

(No Model.)

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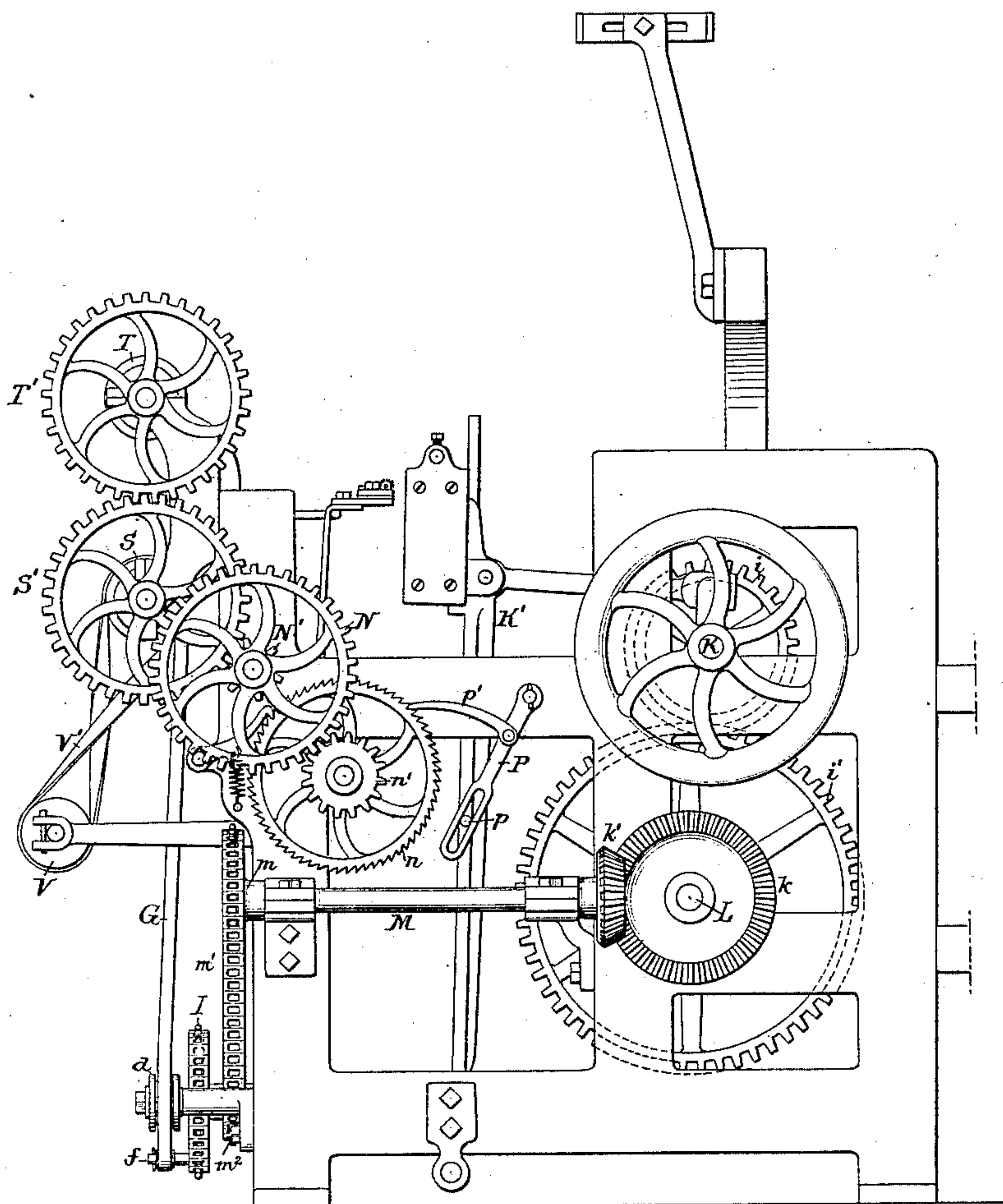
A. BACON.

MECHANISM FOR CUTTING DOUBLE PILE FABRICS.

No. 359,048.

