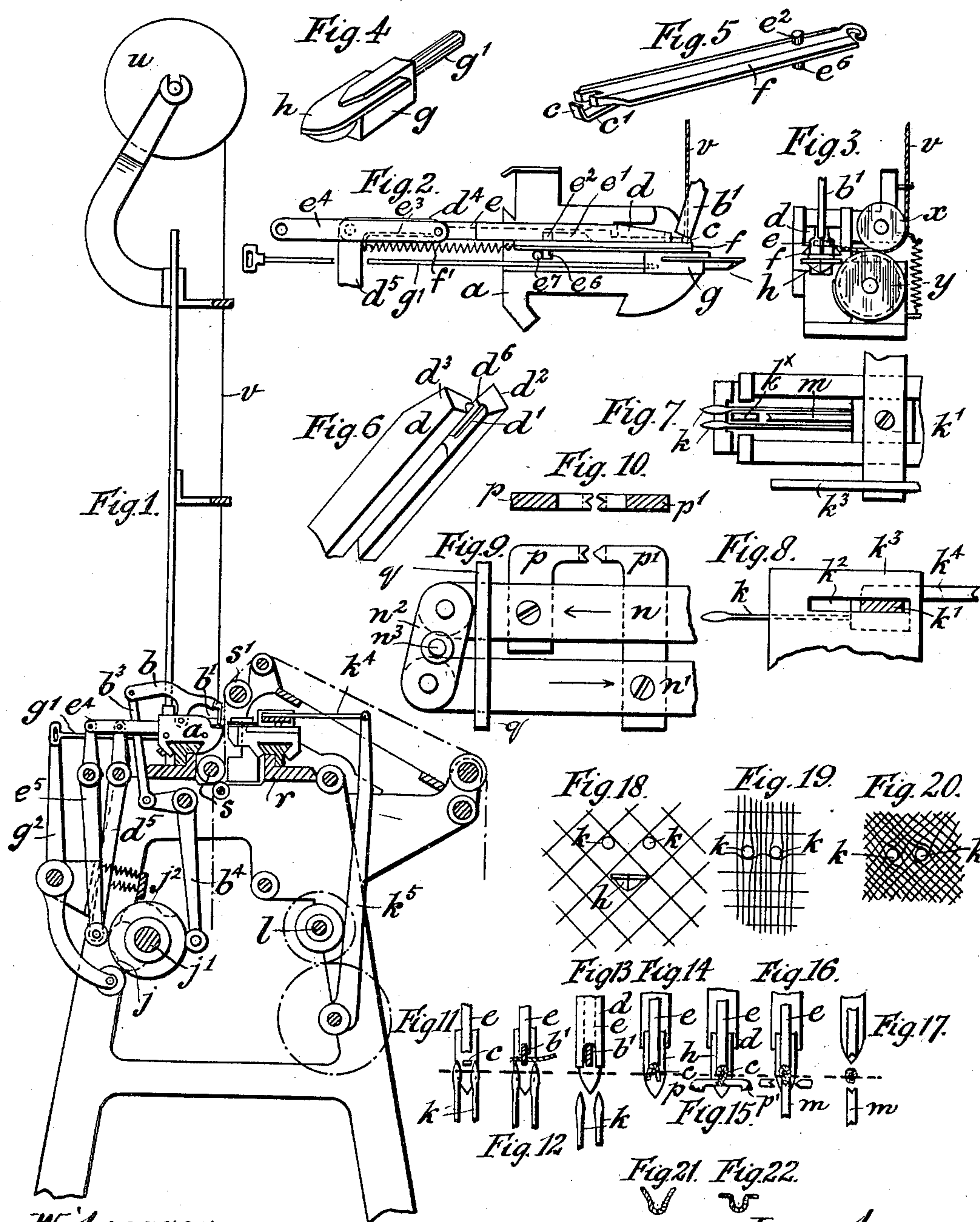


Patented Nov. 19, 1901.

MACHINE FOR SPOTTING NET OR LIKE FABRICS.

(Application filed Nov. 12, 1900.)

(No Model.)



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MACHINE FOR SPOTTING NET OR LIKE FABRICS.

SPECIFICATION forming part of Letters Patent No. 686,783, dated November 19, 1901.

Application filed November 12, 1900. Serial No. 36,277. (No model.)

To all whom it may concern:

Be it known that I, EDGAR LESLIE THORP, a subject of the Queen of Great Britain and Ireland, residing at Nottingham, England, have invented a new and useful Machine for Spotting Net or Like Fabrics, of which the following is a specification.

