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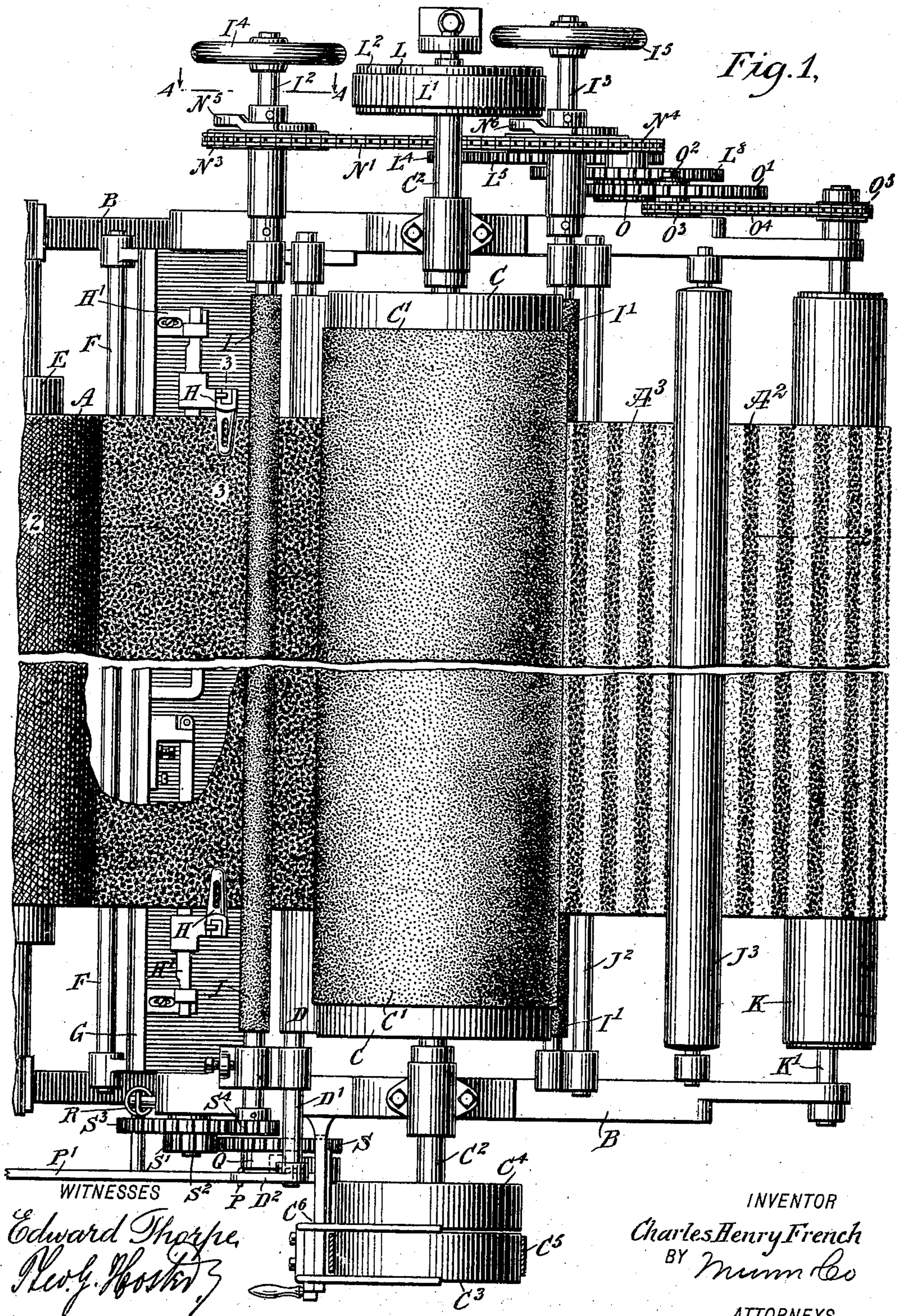
PATENTED MAR. 12, 1907.

C. H. FRENCH.

MACHINE FOR PRODUCING ORNAMENTAL SURFACES ON FLEECE FABRICS.

APPLICATION FILED MAY 14, 1906.

