparatus seeking the exploration of the most delicate differentiations in the various pressures, it is necessary that these delicate readings be not altered by extraneous conditions. Thus, the bag should exert an even and homogeneous pressure over the vessel during observation. In the band or cuff as heretofore constructed, especially in respect to the means of application or fastening of the band to the arm of the patient, this requirement has not been fulfilled. There has been the tendency of the bag to become bisected or altered, to yield or "give" under "self-adjustment" of the fastening means, especially under maximal pressures, and even where this is not pronounced, such excursion of the bag as to affect the reading, and in absence of that ease and facility of application of the cuff to the arm, that makes for ease of mind of the nervous patient.

By my invention, I provide a construction in which the cuff when placed upon the arm, regardless of the size of the arm, will have its ends in positive and fixed apposition over the whole width of the cuff or at substantially all points in a line transversely of the band, in such manner as to secure uniform constriction about the arm and substantial constancy of the factors of cuff resistance and resulting accuracy of reading and recording, in that variations of pressure created in the cuff bag are transmitted exclusively of any extraneous modifying factors to the recording apparatus. Further, I provide a cuff that may be easily and quickly applied to the arm or limb.

Referring to the drawing, Figure 1 is an elevational view of a sphygmomanometer arm band employing my invention; the fabric of the band being partly broken away to show the rubber bag; Figure 2 is a perspective view showing the band applied to an arm; Figures 3, 4, 5, 6, 7 and 8 are detailed views showing the fastening devices for closing of the band about the arm, and which will be referred to hereinafter.

The band proper 2 may be made of duck or any suitable material, preferably of a non-stretching or non-yielding weave. This band is provided in the usual manner with a pocket 3, in which is housed the rubber bag 4, having the

usual intake 5 for an air supply (not shown), and the outlet 6 for attachment to a manometer (not shown). The end edge 7 of the band, which is adjacent the pocket 3 is provided with a stringer 8 carrying locking or fastening pins or fingers 9, which are adapted to interlock and co-operate with like fingers 9a on stringers 10 disposed along the fabric of the band commencing preferably at the opposite end of the band, as clearly shown in Figure 1. Any number of stringers 10 may be employed, and so arranged as to adapt the band to a wide range of arm sizes.

In general, the fastening device of the stringers 8 and 10 preferably follows the construction of a well-known hookless fastener now on the market. In the particular illustration, the flexible stringers are locked and unlocked by a sliding cam device 11 mounted on the stringer 8, and adapted to receive a stringer 10, the locking being effected by movement of the cam in one direction, and unlocking by movement of the cam in the opposite direction. The stringers 8 and 10 are alike and consist as shown, of a fabric strip or tape 12 (see Figures 3 to 8), provided as shown in Figures 6 and 7, with an outer rolled edge or bead 13, upon which the locking fingers or pins 9 and 9a are clamped or fastened; the locking members or pins having a base or jaw-like portions 14, which are clamped upon the tape, and outwardly projecting locking portions 14a, provided with a cup-shaped indentation and projection 15, so that one side of one member nests within the recess of the opposite side of the adjoining member when in locked relation.

In applying the band, it is so arranged on the arm that the stringer 8 will be brought into close juxtaposition to one of the stringers 10, depending upon the size of the arm and the consequent takeup of the length of the band 2. The upper end of each stringer 10 is provided with a smooth pin-like extension 19, and the upper end of the stringer 8 is provided with a recessed piece or clip 20. As shown in Figures 3 and 8, the cam 11 is provided with a forked or Y-shaped recess 21. In attaching the band to the arm, the extension 19 of a stringer 10 is first inserted in its respective fork of the recess 21 of the cam through which it passes into engagement with the clip 20. By holding the band at the top thereof as indicated in Figure 4, and feeding the cam downward on the stringers by means of the finger piece 11a, the locking fingers 9 and 9a of the stringers passing through the Y-shaped recess are brought together and locked on one another by the cam, the lower or forked portion of which bends the

stringers so as to spread the fingers in such manner as to cause the cup-shaped ends of the fingers of one stringer to mesh with those of the other adjoining stringer and then to interlock one with the other as the narrow upper part of the cam brings the stringers together in straight or parallel lines, in the movement of the cam along the stringers. The locking members will be engaged and disengaged according to the direction of movement. Thus to remove the band the cam is returned to its uppermost position. To facilitate manipulation of the cam 11, the cam is provided with a pivoted finger piece 11a.

As shown in Figure 5, the finger piece 11a has a projecting pin 16, and the cam a corresponding opening 17. The lower end of stringer 8 is provided with a loop 18. When the band has been fastened about the arm as shown in Figure 2, the finger piece 11a is folded back upon the cam, in the direction of the arrow as shown in Figure 5, so that the pin 16 passing through the opening 17 of the cam will engage the loop 18 and lock the cam against upward movement and unfastening of the stringers during inflation of the rubber bag and consequent tension upon the fastening means.

It will be seen from the above that the difficulties incident to the use of arm bands having long tails or extensions or heavy or cumbersome clamping devices for the purpose of fastening the band to the arm, are obviated by the use of this band. The band is easily applied and removed from the arm; a uniform circumferential constriction ob-

tains, as the binding is positive and firm and it is possible to uniformly inflate the air bag, and there is obviated the tendency for the bag to shift its position on the arm. The ease and quickness of application and uniformity of hold and security on the arm conduce to ease the mind of the patient. All these things result in greater accuracy in the recording of the manometer. Further, the device is simple and compact in construction and cheap to manufacture.

I claim:

1. A cuff for sphygmomanometers and the like, comprising a band adapted to be applied to the arm of a patient, and having end portions, and means for locking the end portions in positive and fixed apposition at all points along a line transversely and substantially the entire width of the band.

2. A cuff for sphygmomanometers and the like, comprising a band adapted to be applied to the arm of a patient, and having end portions, a series of locking devices spaced at intervals along the back of the band at one end portion and extending transversely of the band, and a locking device carried by the other end of the band and adapted for interchangeable locking cooperation with the other locking devices, to effect in each case a continuous seam-like jointure between the ends of the band, to hold said ends in positive and fixed apposition at all points of a line transversely and substantially the entire width of the band.

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