

No. 843,444.

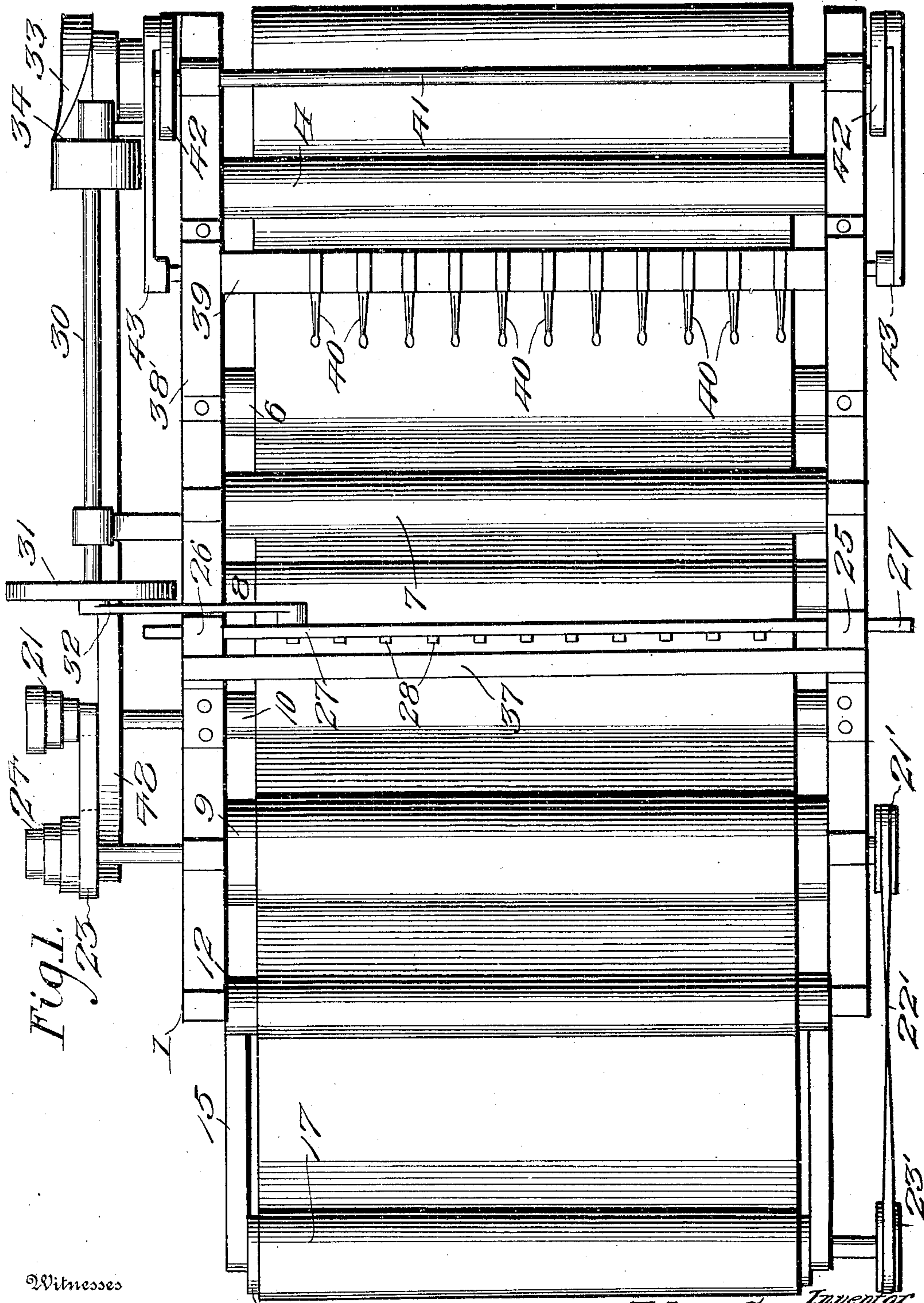
PATENTED FEB. 5, 1907.

J. CUNANE.

DEVICE FOR CUTTING FLOAT THREADS OF FABRICS.

APPLICATION FILED NOV. 18, 1905.

