

(No Model.)

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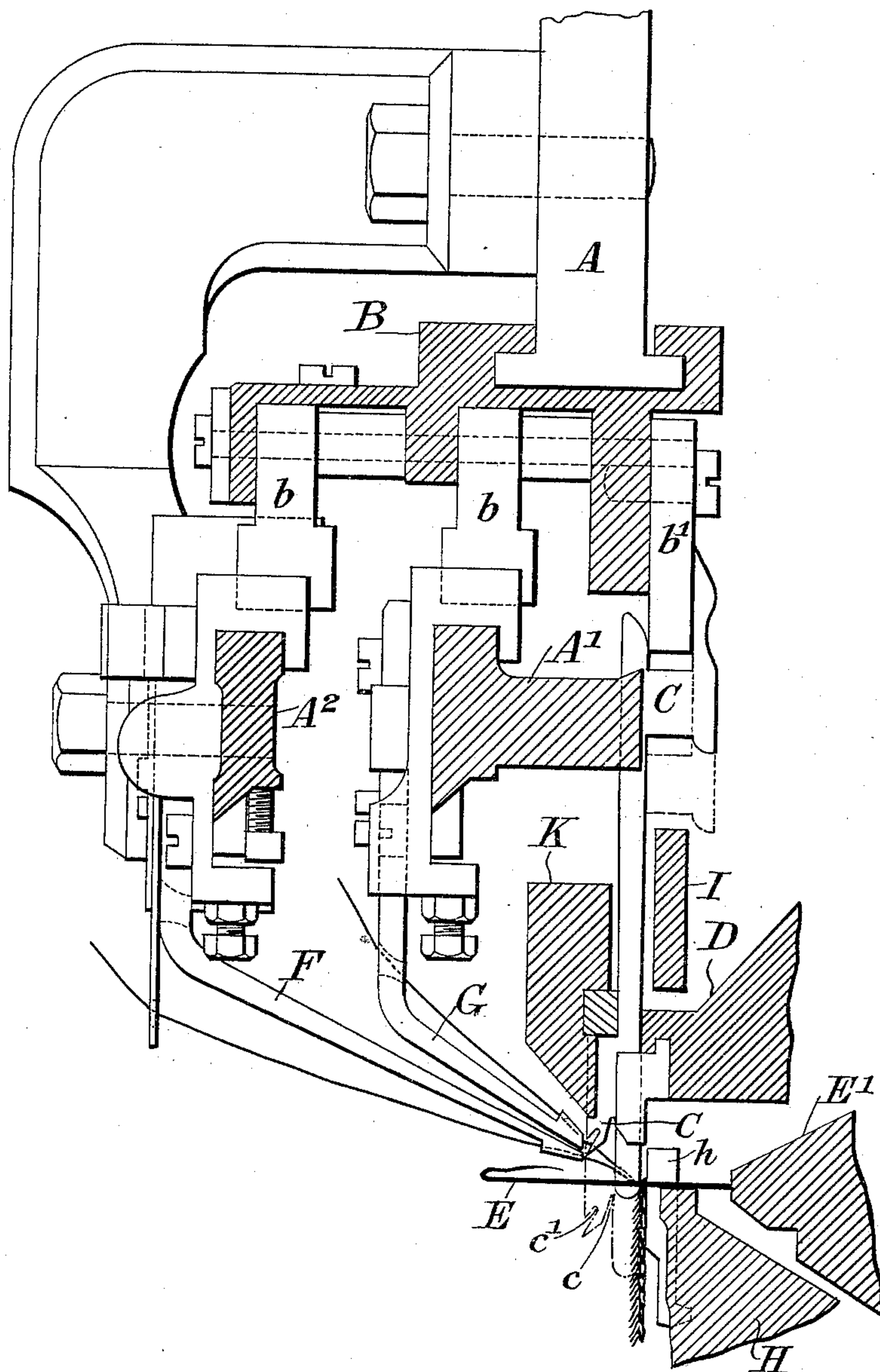
A. J. BLACK.

