

(No Model.)

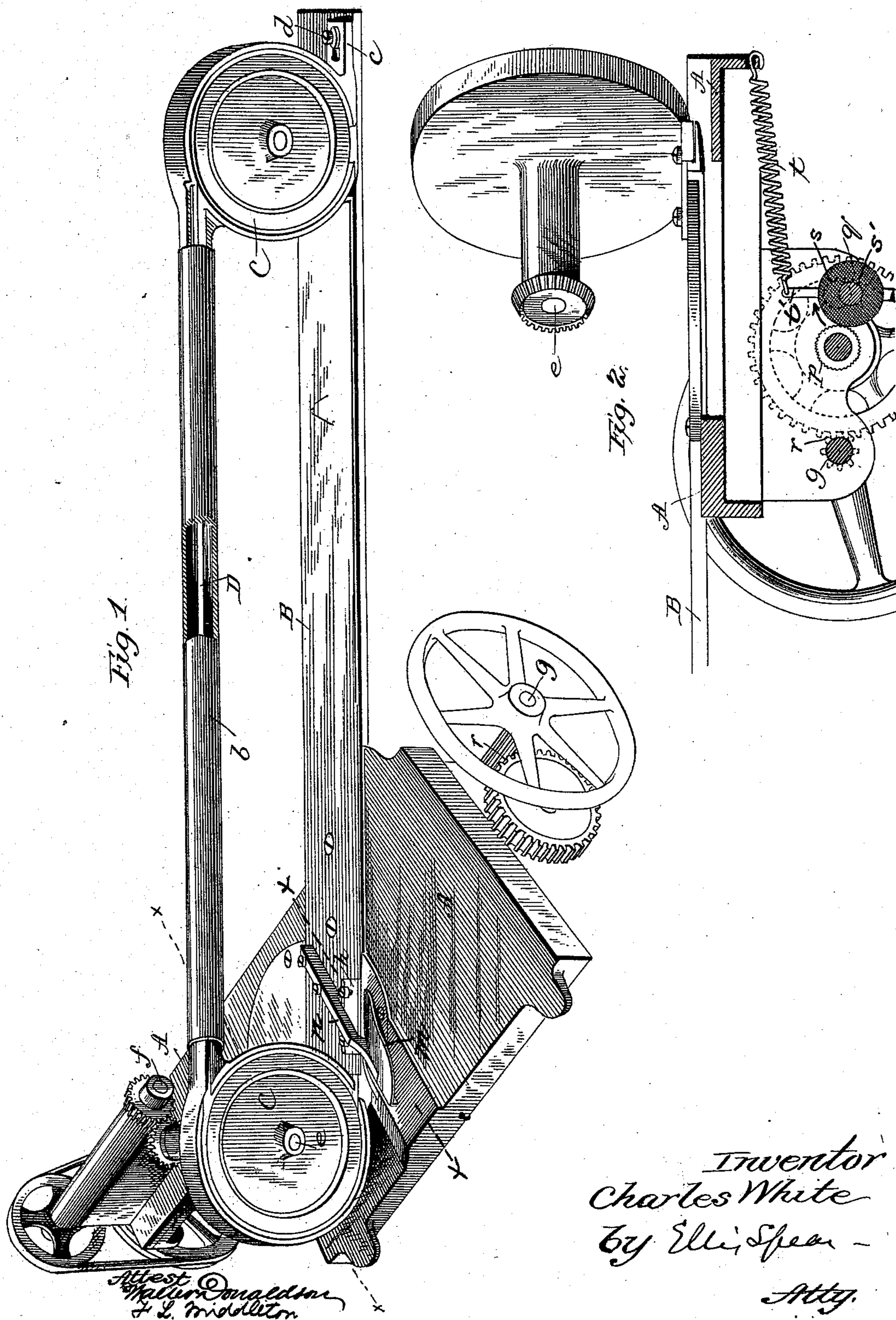
3 Sheets—Sheet 1.

