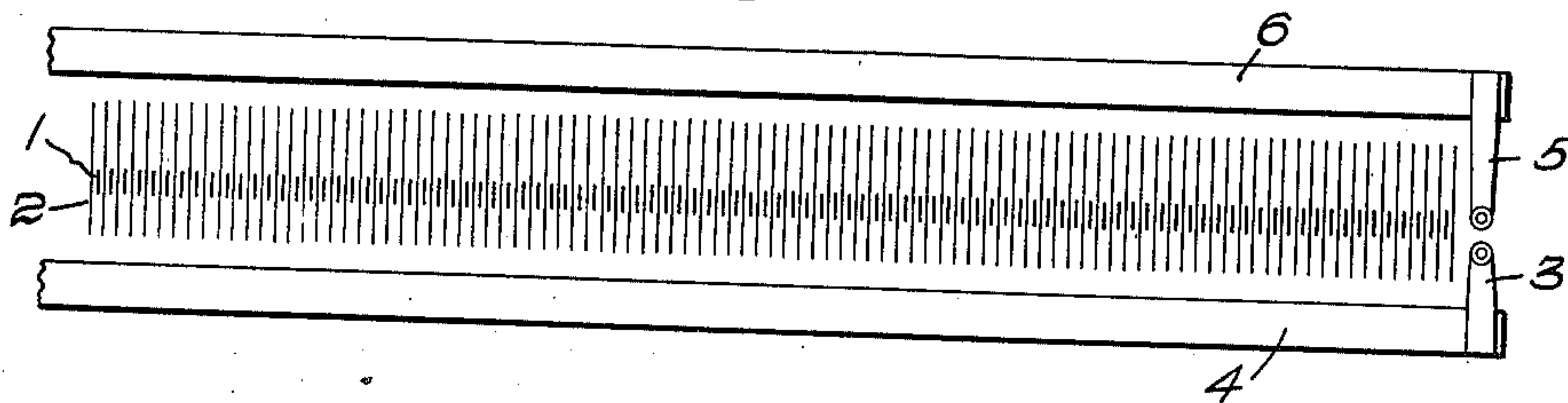


H. A. CARTER.  
 KNITTED FABRIC.  
 APPLICATION FILED JAN. 3, 1910.

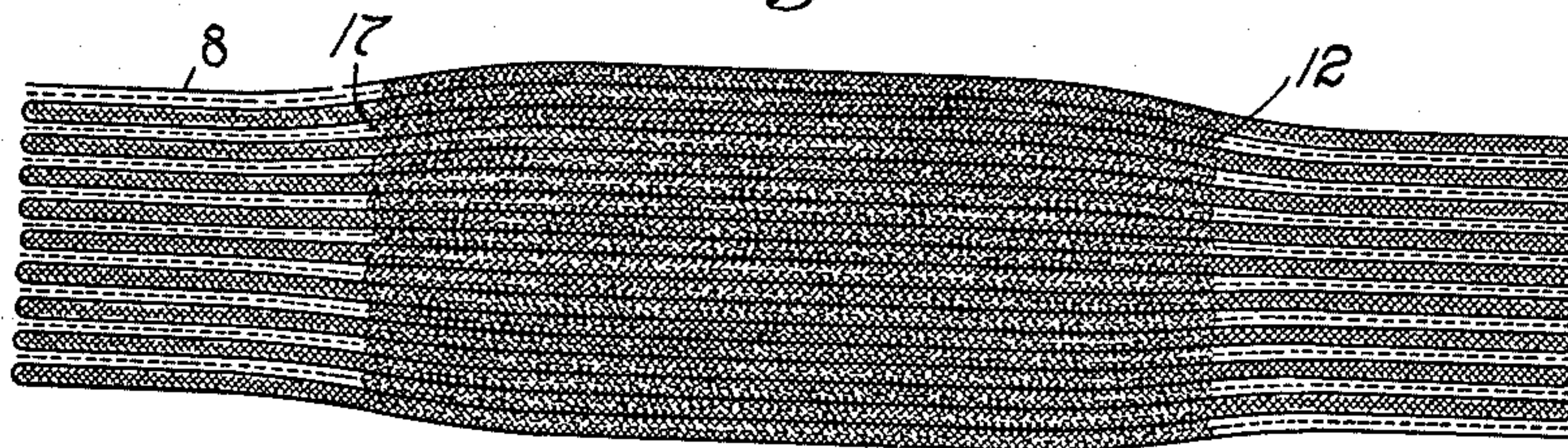
963,864.