APPARATUS FOR PRODUCING ELASTIC LOOPED FABRICS.

No. 466,898.

Patented Jan. 12, 1892.

Fig: 1.



Witnesses:

Joseph W. Roe,
O. Sundgren.

Inventor:

Inventor:
Arthur John Black
by attorneys
Broun & Hall

(No Model.)

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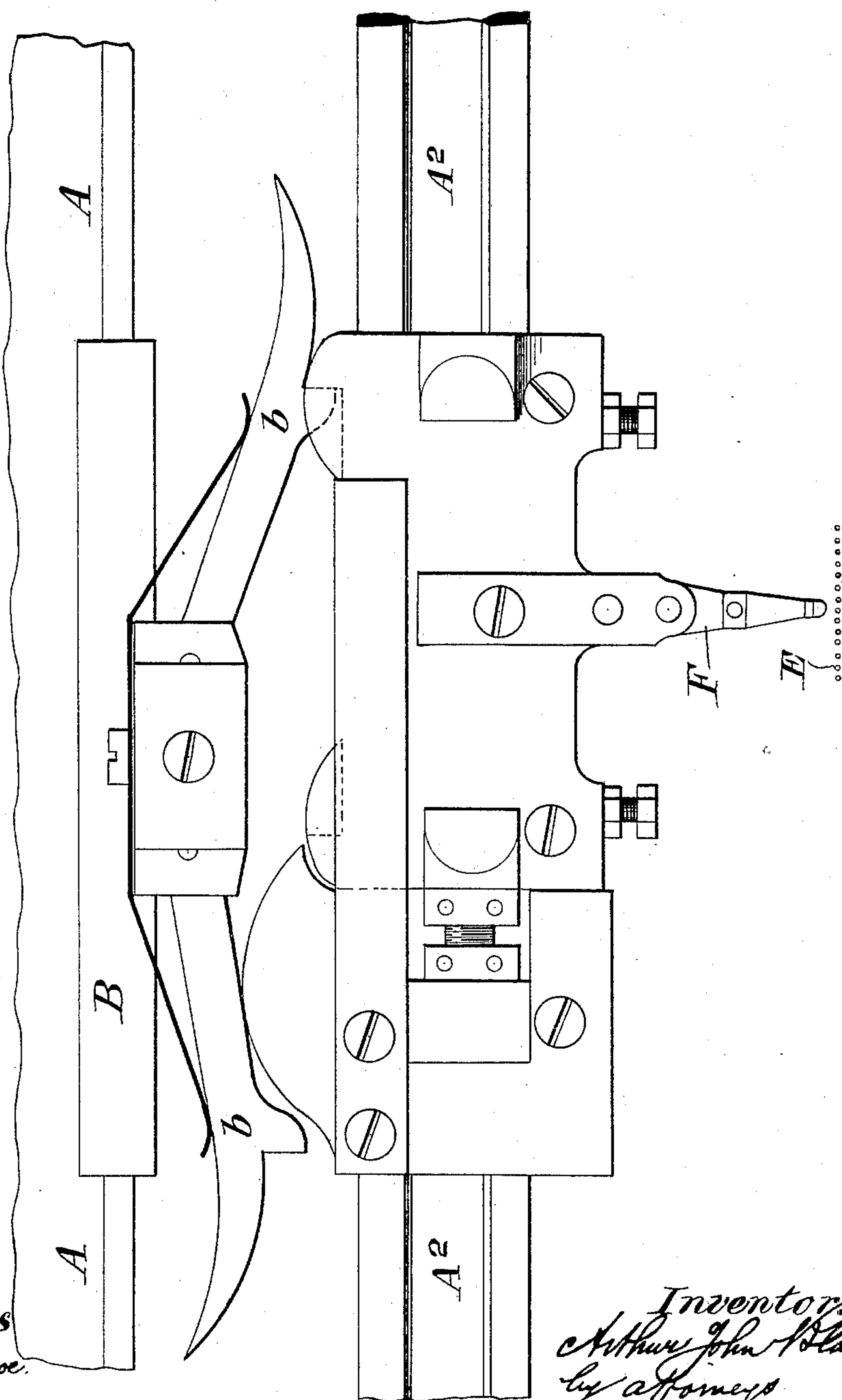
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Fig: 2.