This invention relates to machines for spotting net, veilings, and the like of the type in which a series of small pieces of chenille are cut off, formed into U-shaped loops, placed in the net, and secured thereto to form a row of spots, substantially as set forth, for instance, in the specification of British Letters Patent No. 25,271 of the year 1896.

Now the present invention has for its objects various improvements in machines of this kind designed to render the same more certain in their action and to produce superior work. To this end means are provided for more effectually centralizing or adjusting the meshes of the net, there being appropriate means for dealing both with large meshes and with small meshes. Means are also provided for more correctly forming the pieces of chenille into U-shaped loops prior to applying them to the net.

The invention also has reference to means for properly nipping or closing together the ends of the loops and for feeding the net through the machine without the use of porcupine-rollers, such as previously employed.

In order that the invention may be readily understood, reference will now be made to the accompanying drawings, in which—

Figure 1 is a general view, in vertical cross-section, of one construction of machine embodying my present improvements. Fig. 2 is a detail side view, and Fig. 3 a front view, of the mechanism for cutting and looping the chenille. Fig. 4 is a detail perspective view of one of the devices for centralizing large-mesh net. Fig. 5 is a detail view in perspective of the pin and pin-plate hereinafter referred to. Fig. 6 is a detail perspective view of the cutter. Figs. 7 and 8 are plan and side views, respectively, of the device for centralizing small-mesh net. Figs. 9 and 10 are respectively a plan and a section of the means for closing or nipping the loops. Figs. 11 to 17 are diagrammatic views illustrating the operation of forming a single chenille spot. Fig. 18 is a fragmentary view showing

how the centralizing devices act on large-mesh net. Figs. 19 and 20 show similarly the centralizing action with two different kinds of small-mesh net, the scale being in this case larger than full size. Fig. 21 is a detail view showing the shape of the piece of chenille just after being cut by the improved mechanism. Fig. 22 shows the same as cut by the ordinary mechanism.

a is one of the "heads" in which the cutting and looping mechanism is situated. *b* is a three-armed lever mounted on said head, and *c* is a spring-pin around which the loop is first bent to its U shape. The said lever *b* is recessed at its front end *b'*, so that when down, as in Fig. 2, and resting over the pin *c* it exerts no pressure upon said pin, and consequently cannot break or damage it.

d is one of the cutters for severing the piece of chenille. These cutters are arranged as slides in the heads *a* and are channeled on their under sides to accommodate the pushers *e*, which first hold the chenille against the pin *c* while being cut off and formed and then thrust it forward into the net.

d' is a U-shaped mouth or "former," consisting of a rounded channel in the under side of the cutter end. It serves to press the loop into shape after being cut off.

The end of the cutter is slightly indented, resembling a wide-angled V in shape, so that its edges project somewhat, *d²* being the cutting edge, while *d³* is a non-cutting edge. The shape of the cutter end and of the edge *d²* causes the chenille wire to be cut without bur and produces a piece approximately of the shape shown in Fig. 21, with ends splayed out somewhat, but not at the sharp angle shown in Fig. 22, which is the ordinary form of a freshly-cut piece of chenille. With this latter form it is very difficult to eliminate the sharp bends in the ends of the loops, whereas with the shape shown in Fig. 21 a finished loop of perfect form results. The cutter is connected by a link *d⁴* with a lever *d⁵*, actuated from the cam-shaft *j'*, and, similarly, the lever *b* is connected by a link *b³* with a bell-crank lever *b⁴*, actuated in the same manner.

d⁶ is a recess in the end of the cutter opposite the lever *b*. It allows the edge of the cutter to pass on each side of said lever while the latter is holding down the chenille.

f is a "pin-plate," so called because it car-

ries the pin c and its spring c' . It is connected to the pusher e by the following arrangements: In the pusher is a short recess e' , in which works a stud e^2 on the pin-plate, thus
 5 allowing a certain amount of lost motion between them, while at the rear end of the pusher is a finger e^3 , from which a spring f' extends to the pin-plate. The spring tends to draw back the pin-plate, so that the pin c
 10 shall press against the end of the pusher when the chenille is to be nipped or held.

e^4 is a link coupled to a lever e^5 , which is acted on by a cam j on the shaft j' , so as to reciprocate the pusher.