3 SHEETS—SHEET 1.



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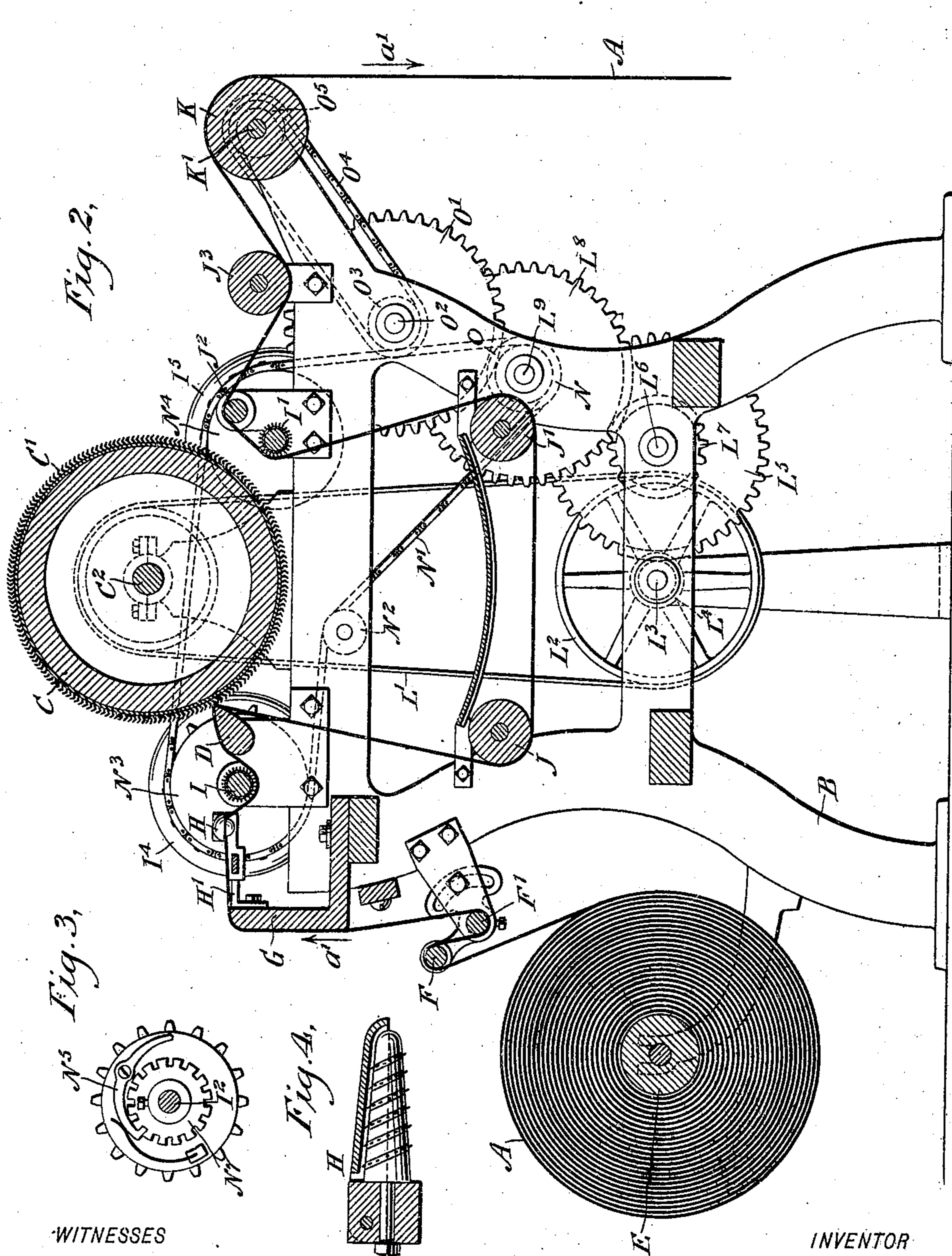
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WITNESSES

Edward Thorpe.
Rev. J. Hooper.

