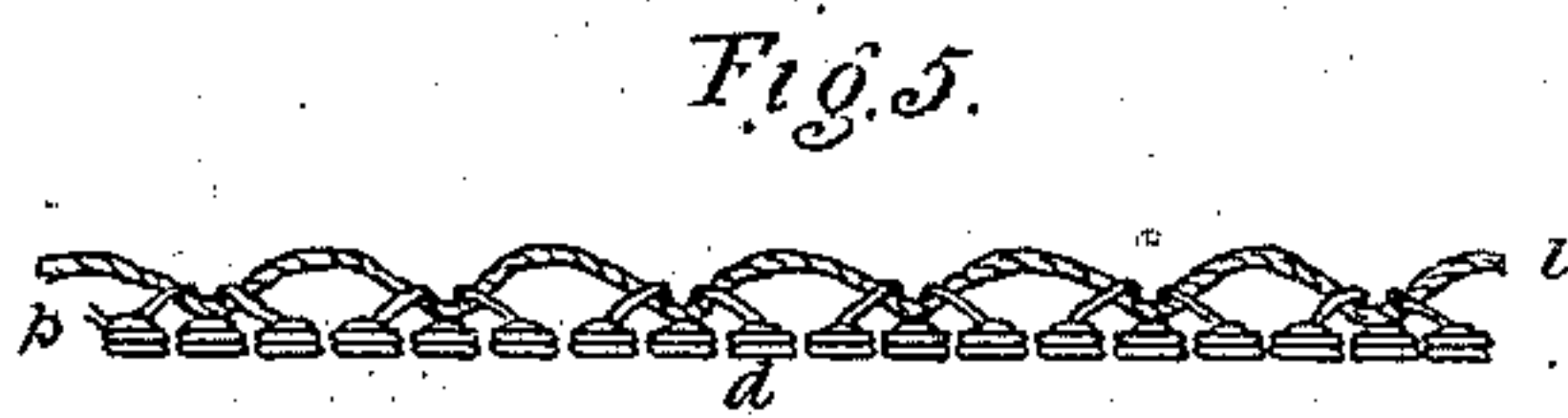
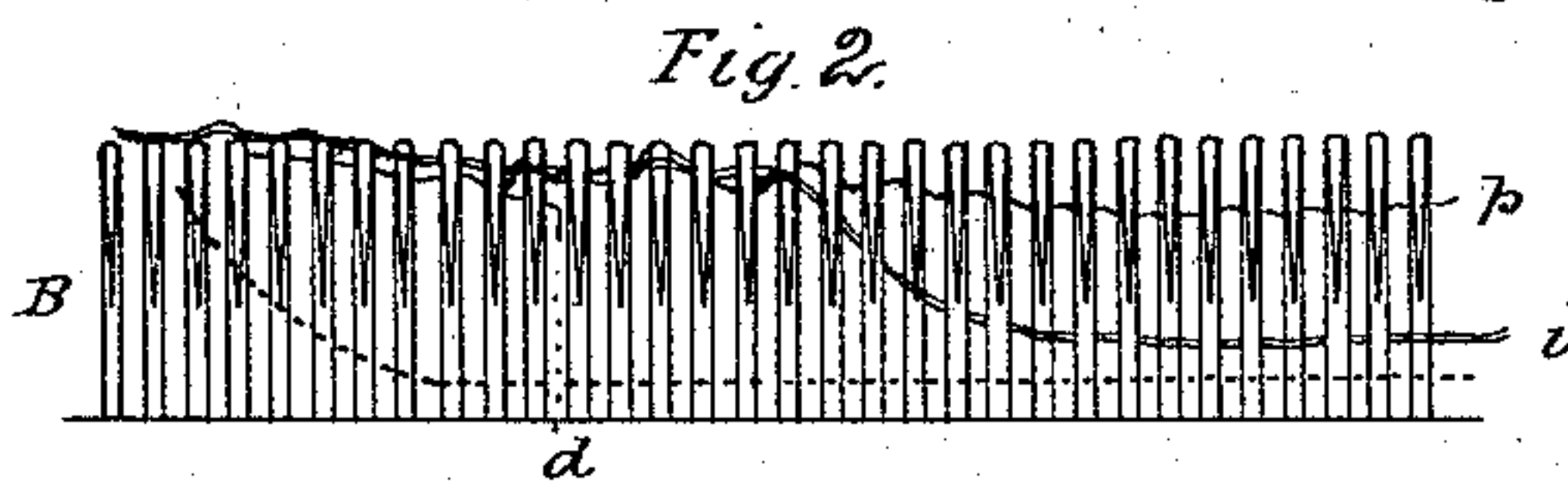