C. WHITE.

EMBROIDERY CUTTING MACHINE.

No. 412,573.

Patented Oct. 8, 1889.



(No Model.)

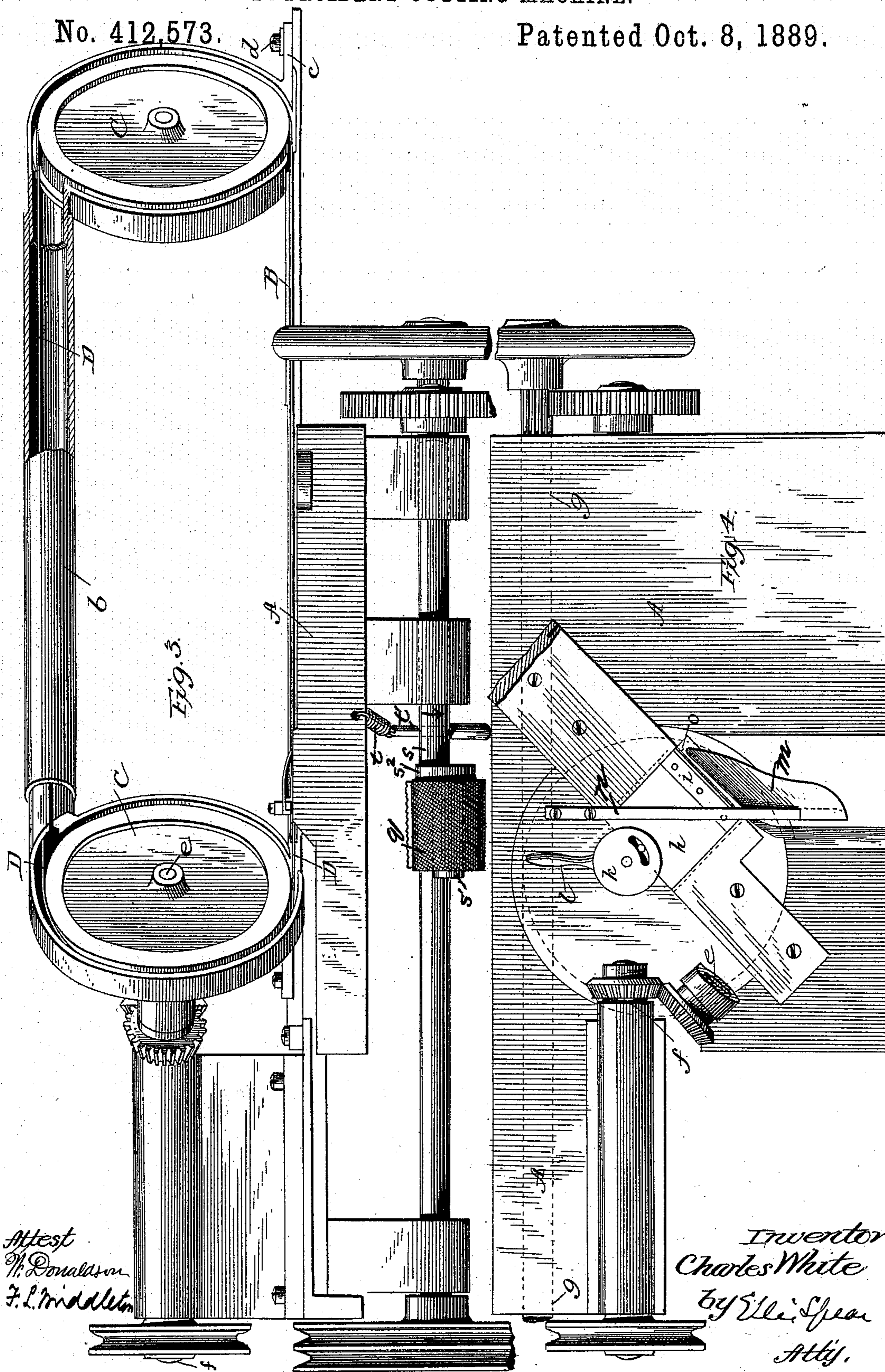
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Attest
W. Donaldson
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Inventor
Charles White
by Eli Spear
Atty.

