

April 26, 1932.

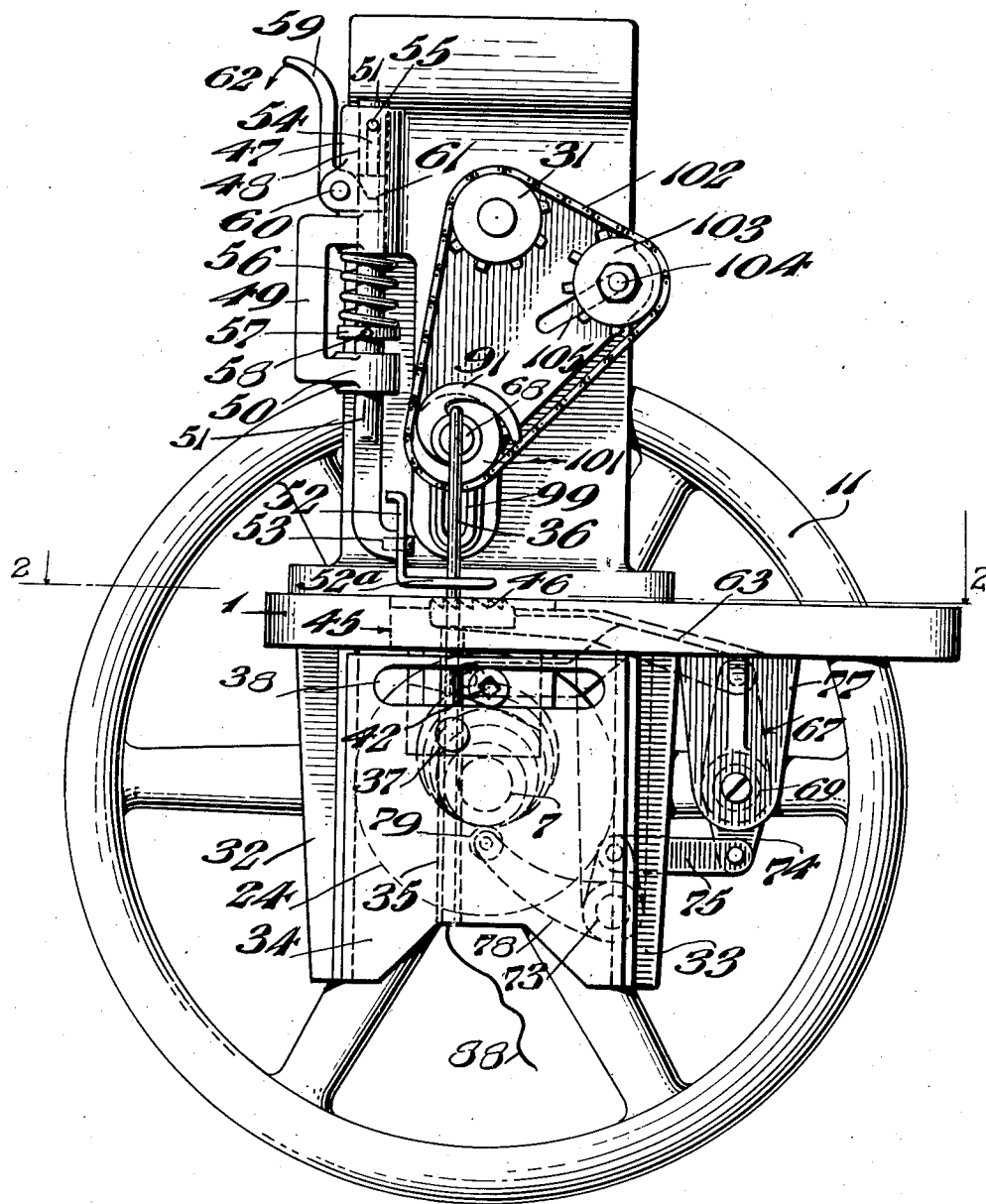
C. A. BRAUDES

1,855,175

LOOPING AND TUFTING MACHINE

Original Filed Jan. 21, 1926 6 Sheets-Sheet 1

Fig. 1.



INVENTOR:

CLARENCE A. BRAUDES,

BY

Heershey & Banks

ATTORNEYS.

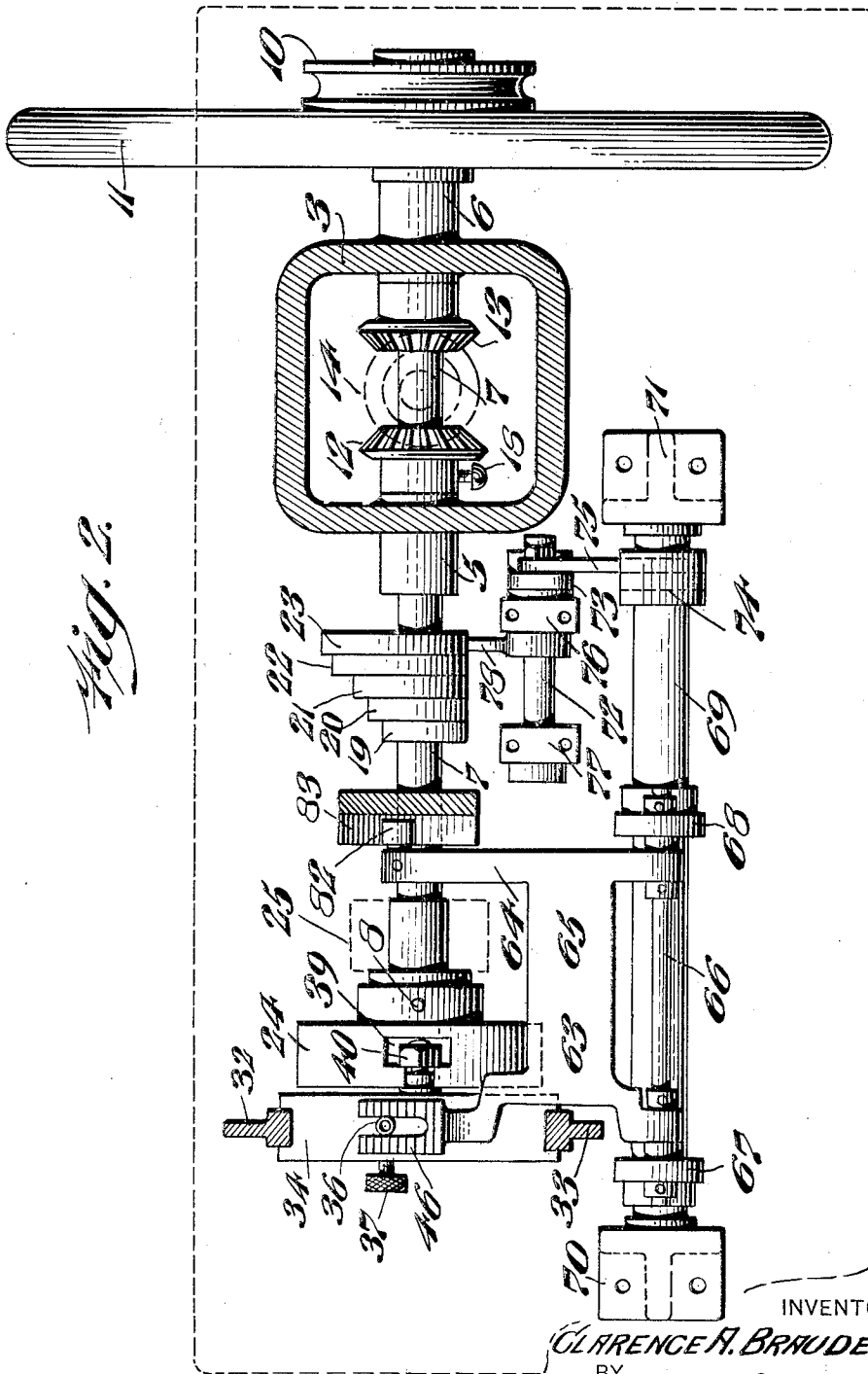
April 26, 1932.