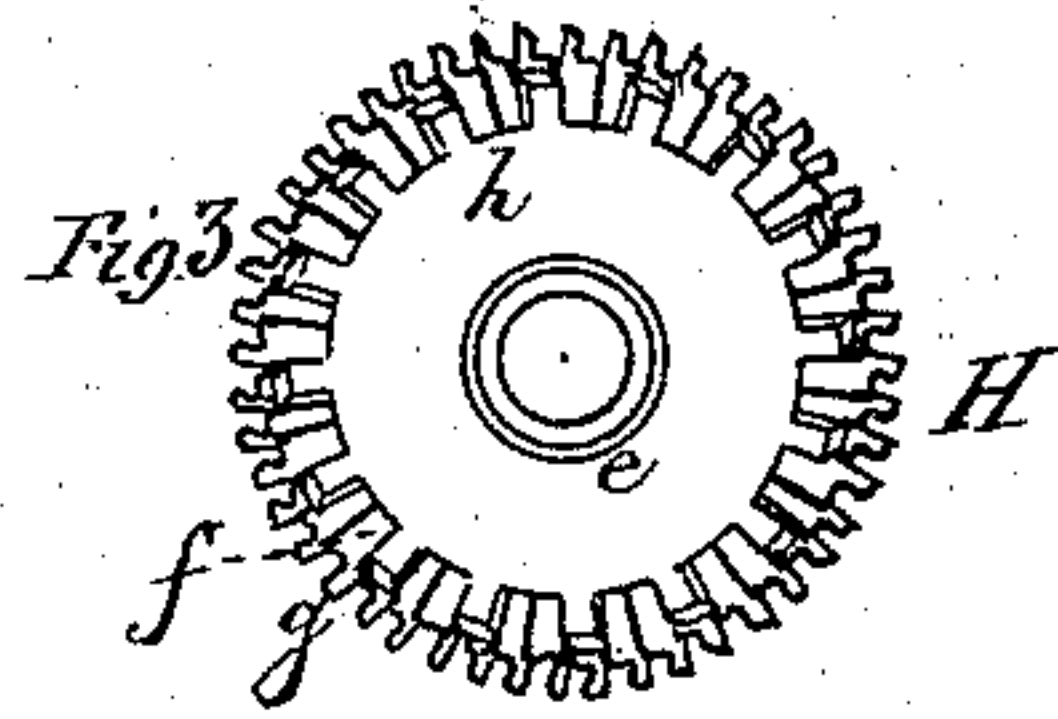
