J. Thomas.
Chenille Mach.

No. 44,050. Patented Aug. 30, 1864.

Fig. 3.

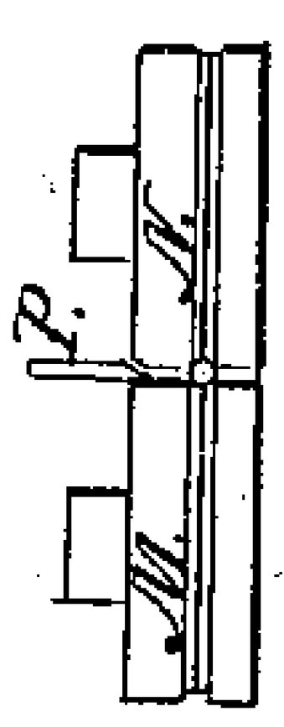


Fig. 4.

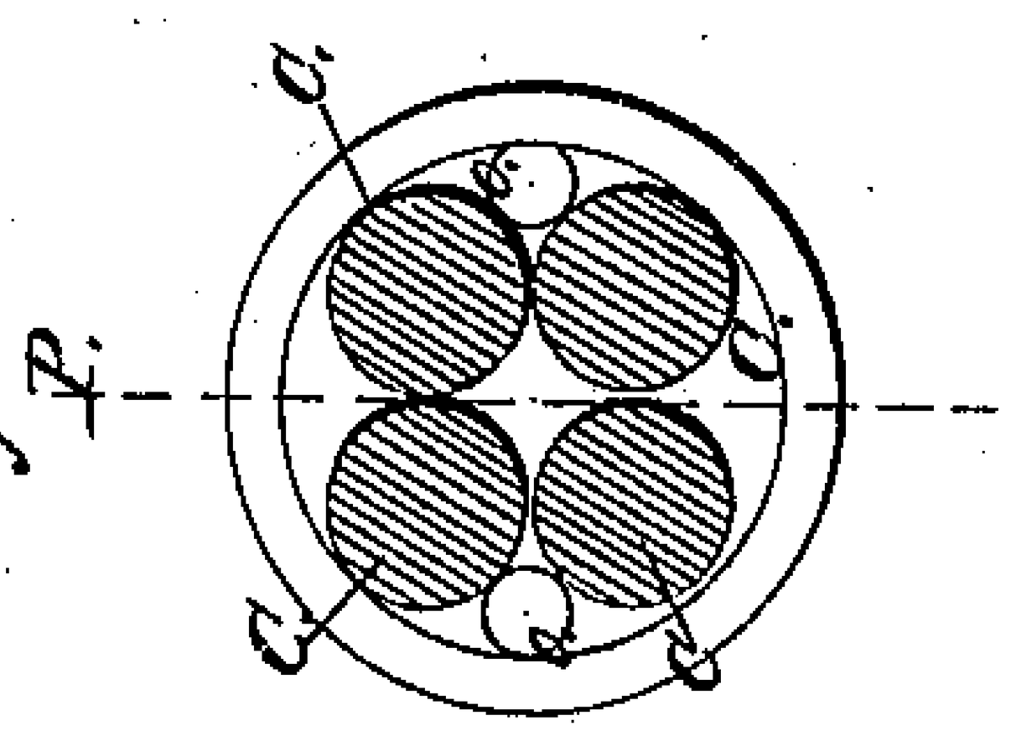


Fig. 1.