C. A. BRAUDES

1,855,175

LOOPING AND TUFTING MACHINE

Original Filed Jan. 21, 1926 6 Sheets-Sheet 2



INVENTOR:

CLARENCE A. BRAUDES.

BY

Wiedusky & Garbante
ATTORNEYS.

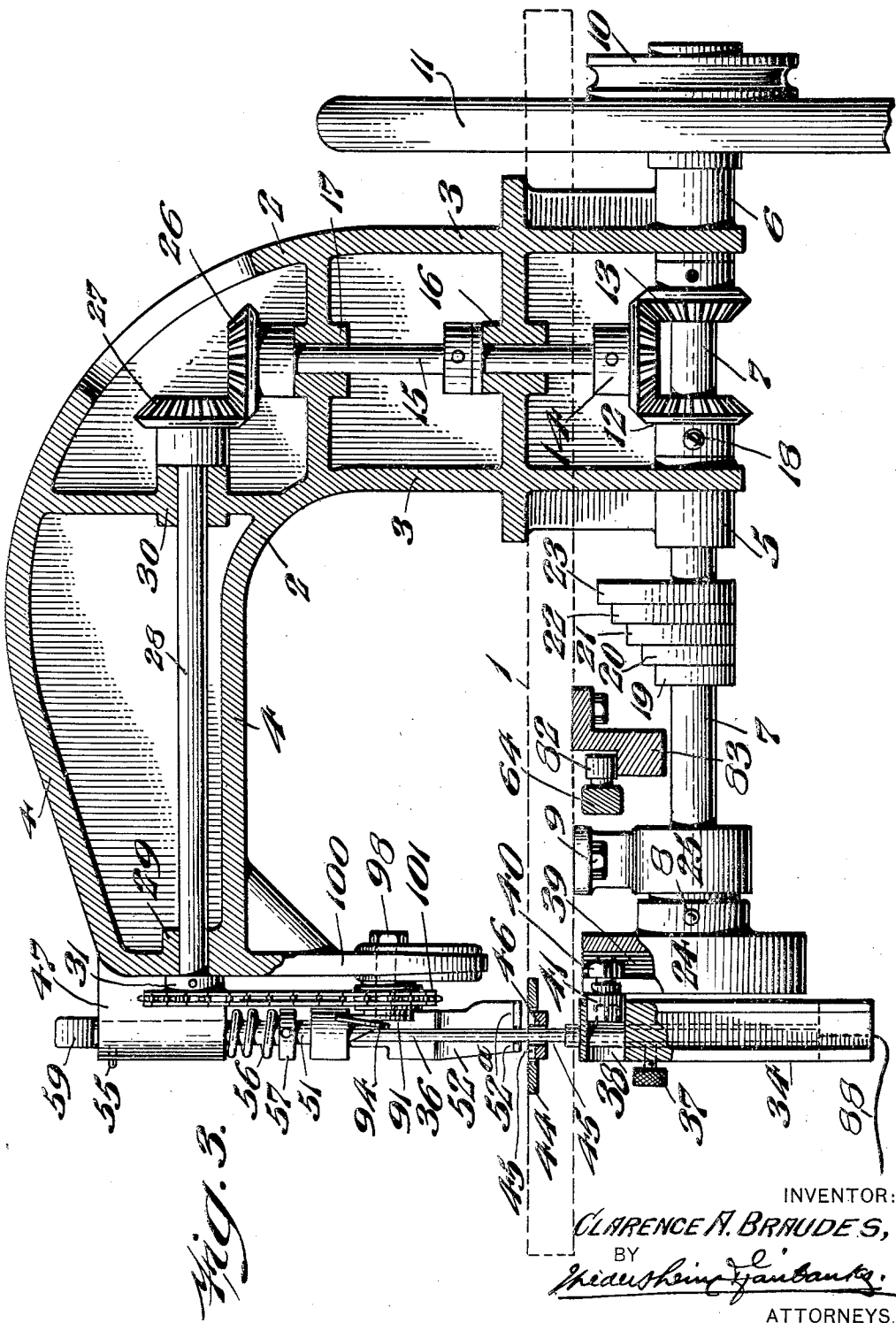
April 26, 1932.

