(No Model.)

J. HOLMES.

KNITTED GARMENT AND METHOD OF MAKING SAME.

No. 545,479. Patented Sept. 3, 1895.

Fig: 1.

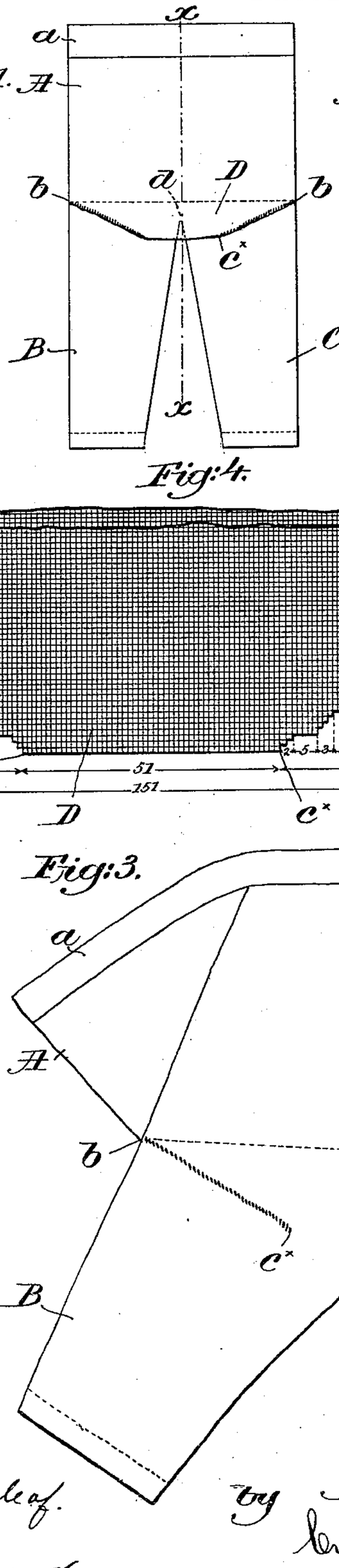

Fig: 2.

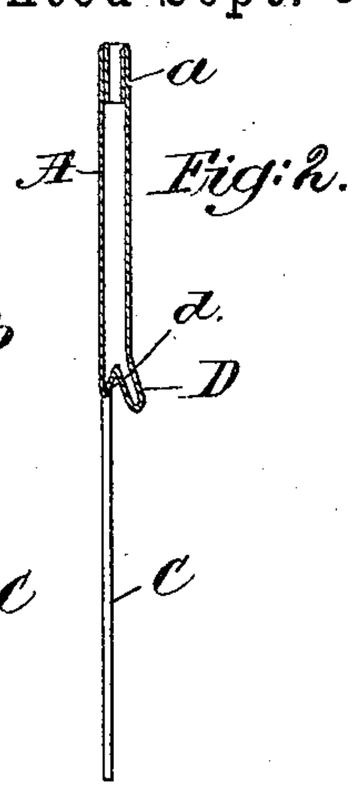

Fig: 4.

Fig: 3.

Witnesses.
Fred S. Grundof.
Thomas J. Drummond.

Inventor:
by Tobar Holmes.
Crosby & Gregory. attys.

UNITED STATES PATENT OFFICE.

JOHN HOLMES, OF BOSTON, MASSACHUSETTS.

KNITTED GARMENT AND METHOD OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 545,479, dated September 3, 1895.

Application filed November 19, 1894. Serial No. 529,235. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOLMES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Knitted Garments and Methods of Making the Same, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Knitted pants have heretofore been made in two or more pieces, knitted separately and then sewed together to provide for the necessary fullness in the seat portion, but the tendency of the seams to part when subjected to sudden or undue strain makes such garments unsatisfactory and unreliable. The seams, moreover, reduce the elasticity of the garment and often cause discomfort to the wearer.

This invention has for its object to improve garments of the class described by knitting them in such manner as will provide, without seams, the requisite fullness at the seat portion, so that the foregoing objectionable features are entirely obviated, and an elastic durable garment is produced of uniform strength in all its part, particularly adapted for bicycle-riders and equestrians.

In accordance with my invention I form the body portion of the garment by circular knitting, beginning at the top or waistband thereof to the beginning of the fullness in the seat, and at such point I throw out or render inoperative those needles upon which the front of the body portion has been knitted and proceed to knit on the remaining needles, throwing out the endmost needles from time to time to narrow until a gore-piece has been knitted of sufficient size to form the desired fullness in the seat and between the back of the body and the crotch. Circular knitting on all the needles is then resumed to the crotch, after which the legs are completed in any desired and suitable manner.