Patented Mar. 8, 1887.

FIG. 1.



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William E. Conner

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(No Model.)

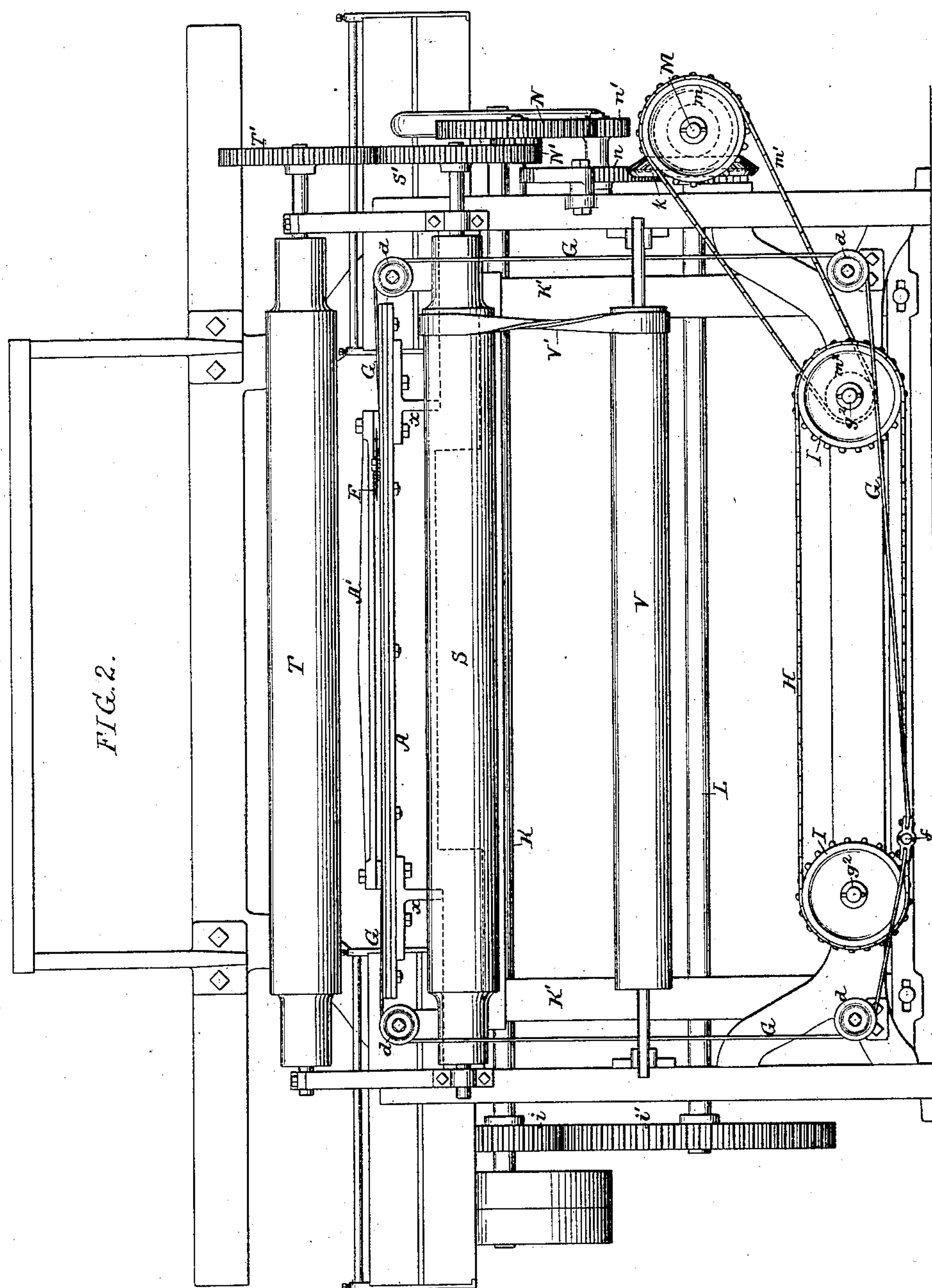
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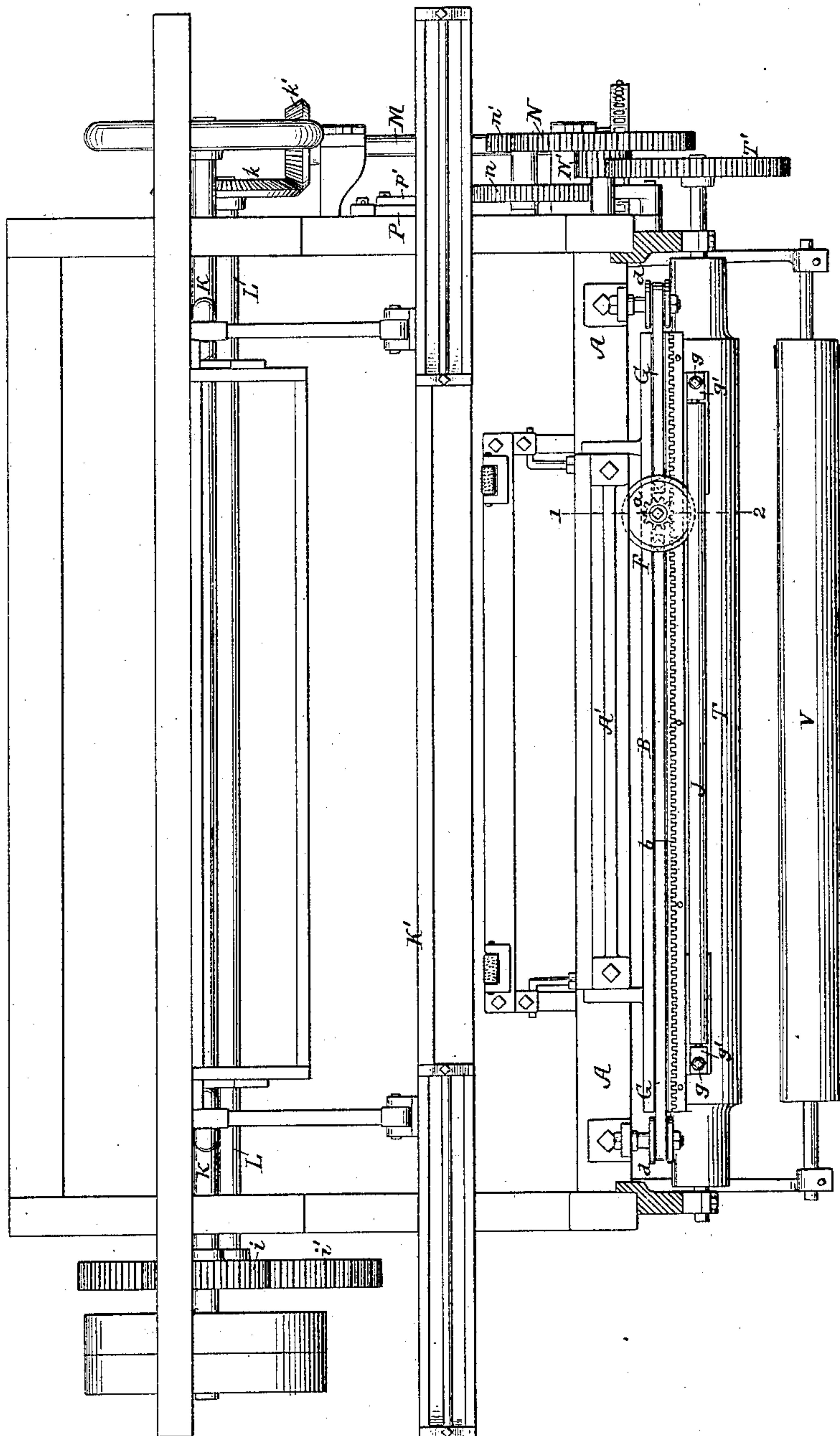
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FIG. 3.