C. A. BRAUDES

1,855,175

LOOPING AND TUFTING MACHINE

Original Filed Jan. 21, 1926 6 Sheets-Sheet 3



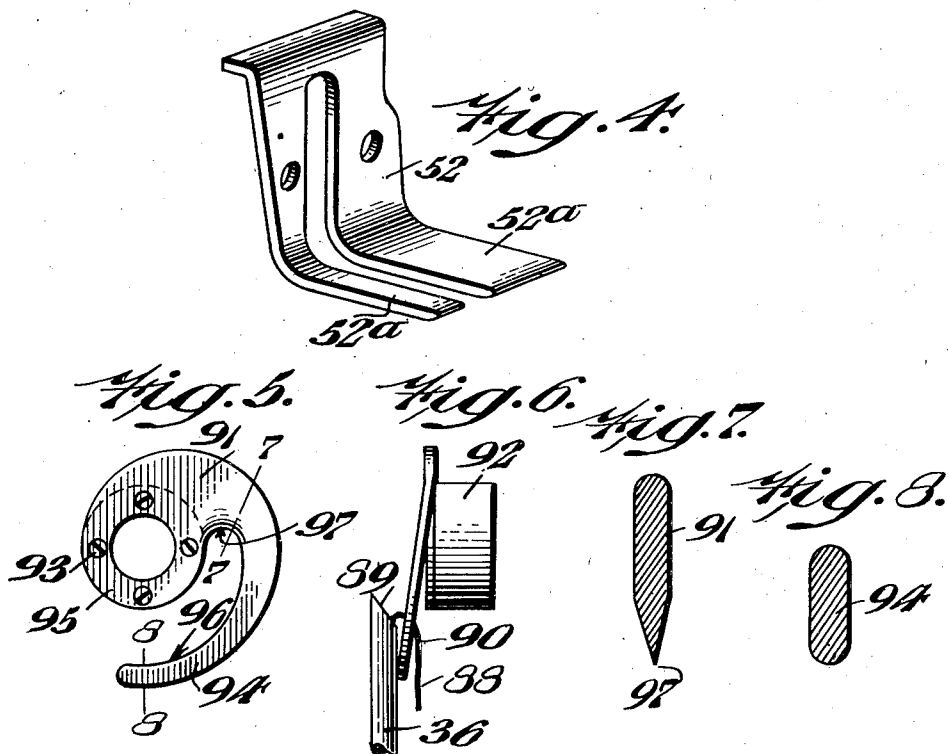
April 26, 1932.

C. A. BRAUDES

1,855,175

LOOPING AND TUFTING MACHINE

Original Filed Jan. 21, 1926 6 Sheets-Sheet 4



INVENTOR:

CLARENCE A. BRAUDES,

BY

Wendelheim Frobenius
ATTORNEYS

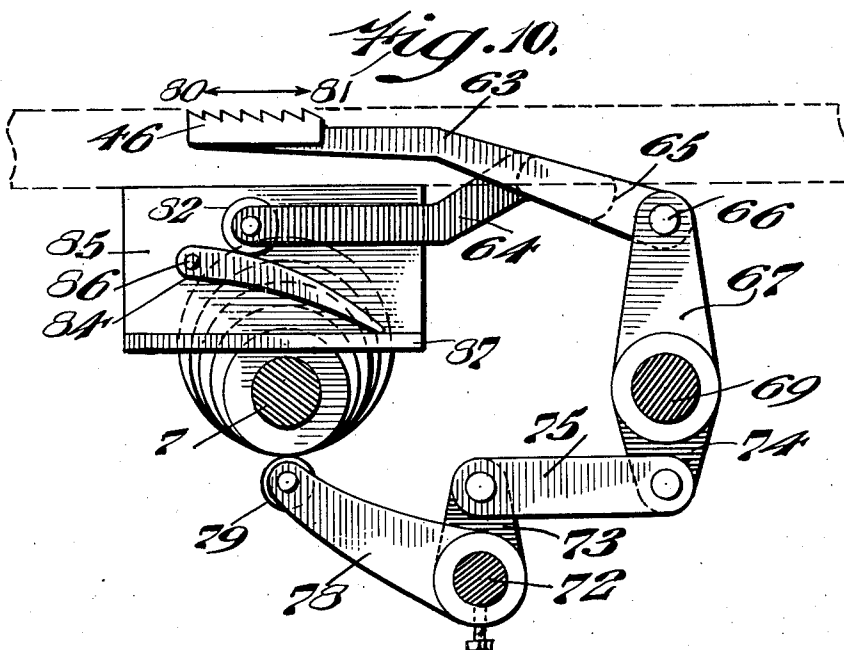
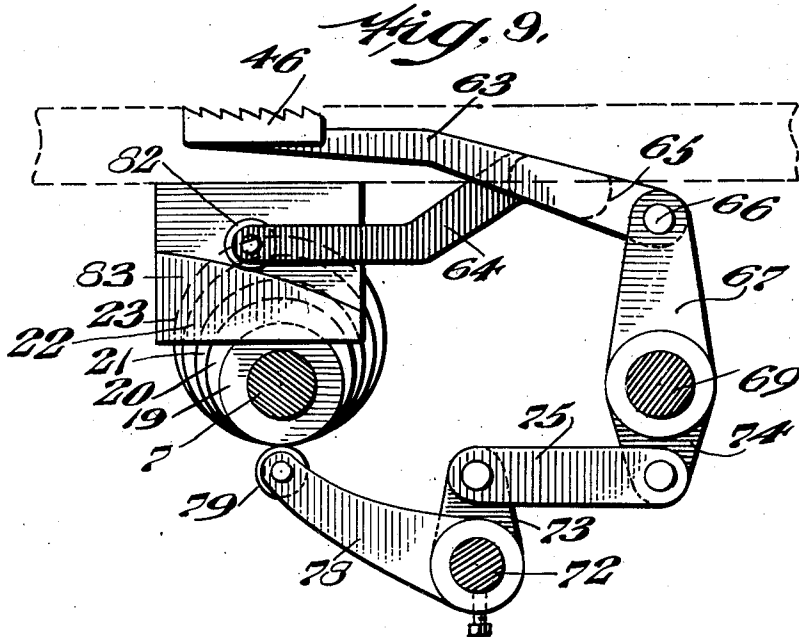
April 26, 1932.

C. A. BRAUDES

1,855,175

LOOPING AND TUFTING MACHINE

Original Filed Jan. 21, 1926 6 Sheets-Sheet 5



INVENTOR:

CLARENCE A. BRAUDES,
BY *Widessing & Banks*
ATTORNEYS.