3 SHEETS—SHEET 1.



Witnesses

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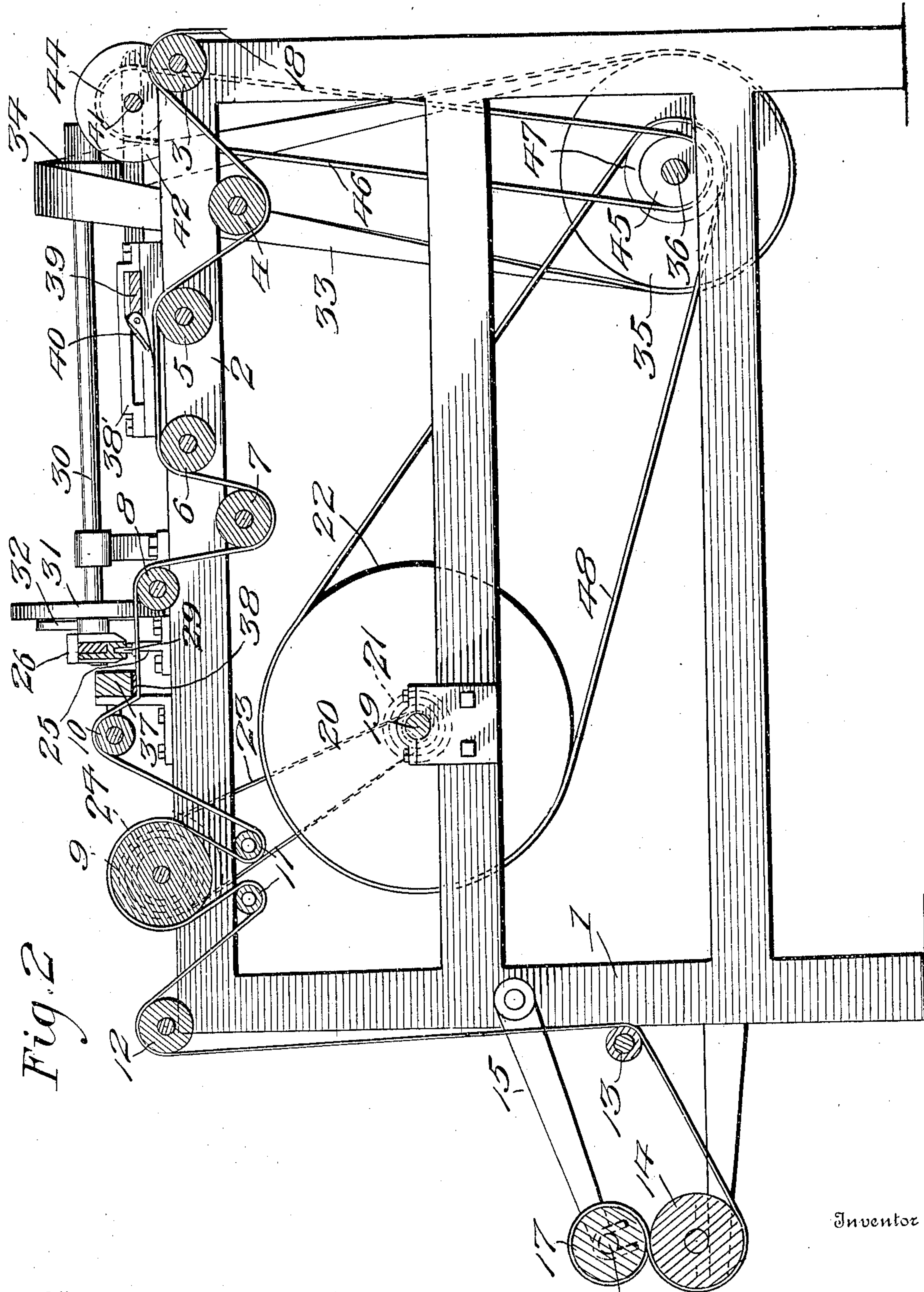
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3 SHEETS—SHEET 3.

Fig. 3.