15 e^6 is a stop which limits the rearward movement of the pin-plate by coming into engagement with a pin e^7 in the head a . It will be noticed, however, that owing to the lost motion above referred to this does not interfere
 20 with the further backward movement of the pusher e .

g is a slide which comes under the pin c and raises it at the proper time. This slide is operated by a rod or link g' and lever g^2 from a
 25 cam j^2 on the cam-shaft j' .

h and k are the centralizing devices or "pointers." The former are carried in the heads a and work behind the net, being termed the "main" pointers, while the latter work
 30 in front of the net and are termed "auxiliary" pointers.

The main pointers h may be carried by the slides g , being made detachable therefrom, so that they may be removed when small-mesh
 35 net is being dealt with. They may, however, be mounted on separate slides of their own.

The auxiliary pointers k cooperate with the main pointers h for large-mesh net and serve also by themselves to centralize small-mesh
 40 net. They are carried by a bar k' , working in slots k^2 in cheeks or brackets k^3 . The operation of the bar moves the pointers k in and out. When moved inward—that is, to the right with regard to Fig. 7—the pointers are
 45 pressed slightly apart by a block k^x , and therefore when moving outward again and piercing the net the pointers close together somewhat and so act more effectually to displace the bars of the net. The bar k' is actuated
 50 by links k^4 and levers k^5 from a cam-shaft l . The auxiliary pointers may be situated above the "fixing-center" of large-mesh net and cooperate with the pointers h to insure perfect centralization, as indicated in Fig. 18. When,
 55 however, fabrics with very small mesh are being "spotted," the main pointers h are removed and the pointers k are arranged opposite the pusher e . They then act to open out the fabric by pushing aside the bars, as
 60 in Figs. 19 and 20, so leaving passages through which the ends of the chenille loop enter the net. It is to be understood that the terms "main" and "auxiliary" are applied to these parts for the purpose of distinction only on
 65 account of their relative sizes and not in regard to any disparity in their functions.

m is the usual ram or plunger for finally

pressing up and clenching the loop. It is situated between the points k k .

p p' are two blades or jaws which form the nipper for closing the loop ready for the action of the ram m . These jaws instead of being arranged scissorswise, as formerly, come together with a rectilinear motion and have their ends notched and let into each other, as
 75 in Figs. 9 and 10, to more effectually close the loop. The said jaws p p' are carried by bars n n' , working in slotted brackets q , arranged at each end of the machine. At one end the bars are connected by a reversing link n^2 ,
 80 pivoted at n^3 to the bar r or to a projection therefrom. Thus a longitudinal movement of one rod causes a corresponding movement of the other, but in an opposite direction, and hence the jaws will be either closed, Figs. 9
 85 and 10, or opened. The movements of the rods may be effected in any convenient manner.

s s' are plain or sand-covered rollers, over which the net or fabric travels. These rollers
 90 take the place of the studded or porcupine rollers previously employed and which are dispensed with as hindering the free passage of the fabric through the machine, the centralizing devices insuring the proper position-
 95 ing of the meshes.

The chenille v is supplied from bobbins u , preferably carried above the machine, and is fed to the looping and cutting devices by the
 100 usual feed-rollers x and y .

The operation of forming a spot is as follows: The main pointer h and its corresponding auxiliary pointers k first move from opposite sides through the net t , as shown at
 105 Fig. 11. This action brings the part of the net which is to receive a spot exactly opposite the head a —that is, into its proper position opposite the spotting device—each part being held positively in place independent of the other parts. The slide g of the main
 110 pointer h also raises the pin c at the same time, as before mentioned. The chenille b is now fed by the rollers x and y between the pin c and the pusher e until the piece which is to form the loop rests with its middle part
 115 opposite said pin, so that it can readily be bent around the same, thus insuring a very correct and uniform formation of the loop. The pusher e at this time is moving toward the pin c , as in Fig. 12. The end b' of the
 120 lever b now descends over the pin and the pusher end, so as to hold the chenille in place between them without, however, pressing on the chenille. In other words, the lever closes the space above the pin and prevents the
 125 chenille slipping over the top of the latter. The cutter d now moves forward over the pusher e and pin c (the recess d^6 in them accommodating the lever end) and cuts off the required piece of chenille. The pusher ad-
 130 vances slightly and further tightens its hold on the loop, which is as yet only of the shape shown in Fig. 21. The lever then rises, and the former d' in the under side of the cutter

acts on the partly-formed loop and completes the same. The pusher *e* then continues its forward movement toward the net and thrusts the U-shaped loop into place, the pin *c* being
 5 between the chenille and the net, as shown on Fig. 14. The nippers *p p'* are next operated, as at Fig. 15, and bring together the two ends of the V-shaped piece of chenille. The nippers then retire, as do also the auxiliary pointers *k k*, and the rams or plungers
 10 *m* close or press up the ends of the loops and finish the spot, as in Fig. 16. Finally, the main pointers *h* retire, whereupon the pin *c* springs out of the spot, the pin-plate *f* also
 15 retiring, as well as the pusher *e* and plunger *m*, so leaving the chenille in the fabric, as at Fig. 17, and resuming their original positions ready to form the next row of spots.