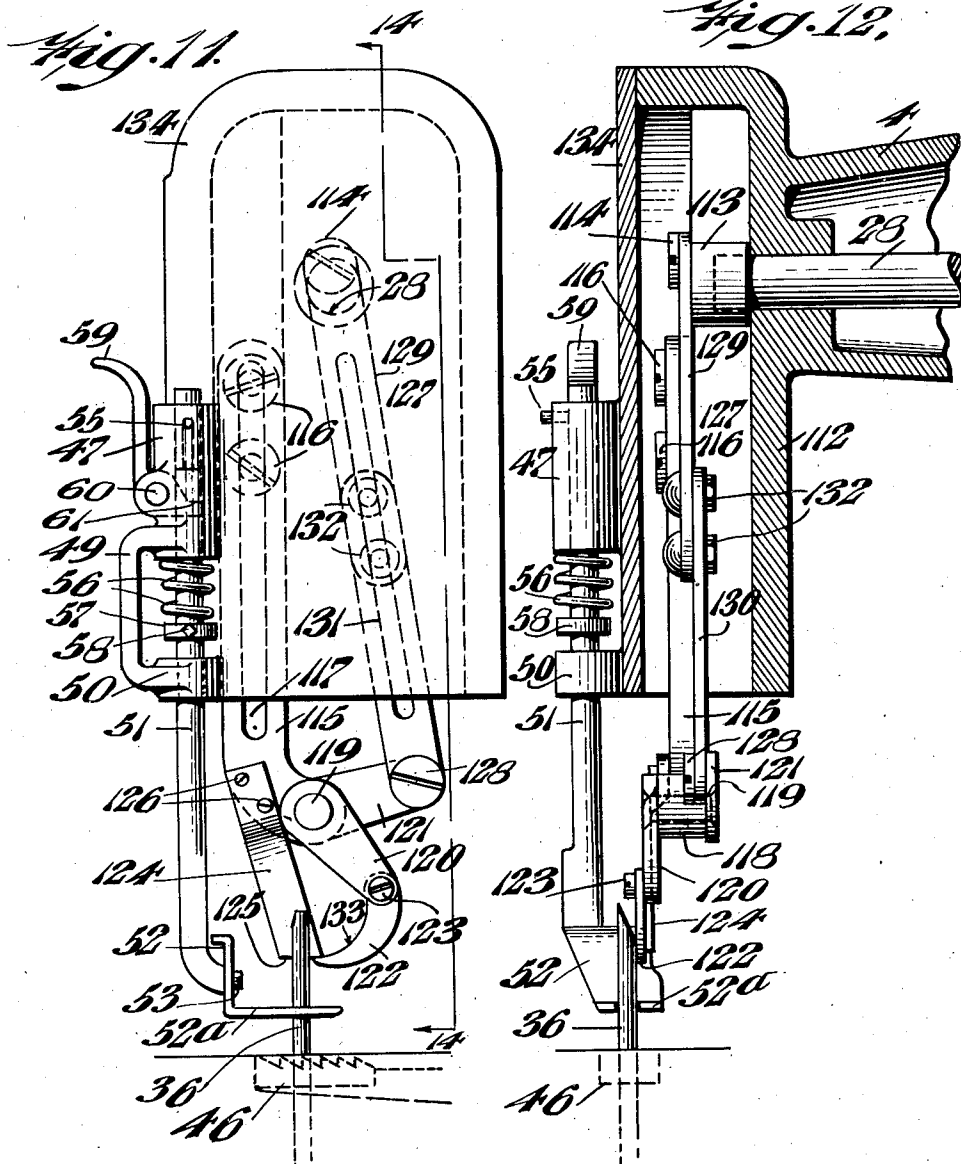
April 26, 1932.

C. A. BRAUDES

1,855,175

LOOPING AND TUFTING MACHINE

Original Filed Jan. 21, 1926 6 Sheets-Sheet 6



INVENTOR:

CLARENCE A. BRAUDES,

BY

Widomski & Fink
ATTORNEYS.

UNITED STATES PATENT OFFICE

CLARENCE A. BRAUDES, OF BROOKLYN, NEW YORK

LOOPING AND TUFTING MACHINE

Continuation of application Serial No. 82,868, filed January 21, 1926. This application filed May 21, 1930. Serial No. 454,469.

My invention relates to a new and useful looping and tufting machine, adapted to produce a series of loops upon the upper surface of any suitable fabric and adapted further, if so desired, to cut said loops open as they are produced, in such a manner as to produce a corresponding series of open ended tufts on the surface of said fabric.

My invention relates more particularly to a new and useful looping and tufting machine of the character stated, adapted for the production of ornamental designs upon the upper surface of textile fabrics, through the medium of successive series of loops or tufts, which may be produced of any desired colored yarn and which may be so collocated upon the surface of a fabric as to produce any desired design.

With the above ends in view, my invention consists of suitable means for guiding a piece of fabric in a plane, means for feeding or advancing said fabric in an intermittent manner for each stroke of the machine, and means for the adjusting of the feed of said fabric.

My invention further consists of a hollow, tubular upright needle, adapted to carry a yarn through the fabric in an upward direction and in the form of a loop; thereby to form the loops upon the upper surface of the fabric, without the aid of any auxiliary loop forming means, and means to reciprocate said tubular needle transversely of the fabric, as well as means for adjusting the length of the stroke of said needle.

My invention further consists of novel means for engaging the loop of yarn after it is carried through the fabric by the tubular needle and before said needle has been withdrawn, and to retain said loop while said needle is being withdrawn from said fabric during said downward or return stroke, and means subsequently to cut said loop, thereby to produce an open tuft of the yarn.

My invention further consists of means to adjust the relative height of said needle and means correspondingly to adjust the height of said loop retaining and cutting means relative to said needle.

My invention further consists of a novel

means for actuating said fabric feeding and guiding means, said needle reciprocating means and said loop retaining and cutting means, so as properly to time the same with respect to each other, for each stroke of the machine.

For the purpose of illustrating my invention, I have shown in the accompanying drawings forms thereof which are at present preferred by me, since they will give in practice satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

This application is a continuation of my copending application Serial No. 82,868, filed Jan. 21, 1926.

