

M. W. BURK.
SURGICAL STOCKING.
APPLICATION FILED JULY 6, 1918.

1,287,870.

Patented Dec. 17, 1918.

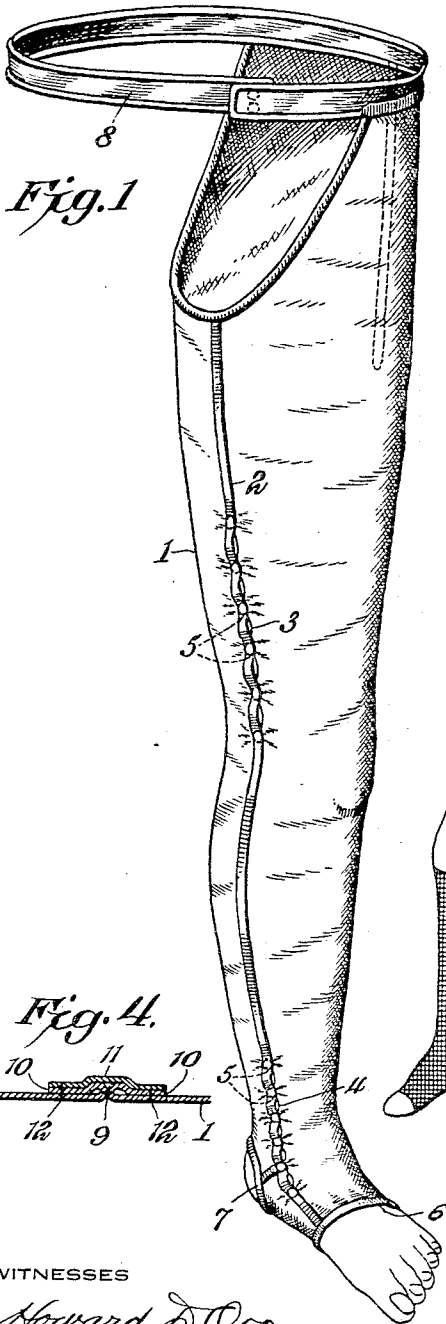


Fig. 4.

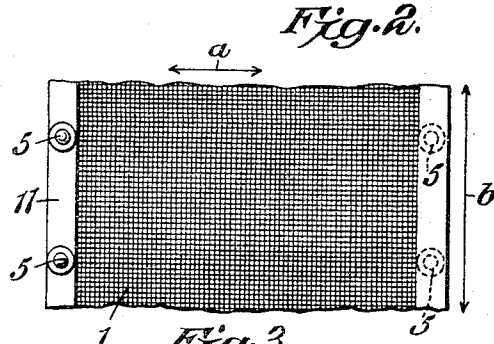
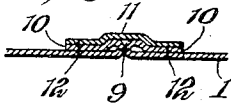


Fig. 2.

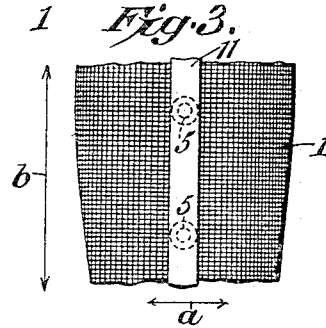


Fig. 3.

Fig. 5.

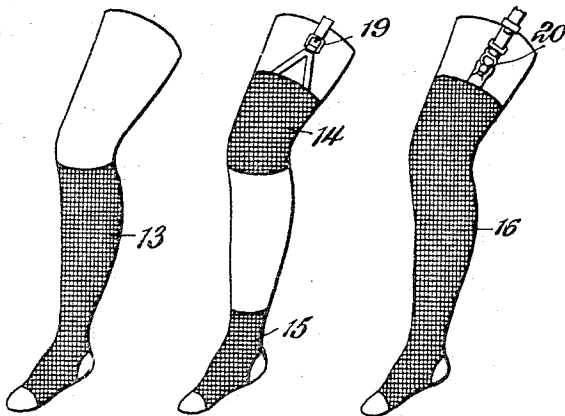


Fig. 6.



WITNESSES

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SURGICAL STOCKING.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MABEL W. BURK, a citizen of the United States, residing at Chester, in the county of Delaware and State of Pennsylvania, have invented a new and useful Surgical Stocking, of which the following is a specification.

This invention has reference to surgical stockings, by which term it is meant to include not only devices for encircling the leg or portions thereof, but devices for encircling the arms or portions thereof or the trunk of a patient.

The object of the invention is to provide a tightly fitting band for the treatment of various troubles, especially where pressure is desirable, which band or stocking may be made to exert the desired pressure without deterioration, at the same time is readily yieldable to movement of parts of the body surrounded by the stocking.