Patented July 12, 1910.

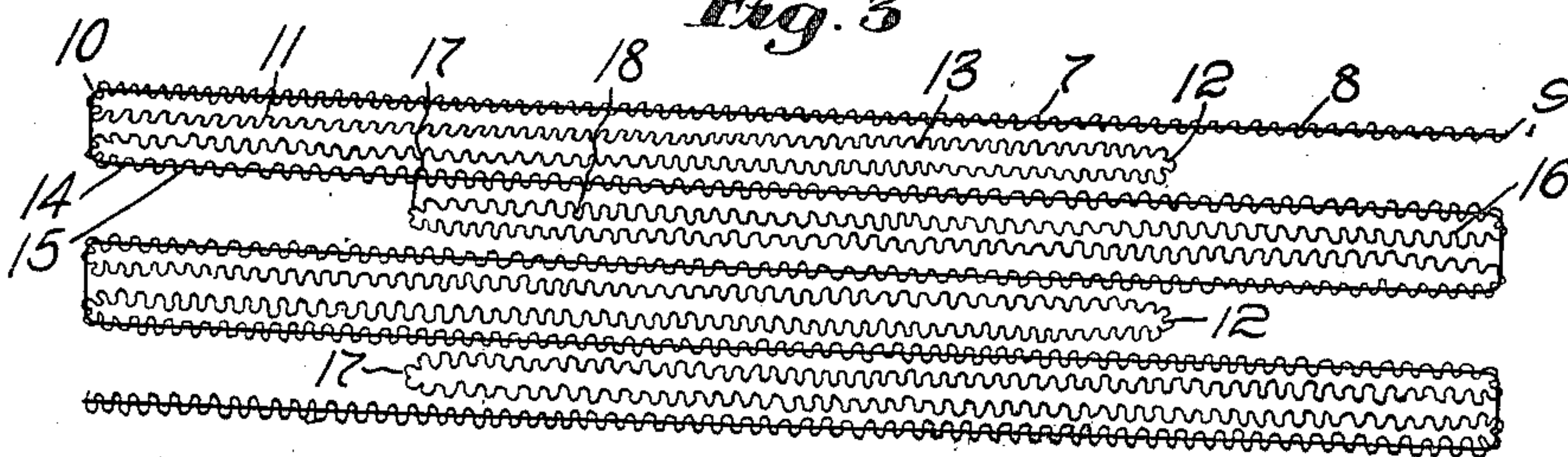
*Fig. 1*



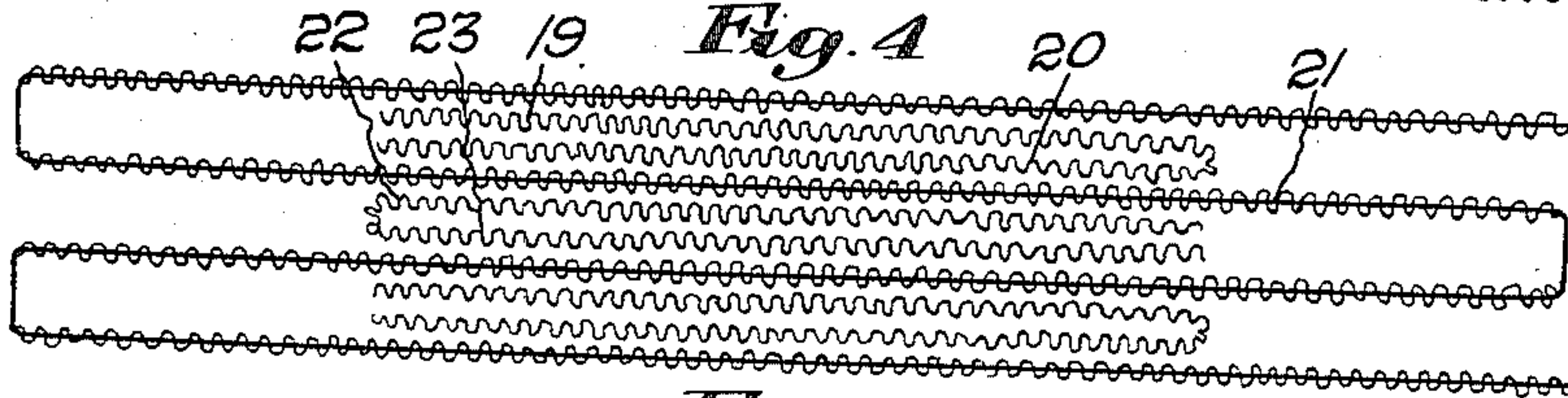
*Fig. 2*



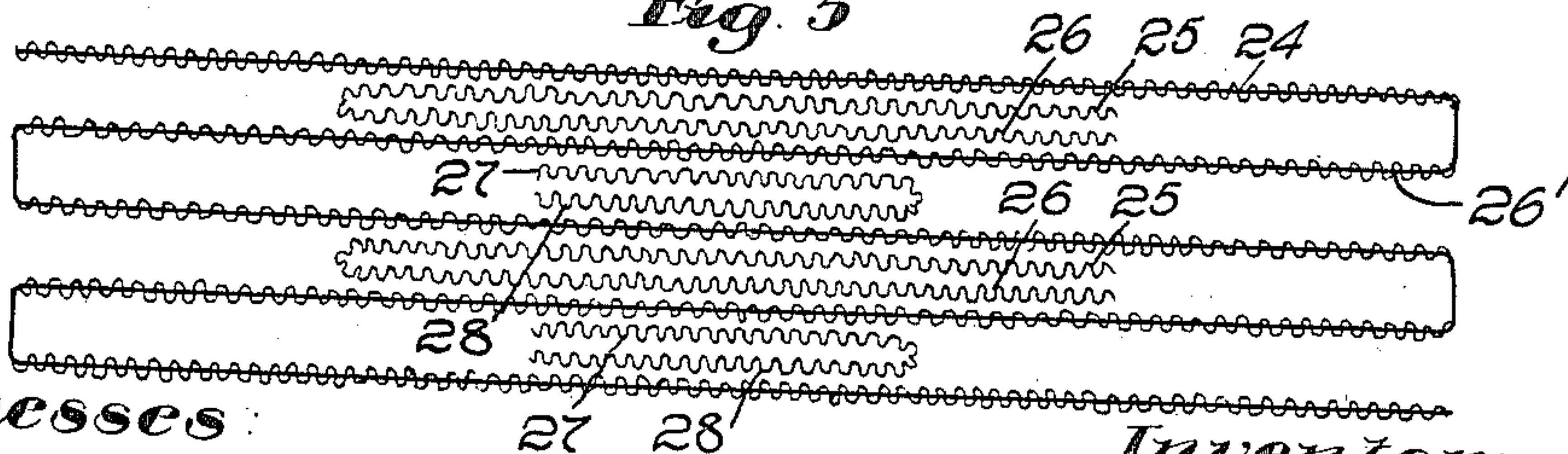
*Fig. 3*



*Fig. 4*



*Fig. 5*



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 by Emery and Booth, Attys



# UNITED STATES PATENT OFFICE.

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## KNITTED FABRIC.

963,864.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed January 3, 1910. Serial No. 536,127.

*To all whom it may concern:*

Be it known that I, HORACE A. CARTER, a citizen of the United States, residing at Needham Heights, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Knitted Fabric, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to knitted fabrics having gored or gusset areas.

In order that the principle of the invention may readily be understood, I have disclosed in the accompanying drawing certain forms of said fabric and diagrammatically illustrated one type of mechanism for producing the same.

Referring to said drawing; Figure 1 is a diagrammatic representation in front elevation of mechanism for forming the fabric embodying my invention; Fig. 2 is a plan view of a fabric having my invention embodied therein; Fig. 3 is a diagrammatic illustration of one form of my invention; and Figs. 4 and 5 are similar views of further forms thereof.

The invention herein disclosed may be embodied in many different types of fabrics. I have herein represented the same as formed upon a machine having a single row of stationary bearded needles and cooperating sinkers of the well-known Cotton type. If desired, however, the fabric may be formed upon various other types of machines, such, for example, as a Lamb machine, or even upon circular machines.

The invention may be embodied in a plain or ribbed or other suitable fabric.

The fabric embodying my invention is characterized by a gored or gusset area formed by what is sometimes termed "wedge knitting." The fabric constructed in accordance with my invention may be an abdominal belt or a knee cap, or an article of underwear having a gored or gusset area therein.

For convenience of description, I have defined the fabric as having a gored or gusset area and lateral portions, the term "lateral" being employed merely in contradistinction to the gored portion, although in certain embodiments of the invention the goring courses or certain of them may extend into the said lateral portions. The term "flat" is herein employed merely in contradistinc-

tion to the gored or concaved portion, although to a certain extent the goring may extend into said flat portions.