Having now described my invention, what
 20 I claim, and desire to secure by Letters Patent, is—

1. In a machine for spotting net and like fabric, the combination of the devices for forming and fixing the spots to the fabric,
 25 and means for positively centralizing each portion of the fabric which is to receive a spot opposite a set of said devices, substantially as described.

2. In a machine for spotting net and like
 30 fabric, the combination of devices for applying spots of chenille to the fabric, centralizing devices entering the meshes and bringing each portion of the fabric into its proper position to receive the spot independently of
 35 the other portions thereof, and means for operating said devices, substantially as described.

3. In a machine for spotting net and like fabric, the combination of a series of heads,
 40 loop-forming mechanism in said heads, pins around which said loops are bent and clamped, centralizing devices for bringing each portion of fabric independently and positively into position to receive the loop opposite said
 45 heads, pushers for inserting the loops into the fabric, mechanism for closing the loops, and means for operating said parts, substantially as described.

4. In a machine for spotting net and like
 50 fabric, the combination of devices for forming and inserting loops of chenille, movable pins around which the loop is bent during its formation, pointers for independently centralizing each portion of the fabric to re-
 55 ceive the loop, nippers for pressing together the ends of the loops, bars moving longitudinally in opposite directions for carrying said nippers, and means for operating said parts, substantially as described.

5. In a machine for spotting net and like
 60 fabric, the employment of a combined chenille-cutter and loop-former having forwardly-projecting cutting and non-cutting edges, a central recess, and a forming-mouth
 65 on its under side, a pin-plate working in a groove in its under side, a pin on said plate around which the loop is bent and clamped

during its formation and means for positively centralizing each portion of the fabric which is to receive a loop opposite the chenille-cutter and loop-former, substantially as described. 70

6. In a machine for spotting net and like fabric, the combination of a series of heads, chenille-feed wheels thereon, cutters arranged
 75 to slide to and fro therein and having indented ends, levers mounted on said heads and designed to prevent the chenille escaping during the cutting operation, a projecting cutting edge at one side of each of said
 80 cutters, a corresponding non-cutting edge at the opposite side thereof, a recess in the cutter end to accommodate the presser-lever, a forming-mouth in the lower side of the cutter to shape the loops, and means for oper-
 85 ating said parts and means for positively centralizing each portion of the fabric which is to receive the loop opposite the chenille-cutter and loop-former, substantially as described. 90

7. In a machine for spotting net and like fabric, the combination of a chenille-feed, a combined cutter and loop-former, a spring-pin around which the loop is bent, a pin-plate carrying said spring-pin, a pusher work-
 95 ing in the under side of said cutter, a stud on said pin-plate working in a recess in said pusher and so giving a lost-motion action, a spring-raising slide beneath said spring-plate, a centralizing-pointer connected to said slide,
 100 and means for operating said parts, substantially as described.

8. In a machine for spotting net and like fabric, the combination with the means for applying the chenille spots, of a centralizing-
 105 pointer adapted to enter the mesh from one side of the fabric, a slide carrying the same, a pair of auxiliary centralizing-pointers working on the opposite side of said fabric to the aforesaid pointer, a fixed block between said
 110 pointers causing them to open and close slightly as they work to and fro, and means for operating said pointers, substantially as described.

9. In a machine for spotting net and like
 115 fabric, the combination of means for inserting the loops to form the spots into the fabric, nippers adapted to close the ends of said loops, bars each carrying half of said nippers, means for operating said bars simultaneously
 120 in opposite directions, a ram between each of said nippers for finally clenching the rounded ends of the loops, means for operating said ram and means for positively centralizing
 125 each portion of the fabric which is to receive the loop opposite the said nippers, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDGAR LESLIE THORP.

Witnesses:

EDWARD D. HEARN, Jr.,
 T. B. COX.