Jan. 8, 1952 W. E. HEITZ 2,582,123

ADJUSTABLE LENGTH SPHYGMOMANOMETER CUFF OR SLEEVE

Filed June 23, 1950 2 SHEETS—SHEET 1

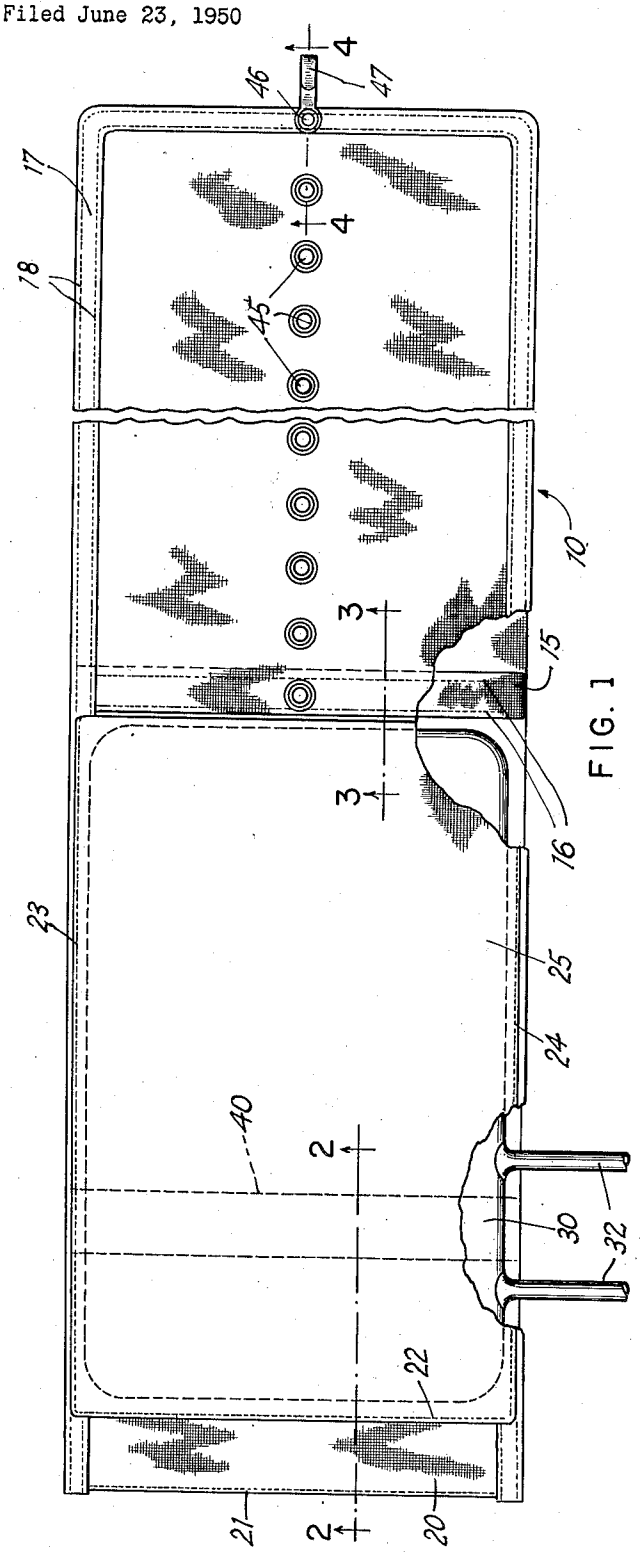


FIG. 1

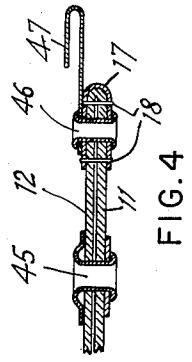


FIG. 4

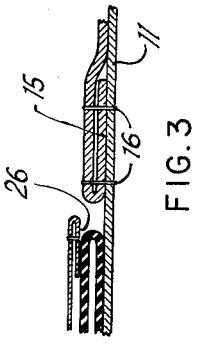


FIG. 3

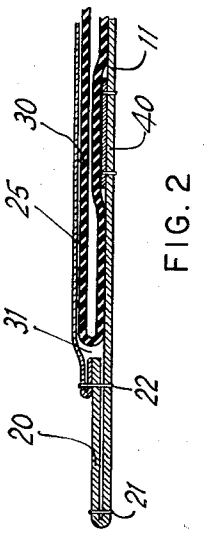


FIG. 2

INVENTOR
Walter E. Heitz
BY
Alfred E. Page
ATTORNEY

Jan. 8, 1952 W. E. HEITZ 2,582,123

ADJUSTABLE LENGTH SPHYGMOMANOMETER CUFF OR SLEEVE

Filed June 23, 1950 2 SHEETS—SHEET 2

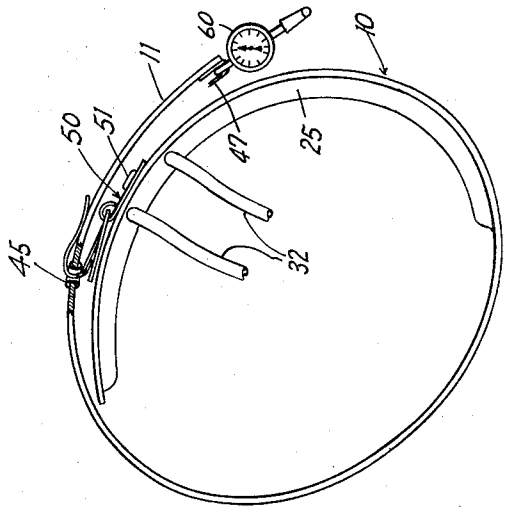


FIG. 6

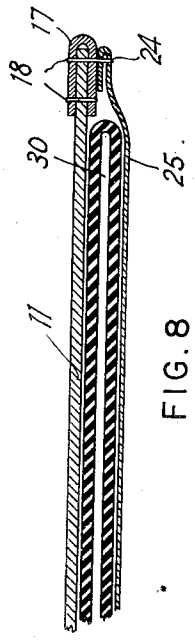


FIG. 8

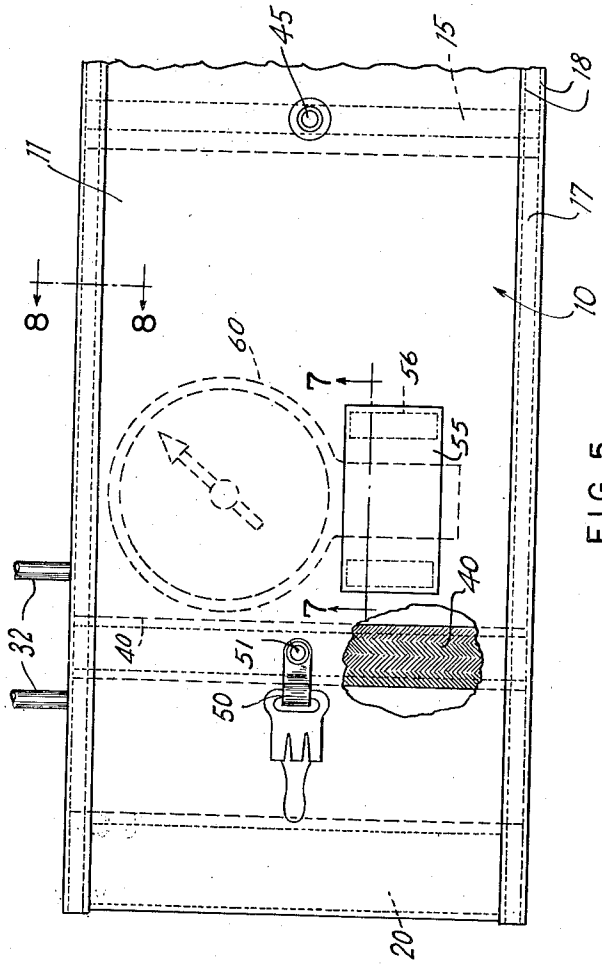


FIG. 5

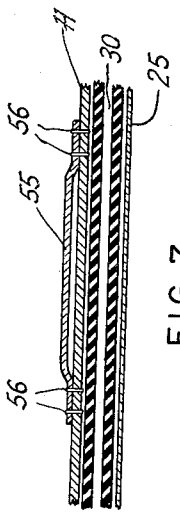


FIG. 7

INVENTOR
Walter E. Heitz
BY
Alfred C. Page
ATTORNEY

Patented Jan. 8, 1952

2,582,123

UNITED STATES PATENT OFFICE

2,582,123

ADJUSTABLE LENGTH SPHYGMOMANOMETER CUFF OR SLEEVE

Walter E. Heitz, Scarsdale, N. Y., assignor to Heitz Instruments, Inc., New York, N. Y., a corporation of New York

Application June 23, 1950, Serial No. 169,821

10 Claims. (Cl. 128—2.05)

1

This invention relates to a sphygmomanometer cuff or band and, more particularly, to such a band or cuff which is more efficient and more sensitive than those presently available.

In the taking of blood pressure readings, it is the practice to encompass the limb of the patient with a cuff or sleeve which is inflatable to stop the flow of blood through the artery in which the blood pressure is to be measured. These cuffs may be in various forms, such as an inflatable elongated bag or a fabric sleeve having an inflatable bag mounted on or in the sleeve.