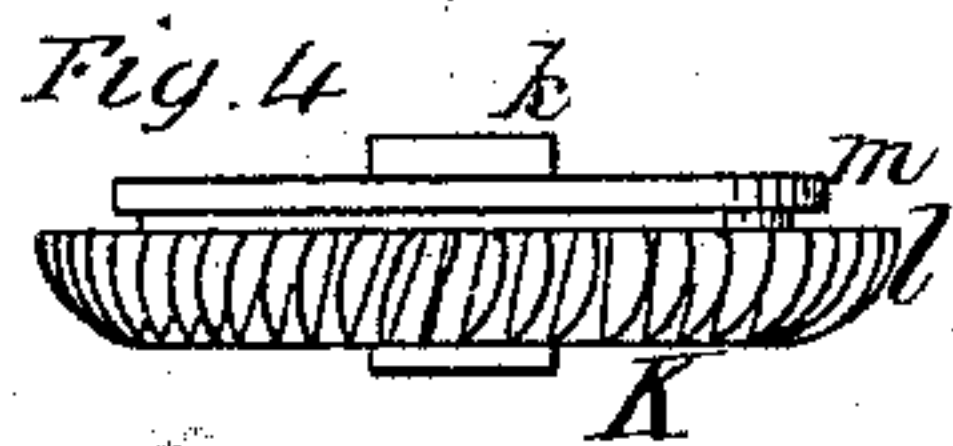
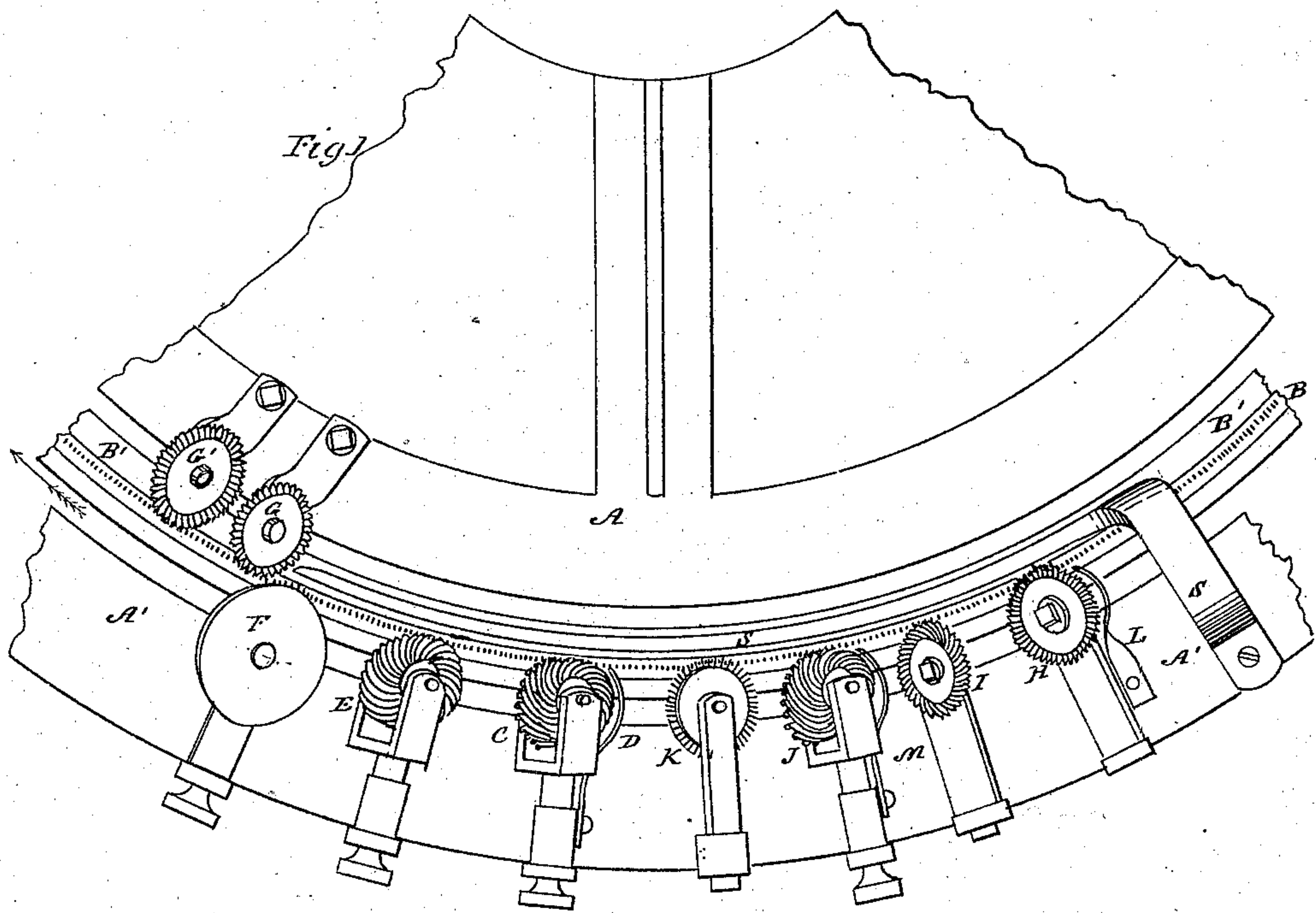