Referring to the drawings, Figure 1 represents a side elevation of a novel looping and tufting machine embodying my invention.

Figure 2 represents a horizontal section on line 2—2 of Figure 1.

Figure 3 represents a front elevation, partly in section, of my novel looping machine.

Figure 4 represents a perspective view of a presser foot.

Figure 5 represents a side elevation of the loop retainer and cutter.

Figure 6 represents a front elevation of the same, showing the manner in which the loop retainer and cutter functions.

Figure 7 represents a section on line 7—7 of the Figure 5, showing the cutting portion of said retainer and cutter.

Figure 8 represents a section on line 8—8 of Figure 5, showing the retaining portion thereof.

Figure 9 represents a front elevation of the fabric feeding mechanism, detached from the rest of the machine.

Figure 10 represents a side elevation similar to that shown in Figure 9, of a modified form of a fabric feeding mechanism.

Figure 11 represents a side elevation of the upper portion of a looping machine em-

bodying my invention, showing a modified construction in the loop cutting device.

Figure 12 represents a section on line 14-14 of Figure 11.

Referring to the drawings, in which like reference characters indicate like parts, 1 designates the table or bed plate of my novel machine, outlined in Figures 2 and 3 in dotted lines, upon which plate are mounted the various operative elements of my novel machine. 2 designates an upper arm or housing consisting of the upright portion 3, which passes through the bed plate or table 1 and is suitably secured thereto, and the overhanging horizontal, longitudinal portion 4, which is supported by said upright portion 3.

The upright housing portion 3 is provided at its lower end with a pair of pendant, longitudinally aligned bearings 5 and 6, in which is journaled the main shaft 7, extending horizontally and longitudinally of the machine, the free end of said shaft being journaled in a bearing 8, which is secured to the lower surface of the table or bed plate 1, by means of suitable bolts 9. The main shaft 7 carries at its outer end a suitable pulley 10, which is adapted to receive any suitable belt for the transmission of power to said shaft 7, and a suitable hand wheel 11 whereby said shaft may be revolved manually, and which also serves as a flywheel to give a smoother action to the reciprocating parts of the machine.

The main shaft 7 also carries a pair of opposed bevel gears 12 and 13 respectively, which are in mesh with a common bevel gear 14, carried by the lower end of an upright transmission shaft 15, which is journaled in the suitable bearings 16 and 17 in said upright portion 3 of the housing 2; one of said bevelled gears 12 and 13 being fixed to the shaft 7 at all times, by means of a set screw 18, while the other of said bevelled gears is loose and idles on said main shaft 7. By changing the set screw from one of the bevel gears 12 and 13 to the other, the direction of rotation of the upright shaft 15 is reversed thereby adapting the machine either for the cut end loops or tufts, or for another character of stitch formed by reverse operation.

The main shaft 7 is further provided with a series of eccentric cam discs 19, 20, 21, 22 and 23, each of a different diameter and eccentricity, and is also provided with an eccentric head 24, carried by the end of said shaft, and suitably fixed thereto by the screw or pin 25. The upright transmission shaft 15 is provided with the bevel gear 26 at its upper end, which is in mesh with the bevel gear 27 carried by the end of an upper shaft 28, which is journaled within the bearings 29 and 30 in the upper horizontal portion 4 of the housing 2. The sprocket wheel 31 is secured to the other end of said shaft 28.

The two pendant vertical parallel guideways 32 and 33 are secured to the underside of the table or plate 1, or may be formed integral therewith. Between the two guideways 32 and 33, shown more particularly in Figures 1 and 2, is slidably mounted a reciprocable slide block 34, which is provided with a suitable vertical opening 35 extending therethrough, which is adapted to receive the tubular needle 36, and to support the same beneath the table 1. The set screw 37 extends into said opening 35, and is adapted to fix and secure the needle 36 in any desired position; thus permitting the vertical adjustment of the needle to produce loops of the desired length.

The slide block 34 is further provided with a transverse horizontal guide slot 38 in the upper portion thereof, while the eccentric head 24, carried by the end of the main shaft 7, is provided with the inwardly enlarged T channel 39, which is adapted to receive a nut 40, carried by the threaded end of the stud 41, said stud being provided with a squared opening 42, for the reception of a square shank wrench. The stud 41 extends into the guide slot 38 in the slide block 34, as shown particularly in Figure 3. Thus, by setting and fixing the stud 41 at any desired point in the T channel 39, with respect to the center of rotation of the head 24, said stud 41 will impart to said slide block 34 a vertical reciprocating movement, of a stroke dependent upon the distance of said stud 41 from the center. By means of the adjustable eccentric stud 41, it is thus possible to adjust the length of the stroke of the needle 36.

In order properly to guide the fabric upon the table 1, and to support said fabric against the vertical upward thrust of the needle 36, I provide a small slide plate 44, preferably having a smoothly polished upper surface, set into the table 1 and flush with the surface thereof, on either side of the opening 45 in said table. Into the opening 45 extends the bifurcated feeder foot 46 from below. The tubular needle 36 also extends upwardly from below the table 1, passing through the opening 45, and between the two limbs of the bifurcated feeder foot 46, as shown in Figure 3.

The upper horizontal portion 4 of the frame or housing 2, is provided at its free end with a vertical slide bearing 47, having the vertical bearing opening 48 extending therethrough, and having also the yoke 49 formed integral therewith and provided with the corresponding vertically aligned lower slide bearing 50. The presser rod 51 is slidably mounted in said bearings 48 and 50, and carries at its lower end the presser foot 52, which is adjustably and detachably secured thereto, by means of the screws 53. The horizontal portion 52^a of the presser foot 52 is bifurcated, with the outer limb thereof wider than the inner limb; said two limbs

being in operative alignment with the needle 36, and straddling the same, in the manner shown in Figures 1 and 3.

In order to retain the presser rod 51 against rotation, there is provided a vertical slot 54 in the bearing 47, and a guide pin 55 extending through said guide slot 54 and fixed in the rod 51. The helical compression spring 56, surrounding the rod 51, is interposed between the upper part of the yoke 49 and an adjustable collar 57 fixed to said rod 51 by means of the set screw 58, thereby urging said presser foot 52 downwardly at all times, against the upper surface of the fabric, in a yieldable manner. The handle 59, pivoted at 60, is provided with a finger 61, which is adapted to extend into a suitable recess in the rod 51, thereby to engage said rod and to lift said rod 51 upwardly when the handle 59 is turned outwardly or rearwardly in the direction of the arrow 62, thereby to raise the presser foot 52 out of operative engagement with the fabric.