(No Model.)

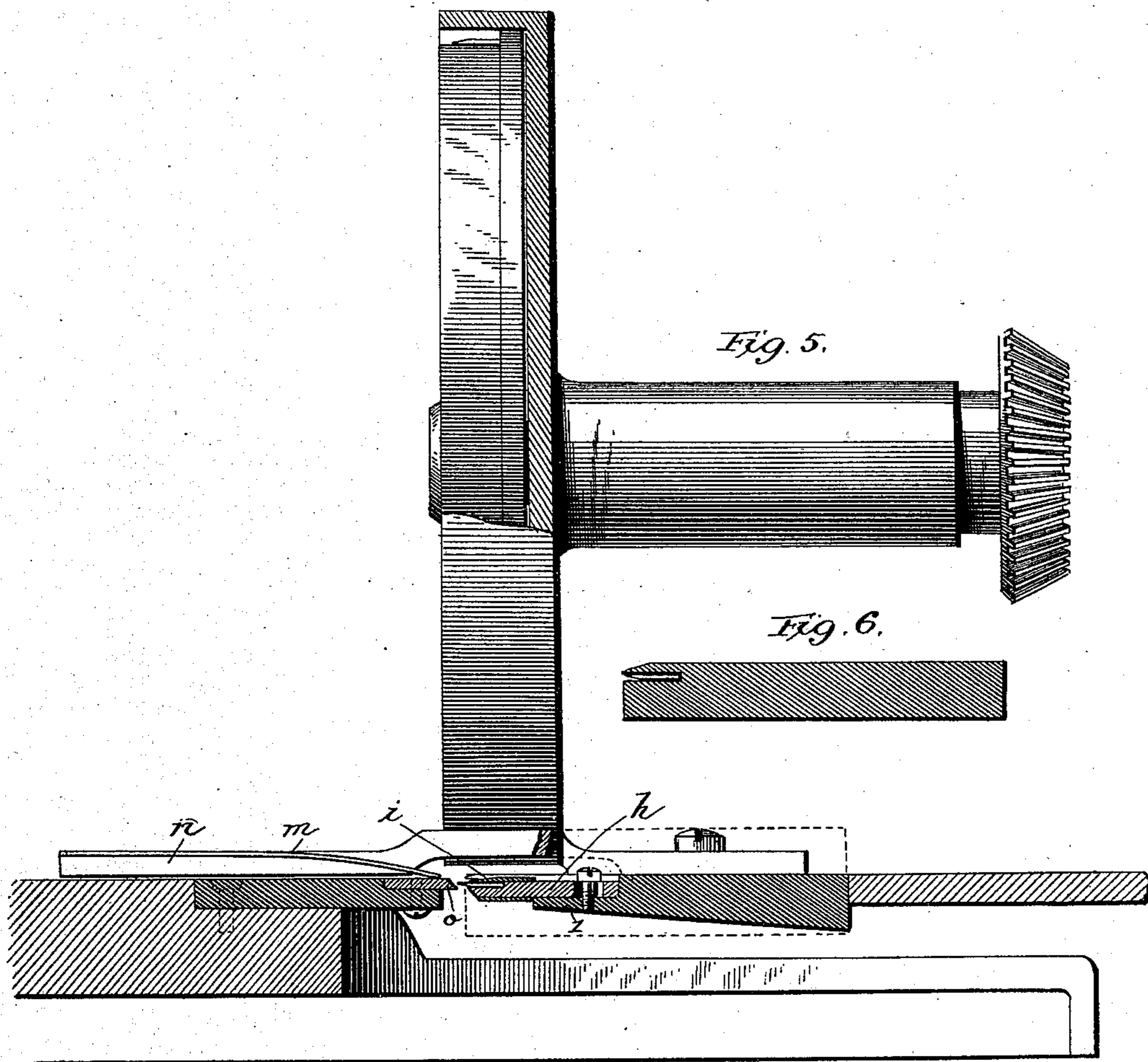
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EMBROIDERY CUTTING MACHINE.