In carrying out my invention, I form a suitable number of complete courses suitably spaced and each preferably having incorporated therewith an additional strand, which desirably is of rubber. Interspersed between these complete courses I form complete or shorter courses, certain of which extend into the gored or gusset area from one direction and others of which extend in the said area from the opposite direction. These shorter or gusset courses may be confined wholly to said gusset area, or, as shown in Fig. 3, may each commence at an edge of the fabric and extend through one lateral portion into and if desired through the gored area, and thence return to the same edge of the fabric. The next short or gusset course may commence at the opposite edge of the fabric, and extend into and if desired through the gored area and return in similar manner to that edge of the fabric from which the last preceding course started. A knitted fabric thus formed will have incomplete courses which overlap each other to form the gusset area. These incomplete courses may be all of the same length, in which case their inner terminals would define the borders of the gusset portion and the gusset portion would be sharply contrasted with the flat portions, or the incomplete courses may be of varying length, in which case there will be a gradual merging of the gusset portion into the so-called flat portions. Suitable variations of either of these forms of my invention may be employed.

Referring to the drawing, I have in Fig. 1 diagrammatically represented at 1 a series of needles which may be arranged in a horizontal stationary series and be of the well known bearded type. The cooperating sinkers are represented at 2 as alternating with said needles. The usual knitting thread is introduced through a yarn guide 3 carried by a reciprocatory bar 4, and the supplemental and preferably rubber thread is introduced by a yarn guide 5 carried by a reciprocatory bar 6. The thread guides 3 and 5 are arranged at substantially right angles with the plane of the needles and are so positioned as at the proper time to introduce the thread or yarn to the beards thereof.

If the fabric have a plain portion, the



knitting may proceed in the usual manner by introducing the knitting yarn through the guide 3, which is moved to and fro in the well-known manner not herein necessary to describe. When, however, it is desired to form a gusset or gored area, the yarn guide 3 is moved across the bank of needles, say from right to left, viewing Fig. 1, so as to form a complete course. I incorporate an independent and preferably a rubber thread into said complete course in any suitable manner. This may be done by employing a series of points positioned in advance of and in substantial parallelism with the needles and moved forward by suitable mechanism so as to pass under alternate loops just laid in said complete course and upon further movement of said points to stretch or lift them from the needles, thus dividing said loops so as to permit the rubber thread to be laid upon the loops remaining untouched upon the needles. After the rubber thread has been thus laid across the fabric, the said points return said alternate loops to their normal position, thus incorporating said rubber thread into the fabric. This incorporation may be effected in any other desired manner. Certain of the loops, as, for example, alternate loops, may be bodily taken from their needles before the laying of the rubber thread and then be returned, thereby completing such incorporation. It will be understood that the rubber thread is thus buried between the loops, so that it does not appear upon either face of the fabric but is preferably substantially wholly covered by the loops thereof upon both sides.

In Fig. 3, I have diagrammatically illustrated the first complete knitted course by the irregular line 7 and the incorporated rubber strand by the straight line 8. This course, as shown, extends entirely across the fabric in this embodiment of the invention. The yarn guide 5 carrying the rubber thread and starting from the point 9, having traversed the entire bank of needles to the point 10 remains stationary at the left hand side of said bank of needles. The yarn guide 3 is next moved to the right to form the short course 11, this course terminating at the point 12, and thus defining one border of the gusset area. The yarn guide 3 is then returned to the left, viewing Fig. 3, to form the next incomplete course 13. Thus, the incomplete courses 11 and 13 extend from the edge 10 of the fabric through to the point 12, which indicates one border of the gusset area. After the formation of the incomplete course 13, the yarn guide 3, which is then at the left hand edge 10 of the fabric, moves entirely across the same to form the complete course 14 and immediately following the formation of said complete course the yarn guide 5 moves from

left to right, so as to incorporate with said complete course 14 the rubber strand 15. The said thread guide 5 then remains stationary at the right hand side 9 of the fabric, and the yarn guide 3 then moves to the left to form the incomplete course 16, this course extending to the point 17 which defines the opposite border of the gusset area. The said yarn guide 3 is then returned to the right forming the next incomplete course 18, which extends to the edge 9 of the fabric, and thus completes one cycle of operation. That part of the fabric extending between the points 9 and 12, I have defined as one lateral portion, that extending between the points 17 and 10 I have defined as another lateral portion, and that extending between the points 12 and 17 I have defined as a gored or gusset area.