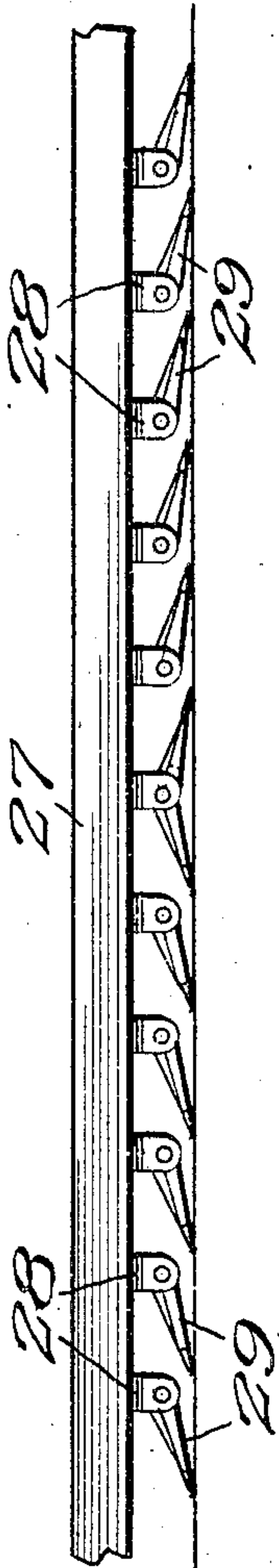


Fig. 5.