To fit limbs of widely differing girth, the sleeve must be of such construction that it can be adjustably wrapped around the limb. Additionally, it should be strong and rugged, engage a substantial length of the artery, and be of such material as to sensitively transmit pulsations of the artery.

The meeting of these requirements has resulted in the development of rather complicated and expensive prior art devices. To achieve adjustability, the sleeve has been provided with a fastening element disengageably associatable with cooperating elements spaced along the sleeve length. Some of these fastening elements have been unduly complicated and likely to malfunction.

Rigid transverse reinforcements have been used to obtain the desired length of artery contact. These reinforcements increase the weight and bulk of the sleeve, as well as its cost, and detract from the patient's comfort. Additionally, the thickness of fabric necessary to mount the reinforcements decreases the sensitivity of response to pulsations in the artery.

The present invention is directed to a fabric sphygmomanometer sleeve which is characterized by simply adjustable fastening means, adequate non-rigid transverse reinforcement, sensitivity of response, and simplicity.

For an understanding of the invention principles, reference is made to the following description of a typical embodiment thereof as illustrated in the accompanying drawings. In the drawings:

Fig. 1 is an inside plan view of the invention cuff or sleeve.

Figs. 2, 3 and 4 are sectional views on the correspondingly numbered lines of Fig. 1.

Fig. 5 is an outside plan view of the cuff or sleeve.

Fig. 6 is an elevation view of the sleeve in the wrapped around state.

2

Figs. 7 and 8 are sectional views on the correspondingly numbered lines of Fig. 5.

Referring to the drawings, the sleeve or cuff 10 comprises an elongated, substantially rectangular backing strip 11 of suitable relatively heavy material such as a light canvas. One end of strip 11 is folded back on itself, as at 12, for substantially half the length of sleeve 10, the inner end of portion 12 being folded under to form a flexible transverse intermediate reinforcement and abutment 15.

The opposite end of strip 11 is likewise folded back on itself to form a transversely extending end reinforcement and abutment 20. Reinforcement folds 15 and 20 are secured to the main portion of strip 11 by suitable stitched seams 16, 16, 21 and 22, seams 22 also securing one end of a sateen strip 25 to reinforcement 20. A U-shape binding strip 17 extends along both sides of strip 11, and along the folded end remote from reinforcement 20, parallel seams 18, 18 securing binding strip 17 to strip 11.