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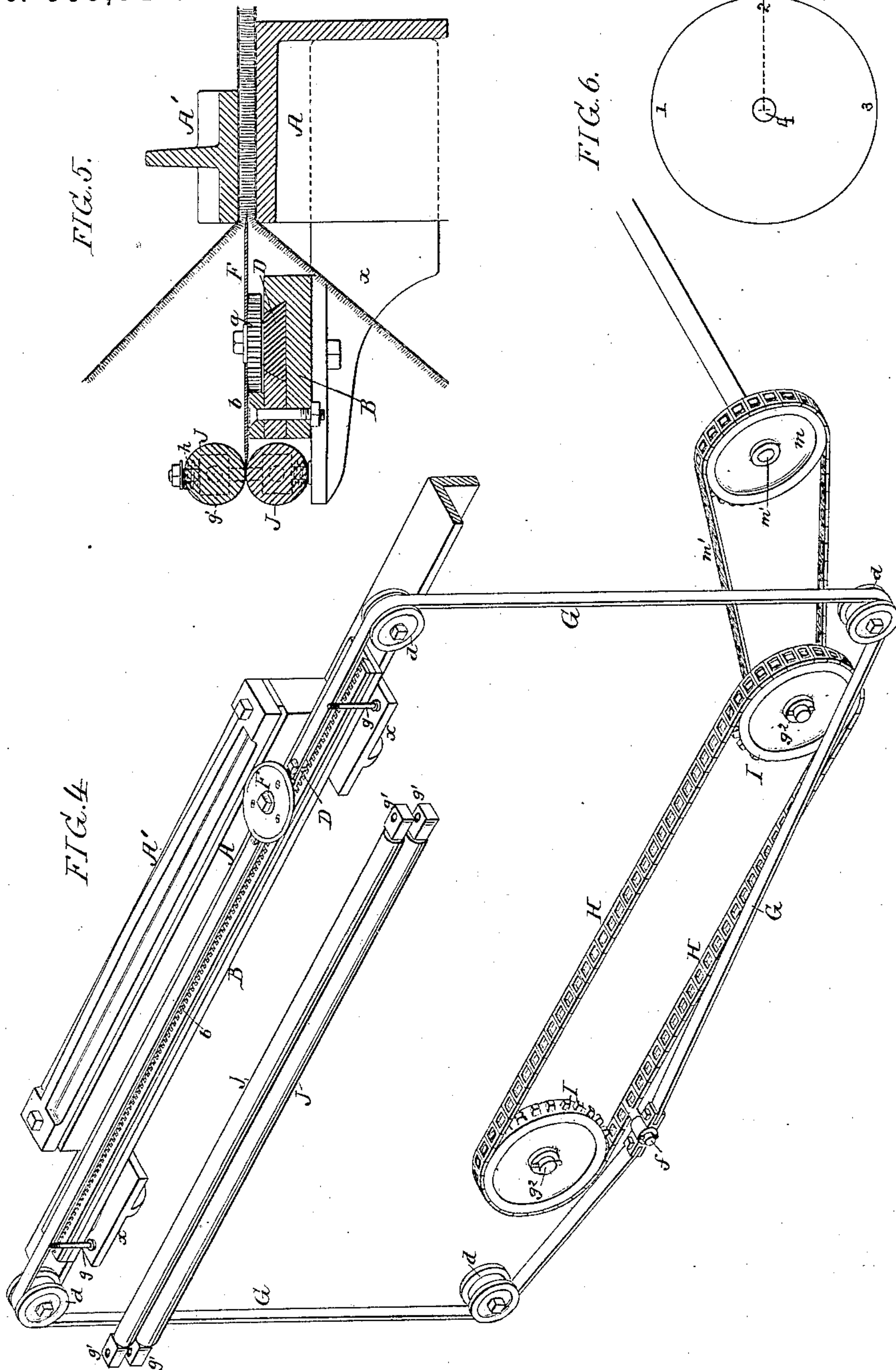
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A. BACON.

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UNITED STATES PATENT OFFICE.