J. KENT & H. LEESON.

Knit Fabric.

No. 160,684

Patented March 9, 1875.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN KENT, OF NEW YORK, AND HENRY LEESON, OF LOCUST VALLEY,
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IMPROVEMENT IN KNIT FABRICS.

Specification forming part of Letters Patent No. 160,684, dated March 9, 1875; application filed
November 3, 1874.

CASE A.

To all whom it may concern :

Be it known that we, JOHN KENT, of the city, county, and State of New York, and HENRY LEESON, of Locust Valley, Queens county, and State of New York, have jointly invented certain new and useful Improvements in the Manufacture of Plush and Knitted Fabrics; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing.

This invention relates to certain improvements in the manufacture of plush and knitted goods. It consists in the production of an improved fabric, having a clean knitted face on one of its sides, and a plush face upon the other, the several threads being arranged in such a manner that the thread which forms the plush shall not show upon the face side of the goods.

By reason of this improvement the fabric is adapted to a great variety of uses, as the plush may be of wool, silk, cotton, or other material, while the face side of the fabric may be wholly of cotton, and it is thereby rendered peculiarly applicable for linings of rubber goods, as the wool or other material of which the plush is formed does not protrude on the face side of the fabric; and it is also well adapted for stockings, jackets, drawers, gloves, chest-protectors, and for shoe and glove linings, as well as for a great variety of uses to which both knitted and plush goods are applied.

We are aware that various kinds of plush goods with a knitted or a woven face have been made and used; but all knitted plush goods, so far as we are aware, which have heretofore been produced, have been open to the objection that portions of the plush-thread passed through the fabric and showed upon the face side.

By our improvement this objection is removed, and our improved fabric shows a clean knitted face on one side, and a plush face, of either similar or different material, on the other side, the plush-threads being knitted in such a manner that they pass only half-way through the fabric.

In the following description and accompa-

nying drawings we present one mode in which our improved fabric may be produced upon an ordinary circular-frame knitting-machine; but we wish it to be understood that we do not in this application claim, nor confine ourselves to, these mechanical devices or means for producing the same, as we have made that the subject of a separate application for patent.

In the accompanying drawings, Figure 1 represents a plan view of a portion of a circular-frame knitting-machine, with appliances for producing our improved fabric. Fig. 2 is a detail view, showing the positions assumed by the different threads in forming the loops. Fig. 3 is a detached view of a wheel which we use for introducing the plush-thread. Fig. 4 is a similar view of a wheel by means of which we connect the plush-thread with the knitting-thread. Fig. 5 is a top view of a course of loops, showing the position of the plush-thread in the knitted web before it is carded.

Similar letters of reference indicate corresponding parts in all the several figures.

A represents a portion of the bed or frame of the machine, and A' the outer stationary frame, to which the feed-wheels are secured. B represents a set of needles, of the kind commonly known as the spring-bearded needle, which are secured, in the ordinary manner, in the revolving frame B', which latter revolves in the direction indicated by the arrow, Fig. 1. C is the looping-wheel, which places the knitting-thread upon the needles and under the beards of the same. E is the dividing-wheel for forming the knitting-thread into loops or curves of equal size. F is the presser for closing the beards of the needles, while the loops forming the lower edge of the knitted web rise over the same when released from the push-back S. G is the landing-wheel, which raises the lower edge of the knitted web, while the presser F closes the beards of the needles. G' is the knocking-over wheel, which throws the loops forming the lower edge of the knitted web clear off the needles, and thereby forms a new course.

These parts above described are of the kind

heretofore used on circular-knitting machines having spring-needles, and are attached to the frame of the machine in the usual manner, being such as are used for making plain knitted fabrics from one thread; and, for the purpose of producing our improved fabric, we use upon the machine, in addition to these, the parts hereinafter described, namely, a plush-thread-looping wheel, H, for introducing the plush-thread; a clearing-wheel, I, for pushing the plush-thread down the needles, out of the way, while a binding-thread is being placed upon the needles; an additional looper, J, for introducing the binding-thread *p*, and a plush-blending wheel, K, for connecting the plush-thread with the binding-thread.