The cycle of operations thus described is repeated to the desired extent, and in this manner is produced a fabric having a concaved or gusset or gored area. It is apparent that the rubber thread is continuous and merely remains quiescent at one side or the other of the fabric during the formation of the incomplete course.

I have described the introduction of a rubber thread with or into the complete courses. If desired, however, I may introduce merely an independent yarn, or in certain embodiments of the invention I need not introduce any additional thread but merely form a complete course of knitting with the yarn guide 3 and the described incomplete courses with the same yarn guide. Preferably, however, I prefer to incorporate the rubber thread, inasmuch as it gives suitable elasticity to the fabric.

In Fig. 4, I have illustrated a slightly modified form of my invention, in which the incomplete courses are wholly confined to the gusset area. In said figure, the incomplete course 19 is formed by movement of the yarn guide 3 from left to right, and the succeeding course 20 by movement in the opposite direction. After the introduction of the complete course 21, there is then formed an incomplete course 22 by movement of the yarn guide 3 from right to left, and the complete course 23 by movement thereof from left to right as indicated. Therefore, in the fabric shown in Fig. 4, the shorter or incomplete courses do not extend to the selvages of the fabric.

In that form of my invention shown in Fig. 5, the construction is substantially similar to that shown in Fig. 4, with the exception that the shorter courses are not of equal length. After the formation of a complete course 24 by movement of the yarn guide 3 from left to right, there is then formed an incomplete course 25 by movement of the yarn guide 3 from right to left, and a succeeding incomplete course 26 by movement of said



yarn guide from left to right. Succeeding the formation of a complete course 26', there is then formed a short incomplete course 27 and a succeeding incomplete course 28. This cycle of operations may then be followed by other complete and incomplete courses, and the incomplete courses may be of varying length throughout.

In each form of the invention, the incomplete courses may be of equal length or varying length, and this variation may be in accordance with any predetermined plan or pattern as may be required for any particular variety of goods.

It is apparent that the shorter courses may be commenced at points not the selvages of the fabric by inserting or elevating the yarn guide 3 between the needles at that point where it is desired to commence an incomplete course.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

#### Claims.

1. A knit web having selvages, normal sections, and sections widened in the direction of the wales, said fabric comprising knitting yarns and weft yarns, said weft yarns being continuous from selvege to selvege, but said widened sections comprising a greater number of courses of the knitting yarn than the normal sections comprise.

2. A knitted fabric having a gored or gusset area between lateral flat portions, said fabric being characterized by spaced courses extending throughout said flat portions and the gored area and having rubber strands incorporated therewith, and interspersed shorter courses into which said rubber strands do not enter, a portion of which shorter courses pertain to one of said flat portions only, and thence extend into and return from said gored area and others of which shorter courses pertain to said other flat portion only and thence extend into and return from said gored area.

3. A knitted fabric having a gored or gusset area between lateral flat portions, said fabric being characterized by spaced courses extending throughout said flat portions and gored area and having rubber strands incorporated therewith, and interspersed

shorter courses into which said rubber strands do not enter, a portion of which shorter courses extend throughout one of said flat portions only and thence extend into and return from said gored area, and others of which shorter courses extend throughout the said other flat portion only and thence extend into and return from said gored area.

4. An elastic knit web having selvages, normal sections, and sections widened in the direction of the wales, said fabric comprising knitting yarns and included rubber weft yarns said weft yarns being continuous from selvege to selvege but said widened sections comprising a greater number of courses of the knitting yarn only than the normal sections comprise.

5. A knitted fabric having a gored or gusset area between lateral flat portions, said fabric being characterized by spaced courses extending throughout said flat portions and the gored area, and having a strand or strands other than that constituting said spaced courses incorporated therewith, and interspersed shorter courses into which said other strand or strands do not enter, said shorter courses pertaining to said gored area.

6. A knitted fabric having a gored or gusset area between lateral flat portions, said fabric being characterized by spaced courses extending throughout said flat portions and the gored area, and having an elastic strand or strands incorporated therewith, and interspersed shorter courses into which said elastic strand or strands do not enter, said shorter courses pertaining to said gored area.

7. A knitted fabric having a gored or gusset area and a lateral flat portion, said fabric being characterized by spaced courses extending throughout said flat portion and the gored area, and having a strand or strands other than that constituting said spaced courses incorporated therewith, and interspersed shorter courses into which said separate strand or strands do not enter, said shorter courses pertaining to said gored area.

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

HORACE A. CARTER.

Witnesses:

FRED WHITTIER,  
LIZZIE M. GRAVES.