The margins of sateen strip 25 are folded under, for reinforcement, and stitched to reinforcement 20 by seam 22, and to the side edges of strip 11 and to binder 17 by stitched seams 23, 24 forming a continuation of seam 22. The free inner end of strip 25 has a stitched hem 26.

An inflatable bag 30, of rubber or the like, lies flat within the pocket 31 formed between strips 11 and 25, having inflation and deflation tubes 32, 32, connected in the usual manner to the pump, pressure indicator and release valve (not shown). Tubes 32 extend outwardly through suitable side openings in pocket 31. For a purpose to be described, a transverse reinforcing strip 40 is stitched to the inner surface of layer 11 substantially midway of tubes 32.

The length adjustment means of the invention sleeve or cuff includes a plurality of eyelets 45 spaced longitudinally of the sleeve between reinforcement 15 and the folded over end of strip 11. These eyelets are rivetted through both layers of fabric 11 and 12, thus being firmly anchored in position. An eyelet 46 at the outer end of the sleeve serves to secure a hook 47 to this end. Hook 47 may be used to mount a pressure gauge directly on the sleeve 10.

A snap fastener 50 (Fig. 5) is arranged to selectively engage any one of eyelets 45 to adjust the sleeve length to limbs of different girth. An eyelet 51 secures fastener 50 to strip 11 and reinforcement 40, the fastener 50 thus being firmly anchored in position. Fig. 6 somewhat schematically indicates how sleeve 10 is wrapped around

a limb, sateen lining 25 being innermost and fastener 50 being engaged in the proper eyelet 45 to provide a close fit. A leather loop 55 may be stitched to fabric 11, as at 56 and used to hold the gauge 60 when the sleeve is not in use, thus preventing the sleeve and its gauge from being relatively misplaced.

In operation, as bag 30 is inflated, it is held longitudinally between the closed end of pocket 31 and reinforcing abutment 15. The thin sateen, or the like, lining 25 overlying bag or sack 30 provides a sensitive response to arterial pulsations, and the several transverse, flexible reinforcements 15, 20, 40 assure an adequately lengthy contact with the artery.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the principles thereof, it should be understood that the invention may be otherwise embodied without departing from such principles.

What is claimed is:

1. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half its length to form a reinforced double layer construction; and a strip of relatively thin fabric secured along one end and both edges to the inner surface of such elongated strip throughout the major part of its non-reinforced length and forming therewith a pocket open at the other end of the thin fabric strip to receive an inflatable bag; said relatively thin fabric providing for sensitive response of the inflated bag to blood stream pulsations.

2. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half of its length to form a reinforced double layer construction; a strip of relatively thin fabric secured along one end and both edges to the inner surface of such elongated strip throughout the major part of its non-reinforced length and forming therewith a pocket open at the other end of the thin fabric strip to receive an inflatable bag; and means on the inner surface of the elongated strip adjacent the mouth of the pocket and obstructing movement of the bag out of the pocket when the bag is inflated; said relatively thin fabric providing for sensitive response of the inflated bag to blood stream pulsations.

3. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half its length to form a reinforced double layer construction; a strip of relatively thin fabric secured along one end and both edges to the inner surface of such elongated strip throughout the major part of its non-reinforced length and forming therewith a pocket open at the other end of the thin fabric strip to receive an inflatable bag; said relatively thin fabric providing for sensitive response of the inflated bag to blood stream pulsations; a plurality of fastening means spaced longitudinally along the reinforced portion of said elongated strip; and a fastening element secured to said sleeve and selectively cooperable with said fastening means, whereby said sleeve may be fastened in wrapped around relation on limbs of different girth.

4. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half its length to form a reinforced double layer construction; a strip of relatively thin fabric secured along one end and both edges to the inner surface of such elongated strip throughout the major part of its non-reinforced length and forming therewith a pocket open at the ohter end of the thin fabric strip to receive an inflatable bag; means on the inner surface of the elongated strip adjacent the mouth of the pocket and obstructing movement of the bag out of the pocket when the bag is inflated; said relatively thin fabric providing for sensitive response of the inflated bag to blood stream pulsations; a plurality of fastening means spaced longitudinally along the reinforced portion of said elongated strip; and a fastening element secured to said sleeve and selectively cooperable with said fastening means, whereby said sleeve may be fastened in wrapped around relation on limbs of different girth.

5. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half its length to form a reinforced double layer construction, the inner end of the folded over portion being folded to form a first reinforcing hem extending transversely of the sleeve and the opposite end of the strip being folded to form a second reinforcing hem extending transversely of the sleeve; a strip of relatively thin fabric secured to the inner surface of said elongated strip between said hems and forming therewith a pocket to receive an inflatable bag; said first hem obstructing movement of the bag out of the pocket when the bag is inflated; a plurality of fastening means spaced longitudinally along said elongated strip; and a fastening element secured to said sleeve and selectively cooperable with said fastening means, whereby said sleeve may be fastened in wrapped around relation on limbs of different girth.

6. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half its length to form a reinforced double layer construction, the inner end of the folded over portion being folded to form a first reinforcing hem extending transversely of the sleeve and the opposite end of the strip being folded to form a second reinforcing hem extending transversely of the sleeve; a strip of relatively thin fabric secured to the inner surface of said elongated strip between said hems and forming therewith a pocket to receive an inflatable bag; said first hem obstructing movement of the bag out of the pocket when the bag is inflated; a reinforcing binder secured around two side edges and an end of said sleeve; a plurality of fastening means spaced longitudinally along said elongated strip; and a fastening element secured to said sleeve and selectively cooperable with said fastening means, whereby said sleeve may be fastened in wrapped around relation on limbs of different girth.

7. A sphygmomanometer sleeve comprising, in combination, an elongated strip of relatively heavy fabric folded inwardly upon itself for substantially one-half its length to form a reinforced double layer construction, the inner end of the folded over portion being folded to form a first reinforcing hem extending transversely of the sleeve and the opposite end of the strip being folded to form a second reinforcing hem extending transversely of the sleeve; a strip of relatively thin fabric secured to the inner surface

of said elongated strip between said hems and forming therewith a pocket to receive an inflatable bag; said first hem obstructing movement of the bag out of the pocket when the bag is inflated and reinforcing the sleeve transversely; a reinforcing binder secured around two side edges and an end of said sleeve; a fabric reinforcing strip extending transversely of said elongated strip intermediate said hems; a plurality of fastening means spaced longitudinally along the double layer reinforced portion of said elongated strip; and a fastening element secured to said elongated strip and to said transverse reinforcing strip and selectively cooperable with said fastening means, whereby said sleeve may be fastened in wrapped around relation on limbs of different girth.

8. A sphygmomanometer sleeve as claimed in claim 7 in which said fastening means comprises eyelets and said fastening element comprises a snap fastener engageable in a selected eyelet.

9. A sphygmomanometer sleeve as claimed in claim 7 including a hook secured to the end of said sleeve remote from said second hem to protect a pressure gauge when not in use.

10. A sphygmomanometer sleeve as claimed in claim 7 in which said fastening means comprises eyelets and said fastening element comprises a snap fastener engageable in a selected eyelet; and including a hook secured to the end of said sleeve remote from said second hem to protect a pressure gauge when not in use.

WALTER E. HEITZ.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,199,408	La Liberte	May 7, 1940
2,258,720	Saighman	Oct. 14, 1941
2,347,197	La Liberte	Apr. 25, 1944

FOREIGN PATENTS

Number	Country	Date
9,535 of 1911	Great Britain	Oct. 5, 1911