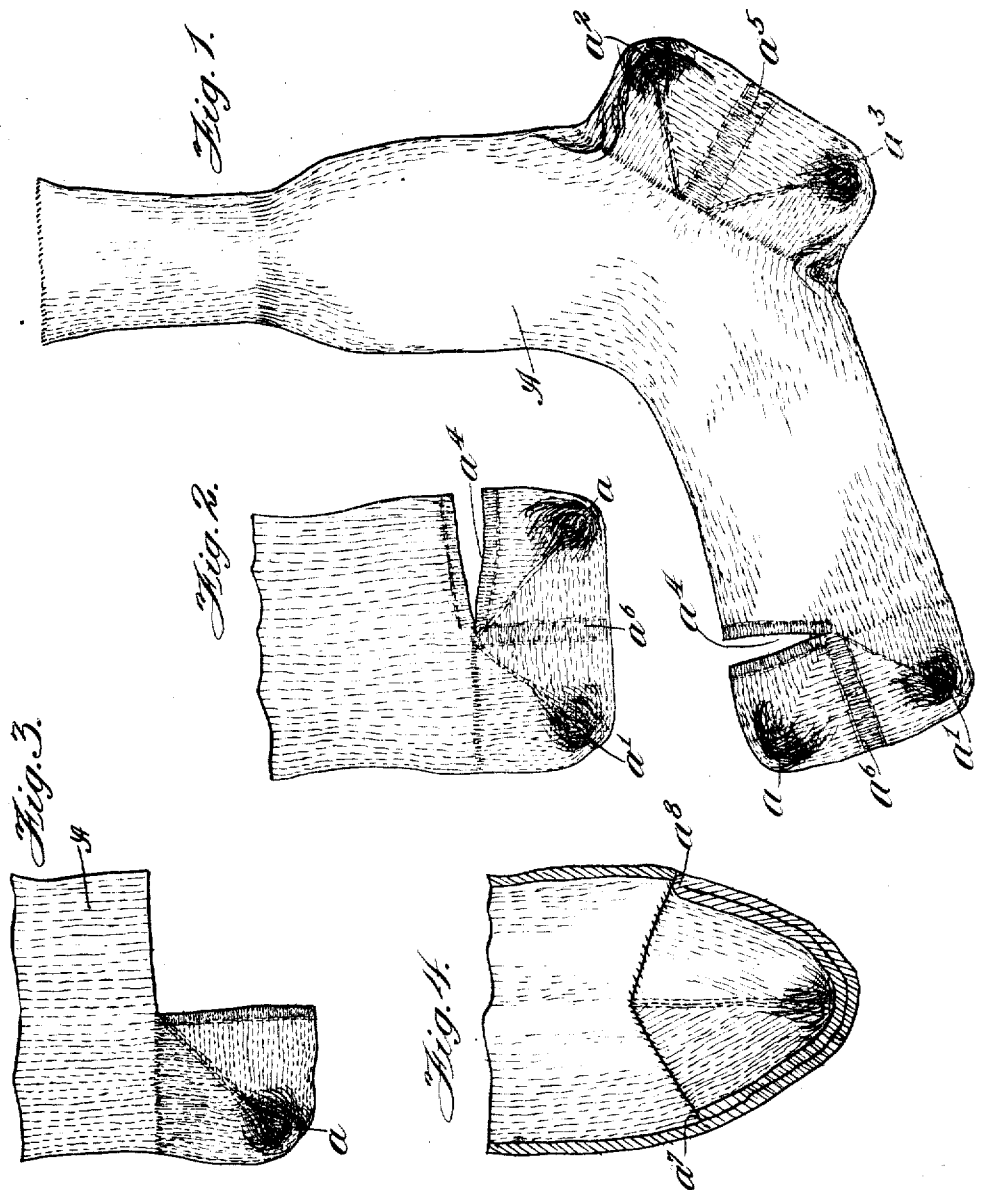


M. T. MURPHY & C. GESS.
 REINFORCED KNIT GOODS AND PROCESS OF MAKING SAME.
 APPLICATION FILED FEB. 3, 1908.

952,709.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.



