

Sept. 3, 1935.

P. ADAMSON

2,013,396

KNITTED ELASTIC SURGICAL STOCKING AND THE LIKE

Filed April 11, 1932

2 Sheets-Sheet 1

Fig. 3.

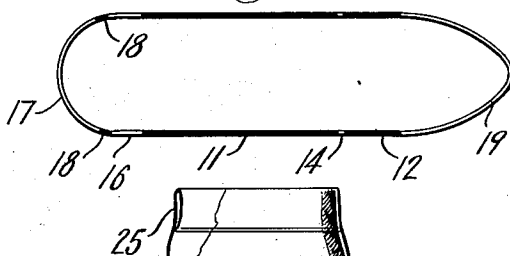


Fig. 2.

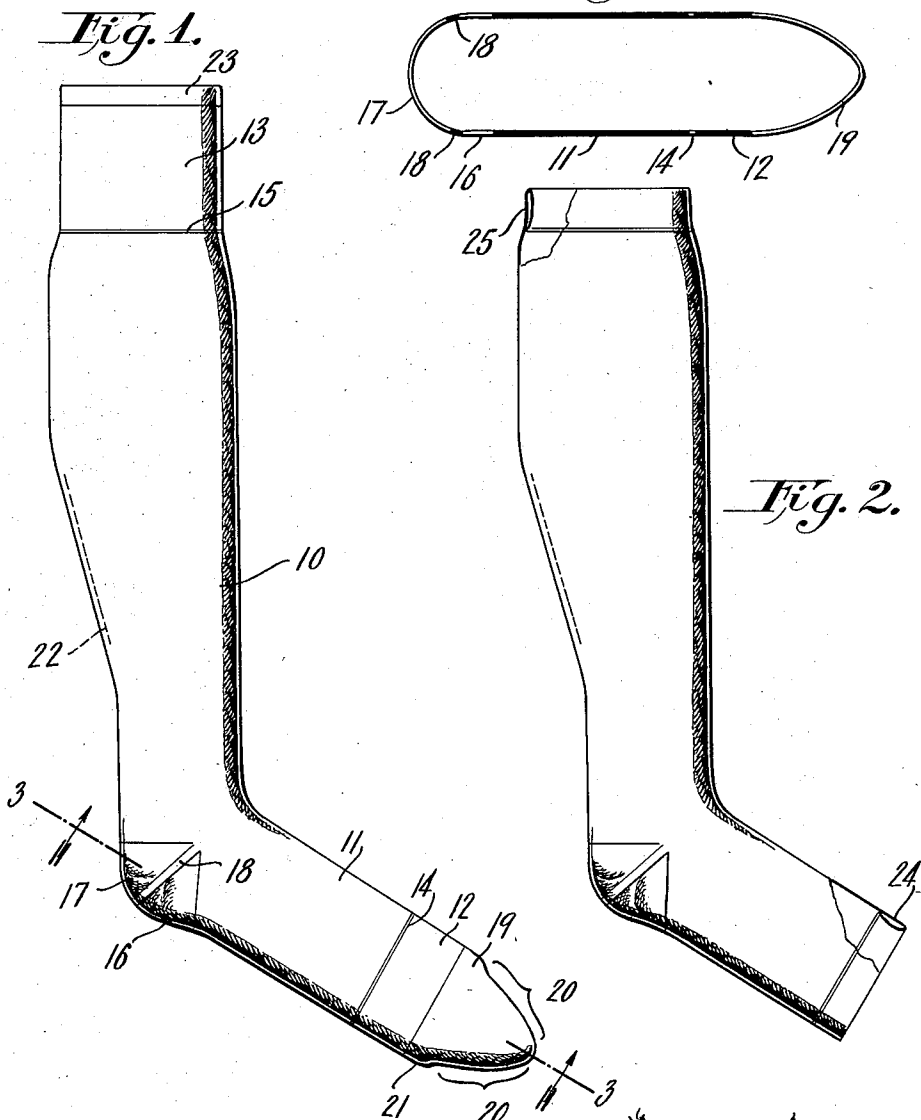


Fig. 1.