INVENTOR

Charles Henry French
BY Mummolo

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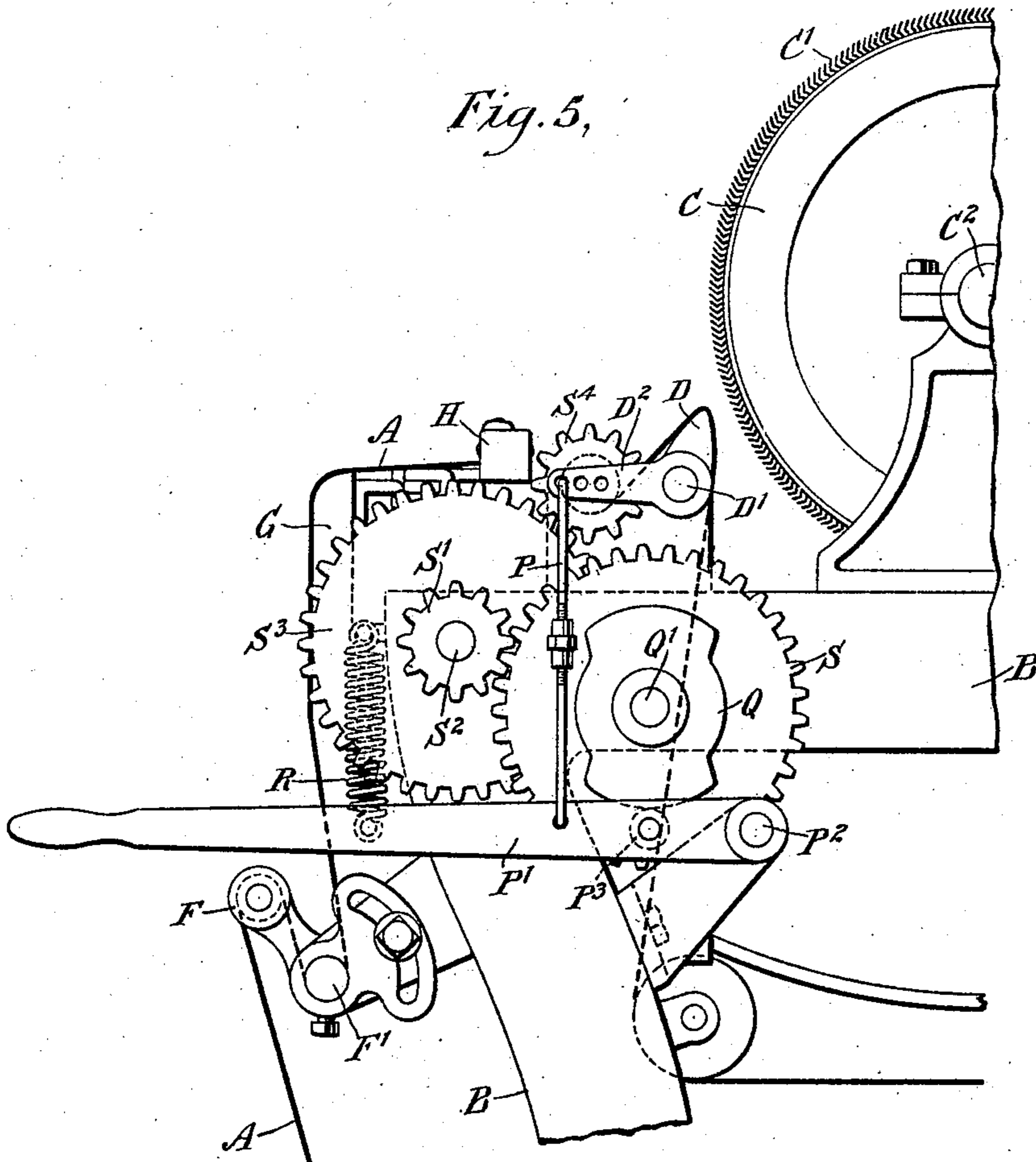
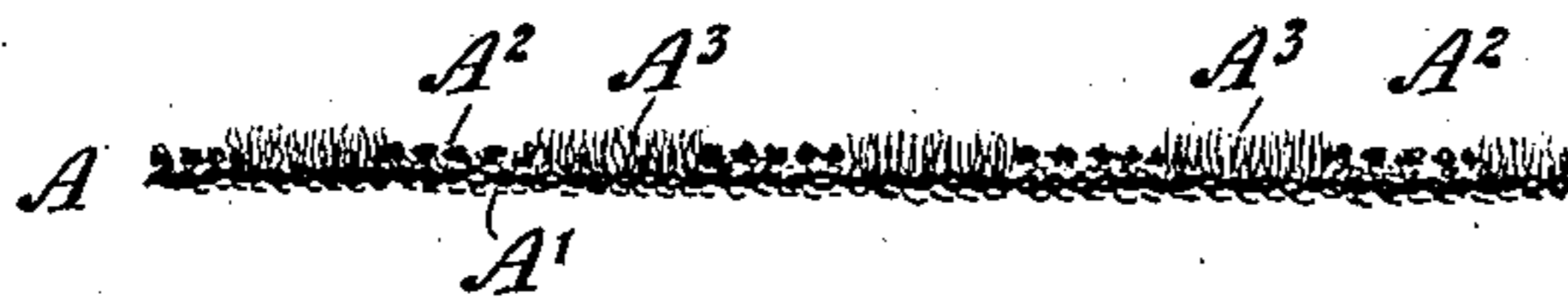