In order to feed or advance the fabric beneath the presser foot 52 intermittently, there is provided the bifurcated feeder foot 46, having its upper surface toothed, with the teeth inclined rearwardly; said feeder foot 46 straddling the needle 36, as shown in Figures 2 and 3. In order simultaneously to impart to said feeder foot 46 a horizontal as well as a vertical reciprocating movement, said feeder foot 46 is carried by an arm 63, which is rigidly connected to a cam arm 64, through a common integral web 65. The two arms 63 and 64 are pivoted upon a common pivot 66, carried at its ends by the pair of similar arms or levers 67 and 68, which are carried by a common rocker shaft 69. The rocker shaft 69 is journaled within a pair of suitable bearing blocks 70 and 71, fastened to the underside of the table or plate 1. The rocker shaft 69 is operatively connected to a second rocker shaft 72, through the rocker arms 73 and 74, and the link 75. The rocker shaft 72 is journaled within suitable bearing blocks 76 and 77, which are also secured to the underside bearing blocks 76 and 77, which are also secured to the underside of the table or bed plate 1, and in turn carries a follower arm 78, having a follower roller 79 rotatably mounted at its end. The follower 79 is adapted to ride on any one of the several eccentric cams 19 to 23 inclusive.

By this means, the rotation of the main shaft 7 will impart a rocking or oscillatory motion to the shafts 72 and 69 respectively, thereby causing said arm 63 and hence the feeder foot 46 to oscillate to and fro in the direction of the arrows 80 and 81, with each stroke of the machine, and hence with each stroke of the needle 36. The length of the horizontal feeding movement or stroke of the feeder foot is determined by the choice of the cam discs 19 to 23 inclusive.

In order to raise the feeder foot 46 upwardly a slight distance, into engagement with the fabric, during the forward or operative stroke of said foot 46, (in the direction of the arrow 80) and to lower said foot 46 a suitable amount out of engagement with the fabric, during the return movement of said foot, (in the direction of the arrow 81) the follower arm 64, having the follower roller 82 rotatably mounted at its end, is adapted to ride upon the inclined cam 83, which is also fixedly secured to the plate 1. Thus, as the arms 63 and 64 are oscillated to and fro, by the rocker arms 67 and 68, the arms are also raised and lowered simultaneously by the cam 83, thereby imparting to the feeder foot 46 simultaneous horizontal and vertical reciprocating movements. This construction is best shown in Figure 9.

In Figure 10 there is shown a modified form of a feeder foot cam, for raising and lowering the arms 63 and 64, which cam 84 is pivotally mounted upon a support 85, at a point 86, and has its lower end resting upon a horizontal guide flange 87, also carried by said support 85. In this modified construction, the follower roller 82, after passing over the extreme forward or pivoted end of the cam 84, in its forward and upward movement in the direction of the arrow 80, descends abruptly and drops onto the guide flange 87. The follower roller 82 then returns along the guide flange 87, raising the cam 84, as it passes beneath the lowermost end thereof. The cam 84 drops into position again by gravity, and permits the roller 82 to ride over the same, in the forward direction again. By means of this pivotally mounted cam, or switch cam, construction, all backward drag upon the fabric is eliminated, since the feeder foot 46 is disengaged from the fabric abruptly at the extreme end of the forward or operative stroke thereof. By properly adjusting the position of the cams 19 to 23, inclusive, upon the main shaft 7, the stroke of the feeder foot 46 may be so synchronized with the movement of the needle 36 as to impart to said feeder foot 46 a forward movement in the direction of the arrow 80 during the time that the needle is in the lower position and out of engagement with the fabric. Suitable springs, not shown in the drawings, may be interposed between the shaft 72 and a suitable stationary or rigid point on the machine, for maintaining said shaft under a constant torsional strain, thereby to retain the follower roller 79 against any one of the cams 19 to 23 inclusive. The follower roller 82 is held against the corresponding lifting cam either by gravity or by any suitable spring, not shown in the drawings.

As shown particularly in Figures 1 and 6, the yarn 88 passes through the axial bore of the hollow needle 36, in a continuous manner,

and is thus carried through the fabric with each stroke of the needle, in the form of a closed loop, having one side of the loop within the needle and having the other side of the loop on the outside of the needle, as shown in Figure 6. The end of the needle 36 is bevelled as at 89, thereby causing said needle to penetrate the fabric more readily and also causing the yarn 88 to be positioned upon the same side of the needle at all times, as also shown in Figure 6.

In order to retain the loop 90 in position, while the needle 36 is being withdrawn, and in order subsequently to cut said loop at the top, after said needle has been withdrawn from the fabric, I provide a novel rotary loop retainer and cutter 91, of a suitably tempered spring steel, which is secured to the boss 92, by means of a series of screws 93, said retainer and cutter being provided with a spring blade 94, extending outwardly of the hub portion 95 thereof, in a spiral formation, and having a rounded or dull inner retaining edge 96, shown in enlarged section in Figure 8, over a suitable portion of its length, and having the sharp cutting edge 97, along the inner portion of said blade, as shown in enlarged section in Figure 7. The combined retainer and cutter is rotatably mounted upon a stud shaft 98, which is adjustably mounted in a suitable slot 99, in a lower pendant bracket 100, carried by the horizontal housing portion 4, whereby the vertical height of said retainer and cutter may be adjusted to accommodate the height of the needle and hence the particular height of the loop 90. The stud shaft 98 also carries a sprocket wheel 101, whereby said rotary retainer and cutter may be revolved, and sprocket chain 102 is passed over said sprocket wheel 101, as well as the sprocket wheel 31 carried by the outer end of the horizontal shaft 28, and a suitable idler take-up sprocket wheel 103, thereby causing said retainer and cutter 91 to revolve in timed relation to the shaft 28 and hence in timed relation to the needle 36. In order to permit the adjustment of the position of the idler take-up sprocket wheel 103, when such adjustment is required by the adjustment of the height of the retainer and cutter 91, and the sprocket wheel 101, the stud 104 is also adjustably mounted in a suitable slot 105, as shown particularly in Figure 1.