Witnesses
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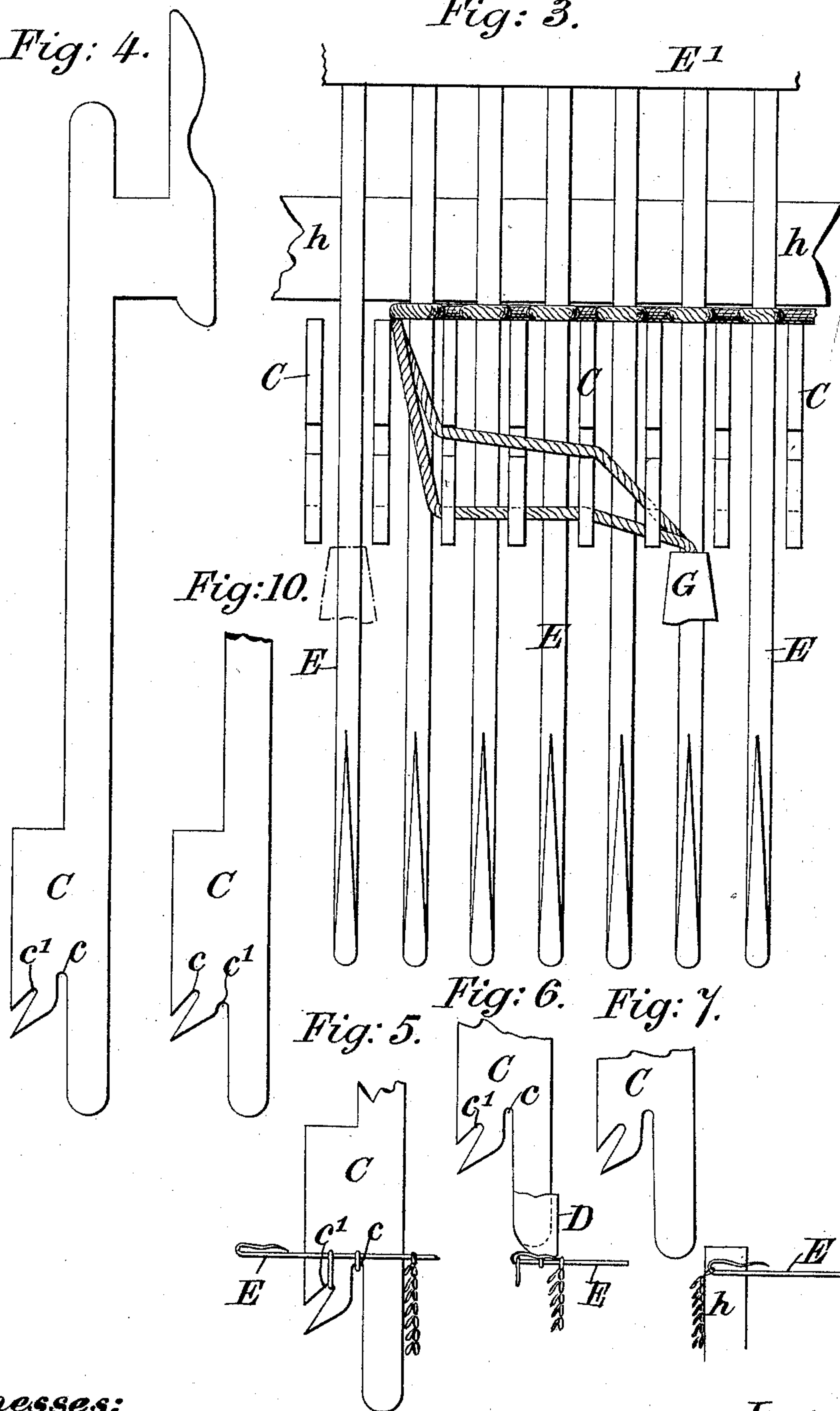
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Fig: 3.