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES HENRY FRENCH, OF CANTON, MASSACHUSETTS, ASSIGNOR TO
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MACHINE FOR PRODUCING ORNAMENTAL SURFACES ON FLEECE FABRICS.

No. 847,056.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed May 14, 1906. Serial No. 316,771.

To all whom it may concern:

Be it known that I, CHARLES HENRY FRENCH, a citizen of the United States, and a resident of Canton, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Machine for Producing Ornamental Surfaces on Fleeced Fabrics, of which the following is a full, clear, and exact description.

The invention relates to cloth-finishing machines; and its object is to provide a new and improved machine for producing ornamental surfaces on fleeced fabrics—such, for instance, as shown and described in the application for Letters Patent of the United States, Serial No. 311,891, filed by me on April 16, 1906, the machine being arranged to provide a permanent ornamental surface in the form of alternating transverse stripes of coarse and fine texture.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a sectional side elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional side elevation of part of the improvement on the line 3 3 of Fig. 1. Fig. 4 is a sectional side elevation of one of the temples. Fig. 5 is a side elevation of the mechanism for periodically actuating the rocking beam, and Fig. 6 is a cross-section of the fabric produced by the machine.

The fabric A to be run through the machine presently to be described in detail consists of a knit body A', having a fleeced surface A² of twisted, lumped, or rippled fibers to give the surface A² a coarse or chinchilla effect. In passing this fabric through the machine the fibers of the portions of the surface A² are subjected to a combing-out action, whereby the fibers of the portions thus acted on are rendered fine and downy in distinct contrast to the remaining coarse portions of the original twisted, lumped, or rippled surface A². The portions combed out are in the form of transverse stripes of a fine downy texture, which stripes alternate with transverse stripes

of twisted, lumped, or rippled texture, thus producing a highly ornamental effect by contrast of the said alternating stripes. For the sake of brevity I prefer to use hereinafter the terms "fine" and "coarse" for the portions A² and A³.

On a suitably-constructed frame B is mounted to rotate the napping-drum C, provided on its peripheral face with combing-teeth C', adapted to comb out the portions A³ of the fabric A, presented with its coarse surface A² to the said combing-teeth C' by the use of a rock-beam D, preferably made almond shape and having its ends D' journaled in suitable bearings carried on the main frame B. The beam D extends in close proximity and across the peripheral face of the drum C, and the fabric A is caused to travel over the said beam D in the direction of its length, as indicated by the arrows a', and at a speed considerably less than the peripheral speed of the napping-drum C. For this purpose the following arrangement is made:

The fabric A unwinds from a spool E and passes over and under friction-rollers F F' and up over a cloth-beam G, secured on the main frame B, and then the side edges of the fabric A are engaged by temples H, of any approved construction, and adjustably mounted on brackets H', attached to the beam G. The temples H hold the fabric A properly stretched in the direction of its width and also guide the fabric in the stretched condition to a feed-roll I, journaled in suitable bearings on the main frame B. The feed-roll I is preferably provided with small pins at its peripheral surface to insure a proper forward travel or feeding of the fabric A in the direction of the arrows a'. Immediately after leaving the feed-roll I the fabric passes over the beam D, and then the fabric extends downward under a guide-roller J, then forwardly and under another guide-roller J', and then the fabric extends upwardly and passes over another feed-roll I', similar to the feed-roll I, but located on the opposite side of the napping-drum C, as plainly indicated in Fig. 2. The fabric passes from the feed-roll I' over a guide-roller J², then under a guide-roller J³, and finally over a roller K, from which the fabric passes to a reel to be wound up in the usual manner.

