

No. 654,957.

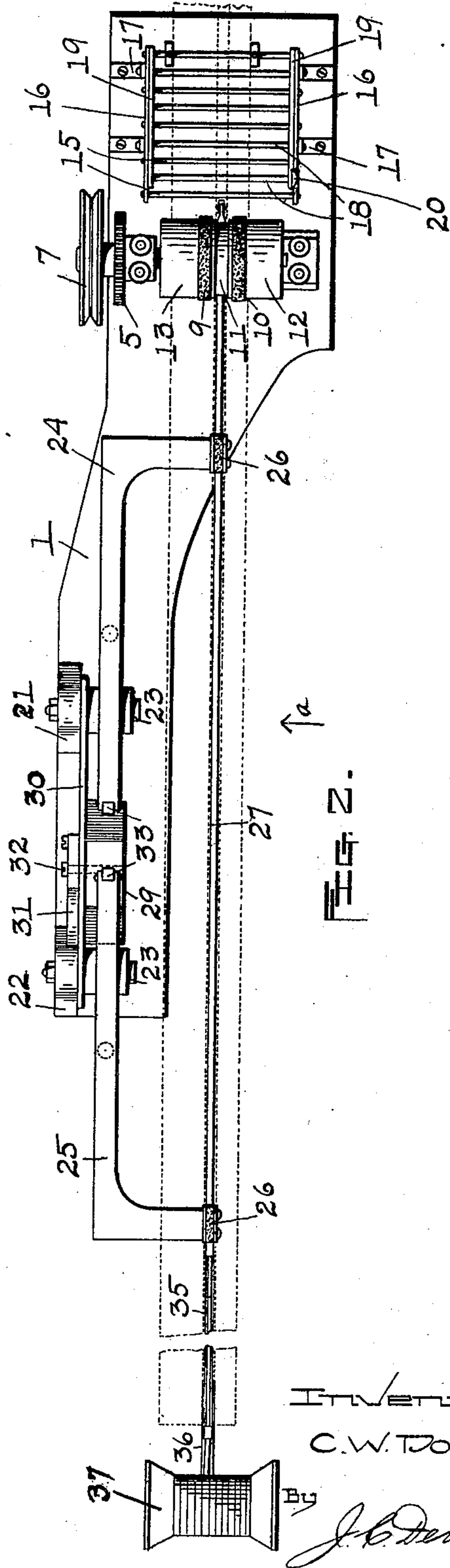
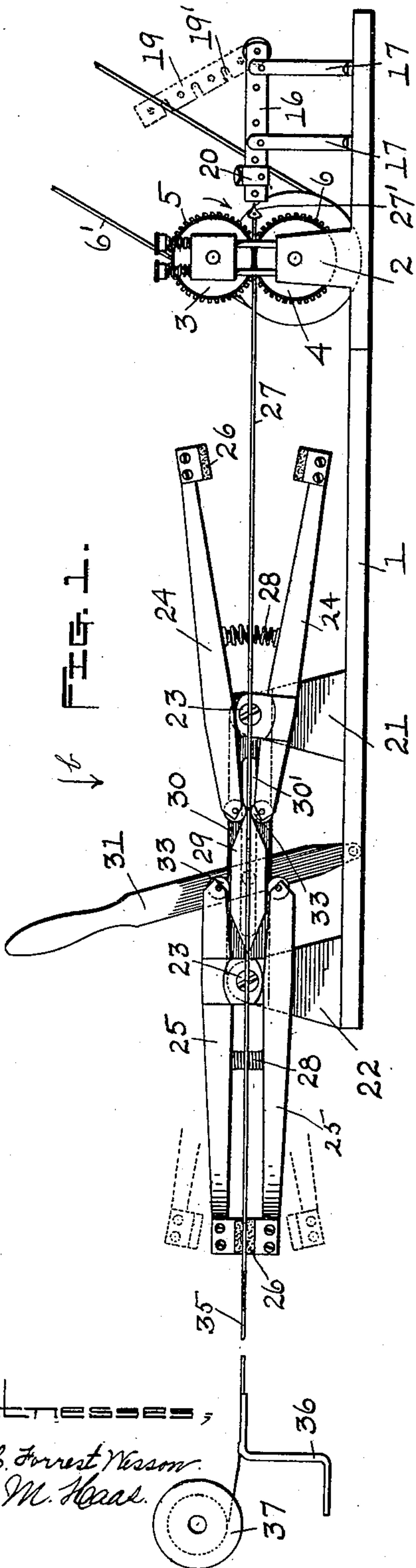
Patented July 31, 1900.

C. W. DODGE.  
TAPE NEEDLE DEVICE.

(Application filed Jan. 4, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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# UNITED STATES PATENT OFFICE.