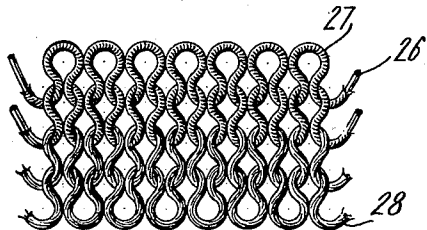
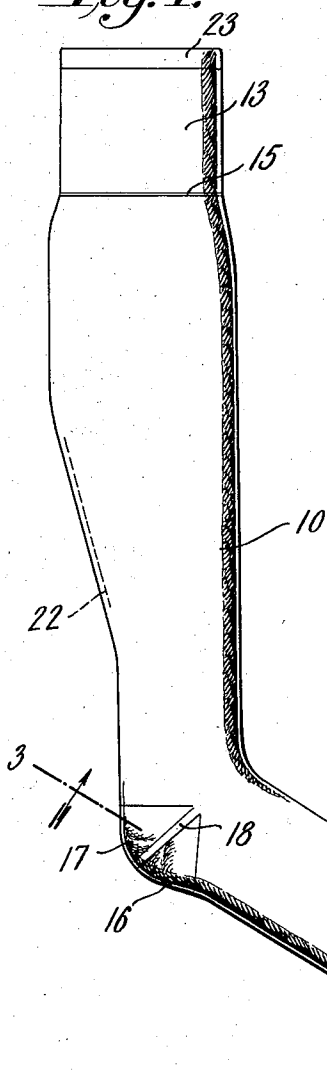


Fig. 4.

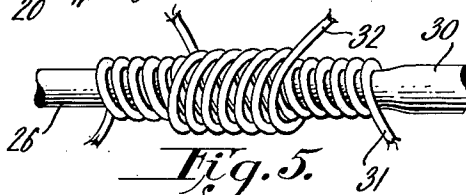


Fig. 5.

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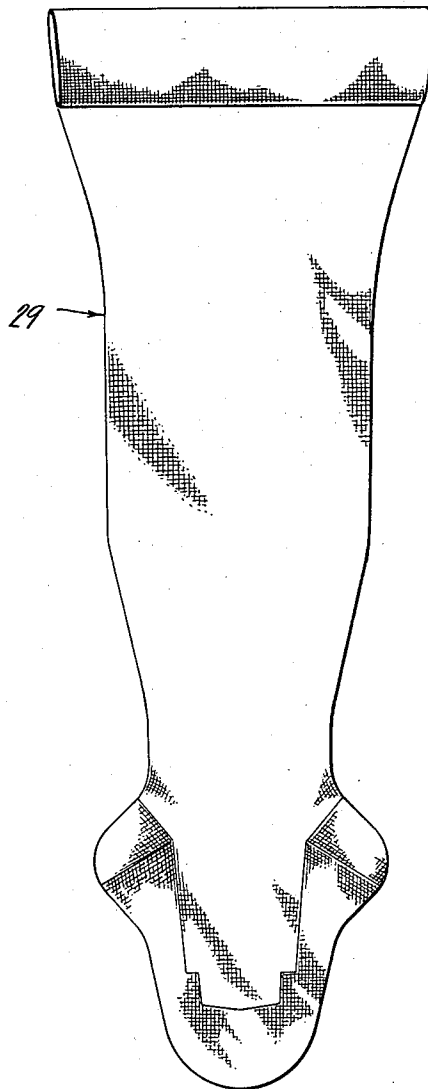
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Fig. 6.



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KNITTED ELASTIC SURGICAL STOCKING
AND THE LIKEPercy Adamson, Rye, N. Y., assignor to United
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Application April 11, 1932, Serial No. 604,378

4 Claims. (Cl. 66—172)

My invention relates to a knitted elastic surgical stocking or other limb or body encircling member for surgical use.