ALFRED BACON, OF PHILADELPHIA, PA., ASSIGNOR TO GEORGE F. BECHMANN, FRANKLIN L. CARNELL, AND SAMUEL ALLEN, ALL OF SAME PLACE.

MECHANISM FOR CUTTING DOUBLE PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 359,048, dated March 8, 1887.

Application filed May 27, 1886. Serial No. 203,406. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BACON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Mechanism for Cutting Double Pile Fabrics, of which the following is a specification.

The object of my invention is to provide mechanism for rapidly and accurately severing double pile fabrics, the device having been specially devised for severing the fabric in the loom in which it is woven, and the main features of the device being the steady movement of the cutter, evenness of wear of the operating parts, and the maintenance of a proper cutting-edge at all times upon the knife.

In the accompanying drawings, Figure 1 is a side view of sufficient of a loom to illustrate the construction and mode of application of my improved device for severing the double pile fabric produced by the loom. Fig. 2 is a front view with the sharpener for the cutting-knife removed. Fig. 3 is a plan view. Fig. 4 is a perspective view of the devices forming the subject of my invention, the knife-sharpener being detached from its supports. Fig. 5 is a transverse section on the line 1 2, Fig. 3, but on a larger scale than said figure; and Fig. 6 is a diagram illustrating one of the features of the invention.

A is the breast-beam of the loom, and A' a transverse bar supported above the beam so as to provide a space, through which passes the double fabric connected by the pile-threads.

Parallel with the beam A, and a short distance in front of the same, is a bar, B, which is carried by projecting brackets *x*, and forms a guide for a slide, D, the latter carrying a stud, on which is free to turn a spur-wheel, *a*, to the upper face of which is secured a circular cutter, F, said spur-wheel engaging with a rack, *b*, secured to the upper face of the guide-bar B, so that as the slide D is caused to reciprocate transversely in the guide a rapid rotary motion, first in one direction and then in the opposite direction, will be imparted to the cutting-disk F.

One end of the slide D is connected to one end of a belt, G, which passes around pulleys *d*, suitably supported on the frame of the loom,

the opposite end of said belt being connected to a stud, *f*, projecting from one of the links of a chain-belt, H, adapted to sprocket-wheels I, mounted upon studs *g*², secured to and projecting from the loom-frame. A similar belt, G, passing around like pulleys *d*, serves to connect the opposite end of the slide D to the stud *f*, so that when rotary motion is imparted to one of the sprocket-wheels I the stud *f*, traveling with the belt H, will, through the medium of the belts G, impart a transverse reciprocating movement to the slide D, and thus cause the cutter F to pass to and fro through the web of fabric, so as to cut the pile-threads and separate the compound fabric into two single fabrics, each having a cut-pile surface.

In order to insure the uniform cutting of the pile it is necessary that the movement of the slide and its cutter shall be smooth and steady, as any jarring or jerking of the slide or cutter causes irregularity in the cut and unevenness in the length of pile on the fabrics produced. This smooth and steady movement I secure by means of the driving mechanism shown, as there is a gradual diminution in the speed of the slide at and near each end of its traverse and a gradual acceleration of speed as it starts on the return movement, this result being due to the passage of the stud *f* around the sprocket-wheels I, for while the stud is traversing a quarter of the circumference of the said wheel—that is to say, from 1 to 2 or from 2 to 3, Fig. 6—the actual transverse movement of the slide D is equal only to the radius of the wheel—that is to say, from 2 to 4, Fig. 6—while at all other points in the traverse of the stud *f* the movement of the slide is equal to the surface speed of the sprocket-wheels.

The brackets *x* are provided with projecting pins *g*, serving as guides for the journal-boxes *g*¹ of rolls J J, between which projects the cutting-edge of the knife F, the boxes *g*¹ being acted upon by springs *h*, so as to press the rolls J J toward each other and into contact with the opposite sides of the knife.