The rollers J, J', J², J³, and K are journaled in suitable bearings on the main frame B.

The feed-rolls I I' and the roller K receive a positive driving motion from the shaft C² of the napping-drum C, and for this purpose the following arrangement is made:

5 The shaft C² of the napping-drum C is provided with fast and loose pulleys C⁴ C⁵, connected by a belt C⁵ with other machinery, and the said belt C⁵ can be readily shifted
10 from one pulley to the other by a suitable belt-shifter C⁶, and when the belt C⁵ is on the fast pulley C³ then a continuous motion is given to the shaft C² and to the napping-drum C.
6 On the shaft C² is secured a pulley L, connected by a belt L' with a pulley L², secured
15 on a short shaft L³, journaled on the main frame B. On the shaft L³ is secured a pinion L⁴ in mesh with a gear-wheel L⁵, journaled on a stud L⁶, held on the main frame B, and on the face of the gear-wheel L⁵ is secured a pinion
20 L⁷ in mesh with a gear-wheel L⁸, journaled on a stud L⁹, arranged on the main frame B. On the gear-wheel L⁸ is secured a sprocket-wheel N, around which passes a sprocket-chain N', passing over an idler N²
25 and then around a sprocket-wheel N³, mounted to rotate loosely on the shaft I² of the feed-roll I. The sprocket-chain N' passes from the sprocket-wheel N³ over a sprocket-wheel N⁴, mounted to rotate loosely on the shaft
30 I³ of the feed-roll I', and then the sprocket-chain N' passes down to the sprocket-wheel N previously mentioned. Now the sprocket-wheels N³ N⁴ are connected by pawl-and-ratchet mechanism with the shafts
35 I² I³ of the feed-rolls I and I', and for this purpose the sprocket-wheels N³ N⁴ carry spring-pressed pawls N⁵ N⁶, engaging ratchet-wheels N⁷ N⁸, secured on the shafts I² I³, provided with hand-wheels I⁴ I⁵, respectively, as
40 plainly indicated in the drawings. Now when the machine is in operation and the sprocket-chain N' rotates the sprocket-wheels N³ N⁴ then the rotary motion of the latter is transmitted by the pawls N⁵ N⁶ and
45 the ratchet-wheels N⁷ and N⁸ to the shafts I² I³, which drive the feed-rolls I I'. When it is desired to stop the feed of the fabric for the time being and to feed by hand, then it is only necessary for the operator to throw out
50 the pawls N⁵ N⁶ and turn the shafts I² and I³ by hand, the operator then having hold of the hand-wheels I⁴ I⁵. Thus by the arrangement described, the fabric A may be fed forward or backward, according to the direction
55 in which the hand-wheels I⁴ I⁵ are turned. It is understood that normally, however, the shafts I² and I³ are driven in unison by the sprocket-chain N', the sprocket-wheels N³ N⁴, and the pawl-and-ratchet mechanisms referred to.
60

The roller K is driven from the gear-wheel L⁸, and for this purpose the latter is provided with a pinion O in mesh with a gear-wheel O', journaled on a stud O², held
65 on the main frame B, and on one face of the

gear-wheel O' is secured a sprocket-wheel O³, connected by a sprocket-chain O⁴ with a sprocket-wheel O⁵, secured on the shaft K' of the roller K. Thus when the machine is
70 in operation positive driving motion is given to the roller K to conduct the fabric from the machine.