Articles of the character referred to for surgical use have long been known but they are heavy and uncomfortable, partly by reason of their weight and also because of the seams connecting the parts. Ordinarily, they are made from heavy woven fabric which is cut to shape and seamed, and the seams are necessarily bulky and thus have a tendency to irritate the parts against which they press. Woven elastic fabrics as heretofore used for this purpose stretch in one direction only and this is a further reason of complaint. It has not been practicable to knit such stockings on a knitting machine for the reason that no suitable elastic yarns have heretofore been known. The yarns that have heretofore been used have been cut rubber yarns wrapped with textile material, such yarns being very heavy as compared with the yarn which I use, and being further objectionable due to the fact that cut rubber yarns are of comparatively short length so that the ends must be knotted together at frequent intervals whereas in such yarn as I preferably use, the rubber core may be made of indefinite length and covered yarn can readily be provided of lengths which are greater than those heretofore known.

An object of my invention is to provide a knitted elastic surgical body or limb encircling member knitted from an elastic yarn.

Another object is to provide a machine knitted elastic surgical body or limb encircling member having increased lightness and flexibility, relative freedom from heavy seams, capable of providing uniform support at the desired points, good appearance, increased durability, and reasonable cost.

Another object of the invention is to provide a surgical stocking or the like which will stretch freely in all directions, thereby affording greater comfort to the wearer.

Further objects will appear from the detailed disclosure and claims.

For a complete disclosure of the invention, reference is made to the accompanying drawings in which:

Figure 1 is an elevation of a seamless stocking blank;

Fig. 2 is an elevation of a completed stocking of one type;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a much enlarged detail of a joint between a portion of the stocking made from elas-

tic yarn and another portion made from inelastic yarn;

Fig. 5 is a much enlarged detail of a short length of the elastic yarn used; and

Fig. 6 is an elevation of a full fashioned knit blank.

In the drawings, in one form of the invention, reference character 10 indicates the tubular body portion of a stocking blank having a tubular instep portion 11 and also having welt portions 12 and 13, either or both of which welt portions may be made of elastic yarn which is lighter than the elastic yarn used in the leg and instep portions. While I do not limit myself to the use of any particular yarn, it is preferred to use an elastic yarn of the character described in patent to Adamson, No. 1,822,847, granted September 8, 1931. Narrow zones 14 and 15 of inelastic yarn may be interposed between the welt portions and the adjacent tubular elastic yarn portions of a stocking. A divided heel area mainly of inelastic yarn is shown as composed of two parts 16 and 17 which are separated by a narrow zone 18 of elastic yarn. At the toe end of the stocking there is also a web 19 of inelastic yarn which serves as a handling web.

In making the stocking blank above described, the knitting operation is begun at the toe end of the stocking, the blank in this particular instance being shown as made on a machine of the Burson type, and the knitting operation being instituted by starting on the bare needles with a course knitted by taking the yarn with both banks of needles simultaneously, after which the stocking is widened at opposite sides at the parts indicated at 20—20. When the full width of the foot has been attained, a few courses are knitted to form the portion indicated at 21, after which the yarn is changed by substituting an elastic yarn for knitting the welt portion 12 of the stocking. This continues up to the point where the zone 14 begins, where an inelastic yarn is substituted for the elastic yarn for a few courses, after which the yarn is again changed so as to knit with an elastic yarn in the portion 11. When the heel area 16 is reached, an inelastic yarn is substituted for this area up to the beginning of the zone 18 where round and round knitting with elastic yarn is resumed for a few courses to avoid the weakness ordinarily found at the junction of the points at the sides of the heel area and the body of the stocking. When the zone 18 is completed, inelastic yarn is again substituted for the heel area 17 and when this area has been completed, the elastic yarn is again thrown in for the leg portion

of the blank. During the formation of the leg portion, the leg is widened at the calf, as usual, as indicated by the interrupted line 22. When the zone 15 is reached, an inelastic yarn is again thrown in for a few courses and thereafter knitting with the elastic yarn is resumed for the tubular portion 13, which ordinarily will be knitted with a lighter yarn than that used in the parts 10 and 11. After the part 13 is completed, a handling web 23 is knitted of inelastic yarn.