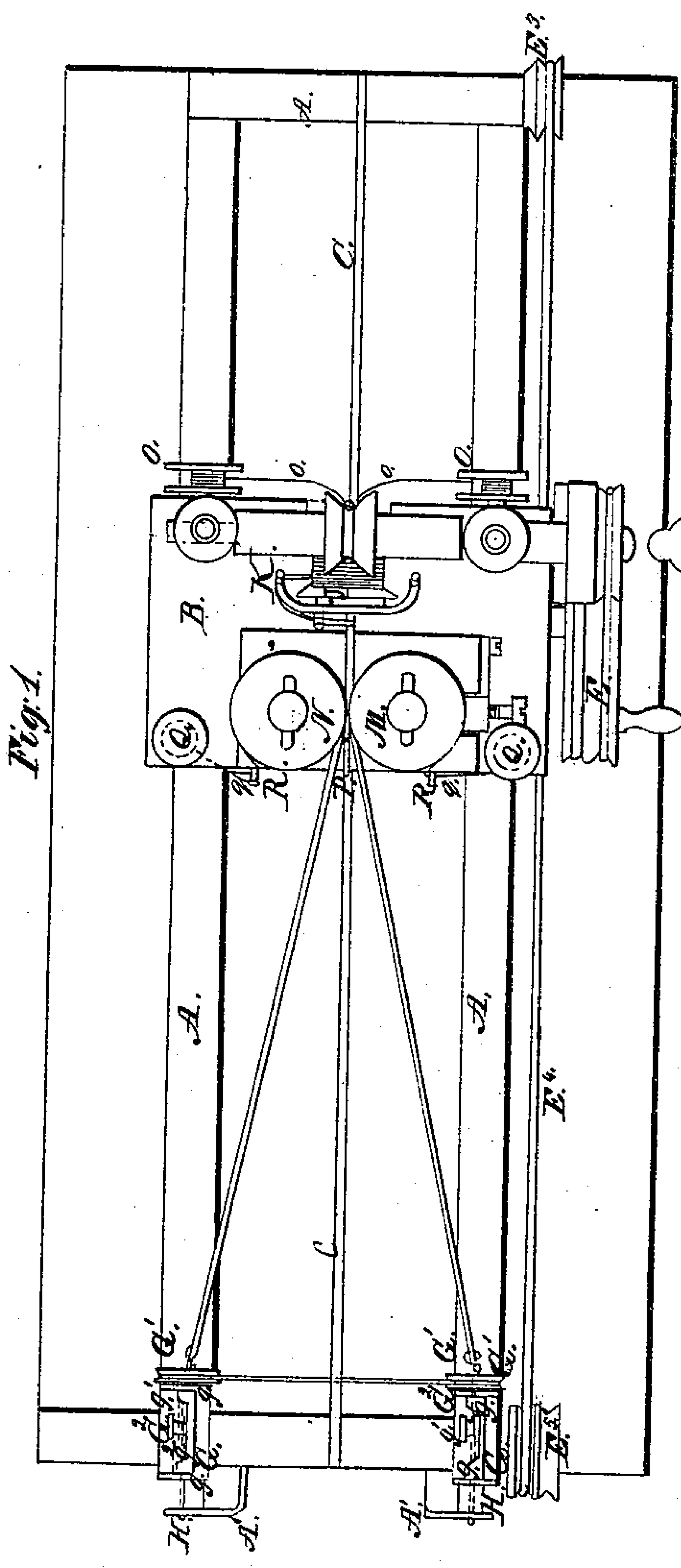