By properly adjusting the position of the sprocket wheel 31 upon the shaft 28, the rotary movement of the retainer and cutter 91 may be so timed with respect to the stroke of the needle 36 as to cause the end of the blade 94 to engage the loop 90, in a manner shown in Figure 6, just as the needle reaches its uppermost position, thereby causing said loop to be retained by the rounded edge portion 96 of said blade, while the needle 36 is on its downward or return stroke, and thereafter causing the sharp edge 97 of said blade to cut

said loop so as to form the desired open ended tuft.

In Figures 11 and 12 I have shown a modified construction in the loop cutting means. In this modified construction the rotary loop retainer and cutter and the pendant bracket 100 are eliminated, and instead there is provided a housing head 112. In this modification there is an eccentric 113 provided on the end of the upper shaft 28 carrying a suitable eccentric pin or screw 114. To the head 112 is adjustably secured the slotted arm 115, by means of the two screws 116 passing through a suitable slot 117. The lower end of the stationary arm 115 carries a bearing 118, in which is journaled a suitable pivot pin or shaft 119. To one end of this pivot pin or shaft 119 is rigidly secured, by any suitable means, a cutter arm 120, while to the other end thereof is rigidly secured, also by suitable means, the actuating arm 121. To the cutter arm 120 is adjustably secured a thin and oscillating cutting blade 122, by means of the screws 123, while a stationary blade 124 having the lower cutting edge 125 is rigidly secured to the stationary arm 115, by means of the screws 126. The actuating arm 121 is operatively connected to the eccentric pin 114 by means of an adjustable connecting rod 127 and a pin or screw 128. The adjustable connecting rod 127 is composed of an upper and a lower member 129 and 130 respectively, each provided with a suitable slot 131, which are secured to each other by means of the two screws or other detachable fastening means 132.

Thus, with each stroke of the machine and hence with each revolution of the shaft 28, the cutting arm 120 will be deflected by the eccentric pin 114, thereby causing the blade 122 to oscillate to and fro, past the stationary cutting edge 125, thereby to effect a shearing action between said stationary cutting edge 125 and the movable cutting edge 133 of the cutting blade 122. The movable cutting blade 122 as well as the stationary blade 124 are so positioned with respect to the needle 36, as to cause said movable blade to engage and retain the loop of yarn hanging over one side of the needle and to bring the same between the two cutting edges 125 and 133, thereby severing the loop. The presser foot mechanism in this particular modification of my invention may be carried by the cover plate 134 of the frame head 112, as shown particularly in Figure 12.

In order to adjust the height of the cutting mechanism with respect to the needle 36, and in order to adapt the same to varying heights of loops, it is merely necessary to raise or lower the stationary arm 115 by means of the screws 116, and to adjust the length of the connecting rod 127 a corresponding amount, by means of the screws 132. With the aid of the adjustment screws 123, the blade 122 may

be adjusted in angular relation to the arm 120, thereby to adjust the shearing angle of the movable cutting edge 133 with respect to the stationary cutting edge 125.

5 My machine presents various advantages. The direct result of having the loops formed and treated on the upper surface of the base material rather than on the lower surface, is that the loops and pile are visible to the operator while they are being formed, retained and cut. Thus, errors in setting any part of the machine, effecting the proper desired formation of the loops or of the pile are immediately discovered by the operator and may be corrected before substantial damage is done. There is the further advantage of efficiency in that the operator seeing the performance of the machine is enabled to speed up operation without impairing the quality of the product. Manual access immediately can be had to any of the loops in case of slight irregularity. The machine, moreover, does not exert any pressure upon the loops, as would a machine forming the loops on the side of the fabric which rests on the table. Inasmuch as the loop is not formed through the thickness of the table, my machine renders possible the formation of the shortest possible loop or tuft, the thickness of the retaining pin or shear being the only limitation as to length.

While the drawings of the present application show a single needle machine and the specification concerns itself with the description of such a machine, it will be very obvious that a multiplicity or a battery of needles and associated loop retainers and cutters might be utilized and that the plurality of needles might be independently operated or might be operated in unison from a common actuating means.

It will also be understood that the term table as used in this application is to be interpreted in its broadest sense. In so far as the present invention is concerned, it is immaterial whether a solid, table-like support member is utilized or whether equivalent devices are used, such for instance as skeleton frame members or other apparatus which is the full equivalent of a table. The primary consideration is to properly support the fabric while it is being operated upon and any device for effecting such support is considered to be a table within the scope of the appended claims.

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

1. In a device of the character stated, a horizontal table, a reciprocable needle adapted to carry a loop of yarn upwardly through said table and through a fabric thereon, means to retain said loop in the outermost position, means to cut said loop and means to

actuate said needle and said retainer and cutter in timed relation to each other.

2. In a device of the character stated, a horizontal table, a reciprocable needle adapted to carry a loop of yarn upwardly through said table and through a fabric thereon, means in operative alignment with said needle, to retain said loop of yarn, upon being carried through the fabric by said needle, and to cut the same thereafter, and means to actuate said needle and said loop retainer and cutter in timed relation to each other.

3. In a device of the character stated, a horizontal fabric supporting table, an upright, reciprocable needle adapted to carry a loop of yarn through the table and fabric in an upward direction, means above the table to retain the loop after it is formed, cutting means coacting therewith, and means to actuate said needle, said retaining means and said cutting means in timed relation to each other.

4. In a device of the character stated, a table, an upright, reciprocable needle adapted to carry a loop of yarn upwardly and through said table and through a fabric thereon from below the table to its upper surface, means in operative alignment with said needle to retain said loop, and subsequently to cut said loop, and means to actuate said needle and said loop retaining and cutting means in timed relation to each other.

5. In a device of the character stated, a substantially horizontal table, a reciprocable needle extending through said table, a loop retainer and cutter positioned above said table in operative alignment with said needle, means below said table to actuate said needle and means above said table to actuate said loop retainer and cutter in timed relation to said needle.

6. In a device of the character stated, a table having a suitable opening therethrough, an upright reciprocable needle extending therethrough, means below said table to support and guide said needle in a desired path, a loop retainer and cutter positioned above said table in operative alignment with said needle, means to adjust the stroke of said needle in said support, means to actuate said loop retainer and cutter and said needle in timed relation to each other.