The stocking blank is now completed by cutting the end portion of the web 19 and doubling the welt area 12, as shown at 24 in Fig. 2, and placing loops of a course in zone 14 and also inelastic yarn loops of a course at or close to the end of welt zone 12 on the points of a looping instrumentality, raveling out the remainder of the web 19 up to said points and then connecting the loops so positioned in the usual manner of looping, as practiced in connection with knitted articles. In like manner, the upper welt area 13 is folded over as indicated at 25 in Fig. 2 and a course at its upper end is connected to a course in the zone 15, after which the waste portion of the handling web 23 is removed. It will be understood that the zones 14 and 15 of inelastic yarn are provided as a matter of convenience for the looping operation incidental to the completion of the welts 24 and 25.

In the embodiment just described, the finished stocking is toeless, but if desired, the stocking may be knitted with a toe portion of either elastic or inelastic yarn. Or, instead the stocking may be made without any foot and with merely a strap extending beneath the foot.

In the enlarged detail in Fig. 4, the upper courses of fabric are made from yarns having an elastic core 26 and a covering 27, all of which may be as described in the patent to Adamson above referred to, the core yarn being preferably grainless rubber and the covering material being formed from textile yarn, the whole being of approximately the thickness of ordinary knitting yarn of relatively fine gauge. The lower courses comprise textile yarns 28, preferably cotton yarns.

In Fig. 6 a modification is shown in which a full fashioned blank 29 is knitted either entirely of elastic yarn or with inelastic yarn substituted at desired portions, such as in the foot. This blank may then be joined up along its edges in the manner usually employed in making full fashioned stockings.

Other body encircling articles, such as wristlets, knee and ankle supports, abdominal supports, etc., may be made in a similar manner.

The construction of the preferred elastic yarn is further illustrated in Fig. 5, where 26 indicates

the core which, as in the Adamson patent referred to, is in a stretched condition, as indicated by the enlargement of the unwound portion of the core at 30. The covering is shown as consisting of oppositely wound inner and outer yarns 31 and 32 respectively.

While elastic yarn may be used embodying a core of any suitable rubber or rubber-like material, it is preferred to use a yarn having a core made directly from a dispersion of rubber, such as natural latex, as described in patent to Hopkinson et al. No. 1,545,257, granted July 7, 1925. I have found that articles made from elastic yarn having such a core have greatly superior resistance to heat and air ageing, laundering, perspiration, etc. In addition, being made of rubber from latex direct, and therefore unmilled, the thread has superior strength and elasticity, and it is also free from the sharp corners and irregularities of cut thread, so that the covered yarn is very regular and of uniform strength.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A blank for a surgical stocking comprising a knitted tube with a body of elastic yarn, a heel pocket area of cotton yarn, a handling web of inelastic yarn at each end of said body, and a narrow attachment zone of inelastic yarn in spaced relation to each of said handling webs for wetting by attachment of a course at the end of the body to a course in said attachment zone.

2. In a knitted stocking blank, a tubular portion made from elastic yarn, a handling web of inelastic yarn at the end thereof and a narrow zone of inelastic yarn spaced from the end of said tubular portion, whereby a welt can be made on the blank by looping a course at the end of the elastic yarn portion to a course in said narrow zone.

3. A method of making a seamless surgical stocking blank comprising knitting a toe portion of cotton yarn, followed by a zone of elastic yarn, then knitting a narrow zone of cotton yarn, then knitting an elastic yarn to complete the instep and sole of the stocking, then knitting a heel pocket, then knitting the leg nearly to the top, then knitting a narrow zone of cotton followed by a zone of elastic yarn and a handling web.

4. A method of knitting a seamless surgical stocking comprising knitting a tube of elastic yarn with a narrow circumferential zone of inelastic yarn intercalated between the ends of the tube, providing a handling web at one end of the tube, and connecting loops of a course of inelastic yarn at said end to loops in said narrow circumferential zone to form a welt.

PERCY ADAMSON.