In order to rock the beam D periodically, the following arrangement is made, special
75 reference being had to Figs. 1 and 5: An arm D² is secured to one end of the shaft D', and this arm D² is connected by an adjustable link P with a lever P', fulcrumed at P² on the main frame B, and on the lever P' is journaled a friction-roller P³ in engagement with
80 the peripheral surface of a cam Q, secured on a shaft Q', driven from the feed-roll I. A spring R presses the lever P', so as to hold the friction-roller P³ in peripheral contact with the cam Q, and when the machine is in
85 operation and the cam Q is rotated then an intermittent swinging motion is given to the lever P' to cause the latter to impart an intermittent swinging motion to the beam D by the action of the link P and the arm D².
90 Now by this intermittent swinging motion given to the beam D the traveling fabric A is held for a certain length of time in engagement with the teeth C' for the latter to comb out portions of the coarse surface A², it being
95 understood that when the beam D is in the position shown in Fig. 5—that is, away from the napping-drum C—then that portion of the fabric which passes over this beam D for the time being remains in the original coarse
100 state—that is, not combed out. Thus transverse alternating stripes of coarse and fine texture are produced by the action of the beam D and the napping-drum C, between which and the beam D passes the fabric A,
105 as above described.

In order to rotate the cam Q from the feed-roll I, the following arrangement is made: On the shaft Q' is secured a gear-wheel S in mesh with a pinion S', journaled on a stud S², held
110 on the frame B, and the said pinion S' is secured to one face of a gear-wheel S³, in mesh, with a pinion S⁴, secured to the shaft I² of the feed-roll I. Thus when the latter is rotated, as previously explained, then a rotary
115 motion is transmitted by the pinion S⁴, the gear-wheel S³, the pinion S', and gear-wheel S to the cam Q to rotate the latter very slowly in comparison to the speed with which the feed-roll I and the napping-drum
120 C are rotated.

The lever P' is preferably in the form of a hand-lever under the control of the operator to enable the latter to impart a rocking motion to the beam D whenever it is desired to
125 throw the beam D away from the napping-drum C.

The operation is as follows: When the several parts are in the position illustrated in Figs. 1 and 2 and a rotary motion is given to
130

the shaft C², then the napping-drum C, as well as the feed-rolls I I' and the roller K, are rotated, so that the fabric A is caused to travel in the direction of the arrows a', and in doing so it passes over the beam D, which periodically presents the coarse surface A² to the action of the combing-teeth C'. Now as the coarse surface A² of the fabric A has its fibers in a twisted, rippled, or lumped condition owing to previous operation it is evident that the combing-teeth C' comb out portions of the said twisted, lumped, or rippled fibers in a transverse direction and in the form of stripes to produce the transverse combed-out or downy stripes A³, alternating with the stripes A² of twisted, lumped, or rippled fibers. Thus by the arrangement described the fabric can be very quickly treated with a view to produce a highly ornamental permanent effect by having contrasting portions of combed-out, downy, and twisted, lumped, or rippled fibers, as will be readily understood by reference to Figs. 1 and 6.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for producing ornamental surfaces on fabrics having fleeced coarse surfaces, comprising a revoluble napping-drum having an uninterrupted peripheral combing-face, means for drawing the fabric in the direction of its length past the said combing-face, and an intermittently-rocking beam for moving the fabric periodically in engagement with the said combing-face.

2. A machine for producing ornamental surfaces on fabrics having fleeced coarse surfaces, comprising a revoluble napping-drum having an uninterrupted peripheral combing-face, a drawing device for drawing the fabric past the said napping-drum in the direction of the length of the fabric, a beam mounted to rock for moving the fabric into and out of engagement with the said combing-face, and in the direction of the width of the fabric and in the direction of the length of the napping-drum, and means for periodically rocking the said beam.

3. A machine for producing ornamental surfaces on fabrics having fleeced coarse surfaces, comprising a revoluble napping-drum having an uninterrupted peripheral combing-face, a drawing device for drawing the fabric past the said napping-drum in the direction of the length of the fabric, a beam mounted to rock for moving the fabric into and out of engagement with the said combing-face and in the direction of the width of the fabric and in the direction of the length of the napping-drum, an arm on the said beam, and a cam device connected with the said arm for periodically rocking the said beam.

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

CHARLES HENRY FRENCH.

Witnesses:

N. W. DUNBAR,
J. H. LANDRIK.