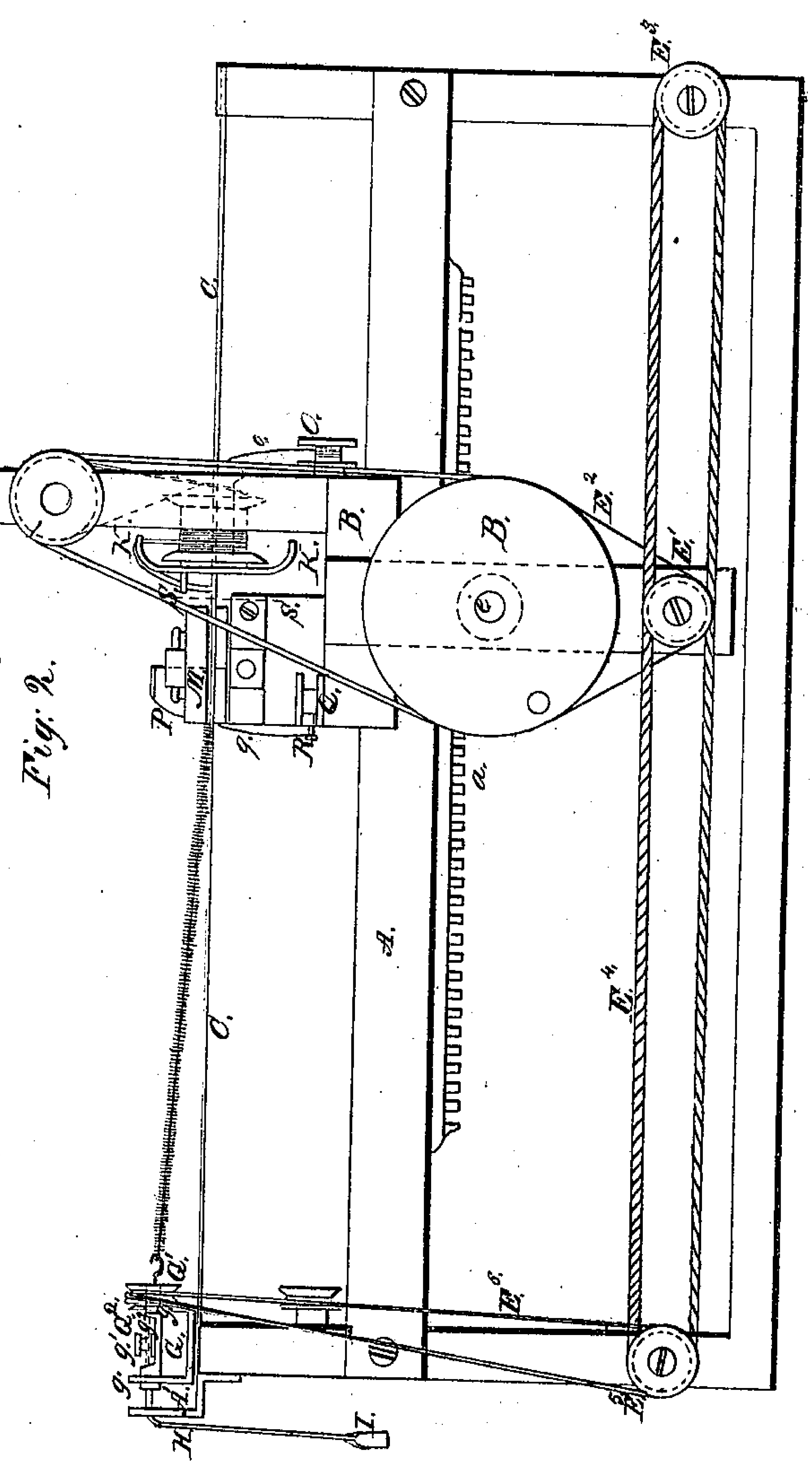