The wheel H consists of a hub, *e*, a series of teeth or blades, *f*, which are set at an angle of about forty-five degrees (or other suitable angle) with the axis of the wheel, and which are formed with a nib, *g*, on the upper part of their edges, and a circular plate, *h*, having slots cut in its periphery, which is rigidly secured to the lower side of the wheel, which said slots are each opposite to two adjoining spaces between the teeth of the wheel, the other and intervening spaces being covered by the projecting pieces of the said plate, which said projecting pieces push every third needle inward as the frame B' revolves, and at the same time close the beards of such needles. The teeth *f* are at a distance apart corresponding with the distance between the needles, and the nibs *g* seize the plush-thread as it is presented by the guide L, and lay it over the needles, the projections of the plate *h* pushing inward every third needle, and at the same time closing its beard, so that the plush-thread is laid on the inside of two adjoining needles and on the outside of the next adjoining one, as shown at the right of Fig. 2, in which *i* represents the plush-thread. This wheel H rotates upon a pin or journal secured, by any suitable means, to the frame A' at such angle from the perpendicular as will enable it to lay the thread over the needles in the manner indicated. The clearing-wheel I is somewhat similar in form to the wheels G and G', but works in the opposite direction, has bearings in an arm secured to the frame A', and is placed in such a position and at such angle that its teeth will work in between the needles in a downward direction. Its function is to force the plush-thread down the shanks of the needles, while the additional looper J is placing the binding-thread *p* upon the needles. The additional looper J is similar in form and construction to the wheel C, and is set in a similar way. It places the binding-thread *p* upon the needles in the same manner that the wheel C places the knitting-thread upon them.

The plush-blending wheel K consists of a hub, *k*, in which are set the teeth *l*, and a cir-

cular plate or presser, *m*, which is firmly attached to the upper face of the said wheel. It has bearings in an arm secured to the frame A', and is set at a suitable angle to the plane of the frame, and its teeth are set at an angle, and present a face of about a quarter-circle to the needles. Its teeth bring up the plush-thread and connect it with the binding-thread, while the plate or presser *m* pushes back the beards of the needles, to allow the plush-thread to pass over the same.

The joint operation of these wheels, in connection with the wheels C, E, F, G, and G', is as follows: The plush-looper H takes the plush-thread *i* from the guide L, and places it upon and between the needles in such a position that it passes over two adjoining needles on the inside of the circle of needles and over one needle on the outside alternately, the slotted plate *h* closing the beards of the needles meantime, so that it shall pass over them. The clearing-wheel I then pushes the thread *i* downward, as seen at the right of Fig. 2, so that it shall not interfere with the action of the additional looper J, which latter places the second or binding thread *p* under the beards of the needles. The blending-wheel K then brings up the plush-thread *i*, and connects it with the binding-thread *p*, as seen at the center of Fig. 2, this latter thread being thereby passed over the plush-thread at intervals of every third needle, and at the same time the presser *m* closes the beards of the needles, so that the plush-thread may clear the same as it rises on the needles. The wheel C then places the thread *d* upon the needles; the wheel E now equalizes the loop; the wheel G brings up the lower edge of the knitted web, (represented by the dotted line in Fig. 2,) while the presser F pushes back the beards of the needles. The wheel G' now throws these loops and the plush-thread off the needles, while the threads *p* and *d* remain on the needles, and now form the lower edge of the web. The plush-thread is thus laid in long loops on the back of the web, and are afterward subjected to the action of an ordinary card, to break the loops and bring out the plush in the ordinary manner.

The position of the threads in the finished fabric is shown in Fig. 5.

Having thus described our improved fabric, and shown one mode by which it may be produced, what we claim as our invention is—

An improved knitted fabric having a clean knitted face on one side, and a plush face, of similar or of different material, on the other, and in which no portion of the plush-threads appear on the knitted face thereof.

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Witnesses:

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JOHN S. THORNTON.