Witnesses:

Ed. Perry
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Inventors:
Michael Timothy Murphy
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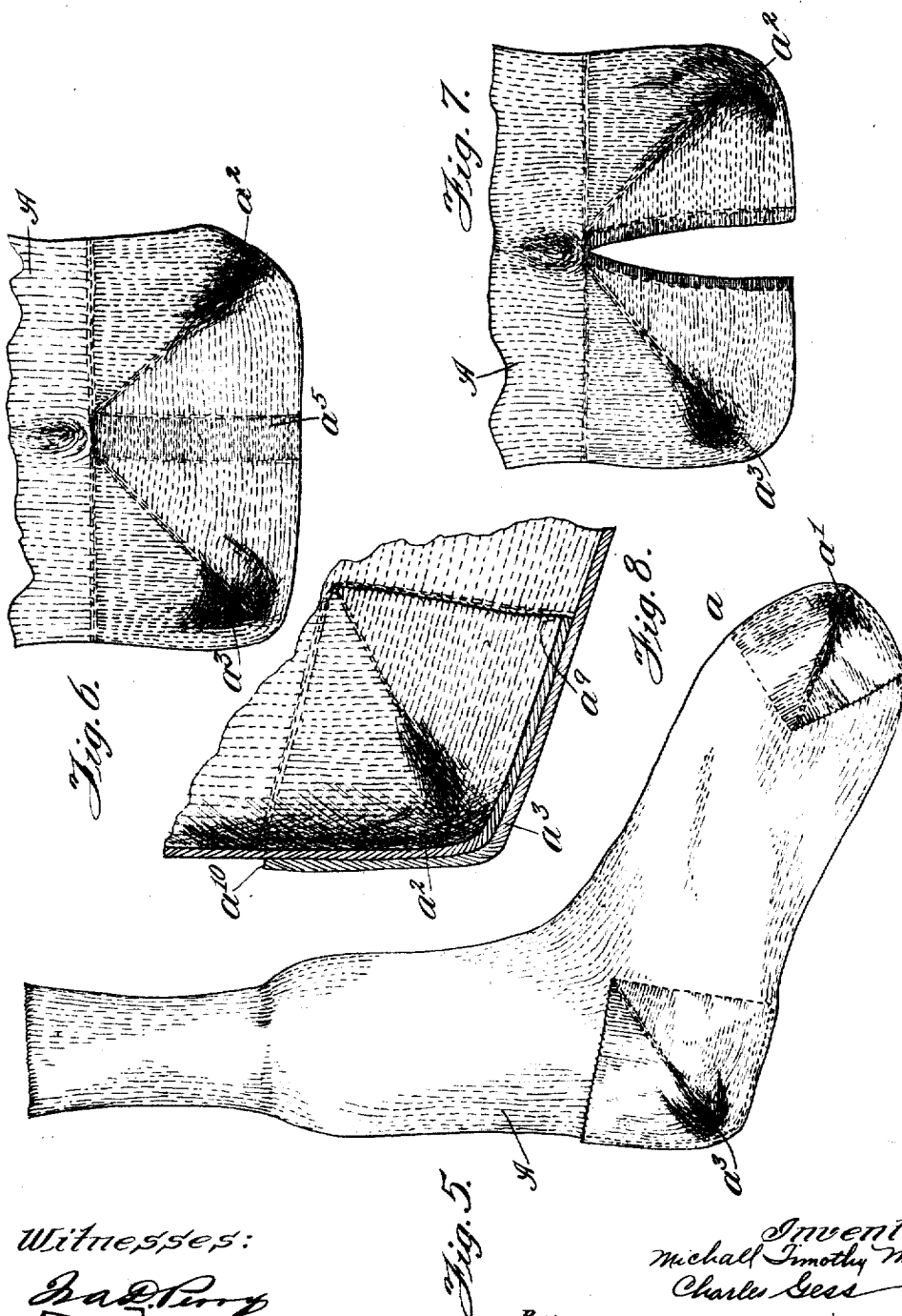
Attorney

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2 SHEETS—SHEET 2.



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Fig. 5.

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UNITED STATES PATENT OFFICE.

MICHAEL TIMOTHY MURPHY AND CHARLES GESS, OF ST. JOSEPH, MICHIGAN.

REINFORCED KNIT GOODS AND PROCESS OF MAKING SAME.

952,709.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed February 3, 1908. Serial No. 413,964.

To all whom it may concern:

Be it known that we, MICHAEL TIMOTHY MURPHY and CHARLES GESS, citizens of the United States of America, and residents of St. Joseph, Michigan, have invented a certain new and useful Improvement in Reinforced Knit Goods and Processes of Making Same, of which the following is a specification.