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEPH THOMAS, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND CALHOLINA LAMBERT, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING CHENILLE.

Specification forming part of Letters Patent No. **44,050**, dated August 30, 1864.

To all whom it may concern:

Be it known that I, JOSEPH THOMAS, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Machines for Making Chenille; and I do hereby declare that the following is a full and exact description of the same.

The accompanying drawings form a part of this specification. Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is an end elevation representing certain details. Fig. 4 is a cross-section of a small portion on a greatly magnified scale as compared with the other figures. The section is on the line S S in Fig. 2.

The figures show the novel parts with so much of the other parts as is necessary to explain their relation thereto.

Similar letters of reference indicate like parts in all the figures.

My invention relates to the construction and arrangement of the twisting-mandrel and its attachments; to the means of securing a proper yielding tension on the material; to the means of holding and cutting the material at the point where it changes from a continuous coil to a series of short lengths; to the relation of the wires to the other parts, and to the means of giving motion to the mechanism.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by the aid of the drawings and of the letters of reference marked thereon.

A A is a fixed framing. B is a carriage adapted to traverse longitudinally thereon, and C C C C are four parallel strands of wire tightly stretched along the center. The frame A and wires C may be much longer in proportion to the height and width of the machine than is represented. A small gear-wheel on the shaft *e* meshes into the rack *a* and controls the movement of B upon A as the shaft *e* is turned.

E is a large wheel or pulley provided with a handle or crank, as represented, and to set the running mechanism in operation it is only necessary to turn the wheel E continuously by hand, moving along to keep pace with it, and the carriage B and its connections traverse along on the frame A. The round belt E^4, which is set in motion by the revolution of the hand-wheel E, gives a rapid rotation to the mandrels G G. This is effected through the intervention of intermediate mechanism, as follows:

E' is a pulley carried on the carriage B and provided with two grooves. The belt E^2, running in one groove from E, conveys the motion from the latter, and the long belt E^4, by being coiled one or more times in the other groove, receives motion from E'.

E^3 is an idle-pulley on one end of frame A, and serves to keep the belt E^4 extended.

E^5 is a pulley with two grooves. One groove receives the belt E^4, and thereby causes the pulley to receive motion. The other groove receives the belt E^6, and thereby gives motion to the pulleys G' G' on the ends of the mandrels G G. All the belts are kept tight and act efficiently, whatever may be the position of the carriage B as it moves along its track. The mandrels G G are hollow, and are cylindrical at their bearings *g g*, but open on one side at the intermediate space. On this open part of each is a pin, *g'*, and on this pin is a small pulley, G^2, which is grooved to receive the tension-cord attached to the end of the chenille. The tension-cord is represented by H. It is rove through the mandrel G at one end, then passed once around the small outside pulley, G^2, which revolves therewith; thence through and out at the other end of the mandrel G; thence over a guide or small pulley at the part of the frame A or of an arm thereof designated A', and thence perpendicularly down to the suspended weight I. There are two of these tension-cords, one for each piece of chenille being manufactured, and both similarly arranged, but on opposite sides of the machine. There is a constant tension due to the gravity of the suspended weight. As the mandrel G revolves, it revolves the tension-cord or twisting-cord which passes through it, and consequently revolves and twists the chenille. There may be a swivel at some point to avoid the necessity for rotating the weight I, if desired; but I do not deem it necessary in practice, in order to operate my invention successfully. I usually prefer, however, to locate the guide A' at a greater distance from the mandrel G than is represented—as, for example, to employ for this purpose a small pulley on the side of the room near the ceiling, and to introduce a swivel between the mandrel G and such pulley.

The soft silk or other material to form the

plush on the chenille is wound around the four wires C C C C, and these wires are of such diameter that the length of silk wound once around is sufficient for two lengths to be used in the chenille. I cut it in two places by the fixed knife P, standing in the position indicated in Fig. 4. A vibrating or a rotary cutter may be used in a corresponding relation to the other parts, in lieu of the fixed knife P; but with either or any style of cutter it is important to hold the material very firmly at the moment it is cut. I effect this by the aid of the two rollers M N, which revolve slowly on upright axes, and are accurately grooved to receive each one-half of the mass of the material which envelops the wires C C C C, and also to receive and hold tightly presented thereto the cotton or other thread, *q q*, which is to compose one of the longitudinal strands of the chenille. There are, of course, two of these threads, one on each side of the mass of silk, and running one in a groove in the pulley M and the other in a corresponding groove in the pulley N. One of these goes into each piece of chenille. The other thread in each piece is introduced to the interior of the mass of silk by being laid along parallel to the wires C C, &c., before the silk is wound thereon.