Fig. 6

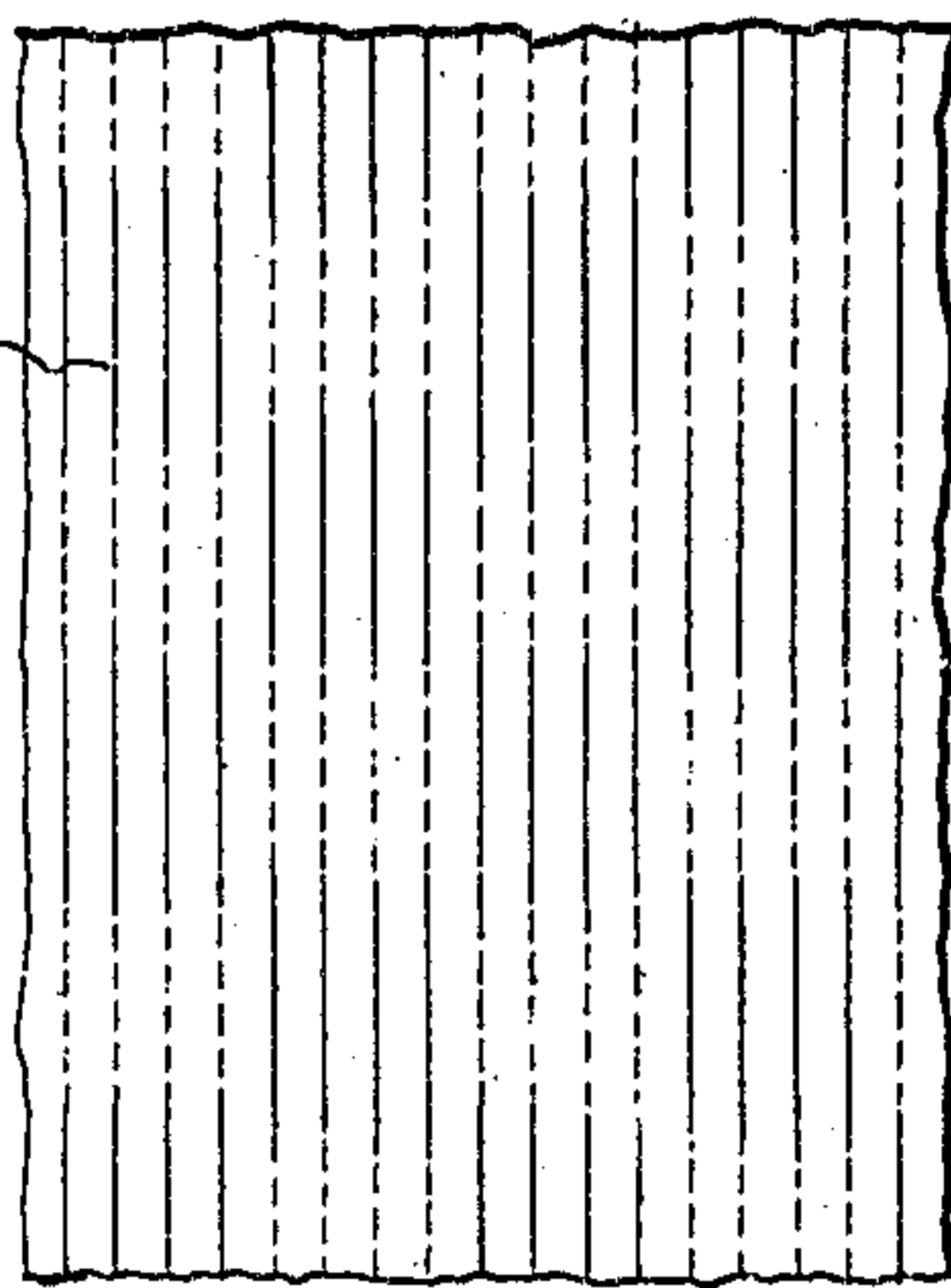


Fig. 7.