7. In a device of the character stated, a table, a reciprocable needle adapted to carry a loop of yarn through a fabric supported on the table, means above the table to retain said loop, means contacting with said retainer to coact therewith for shearing said loop, means to advance the fabric intermittently and transversely of the line of travel of said needle and means to actuate said needle from below the table, said retainer and said cutter in synchronism with each other, so as to cause said loop retainer to engage the loop when formed and subsequently to cause

said cutter to cut said loop and to cause said fabric to advance while the needle is withdrawn from the fabric.

8. In a device of the character stated, a fabric supporting table, a reciprocable needle adapted to carry a loop of yarn through the table and fabric, a loop cutting device above the table comprising a pair of shearing members adapted to move relative to each other substantially free from tension on the loop, and means actuating said needle and said loop cutting device in timed relation to each other.

9. In a device of the character stated, a substantially horizontal table, an upright reciprocable needle extending through said table, a loop cutting device positioned above said table in operative alignment with said needle, comprising a pair of shearing elements adapted to move relative to each other, means below said table to actuate said needle, and means above said table to actuate said cutting device in timed relation to said needle.

10. In a looping and tufting machine of the character in which a needle moves through a fabric supporting table and fabric thereon, and carries a loop upwardly through the fabric, a housing, a stationary blade carried by said housing, a movable blade pivotally carried by said housing in operative alignment with said stationary blade, a shaft journaled within said housing and means intermediate said shaft and said movable blade to impart to the latter an oscillatory movement to enter and cut the loop.

11. In a looping and tufting machine of the character in which a needle moves through a fabric supporting table and fabric thereon, and carries a loop upwardly through the fabric, a housing, a supporting arm adjustably mounted thereon, a stationary blade carried by said arm, a movable blade pivotally secured to said arm in operative alignment with said stationary blade, a shaft, and adjustable means intermediate said shaft and said movable blade for imparting to the latter an oscillatory movement to enter and cut the loop.

12. In a looping and tufting machine of the character in which a needle moves through a fabric supporting table and fabric thereon, and carries a loop upwardly through the fabric, a housing, a supporting arm adjustably mounted thereon, a stationary blade detachably secured to said arm, a cutter shaft journaled in said arm, a movable blade carried by said shaft in operative alignment with said stationary blade, a shaft journaled in said housing and adjustable means intermediate said shaft and said cutter shaft for imparting to the movable blade an oscillatory movement to enter and cut the loop.

13. In a looping and tufting machine of the character in which a needle moves

through a fabric supporting table and fabric thereon, and carries a loop upwardly through the fabric, a housing, a stationary blade, a movable blade arm pivotally carried thereby, said movable blade being adjustably secured to said blade arm in operative alignment with said stationary blade, an operating shaft journaled in said housing, a crank pin carried by said shaft and means intermediate said crank pin and said movable blade arm to oscillate the latter to enter and cut the loop.

14. In a device of the character stated, a housing, a stationary arm adjustably secured thereto, adapted to be adjusted vertically, a stationary blade detachably secured thereto, a cutter shaft journaled in said stationary arm, a blade arm secured to one end of said cutter shaft, an actuating arm secured to the other end thereof, a resilient movable blade adjustably secured to said blade arm, in operative alignment with said stationary blade, an operating shaft, an eccentric pin carried thereby, and an adjustable connecting link intermediate said eccentric pin and said actuating arm to oscillate said cutter shaft and hence said movable blade.

15. In a device of the character stated, a fabric supporting table, a reciprocable needle having a longitudinal bore extending through and adapted to have a yarn passed through said bore, said needle being adapted to carry a loop of said yarn upwardly through a fabric on said table, means above the table to retain and to cut the loop and means to actuate said needle and said loop retainer and cutter in timed relation to each other.

16. In a device of the character stated, a substantially horizontal table, a reciprocable needle extending through said table, a loop retainer and cutter positioned above said table in operative alignment with said needle, means below said table to actuate said needle, and means to actuate said loop retainer and cutter in timed relation to said needle.

17. In a device of the character stated, a substantially horizontal table, an upright reciprocable needle extending through said table, a loop cutting device positioned above said table in operative alignment with said needle, comprising a pair of shearing elements adapted to move relative to each other, means below said table to actuate said needle, and means to actuate said cutting device in timed relation to said needle.

18. In a device of the character stated, a horizontal table, a reciprocable needle adapted to carry a loop of yarn upwardly through said table and through a fabric thereon, means above said table to cut said loop and means to actuate said needle and said cutter in timed relation to each other.

19. A method of forming a tufted fabric which includes the steps of supporting the

5 fabric in a horizontal plane and moving it
step by step in said plane, passing a loop of
yarn upwardly through the fabric from be-
low the latter after each forward feeding
step of the fabric, and engaging and severing
said loop prior to the engagement of the next
loop.

20. In a device of the character stated,
means for supporting in horizontal position
a piece of fabric to be worked upon, a recipro-
cable needle adapted to carry a loop of yarn
upwardly through said supporting means
and fabric, means to retain said loop in the
outermost position, means to cut the loop and
means to actuate the needle, the retainer and
the cutter in timed relation to each other.

21. A method of forming a tufted fabric
which includes the steps of supporting the
fabric in a horizontal plane and moving it
step by step in said plane, passing a loop of
yarn upwardly through the fabric from be-
low the latter after each forward feeding step
of the fabric, supporting said loop against
gravitational collapse and then cutting the
loop while so supported.

22. In a machine of the class described,
means for supporting a fabric in a substan-
tially horizontal plane and for moving the
fabric step by step in said plane, a hollow
reciprocable needle arranged below the fabric
and adapted to carry a loop of yarn upward-
ly through the support and the fabric, means
arranged above the fabric for retaining said
loop against gravitational collapse, means to
cut said loop while so retained, and means
for operating the needle, the retainer and
the cutter in timed relationship.

23. A machine of the class set forth in claim
22 and wherein the timing of the parts is such
that one loop is cut prior to the formation of
the next loop.

Signed at New York in the county of New
York and State of New York this 20th day
of May, A. D. 1930.

CLARENCE A. BRAUDES.