Figure 1 is a rear elevation of a pair of pants embodying my invention. Fig. 2 is a vertical section thereof on the line *x x*. Fig. 3 is a side view of the pants or trousers folded in to show the fullness at the seat; and Fig. 4 is a view of a part of the body portion and the gore-piece or fullness, on a larger scale, to more clearly show one manner of forming the latter.

The garment shown is composed of the body A, legs B and C, and the seat having the fullness D.

In the production of my invention I preferably employ a circular-knitting machine. The fabric is commenced at that end which is to form the top or waist band *a* of the body portion on the full number of needles, and by circular knitting, course after course, the body portion A is made. At about the points *b b*, Figs. 1 and 4, the beginning of the fullness at the seat, I throw out the needles upon which the front of the body portion has been knitted, and on the remaining needles begin to knit, by reciprocating knitting, a gore-piece D, which is to form the said fullness between the back of the body and the crotch. Supposing, for illustration, that there are one hundred and fifty-one needles remaining, after reaching the points *b*, I throw out the endmost needles at each course for several courses, three being shown in Fig. 4, until the course *c* is knit. A sufficient number of needles at each end are then thrown out, five being herein shown, and several more courses are knit on the remaining needles, throwing out the endmost needles at each course until the course *c'* is knit. Then five more needles at each end are thrown out and I proceed as before until the course $c^{\times}$ is knit, making, as shown in Fig. 4, twenty-six courses, or enough to give the necessary fullness to the seat from top to bottom. By throwing out one needle at each end of a course for several courses, and then throwing out a number of needles at each end of the next course, I am enabled to narrow without unduly lengthening the gore-piece D; but it is obvious that the number of needles thrown out at each course may be varied without departing from the spirit and scope of my invention. To lengthen the gore-piece the number of courses gradually narrowed is increased, while it is shortened proportionately to its width by increasing the number of needles thrown out at some of the courses. When the gore-piece D is of the proper size, as when the course $c^{\times}$ has been knit, I throw in all the needles, front and rear, and proceed by circular knitting to complete the body and

seat portion between the line *b b* and the crotch *d*. The garment is then removed from the machine to a circular-machine having the proper number of needles to knit the legs, and the stitches at the top of one leg are picked onto the needles and the leg completed by circular knitting, after which the other leg is completed in similar manner; or after removing the garment from the circular-machine the legs may be completed separately on a machine of the Lamb type, onto the needles of which the stitches at the top of the legs are picked. In the former case the legs cannot be narrowed as knit as they may be if completed on a Lamb machine. If desired, the circular knitting on the first machine may be continued after the crotch has been reached until a fabric has been knitted of sufficient length for the legs, and the said fabric is cut back and front, the edges of each half being sewed together to form a seam on the inside of each leg.

By the herein described invention I am enabled to knit a garment having the proper fullness at the seat portion without seams, the amount of fullness being determined by the extent of the gore-piece D, and for different sizes of garment the amount of fullness is easily regulated, as has been described, and the garment may be knit without any seam whatever, if desired.

In Fig. 3 the garment is shown as folded on the line *x x* of Fig. 1, the direction of the zigzag line forming the side of the gore-piece being shown at *b* $c^{\times}$, while the dotted line extending across the leg corresponds to the dotted line *b b* of Fig. 1.

So far as I am aware it is broadly new to make a knitted garment of the class described, having a gore-piece knitted in at the seat portion to form the requisite fullness thereat, and my invention is not restricted to the exact shape of said gore-piece, nor to the precise manner herein set forth for making it, nor to the shape and length of the legs of the garment, for while I have herein shown my invention as embodied in knee-pants it is obvious that the legs thereof may be made of any desired length.

I claim—

1. As a new article of manufacture, a knitted garment comprising a body portion, legs, and a seamless seat portion having knitted therein a narrowed gore between the back of the body and the crotch, to give the requisite fullness to the seat portion, substantially as described.

2. The herein described method of making knitted pants, which consists in forming the body portion by circular knitting to the beginning of the seat; throwing out the needles upon which the front of the body portion has been knitted; knitting upon the remaining needles and narrowing, to thereby form a fullness at the seat portion between the back of the body and the crotch; throwing in all the needles and completing the body portion by circular knitting to the crotch; and thereafter completing the legs, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN HOLMES.

Witnesses:

JOHN C. EDWARDS,

THOMAS J. DRUMMOND.