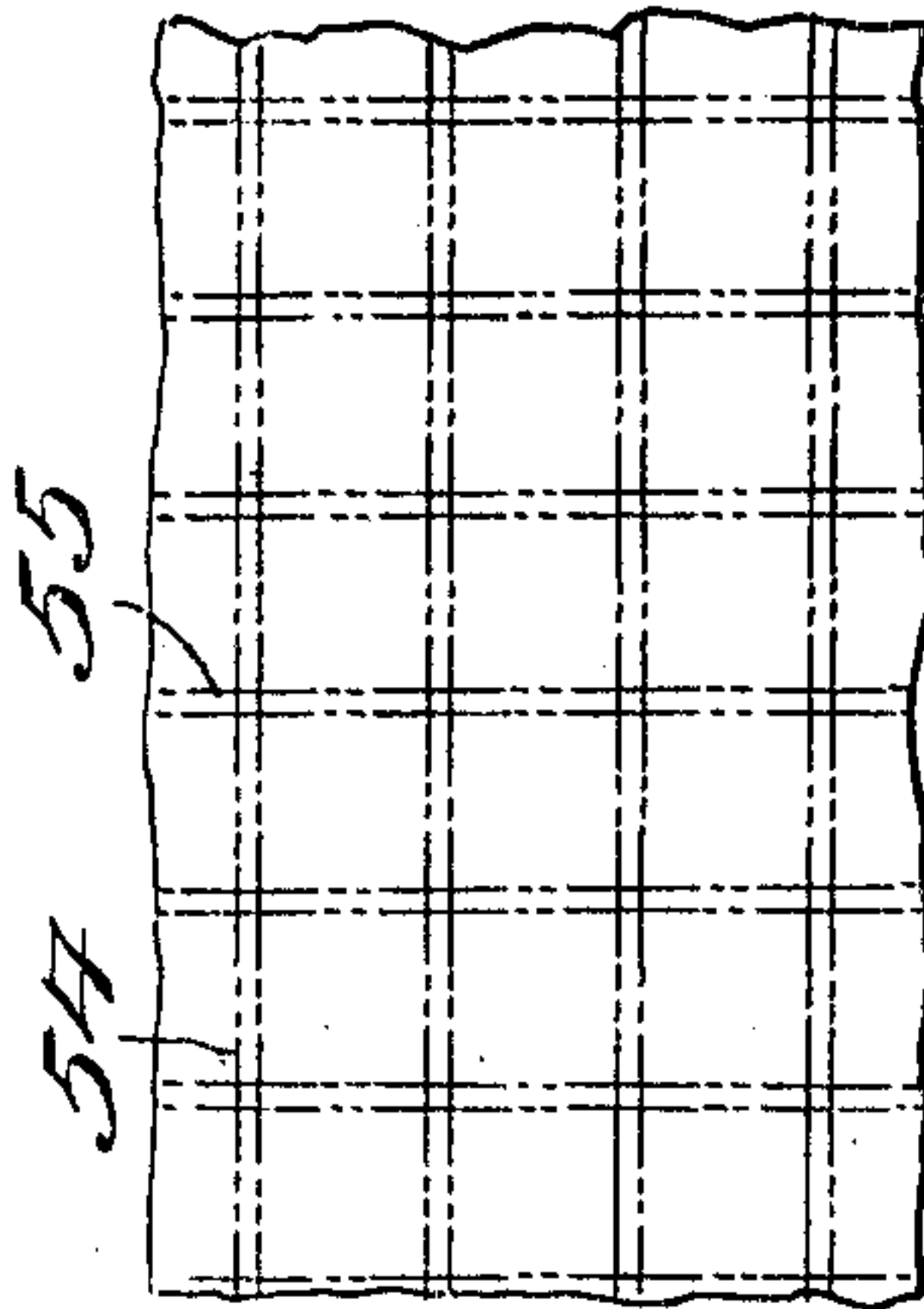
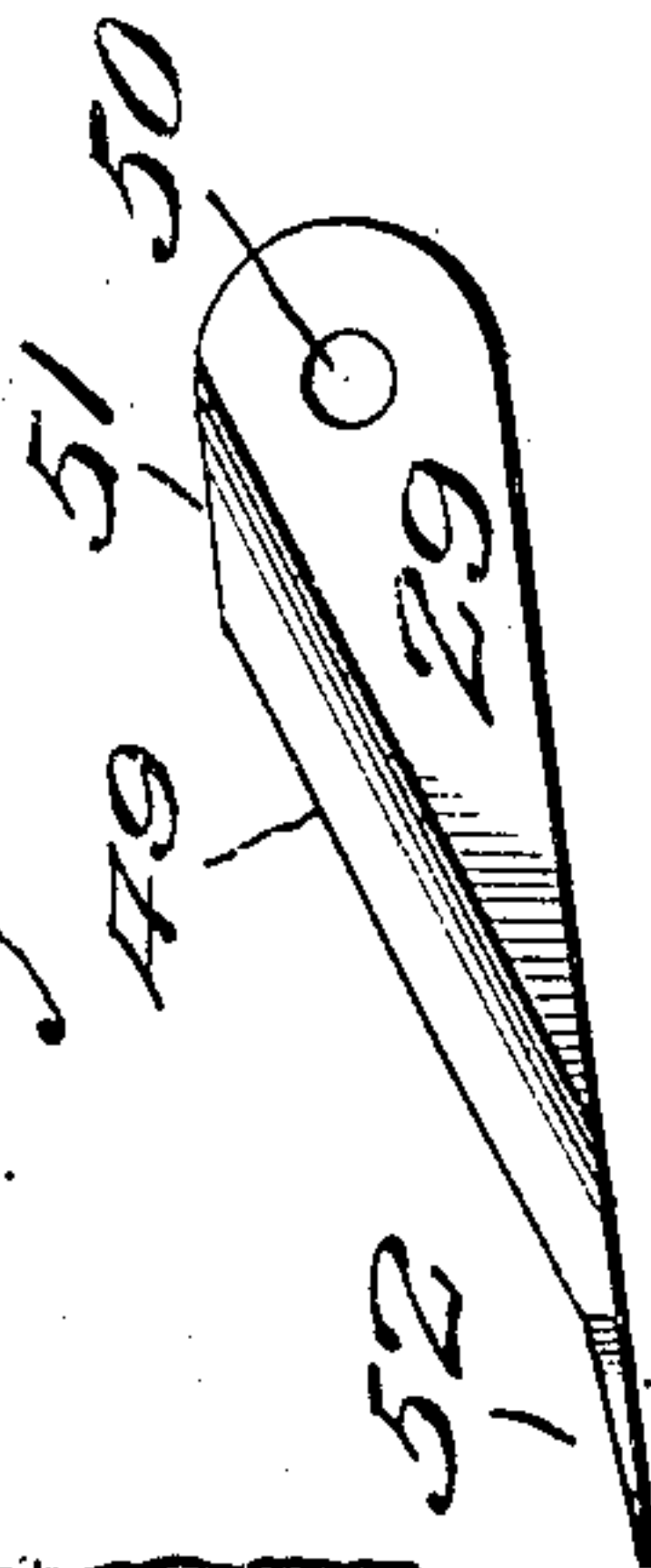


Fig. 4.