The rolls J are formed of or coated with abrading material, and are of such a length as to extend throughout the traverse of the knife, so that the cutting-edge of the latter is at all times under the sharpening influence of the

rolls, and a keen edge is therefore maintained, there being no tendency to nick the edge of the knife or interfere with the perfect truth of its movement, as in that class of cutters in which the knife is carried between a pair of sharpening-blocks at each end of its movement. Rigid bars or rods may replace the rolls, if desired; but the latter are preferred, because of the facility with which a new sharpening-surface may be presented by partly rotating the rolls.

The construction of the loom and the mode of driving the belt H form no essential part of my invention; but in the drawings I have shown, and I will now describe, one method of construction which may be adopted.

K is the crank-shaft of the loom, vibrating the lathe K', as usual, this shaft driving by means of spur-wheels *i* and *i'* the lower shaft, L, a bevel-wheel, *k'*, on which engages with a bevel-pinion, *k*, on a shaft, M, the front end of which has a sprocket-wheel, *m*, a chain-belt, *m'*, engaging therewith and with a sprocket-wheel, *m*², secured to or forming part of one of the sprocket-wheels I. A pin, *p*, on the lathe actuates an arm, P, a pawl, *p'*, on which engages with a ratchet-wheel, *n*, which has a pinion, *n'*, engaging with a spur-wheel, N, the shaft of which has a pinion, N', gearing into a spur-wheel, S', on the lower draft-roll, S, the upper draft-roll, T, having a spur-wheel, T', meshing with the wheel S'. The cloth-roll V is driven by a belt, V', from the draft-roll S.

Although I prefer the use of the rotary cutter shown and described, a fixed cutting-blade may be used in place of the same, if desired, and my invention may be applied to a machine for cutting double pile fabrics instead of being used directly in connection with the loom in which the fabric is woven.

In endless-belt cutters which have been heretofore employed it has been the practice to secure the cutter directly to the belt, and as the knife in this case can only cut while being carried forward—say from the right-hand pulley to the left-hand pulley—all of the return movement of the cutter—that is to say, from the left-hand pulley to the right-hand pulley—is unavailable for cutting purposes, and where the cutter-carrying slide is guided this is a specially objectionable feature, for the reason that the guide must extend throughout the entire path traversed by the cutter, thus creating a large amount of friction. By providing the slide with a cutter acting in both directions and connecting said slide to the operating-belt, as set forth in

my specification, however, I am enabled to impart a reciprocating movement to the slide, and thus permit the cutter to act almost continuously upon the fabric, the extent of the guide for the cutter-slide being reduced to a minimum and excessive friction prevented.

I claim as my invention—

1. The combination, in a device for cutting double pile fabrics, of a cutter constructed to cut when moved in either direction across the fabric, a cutter-slide, a guide for the latter, an endless belt and means for supporting and driving the same, and devices, substantially as described, for connecting said belt to the cutter-slide, whereby a forward and backward movement in the same path is imparted to the slide, all substantially as specified.

2. The combination of the cutter, the slide and a guide therefor, the endless belt and its pulleys, the stud on said belt, the belts or bands connecting the slide to said stud, supporting-pulleys for said belts or bands, and means for driving one of the pulleys of the endless belt, all substantially as specified.

3. The combination of the circular cutting-knife, a spur-wheel connected thereto, a slide having a stud on which said spur-wheel is free to turn, a fixed rack, with which the spur-wheel engages and by which it is rotated as the slide reciprocates, an endless belt having a projecting stud, means for connecting said stud to the knife-carrying slide, and mechanism for driving the endless belt, all substantially as specified.

4. The combination, in a device for cutting double pile fabrics, of a circular cutting-knife, a slide carrying the same, and mechanism for reciprocating the slide and rotating the knife, with a sharpener extending throughout the length of travel of the cutter, whereby the latter is subjected to a continuous sharpening action, all substantially as specified.

5. The combination, in a device for cutting double pile fabrics, of a circular cutting-knife, a slide carrying the same, and mechanism for reciprocating the slide and rotating the knife, with sharpening-rolls, between which the cutting-edge of the knife projects, said rolls extending from end to end of the traverse of the knife, all substantially as specified.

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

ALFRED BACON.

Witnesses:

WILLIAM D. CONNER,
HARRY SMITH.