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Patented Oct. 8, 1889.



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UNITED STATES PATENT OFFICE.

CHARLES WHITE, OF BALTIMORE, MARYLAND, ASSIGNOR TO FRIEDEN-
WALD BROTHERS, OF SAME PLACE.

EMBROIDERY-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 412,573, dated October 8, 1889.

Application filed October 20, 1888. Serial No. 288,643. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WHITE, of Baltimore, State of Maryland, have invented a new and useful Improvement in Embroidery-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is designed as an improvement upon the embroidery-machine shown and described in Letters Patent of the United States, No. 320,031, and dated June 16, 1885. In that patent is shown a machine for trimming off the plain portions of embroidery pattern on the line of the embroidery-stitching, so as to leave the article with the line of stitching constituting the embroidery on the bottom edge, the plain portion being entirely removed. The principal form of cutting device shown in that patent was a disk, and while this is very effective and performs the work thoroughly and well, I find that there is considerable wear upon it, and that it is desirable to substitute a different kind of cutter, and in reorganizing the machine to adapt it to the substituted form of cutter I have generally improved the operating parts so as to simplify the construction and to increase its general effectiveness.

In the drawings, Figure 1 represents a perspective view of the machine with a portion of the tubular channel of the cutter broken away to show the interior. Fig. 2 is a section of Fig. 1 on line xx . Fig. 3 is a front elevation of the machine, some of the parts being in section. Fig. 4 is a plan view of the bed of the machine, a portion of the supporting-plate for the cutter being broken away. This figure shows a modification of means of adjustment. Fig. 5 is a sectional view on line xx of Fig. 1. Fig. 6 is a detail view, in section, of the protecting-plate for the cutter.

It will be understood that the material for which this machine is designed is made in different patterns by stitching which makes a line of raised threads above and below, these raised lines constituting the pattern. These patterns are made of various shapes and extend through upon the under and upper surface of the cotton or linen or other foundation-piece a distance from the edge, and this requires the lower edge to be trimmed off

to correspond to the lower edge of the design or figure. This embroidery, when it is thus trimmed, is used for trimming and for various purposes and for various articles of wearing-apparel for ladies.

Prior to my invention as disclosed in the patent above referred to such embroidery was trimmed by hand; but my invention I designed as an apparatus which automatically cut out the lower part of the ground fabric on the line of the embroidery-stitching, and in the present invention my object is the same, with the additional object of generally improving the machine and rendering it more effective in operation and more perfect in construction.

I have represented the bed of the machine at A. At an angle thereto I extend a plate or support B, secured to the bed and carrying at each end a supporting pulley or drum C. Instead of the circular disk used in the patent referred to as a cutting medium I substitute therefor an endless band D, having a sharpened or cutting edge, and this band is supported by the two drums referred to. The support B is arranged with its edge in line with the lower peripheries of the drum, and is provided with a groove or slot, as shown at a , extending its whole length between the drums, of such depth and thickness as to contain the cutter and prevent it from injuring the operator or any person in proximity to the cutting-plate in its movement around the drums or between the same. Connecting the upper peripheries of the drums is a tube b , through which the cutter passes from one drum to the other on its return to the cutting-point. The connecting-tube receives the tubular extensions x of the drum-peripheries loosely in such a manner as to permit adjustment of the tension by the movement of one of the drums—that is, the said extensions merely project into the tube ends, but are not held rigidly therein. In order to adjust the tension of the endless cutter, I provide one of the drums C with a projecting stud c , held to the support B by means of the set-screw d , passing through a slot in said projection. By means of this adjustable connection the tension of the band may be increased or diminished at will. The movement of the band is