In accordance with the invention, the stocking is made of a fabric of more or less opening mesh, providing desirable ventilation, and, hence, in such respect, comfortable to the wearer, the fabric being capable of stretching in one direction to a moderate extent while in the other direction the fabric is stretchable to a materially greater extent. The fabric is drawn about the part to be inclosed as tightly as required, which is usually about as tight as the fabric can be drawn by the human hands, the fabric encircling the part in the direction of the width of the fabric where stretching is only moderate and the stretch of the fabric may practically be all taken up, the ease of movement of the inclosed part being due to the elasticity or stretch of the fabric in the other direction, that is, lengthwise of the weave.

When the fabric is fitted to and drawn tightly as may be about the part to be inclosed, it is then preliminarily sewed or otherwise fastened, after which, the fitted fabric is removed and permanently sewed or fastened. When the fabric is sewed the edges of the seam are turned back on the outside of the band or stocking and then reinforced by applied tape, also sewed to the fabric. Wherever it is necessary to facilitate the application and the removal of the stocking, gaps are provided at the junction and these gaps have fastening devices, of which snaps may be taken as an example.

While the invention is not limited to any particular fabric, experience has shown that

a woven fabric known as the Kneipp weave having the trade name of Meshlen is particularly adapted for the purposes of the invention. Such fabric is capable of being stretched to a considerable extent lengthwise of the weave and to a limited extent crosswise of the weave, and also has a limited amount of inherent elasticity. The fabric also has other advantages which make it particularly adapted for the purposes of the invention and advantageous over other forms of woven fabrics.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a perspective view of a surgical stocking of waist length.

Fig. 2 is a more or less schematic representation of a piece of a surgical stocking where a gap is formed in the same, the piece being opened out.

Fig. 3 is a more or less schematic representation of the same piece of fabric as applied to the band to be inclosed.

Fig. 4 is an enlarged schematic section of the joined edges of the fabric where the junction is by sewing.

Fig. 5 is a schematic view showing various forms of stockings.

Fig. 6 is a schematic view showing the application of the invention to the arm instead of to the leg.

Referring to the drawing, there is shown in Fig. 1, a waist-length stocking 1, made of a single piece of fabric with a longitudinal seam 2, which seam, at certain points 3 and 4, is open and provided with snaps 5. In the particular showing of Fig. 1, the opening 3 is above the knee of the stocking, while the opening 4 is at the ankle of the stocking. As is customary, the stocking terminates at an instep portion 6 and has an open heel portion 7, thus avoiding any discomfort to the wearer at such parts of the article.

In the showing of Fig. 1, the stocking is

provided with a waist-band 8, whereby the upper end of the stocking may be firmly held in position. The seam 2 has the joined edges connected by stitching 9, as indicated in Fig. 4, with the raw edges 10 of the fabric turned back upon the body portion and covered by a tape 11 connected through the turned back edges and body of the fabric by stitching 12. This has been found, in practice, to be an effective way in joining the parts, but it is to be understood that the invention is not necessarily confined to such particular arrangement.

Each stocking is individualized by fitting it directly to the patient by applying a sufficient length of the cloth to the part to be surrounded by the stocking and this cloth is drawn tightly about the part to be inclosed in the direction crosswise of the weave, this being indicated in Figs. 2 and 3 by short double pointed arrows *a*. The woven fabric, of which the Kneipp weave may be taken as an example, stretches lengthwise of the weave to a greater extent than crosswise thereof and this lengthwise stretch is indicated by the longer arrows *b* in Figs. 2 and 3.

It is important, for the purposes of the invention, that the fabric be of relatively open mesh and be stretchable to only a limited extent in the direction in which it is drawn about the part to be inclosed, the capability of stretching to some extent making the fabric more or less elastic or yieldable to movements of the parts inclosed, this elasticity or yieldability being made more pronounced by the greater degree in the capability of stretching in the direction in which the fabric is not initially stretched, that is, in the direction of the length of the weave.

The stretch crosswise of the weave is practically all taken up in the application of the stocking or band to the parts to be inclosed, such pull upon the fabric as may be exerted by the human hands being sufficient to cause the desired remedial pressure with the fabric about at the limit of its stretch crosswise of the weave.

When the stocking is fitted the cloth or fabric after being drawn as tightly as desired, which is usually about as tight as it may be drawn by the human hands, has the meeting edges fastened together, as by basting. Then the fitted stocking may be removed, this being accomplished in the same manner as the removal of an ordinary stocking. The joined edges are then permanently sewed together and the seam is reinforced by exteriorly applied braid as already described. When the stocking is of such length as to demand it, certain portions of the seam are left open and properly taped and supplied with snaps so that the stocking may be readily drawn upon the limb and the openings subsequently closed and held closed by the snaps.