Fig: 4.



Witnesses:

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Inventor:
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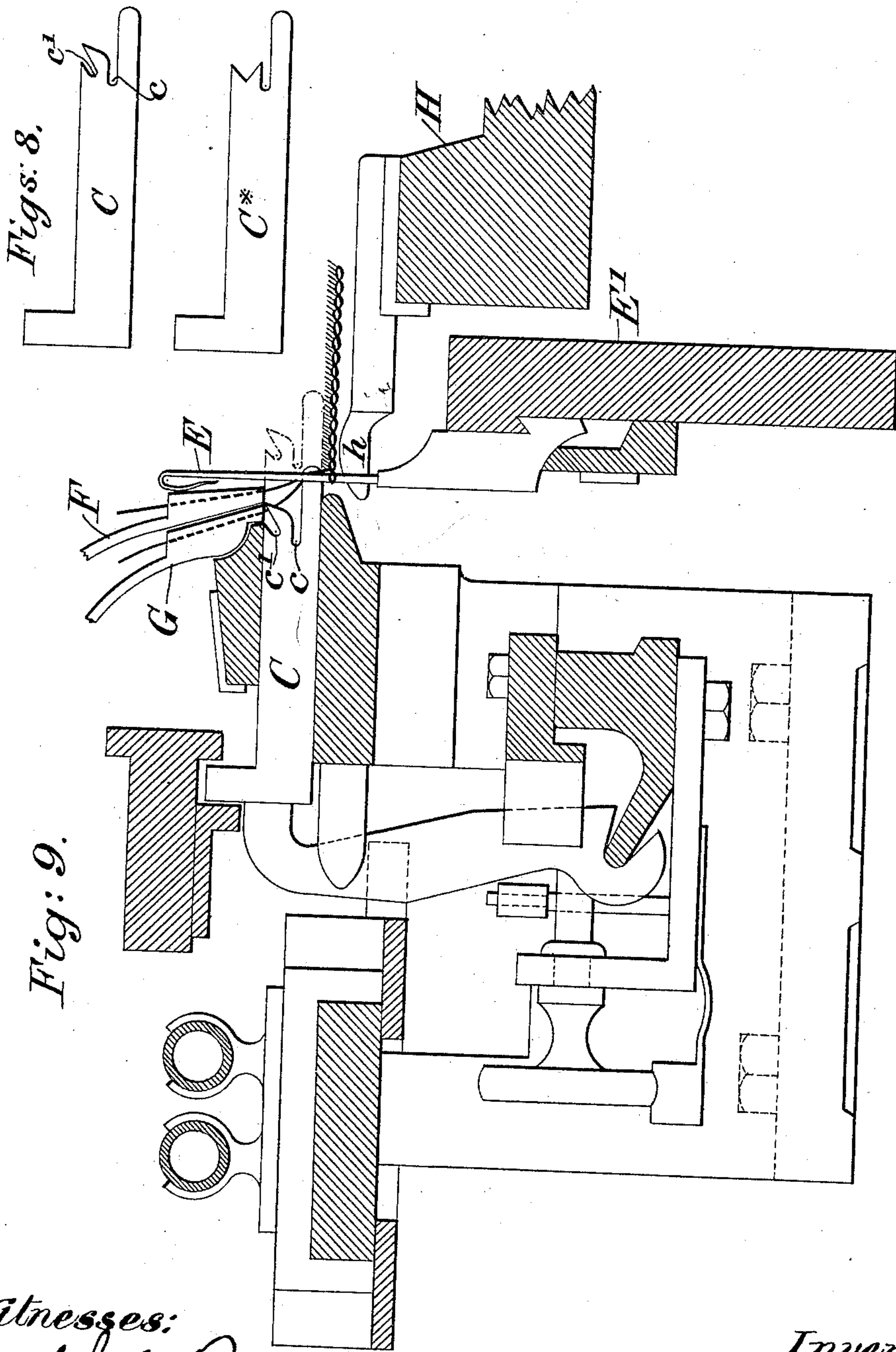
4 Sheets—Sheet 4.