Our invention relates to knit goods, such as socks and stockings and other similar articles of wearing apparel.

Objects of our invention are to provide an improved form of reinforce for the heels and toes of hosiery, or for similar portions of other knit goods; to provide improved and novel blanks of knit fabric, such as socks or stockings or parts thereof in blank form, adapted for use in making hosiery with reinforced heels or toes; to provide an improved and novel method of knitting heels and toes; and to provide an improved process or method of reinforcement for knit goods. The nature and advantages of our invention will, however, hereinafter more fully appear.

In the accompanying drawings:—Figure 1 is a side elevation of a so-called stocking blank, made in accordance with the invention, showing the double heel and double toe, the said blank being adapted to be folded into shape to provide a sock or stocking having inner and outer heels and inner and outer toes, as hereinafter described. Fig. 2 is an enlarged detail view of the double toe of the said stocking blank. Fig. 3 is a view similar to Fig. 2, but showing one toe folded within the other, preparatory to sewing or otherwise securing the two toes in place. Fig. 4 is a detail sectional view, showing the two toes folded and secured in place, thus providing an inner and outer toe for the stocking. Fig. 5 is a side elevation of the sock or stocking after it is completed, the two toes having been secured in place, and the inner and outer heels having been sewed in place, thus providing a sock or stocking having reinforced heel and toe consisting of inner and outer layers knit or formed integral with the balance of the said sock or stocking, as will hereinafter more fully appear. Fig. 6 is an enlarged fragmentary detail view of the double heel with which the said stocking blank is provided. Fig. 7 is a similar view showing the two heels cut apart preparatory to folding

one within the other. Fig. 8 is an enlarged detail sectional view showing one heel secured within the other.

As thus illustrated, and referring more particularly to Fig. 1, it will be seen that the so-called stocking blank A, from which the completed or finished sock or stocking is to be made, is provided, when it leaves the knitting machine, with inner and outer adjacent toes $a-a'$, and with inner and outer adjacent heels a^2-a^3 , all of which are knit or formed integral with the knit fabric which serves as the body of the said sock or stocking, and which surrounds the reinforced portions. In this way, the stocking blank has a toe portion of double area, as well as a heel portion of double area, in other words, double toes and heels, thus providing two toes and two heels, in the manner shown. In the process of knitting, and as is usual in the manufacture of goods of this kind, the socks or stockings are made continuously, and then cut apart afterward, and hence the gap or cut a' forming raw edges at the toe of the stocking. During the knitting of the sock or stocking the first or inner heel a^2 is made first, one or more extra courses a^2 are then run on the machine, and the second or outer heel a^3 is then made, the two heels being thus joined integrally to each other and to the stocking body, in the manner illustrated. After this, the foot portion of the sock or stocking is then made, and then the operator makes the first or outer toe a' , in the usual manner. After this, one or more extra courses a^2 are run on the machine, and then the second or inner toe a is made, after which the operator is ready to commence on the top portion of another sock or stocking. Afterward, the socks or stockings are cut apart—that is to say, the so-called stocking blanks are cut apart, leaving them in the shape or form shown in Fig. 1. In reducing such a blank to the desired form or shape, the second or inner toe a is folded back within the first or outer toe a' , in the manner shown in Fig. 4. The free edge of the second or inner toe is sewed or closed at a' upon the inner surface of the stocking, and the free edge at the top of the toe is sewed or otherwise closed upon the bend or folded edge a^2 , which latter is formed by the bend between the two toes. This results in a toe consisting of inner and outer layers which are integrally united with the balance of the stock-

ing, which latter is of only a single thickness. To produce the double heel for the stocking, the intermediate portion formed by the extra course or courses a^5 is cut or slit in the manner shown in Fig. 7, thus forming raw edges and leaving each heel with one free edge. The first heel a^2 is then brought within the second or outer heel a^3 , in the manner shown in Fig. 8, one layer being superimposed upon the other. The free edge a^9 of the inner heel is then sewed or closed upon the inner surface of the stocking, and the free edge a^{10} is then sewed or closed upon the outer surface of the stocking, in the manner illustrated. This provides the completed sock or stocking with a double heel consisting of inner and outer layers which are knit or formed integral with the balance of the stocking, all other parts of the stocking being composed of only a single thickness of the knit fabric.