effected by the revolution of the drum at the left hand of Fig. 1, which is mounted upon a shaft *e*, having a bevel-gear upon its end meshing with a gear on the shaft *f*, which in turn is connected by belt and pulley to the main shaft *g*, and this main shaft is driven either by hand or by power, as found most desirable. The shafts described have suitable bearings in the frame for the machine. I arrange the knife at such an angle to the table as to secure a better cutting effect by feeding the goods at an acute angle thereto instead of at right angles, as in one of the forms described in my patent aforesaid, in which an endless band is shown.

As shown in Fig. 4, I provide for the exposure of a portion of the cutter by forming a recess in the upper part of the support B, and in this recess a plate *h* is inserted, being guided and supported by its edges fitting in grooves in the adjoining walls, the front edge of the plate extending to a little in rear of the front edge of the support B. This front edge of the plate *h* is provided with a recess or groove corresponding to the recess in the edge of the support B; but as the width of the plate *h* is less than the width of the support B the depth of the recess is correspondingly less than that of the support B, so that as the cutter passes through the recess of the plate *h* its edge is exposed an amount corresponding to the difference between the depth of the recess in the plate *h* and that of the recess in the support B. A covering-plate *i* forms the top of the recess in which the cutter moves and is held in place by rivets. The plate *h* may be adjusted to advance or retract the cutter, according to requirements of the embroidery acted upon by the machine. In Figs. 1 and 5 the plate *h* is shown as adjustable by means of screws passing through slots, and in Fig. 4 a slotted cam *k* is shown as employed for the same purpose. The slot receives a pin from the plate and the cam is provided with an operating-handle *l*.

In order to direct the material to the cutter, I provide a guide which serves the purpose of putting a tension on the part of the fabric containing the embroidery, of accurately guiding the embroidery, and of directing the plain portion which is to be trimmed off to the under surface of the knife. This consists of a spring-plate *m*, which is supported upon an arm *n*, secured to the machine-frame, the said arm bridging the space between the support B and the table A. The spring-plate *m* is secured to the upper surface of the front end of the arm *n*, and is thus raised above the surface of the table in front, while its rear end is unsupported and depends toward the surface of the table, and beneath this spring-plate the embroidery passes and thus receives tension therefrom, the pressure being sufficient to keep it straight and smooth. The arm *n* is provided with a straight edge on its right-hand side, and as the embroidery is fed in

this edge bears against the lower ends of the raised embroidery-threads, and thus feeds the embroidery in a straight line to the cutter. As the arm *n* is supported upon the support B, its front edge does not require a support, and this is held slightly above the face of the table, just sufficiently to insert beneath it the plain portion of the ground fabric which is to be trimmed off. Thus in feeding the fabric the plain portion is passed beneath the arm *n*, with the lower ends of the stitching bearing against the side of the arm and with the face of the embroidery beneath the plate *m*. The embroidery then passes to the knife over the edge of the plate *o*, which extends out beyond the face of the table at this point and is provided with an inclined end. The surface of this plate is slightly above the cutting-edge of the knife. It will be understood that this plate *o* is not absolutely necessary, but I prefer to make it a detachable part of the machine, so that it may be replaced when worn.