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## DEVICE FOR CUTTING FLOAT-THREADS OF FABRICS.

No. 843,444.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed November 18, 1905. Serial No. 288,049.

*To all whom it may concern:*

Be it known that I, JOHN CUNANE, a citizen of the United Kingdom of Great Britain and Ireland, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Devices for Cutting Float-Threads of Fabrics, of which the following is a specification.

10 The invention relates to an improvement in textile machinery, and particularly to a cutting-machine adapted for severing the filler or warp float-threads, or both, of fancy-spot fabrics of all kinds.

15 The main object of the present invention is the production of means whereby the float-threads may be readily severed without liability of injuring the fabric or of pulling the threads therefrom.

20 Another object of the invention is the provision of a knife or blade for use in a machine of this character constructed and arranged to cooperate with and bear upon the fabric, the cutting edge of the blade being so constructed as to insure a complete severing of the float-threads in normal operation of the parts, the end of the blade contacting with the fabric being particularly constructed to avoid the slightest mutilation of the fabric.

30 The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which—

Figure 1 is a plan of a machine constructed in accordance with my invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a view in elevation of the warp-thread cutter-bar, showing the knives connected therewith. Fig. 4 is a perspective view of the cutting-blade detached; Fig. 5, an edge view of plan of the same; Fig. 6, a view of the fabric in which the design includes only warp float-threads. Fig. 7 is a view of the fabric in which the design includes both warp and filler float-threads.

Referring to the drawings my improved machine comprises a suitable framework 1, which may be of any suitable size and of any desired material, as the proportions and material form no particular part of the present invention.

Revolubly mounted between the upper spaced parallel frame-bars 2 are a series of rolls, serving in the main as tension and sup-

porting rolls for the tablet. Adjacent the feed end of the machine is mounted a roll 3, and forward of said roll and on a lower plane is mounted a second roll 4. Supporting-rolls 5 and 6 are rotatably supported between the frame-bars 2 in spaced parallel relation and forward of the roll 4. A roll 7 is mounted forward of the supporting-roll 6 and approximately on a plane with roll 4, while an additional supporting-roll 8 is mounted between the bars 2 forward of the roll 7 and on a plane above the supporting-rolls 5 and 6. Near the delivery end of the machine a feed-roll 9 is supported between the delivery end of the machine and supporting-roll 8, and an intermediate tension-roll 10 is arranged between the rolls 8 and 9. Immediately below the feed-roll 9 are mounted two tension-rolls 11, so positioned as to cause the fabric to engage a comparatively large portion of the surface of the feed-roll. A guide-roll 12 is positioned at the delivery end of the frame, idler 13 and winding-roll 14 being mounted in rear of the frame, the latter being supported in arms projecting from the frame, a storage-roll-receiving frame 15 being pivotally connected to the main frame 1 and carrying at its free end bifurcated bearing-blocks 16 to receive the trunnion of a storage-roll 17, the bifurcated bearing providing for the removal and insertion of the storage-rolls as desired, while the pivotal connection of the frame 15 permits the necessary movement of the outer end to compensate for the increase in diameter of the storage-roll as the fabric is wound thereon.

The fabric 18 passes through the machine relative to the rolls previously described in the following manner: over the roll 3, beneath and around the roll 4, over both supporting-rolls 5 and 6, beneath the roll 7, over the roll 8, beneath friction-block 37, over roll 10, around the forward idler 11, over and around the feed-roll 9 to and around the rear idler 11, over the roll 12, depending in rear of the frame, and around the rolls 13 and 14 and onto the storage-roll, thus providing for a slight tension on the fabric in its travel lengthwise of the machine.

The main shaft 19 is suitably supported transverse the frame and carries a belt-pulley 20 and a stepped cone-pulley 21, connected by a belt 23 to a cone-pulley 24, fixed on the end of the shaft of the feed-roll 9, whereby operation of the main shaft will



drive the feed-roll and draw the fabric longitudinally of the machine. The opposite end of the feed-roll shaft is provided with a belt-pulley 21', connected by a crossed belt 22' to a belt-pulley 23' on the end of the winding-roll 14. Both the feed-roll and winding-roll are of equal diameters.