From the foregoing, it will be seen that a novel and highly satisfactory form of reinforcement is provided for hosiery and other knit goods, at the points where the same are subject to severe strain or wear. We accomplish this, as explained, by using raw cut edges, as distinguished from integral edges or selvage edges, and by knitting the heels and toes adjacent each other, either separately or on the hosiery. It will be seen that both the inside and outside surfaces of the double toe are the right side of the fabric, one toe being turned right side out within the other, that is, with the right side of the fabric against the foot of the wearer; and in connection with the double heel, it will be observed that the outside thereof is the right side of the fabric, while the inside is the wrong side of the fabric, one heel being drawn wrong side out within the other that is with the wrong side against the foot. It will be understood, of course, that this improved method of reinforcing the heels and toes, by forming the stocking blank with two heels and two toes, does not prohibit the use of reinforced yarn—that is to say, the heels and toes can still be made of heavier yarn, if such is desired. The raw edges of the heels and toes can be sewed in place to prevent raveling, by hand or otherwise, as may be desired, and the sock or stocking can be reversed or turned in any suitable manner for the purpose of expediting the attachment or securing of the heel and toe portions in place. As illustrated, each layer of the heel has at least one free edge, the free edges of the inner and outer heels extending in opposite directions. The toe, however, is composed of inner and outer layers only one of which has a free edge, namely the inner toe, the outer toe being united all around with the knit fabric of the stocking. As stated, the free edges of the heel and toe portions may be sewed or other-

wise secured in place, so as to provide separate thicknesses which are adapted to move relatively to each other, and which make the hosiery soft and pliable to the touch. It will be understood, of course, that we do not limit ourselves to the exact construction shown and described, as the same may be varied more or less without departing from the spirit of our invention. It will also be understood that we do not limit the invention, in its broader aspect, to hosiery inasmuch as it may be applied to other knit goods.

The knitted article as it comes from the machine with raw edges for the toe constitutes one blank, and after the heel portion is cut or divided, forming raw edges, the same knitted article constitutes another blank—that is to say, the stocking blank exists in two forms before it is finally folded into the shape required for the finished stocking.

It will be seen, of course, that as far as the broader aspect of our invention is concerned, the extra heels and toes can be made separately, by making a separate heel and sewing it inside of the heel of the stocking, and by making an extra toe and sewing it inside of the toe of the sock or stocking. These heels and toes can be knitted continuously, by a suitably constructed knitting machine, and cut apart, giving them raw edges, and then sewed inside of the hosiery. This would give two layers at the heel, and two layers at the toe, as previously described, but the inside layer would not be integrally united with the knit fabric which forms the body of the sock or stocking. There would be a fully inclosed space between the inner and outer toes, and another inclosed space between the inner and outer heels, but the said inner heels and toes would be joined at their raw edges to the main body of the fabric by stitching, or by other means, as they would not be knitted or formed integral with the stocking. In this way both forms of this invention involve extra heels and toes having raw cut edges sewed in place inside of the hosiery to prevent raveling. Thus the invention affords an economical method of manufacture in either case. With either method, the heels are knit successively and then cut apart and the raw cut edges sewed in place. With either method, the toes are knit successively and then suitably cut and the raw cut edges thereof sewed in place. In either form of this invention the outline of the reinforcement is demarked by a raw cut edge sewed in place. With either method, a plurality of toes or heels are knitted side by side, and in either case the heels are cut apart where they are contiguous to each other to form raw attaching edges. The toes are also cut to form similar attaching edges.

It is an important consideration that, with either method, the heels or the toes are formed adjacent—that is, one heel is formed substantially in continuation of the other, and this is also true of the toes. One-half of each heel or toe is formed in direct continuation of one-half of another heel or toe—that is to say, the knitting from the center of one is in a straight line to the center of the other, so that the direction of the knitting only changes at the center of each heel or toe, and does not curve or change at any point between. Moreover, each heel and each toe is of proper shape for use. In other words, each heel and toe when first knitted is of the exact shape and construction it is to have in the sock or stocking. Thus all the heels and toes may be of the same shape and original formation. It is also important that the stocking blank or other tubular body of fabric is made by successively forming a series of integral heels or toes, only one in direct or straight line continuation of the other, at one side thereof. It will be seen that the heels and toes are duplicates of each other, so far as shape and the method of knitting are concerned. The size may be varied to suit the requirements.

It will be seen that each heel or toe consists of two parts, the fabric of one part extending at an angle to the fabric of the other part. Thus the fabric extends straight from the center of one heel or toe to the center of another heel or toe.