The table is made lower on the left-hand side of Fig. 1, and an inclined portion connects the one part with the other, which thus leaves a space, as shown in Fig. 3, leading to the space beneath the left-hand supporting-drum, through which the plain portion of the ground fabric is directed. As the fabric is fed through to the cutting-edge, (the cutter having been previously started by hand,) the plain portion is directed down beneath the knife, and the part containing the embroidery laid upon the same, so that the cutting-edge lies across the fabric, between the plain portion and the embroidery edge, and as it is fed along the plain portion is cut off on the line of the embroidery, following its configuration by reason of the fact that the tension of the cut plain portion drawing upon the uncut fabric is downward, and as the thickness of the embroidery edge prevents it from being drawn down below the cutting-edge of the knife it is obvious that the knife will cut close to the edge and will follow it, as above described. The cut plain portion, after it passes through the opening in the bed-plate, is directed between a milled roller *p* and a friction-roller *q*, and from thence it passes to a roller or reel, upon which it is wound. The roller *p* is mounted upon the shaft, which is driven from the main shaft through gear-connections, as shown at *r*, and the fabric is kept pressed against this milled roller, and thus fed along automatically by means of the roller *q*. This roller is mounted on a pin *s'*, projecting from a disk *s*², Fig. 3, which is connected at its upper periphery with a shaft *s*. This arrangement places the center of the roller below or eccentric to the center of the shaft *s*, Figs. 2 and 3, and when said shaft is moved in the direction of the arrow it will press the roller *q* against roller *p*. This movement is secured by means of the spring *t* and pin *t'* projecting from the shaft.

I claim as my invention—

1. In combination, a suitable base, an endless cutting-band, the drums therefor, and the support B, said support being arranged below the drums and having a groove directly in line with the peripheries of the drums, substantially as described.

2. In combination, a suitable base, an endless cutting-band, the drums therefor, the support B, below the drums, having a groove directly in line with their lower peripheries, and a tube extending between the upper peripheries of the drums and receiving the endless band, substantially as described.

3. In combination, a base A, an endless band suitably supported having a cutting-edge, a support B, having a grooved edge for covering said band, a guide for directing the material, and an adjustable plate for the band in line with the guiding device, whereby the cutting-edge of the band may be exposed to a greater or less extent, substantially as described.

4. In combination, a base A, an endless cutting-band, a support B, grooved to conceal the same, and a plate having a groove of less depth than that of the plate B, whereby the cutting-edge is exposed, and a guiding device for directing the material to said cutting-edge, substantially as described.

5. In combination, the base A, an endless cutting-band, a support B, grooved to cover said band, supporting-drums at each end of said support, one of said drums being adjustable, and a tube between the drums in line with the upper peripheries, substantially as described.

6. In combination, the cutting-tool, means for supporting and means for driving the same, a guide-bar *n*, and a pressure-plate *m*, supported by said bar, said plate having its forward end raised and its other end near the cutter depressed to bear upon the goods, substantially as described.

7. In combination, a base, an endless cutting-band, a support B, having a groove on its edge in which the band travels, means for

supporting said band, and adjustable plate *h*, having a groove corresponding to the groove in the support B, but of less depth, whereby the edge of the cutter is exposed in its travel a distance equal to the width of the adjustable plate, and means for adjusting said plate.

8. In combination, a base A, a support B, arranged at an angle thereto, a groove in its edge, an adjustable plate fitting a recess in said support B, said adjustable plate also having a groove in its edge in line with the groove in the plate B, but of less depth, whereby the cutting-edge is exposed at this point, supporting-drums for the band, one of said drums being adjustable, a tubular covering between the drums for the band in its return movement, means for driving said band, means for directing the material to the cutting-edge, consisting of the pressure-plate, a vertical shoulder and a guide for the plain portion and feed-rollers for drawing upon the plain cut portion of the fabric, and means for driving said rolls, substantially as described.

9. In combination with an endless cutting-band, means for directing the material to the cutting-edge, feed-rollers for receiving and drawing upon the plain cut portion, consisting of the revolving roll *p*, and the roll *q*, mounted eccentrically upon the rocking shaft, and means for moving the shaft, substantially as described.

10. In combination, the base, the endless cutting-band, the drums, and the support B, for the drums, having a groove, the said band being arranged with its front cutting-edge within the groove and back of the front edge of the support, said support being recessed at one point to expose the cutting-edge, substantially as described.

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

CHARLES WHITE.

Witnesses:

MURRAY HANSON,
WILLIAM H. BERRY.