A surgical stocking made in the manner described is highly advantageous over the so called rubber stockings or rubber fabric stockings because there is no deterioration in the stocking or in the pressure, the stocking being readily yieldable to all movements of the parts inclosed thereby without deterioration of the stocking and without diminution of the initially established pressure. The stocking may be removed at any time and as often as need be for cleansing, with the originally produced pressure upon the parts automatically restored on again applying the stocking. Moreover, the stocking is advantageous over those made of unyielding fabric depending upon lacing or like fastening means for the pressure in that the stocking is soft, highly flexible, porous and capable of exerting and holding any predetermined pressure, besides being comfortable to wear and cool to the wearer.

In Fig. 2, a small section of the stocking at a point where an opening appears is shown displayed, in which case, the fabric not being under tension is more or less contracted, which condition is indicated schematically by a closer approach of the lines which extend in the direction of the length of the stocking and which represent the lengthwise direction of the cloth. In Fig. 3, it is assumed that the same portion of the fabric is applied to the part of the body to be held under pressure with the fabric stretched to about its limit crosswise of the weave and this is schematically indicated by a greater separation of the longitudinal lines, such lines being those extending up and down in the two figures of the drawing. In neither Figs. 2 or 3 is there any attempt made to show any special kind of weave.

In Fig. 1 the stocking is of waist-length, while in Fig. 5 there are shown schematic representations of shorter stockings. For instance, there is indicated a garter stocking 13, a knee cap stocking 14, an anklet stocking 15, and a knee stocking 16. There are various other forms of leg stockings known as thigh stockings, thigh piece, garter legging, thigh legging, knee legging, thigh-knee cap and others, all of which are well known in the art and need no special description.

In Fig. 6 there is shown a wristlet 17, and an elbow cap 18, which may be taken as examples of the application of the invention to the arm of the patient. It is sometimes desirable that portions of the trunk of the patient be subjected to pressure and this may be performed in substantially the same manner as has been described with reference to the leg. For these reasons, the invention whether applied to one part of the body or to another, has the same function as the stocking applied to the leg or portion thereof. Consequently, in describing the invention as being directed to a surgical stocking, it is to be understood

that such term is intended to cover a binding device irrespective of the part of the body to which it is applied, but having the same surgical functions as when used strictly as a stocking of full length or less than full length, or whether applied as a stocking strictly so called, or a legging, or a cap member, or a wristlet, or a body band, or the like.

Surgical stockings are commonly employed in connection with varicose veins, ulcers, sprains and swellings of various kinds. The surgical stocking of this invention is not only eminently useful for the named conditions but is particularly useful in connection with fractures either simple or compound and can be successfully employed in connection with aneurisms.

The surgical stocking of the invention is made of a woven fabric of sufficiently open mesh to provide ample ventilation and, as already stated, such fabric is capable of stretching to a limited degree crosswise of the weave and when applied is drawn tightly enough in the direction of limited stretch so that when such limit is reached it exerts as strong a pressure upon the parts inclosed as may be determined by the person fitting the stocking. Then the fabric is practically non-stretchable in a direction about the part inclosed, but being quite freely stretchable lengthwise of the part inclosed, this being in the direction of the length of the weave, the stocking is freely yieldable to all movements of the parts. The application is individual to the patient and may be described as skin-tight in the encircling direction.

The knee cap stocking 14 is provided with a supporting garter 19 of any appropriate type and the knee stocking 16 is also provided with a garter 20 of any appropriate type. Heretofore there has been difficulty in keeping such types of stockings up, since there is no particular support for the stocking above the knee. The garters provide

means for holding such stockings in proper position without any liability of slipping down.

What is claimed is:—

1. A surgical stocking, or the like, formed of a piece of substantially non-elastic woven fabric of open mesh, moderately stretchable in a direction crosswise of the weave and of a size to circumferentially fit the part to which it is applied tightly with the fabric at substantially the limit of stretch, the edges of the fabric being permanently joined by a seam extending lengthwise of the stocking, whereby the stocking may be repeatedly removed and replaced after being once fitted without liability of change in the initially established pressure, and said stocking having openings along the seam localized to places where pressure is not needed and said openings being provided with permanently set fastening devices, whereby no impediment is offered to the application or removal of the stocking.

2. A surgical stocking, or the like, formed of a piece of woven fabric of open mesh, substantially non-elastic and moderately stretchable crosswise of the weave, said fabric being individualized to the wearer to tightly fit the part to be inclosed with the stretch of the fabric crosswise of the weave substantially all taken up and the edges of the fabric where the pressure is to be applied being permanently secured together, whereby the stocking may be repeatedly applied and removed without deterioration or change of the initially established pressure when in place.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

MABEL WARD BURK.

Witnesses:

NELLIE M. FINEGAN,
H. C. DONAHOO.