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Witnesses:
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UNITED STATES PATENT OFFICE.

ARTHUR JOHN BLACK, OF BEESTON, NEAR NOTTINGHAM, ENGLAND.

APPARATUS FOR PRODUCING ELASTIC LOOPED FABRICS.

SPECIFICATION forming part of Letters Patent No. 466,898, dated January 12, 1892.

Application filed July 13, 1888. Serial No. 280,260. (No model.) Patented in England October 13, 1887, No. 13,905; in France May 19, 1888, No. 190,687, and in Germany June 6, 1888, No. 47,513.

To all whom it may concern:

Be it known that I, ARTHUR JOHN BLACK, of The Cedars, Beeston, near Nottingham, in the county of Nottingham, England, have invented certain Improvements in Apparatus for Producing Elastic Looped Fabrics, (which has been patented in England by Patent No. 13,905, dated October 13, 1887; in France by Brevet d'Invention No. 190,687, dated May 19, 1888, and in Germany by Patent No. 47,513, dated June 6, 1888,) of which the following is a specification.

This invention relates to the manufacture of elastic looped fabrics with a looped pile on the back of the fabric and extending over a portion thereof or the whole of the surface, according to the nature of the article to be produced.

The object of my improvement is to better provide for the production of fashioned under-clothing having such looped pile.

In carrying out my invention I take any well-known fashioning-machine—for example, the "Paget"—provided with a second thread-carrier slide, which is controlled in its movements, like the ordinary thread-carrier slide, by stops worked automatically in any well-known manner. I also employ a peculiar construction of double-throated sinkers to operate upon the two threads which are laid simultaneously on the needles, and by this means I indent the threads unequally, so as to form loops of two different sizes, the larger loop being the pile-loop. The threads will by the peculiar form of the sinker be laid on the needles at a distance apart equal to the distance between the two throats.

In the accompanying drawings, Figure 1 shows in sectional elevation the principal parts of a Paget fashioning knitting-machine modified to suit the purpose of this invention. Fig. 2 is a front elevation showing the front thread-carrier bar and slide with the thread-carrier attached thereto, illustrating the manner of driving and stopping the same. Fig. 3 is a diagram showing in plan view seven needles and eight sinkers and the relative position occupied by the threads of the two carriers during the traverse of the carriers. Fig. 4 shows detached the form of the vertical sinker designed for use in the Paget ma-

chine, the same being drawn to an enlarged scale. Figs. 5, 6, and 7 are diagrams representing side views of the operative parts of a needle and sinker and showing their relative positions at different stages of their operation. Figs. 8 and 9 are side views of a jack-sinker and a dividing-sinker constructed to adapt my invention to what is known as the "Cotton" machine. Fig. 10 is a side view of the operative part of a sinker of modified construction.

A, Fig. 1, is a portion of the main framing of the machine; B, the traversing slide, which carries the driving-catches *b b* and to which is also fitted the incline *b'* for depressing the sinkers. These sinkers are arranged vertically, as shown at C, and they slide in grooves formed in the back of the fixed rail *A'* and in the front of the presser-bar D. *E E* are the needles, arranged horizontally and carried by the needle-bar *E'*.

A² is a fixed bar, which forms a race for the ordinary thread-carrier slide *F*, and on the face of the bar *A'* is formed a race for a slide carrying the additional thread-layer *G*, which thread-layer is required for the production of a pile-surface.