Immediately in rear of the idler 8 I arrange on each side bar of the frame and beyond the plane of the idler guide-brackets 25, preferably secured to the frame-bar and extending vertically therefrom, being provided at their upper ends with a guide-block 26, in which is slidably mounted a cutter-bar 27. Depending from the bar are a series of bifurcated lugs 28, in which are pivotally supported the cutting-blades 29, hereinafter more particularly described. The central lug of the bar is provided with duplicate blades 29, extending in opposite directions therefrom, while the remaining lugs spaced in opposite directions from the central lug are provided with but one blade extending toward the approximate end of the bar. The blades are thus arranged to project in opposite directions from the central point of the bar and toward the ends, providing for a cutting operation in both movements of the bar.

A cutter-shaft 30 is mounted longitudinally of the upper frame-bars, being supported in suitable bearings and terminating at its rear ends adjacent the cutter-bar. At this end the shaft is provided with a disk 31, to which is eccentrically connected a pitman 32, the opposite end of which is connected to the cutter-bar 27. The cutter-shaft 30 is operated by a belt 33, passing over a pulley 34, secured on the forward end of said cutter-shaft, and over a belt-pulley 35, fixed upon a shaft 36, mounted near the forward end of the machine. Immediately adjacent the cutter-bar 27, hereinafter termed the "warp-cutter," and in rear thereof is arranged a friction-block 37, the lower surface of which is covered with a suitable friction-strip 38, as rubber. The lower surface of the friction-strip is approximately on a horizontal plane with the free ends of the blades of the warp-cutter and on a plane below the idler 10 in rear of the friction-block, so that the fabric when passing to meet the friction-block is under a slight tension. Near the forward end of the frame, approximately above the supporting-rolls 5 and 6, are mounted guide-blocks 38', adapted to receive and slidably support a cutter-bar 39, to the rear edge of which is pivotally secured blades 40, exact duplicates of the blades 29.

At the forward end of the machine is mounted a cutter-shaft 41, being arranged transversely of the frame 1 and carrying at its ends disks 42, connected by pitman 43 to the cutter-bar 39, hereinafter termed the "filler-cutter." A belt-wheel 44 is secured upon one terminal of the shaft 41 and driven

from a belt-wheel 45, fixed on the shaft 36, through the medium of a belt 46. An additional pulley-wheel 47, fixed upon the shaft 36, is in communication with the belt-groove 22 of the main pulley-wheel 20, through the medium of a belt 48, whereby power is transmitted from the auxiliary shaft 36 to the main shaft 19.

As the warp float-threads extend longitudinally of the fabric, it is obvious that the blades of the warp-cutter must be arranged at an angle to its line of movement, while as the filler float-threads extend transverse the fabric the blades of the filler-cutter extend and operate in a plane longitudinally of the fabric.

In a machine of this character it is of primary importance that the blades adapted for severing the float-threads should be so constructed and operated as to avoid the slightest injury to the fabric, while at the same time properly severing the threads without liability to pull or disconnect them from the fabric. The knife or blade 29 is therefore the important feature of the present invention. As illustrated in Figs. 4 and 5, said blade comprises an elongated strip of metal having its upper edge inclined from the rear downwardly toward the forward end, said inclined edge being sharpened, as at 49. The rear end of the blade is provided with an opening 50, by which the blades are pivotally supported in the lugs depending from the respective cutter-bars, the inclined cutting edge 49 of the blade terminating at its rear end in advance of the opening 50 and being extended from said termination in a straight edge 51, parallel to the lower edge of the blade. At the forward end the blade is provided with a lip 52, of approximately disk-like form and arranged in a plane at right angles to the plane of the blade, one edge of the lip being very thin, as shown. In operation the lip 52 is adapted to rest squarely with its broad lower surface in contact with the fabric. Thereby any possible injury to the fabric in the use of the blade is prevented. The cutting edge 49 of course terminates at its forward end coincidently with the upper surface of the lip 52, whereby the float-threads passing over the lip 52 engage and are severed by the edge 49.