The heel and toe, of course, constitute the opposite extremities of the foot of the sock or stocking. We provide a raw edge for the inner reinforce of either extremity. Preferably, the wrong side of this reinforce is opposed to the wrong side of the fabric of the hosiery.

For the broader purposes of our invention, we do not limit ourselves to the exact construction shown and described, nor to either one of the two methods or processes of manufacture herein disclosed, as various constructions and methods may be employed for utilizing the raw edge on the inside of the hosiery, to reinforce the toes or heels thereof, without departing from the spirit of our invention.

What we claim as our invention is:

1. A stocking blank having a double toe, one toe being attached to the other but separated by a raw edge from the blank, to provide the stocking with a toe of double thickness when the blank is folded.

2. A stocking blank having a split or divided heel portion of double size, having raw edges at the split or division, to provide the stocking with a heel of double thickness when the blank is folded by drawing one portion thereof within the other.

3. A stocking blank having raw edged

heel and toe portions of double size to provide the stocking with heel and toe of double thickness when the blank is folded by drawing one portion thereof within the other.

4. A stocking blank having two adjacent integral knit heels, one above the other, with one or more extra courses between them, as and for the purpose set forth.

5. A stocking blank having two adjacent integral knit toes, one above the other, with one or more extra courses between them, as and for the purpose set forth.

6. A stocking blank having two adjacent integral knit toes and two adjacent integral knit heels, one toe being partially detached from the blank, and the two heels having a cut or division between them, as and for the purpose specified.

7. An article of manufacture, a tubular body of knitted fabric having a series of integral heels formed side by side in direct continuation of each other at one side thereof.

8. As an article of manufacture, a tubular body of knitted fabric having a series of integral toes formed side by side in direct continuation of each other at one side thereof.

9. In knit goods, a plurality of adjacent integral knit heels or toes, one half of each heel or toe formed in direct continuation of one half of another, there being one or more extra courses between the same.

10. The method of making knitted hosiery having inner and outer toes, which includes the successive knitting of a plurality of adjacent integrally connected toes, by forming one-half of one toe in straight line continuation of one-half of another, suitably cutting the same, superimposing the inner toes on the inner surfaces of the outer toes of said hosiery, then sewing the raw cut edges thereof in place to provide additional inner thickness for the toes of the hosiery.

11. The method of making knitted hosiery having inner and outer heels, which includes the successive knitting of a plurality of adjacent integrally connected heels, by forming one-half of one heel in straight line continuation of one-half of another heel, cutting the same apart, superimposing the inner heels on the inner surfaces of the outer heels of the said hosiery, and sewing the raw cut edges thereof in place to provide additional inner thickness for the heels of the hosiery.

12. As an article of manufacture, a body of knitted fabric comprising a plurality of integral knitted hosiery toes or heels, with extra courses between them, each knitted in the exact shape or form it has when in use, formed side by side and contiguous to each other.

13. As an article of manufacture, a body of knitted fabric comprising a plurality of knitted heels or toes formed adjacent to and integral with each other, with extra courses between them, all in the exact shape or form

necessary for use, each heel or toe comprising two parts, the fabric of one part extending at an angle to the fabric of the other part, at each side of each heel or toe, and the fabric of one part extending in straight line continuation of the fabric of a part of another heel or toe, when the same are spread out flat, whereby the knitted fabric extends straight from the center of one heel or toe to the center of another heel or toe, as shown.

14. The improved method of making and reinforcing the toes or heels of knitted hosiery, by providing the same with inner toes or heels, which includes the knitting of the fabric for the inner toes or heels, with extra courses where the attaching edges are to be formed, cutting the same through the extra courses to provide raw attaching edges therefor, applying the knitted fabric of the inner toes or heels to the wrong side of the fabric of the toes or heels of the hosiery, and

then sewing the said raw edges in place upon the wrong side of the fabric of the hosiery.

15. The improvement in the art of reinforcing the toes or heels of knitted socks or stockings, by providing the same with extra toes or heels, consisting in knitting toes or heels successively and in continuation of each other, with extra courses where the attaching edges are to be formed, cutting the same through the extra courses to provide a raw attaching edge therefor, and then sewing the raw edge in place to retain the extra heel or toe in place.

Signed by us at St. Joseph, Michigan this 28th day of January 1908.

MICHAEL TIMOTHY MURPHY.
CHARLES GESS.

Witnesses:
CHAS. W. STRATTON,
FREMONT EVANS.