H is the knocking-over bar, carrying the knocking-over bits *h*, between which the needles *E* slide to perform the knitting action. Each sinker *C*, it will be seen, has two throats *c c'* of different depths, the point of entrance to both of which is in the plane of the forward edge of the sinker. The deeper throat *c* is intended to receive the ground-thread and the shallower throat *c'* the pile-thread. The dip of the thread-carriers *F* and *G* is so arranged with respect to the sinkers that the thread-carrier *F* will lay its thread under the point of entrance to the deeper throat *c*, as shown in Fig. 1, while the thread-carrier *G* will lay its pile-thread immediately below the point of entrance to the shallower throat *c'*. In rear of the point of entrance to the throat *c* the nib dividing the two throats is inclined upward. This provides for the taking of the ground-thread from its carrier with certainty, even though the thread-carrier is advanced only one needle beyond the selvage-sinker. A good selvage is thus insured for the fashioned work, and by the use of this

sinker, in combination with a pile-thread carrier suitably controlled in the extent of its traverse, the limits of the pile-surface may be varied at the pleasure of the workman. As the sinkers charged with the ground and pile threads are depressed they will bring down those threads upon the needles, and continuing their descent they will first force down the pile-thread to form loops between the needles, and then in completing their descent act upon the ground-thread in the ordinary manner, extending at the same time the length of the loops of the pile-thread. This double action of the sinkers will be clearly understood by reference to the diagram Fig. 5, which represents the sinker in its lowest position between the needles. The needles are now drawn back during the rising of the sinkers, the loops being thereby moved toward the heads of the needles. The movement of the needles brings their beards under the action of the presser D, as shown in Fig. 6, and the further back movement of the needles will bring the knitted work over the beards and cause the new loops to be knitted into the work by the subsequent action of the knocking-over bits *h*, as illustrated in Fig. 7. The vertical movements of the sinkers are effected as usual—that is to say, they are forced down by the incline *b'* on the slide B to their lowest position (see Fig. 5) and raised to their highest position by the lifting-bar I to clear the work on the needles and depressed to the position of Fig. 1, ready to receive the threads by means of the bar K.

From the foregoing description it will be understood that by reason of this new formation of the sinkers the two threads are differently indented, the pile-thread being forced down deeper between the needles than the ground-thread in the act of indenting. In all other respects the knitting operation proceeds as heretofore. Thus the fashioning of the goods or the stopping of the pile-thread carrier to limit its course when patches of pile are to be formed will be effected by the well-known means common to fashioning and splicing machines. The fabrics which I propose

to produce with a pile-surface or a partial pile-surface are gents' and children's shirts, pants, trousers, drawers, hose, and half-hose, and combinations of shirt and pants, known as "combinations;" also, ladies' and children's vests, drawers, combinations, and hose. When it is desired to thicken a part—say, for example, on the chest and back of goods, such as gents' and children's shirts and combinations, ladies' and children's vest and combinations—I arrange for the pile to be formed thereon by adjusting the stop-inclines of the pile-thread carrier to suit the width of pile-surface required.

In adapting my invention to what is known as the "Cotton" machine, which is provided with horizontal indenting and dividing sinkers, I form the sinkers as shown at Fig. 8, C being the indenting or jack sinker and C* the dividing-sinker. In other respects the mechanism will remain unaltered, except that the incline on the traveling slide will be required to give a longer movement than usual to the sinkers. The means for securing this extended movement is shown in the sectional elevation Fig. 9, which represents the principal parts of the well-known Cotton machine.

It will be obvious that the position of the deep and shallow throats in the illustrated sinkers may be reversed, as shown in Fig. 10, where the front and shallower throat will take the thread for the groundwork, while the deeper and rear throat will take the thread for the pile.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

The combination, with the thread-carriers of fashioning knitting-machines, of double-nibbed sinkers having the entrance to their throats in the plane of the forward edges of the sinkers, substantially as herein described.

ARTHUR JOHN BLACK.

Witnesses:

FREDERICK BREWSTER,
JOHN BUXTON.