In Fig. 6 is represented the rear side of a fabric in which the formation of the fancy configuration utilizes only warp-threads, so that said threads appear in the form of warp float-threads 53 on the rear side of the fabric. In Fig. 7 the fancy configuration utilizes both warp and filler threads, so that the float-threads appear as warp-threads 54 and filler-threads 55.

In operation, assuming the parts constructed and arranged as shown and described, the fabric, with the float-threads uppermost, is fed longitudinally of the machine under the



pull of the feed-roll 9. The filler cutter-bar reciprocating more rapidly than the speed of the traveling fabrics causes the lips 52 of said blades to ride beneath the loops of the filler float-threads, thereby severing said loops. As the fabric advances through the warp-cutter the blades thereof operate to sever the threads forming the warp float-loops. The parts are so arranged that the warp-cutters operate to sever the warp float-threads just in rear of their juncture with the fabric in the direction of feed of the same, thus dividing said threads into long and short lengths. As the fabric advances the long length of warp float-threads contacts with the friction-strip 38, being in the continued movement of the fabric bent slightly back upon themselves and gripped between the fabric and said friction-strip. This holding action serves to prevent the cutter in operating to sever the next succeeding loop, from pulling the threads from the fabric.

In the event the fancy spotting of the fabric utilizes only warp-threads the filler-cutter may be dispensed with, as will be obvious.

It will be noted that the lips 52 of the blades rest upon the fabric and that the fabric at the operative point of said cutter-blades is without a solid support. These combined features provide for a sliding movement of the blade relative to the fabric without the slightest possibility of injuring or mutilating the fabric, no matter how fine its material and texture. As the cutting edge of the blades are gradually inclined it follows that any portion of said cutting edge will serve to sever the threads, though of course in the initial and perfect condition of the blades that portion of the cutting edge immediately adjacent the lip 52 will alone have the cutting function. As this portion of the blade becomes dulled from continued use, however, a second and rearwardly-adjacent portion will have the cutting function, and so on until the complete cutting edge has been rendered inoperative. In this condition the blades will pass beneath the loop-threads to their limit of movement and be withdrawn therefrom without severing the threads, but owing to inclined cutting edge also without the slightest tendency to pull the threads from the fabric.

The blades may be hollow-ground to provide for more convenient resharpening, as is usual in cutlery.

The various bearings, particularly those located above the fabric, are preferably lined

with rawhide or other antifriction material, whereby to eliminate as much as possible the use of a separate lubricant, for obvious reasons.

Having thus described the invention, what is claimed as new is—

1. In a textile-machine, means for feeding a fabric therethrough, a warp-cutter operating transversely of the machine and serving to cut the warp float-threads of the fabric, and a weft-cutter operating longitudinally of the machine and serving to cut the weft float-threads.

2. In a textile-machine, fabric-feeding means, a warp-float-thread cutter carried by and operated in the movement of the machine, and a friction device to hold the severed ends of the warp-threads immediately succeeding the action of the cutter.

3. In a textile-machine, fabric-feeding means, a transversely-operated warp-cutter, and means to hold the severed ends of the warp-threads immediately succeeding the action of the cutter.

4. In a textile-machine fabric-feeding means, a weft-cutter operating longitudinally of the machine, and a warp-cutter operating transversely of the machine, and means for operating said cutters during the travel of the fabric.

5. In a textile-machine fabric-feeding means, a weft-cutter operating longitudinally of the machine, and a warp-cutter operating transversely of the machine, the weft-cutter operating upon the fabric in advance of the warp-cutter.

6. In a textile-machine a fabric-feeding means, a warp-cutter designed to sever the warp-loop to provide warp-threads of unequal lengths, and means to secure the warp-threads of greatest length immediately succeeding the action of the cutter, whereby to prevent subsequent operation of the cutter from withdrawing the warp-threads from the fabric.

7. In a textile-machine a fabric-feeding means, a thread-cutter for the fabric, and means for securing the ends of the threads severed in one operation of the cutter and holding them in fixed relation to the fabric during the immediate succeeding operation of the cutter.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN CUNANE.

Witnesses:

HARRY F. SHERWOOD,  
HARRY H. DECK.