The mechanism for winding the silk around is of a kind so well known to the trade as to require little description; but the means of introducing and holding the threads will be referred to in detail.

O O are two spools containing the cotton thread or other thread or fine wire which is to remain in the chenille. The thread from these (marked *o o*) is delivered off from the spools and laid alongside the wires C C, &c., as the carriage B and its connections move to the right.

J is a large spool, and K is a flier. These turn on a hollow axis by the power received through the belt from the pulley above, and rotate very rapidly. The spool J is filled with silk in a suitable condition, which is delivered through the flier K and wound tightly and smoothly around the wires C C C C and threads *o o*, so as to form a compact and nearly cylindrical mass. The cutter P is carried along with the carriage B, and divides the plush both at the upper and under sides.

Q Q are spools containing thread or wire similar to that on the spools O O. These threads are designated *q q*. They pass from their respective spools under the guide-pins R R, and from thence around in the groove each of its respective roller M or N. On entering the "bite" of these rollers, each of these threads *q q* is held very firmly against the exterior of the silk on opposite sides, while the two threads *o o*, which correspond therewith, are, by the means previously described, presented against the interior on each side. The moment the cutter P has severed any given coil of the silk, the short length thus liberated is, by the twisting of the chenille, secured by its middle between the two threads *o* and *q*—that is to say, is held very firmly between the rollers M and N when it is just severed, and cannot at the first instant change its condition, except to straighten a little; but as soon as the slow revolution of the rollers M and N delivers it the twist (communicated through the tension-cord H and through the length of chenille already perfected) twists and secures these fibers of plush between the threads, as required.

It will be obvious that I can, by making my machine sufficiently wide, operate two or more complete sets of this mechanism at the same time. The power required to turn the wheeel E is very small, and I believe one man may easily operate several sets.

I am preparing now to make four instead of two pieces of chenille at once by mounting a double set of mechanism, and I can somewhat simplify the mechanism by using but one belt, E^4, to operate all the twisters; but in all cases I use a pair of compressing-rollers, M and N, for each set of wires C C C C and each two pieces of chenille produced at once.

Some of the advantages due to certain features of my invention may be separately enumerated, as follows: First, by reason of the fact that my mandrel G is provided with a pulley, G^2, outside thereof and carried around therewith, and with apertures g^2, so arranged as to allow the tension-cord H to pass within the mandrel at the bearings and without the mandrel at the point where it passes around the pulley G^2, I am able to use a small mandrel and a large pulley, and thus to diminish the frictional resistance to the operation of the machine, and am able to obtain easy access to the pulley and twisting-cord H at all times and under all circumstances; second, by reason of my weight I, arranged as described, I am able to maintain a tension on the chenille which is uniform, and which will yield to exactly the extent and at exactly the time required by the shortening of the material in the act of twisting; third, by reason of my two compressing-rollers M and N and cutter P, arranged relatively to the wires C C, &c., and to the mechanism generally, as shown, I am able to cut the plush at two points, and to produce two pieces of chenille at one operation, and to effect the same with great uniformity and perfection; fourth, by reason of the fact that my wires C C, &c., are stationary, or are maintained in a straight condition instead of being caused to bend in various directions in traversing around wheels or pulleys, I am able to use as rigid material therefor as may be ever required, and to maintain the same for an indefinite period without stretching, curling, or breaking.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. The hollow mandrel G g^2 and exposed pulley G^2 on the outside thereof, in combination with the operative parts of a chenille-ma-

chine, and arranged relatively thereto, substantially in the manner and for the purpose herein set forth.

2. The tension-cord H and weight I, arranged relatively to the operative parts of a chenille-machine, substantially as and for the purpose herein set forth.

3. In chenille-machines, the knife P, arranged between two compressing-rollers, M and N, or their equivalents, and adapted to sever the material at two points in each circuit.

JOSEPH THOMAS.

Witnesses:
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