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## TAPE-NEEDLE DEVICE.

SPECIFICATION forming part of Letters Patent No. 654,957, dated July 31, 1900.

Application filed January 4, 1900. Serial No. 316. (No model.)

*To all whom it may concern:*

Be it known that I, CARROLL W. DODGE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Threading Ribbon Into Lace, of which the following is a specification.

My invention relates to a machine for threading ribbon into lace, particularly into narrow bands or strips of lace provided with a series of perforations therethrough, and which is commonly used in trimming corsets and articles of underwear.

The object of my invention is to provide a machine, preferably automatic, which will thread or insert a strip of ribbon or similar material into the perforations in bands or strips of lace, or, in other words, string the lace onto the ribbon.

As far as I am aware prior to my invention it has been customary to thread ribbon into lace by hand with a needle. This is a slow process. In my invention the lace is drawn into the machine and strung onto the ribbon or the ribbon threaded into the lace in continuous or long lengths of the ribbon and lace.

My invention consists in certain novel features of construction of my machine and the several parts thereof, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a side view of my machine looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a plan view looking in the direction of arrow *b*, Fig. 1. Fig. 3 is a plan view of the front or threading end of the threading-needle detached. A section of lace is shown by dotted lines. Fig. 4 is an edge view of the end of the threading-needle shown in Fig. 3. The dotted lines show the opposite position of the movable point. Fig. 5 is a plan view of the opposite end of the threading-needle and the ribbon-holding strip. Said end and strip are connected, as shown. Fig. 6 is an end view of one of the friction-rolls shown in Fig. 7 looking in direction of arrow *c*, same figure; and Fig. 7 is a central vertical section through the roll on line 7-7, Fig. 6. Figs. 3 to 7, inclusive, are shown on an enlarged scale.

In the accompanying drawings, 1 is the

base of the machine, upon which are mounted the several parts thereof. At one end of the base 1, arranged on suitable stands or bearings 2, are a pair of friction-rolls 3 and 4, which are connected by gears 5 and 6, fast on the shafts of the friction-rolls 3 and 4, respectively. On the end of the shaft of the friction-roll 4 is a grooved pulley 7, which acts as a driver to turn the friction-rolls in the direction of the arrow in Fig. 1. The pulley 7 is connected by a belt 6' to a pulley or shaft. (Not shown.)

The friction rolls or pulleys 3 and 4 are preferably made as shown in Fig. 7, and consist of a central shaft 8, on which are mounted two disks 9 and 10, of rubber, leather, or other suitable material which furnish a pliable friction material. A collar 11 is mounted on the shaft 8 between the disks 9 and 10, and there is a circumferential groove 11 therein to receive the end of the threading-needle. On one end of the shaft 8 is fast the disk or collar 12, which is preferably keyed to the shaft by a key 12', as shown in Fig. 7. The opposite end of the shaft 8 has loosely mounted thereon an annular disk or collar 13, which is recessed at its outer end to receive an adjusting-nut 14, which turns on a screw-thread 8' cut on the shaft 8. By turning the nut 14 by means of a key engaging with holes 14' therein the disk 13 is moved on the shaft 8 to compress the friction-disks 9 and 10, as desired, in case of any wear of the exposed surfaces thereof. The ends of the shaft 8 are in this instance turned down to act as journals for the friction-roll.

At the end of the base 1, outside of the friction-rolls 3 and 4, is a tension device for the band of lace which is drawn into the machine to be threaded, comprising in this instance a series of rods 15, secured at their ends in bars 16, secured on stands 17 on the base 1. In connection with the series of rods 15, over which the lace extends, is a second series of rods 18, held in the frame 19, pivoted at one end, to be raised, as shown by dotted lines in Fig. 1. The side plates of the frame 19 are notched at 19' to receive the rods 15. As above stated, the lace extends over the series of rods 15, and the closing down of the frame 19, carrying the rods 18, depresses the lace between the rods 15 and acts to put a tension



on the lace as it is drawn into the machine. A spring-catch 20, secured to one of the bars 16, is used in this instance to lock the movable frame 19 in its lowered position. At the  
 5 opposite end of the base 1 are two stands 21 and 22, at the upper ends of which are pivotally mounted on pins 23 two pairs of nippers or clamps, which operate alternately to grip and hold the threading-needle as the lace is  
 10 threaded thereon. Each pair of nippers 24 and 25 consists of two pivoted arms extending one above the other, with their gripping-ends in this instance extending at right angles to the main body of the arms and provided  
 15 with pliable surfaces 26, which engage and hold the threading-needle 27, extending between them and the lace thereon. A spiral spring 28 extends between each pair of nippers and acts to open them when released by  
 20 the operating cam-surface. The nippers 24 and 25 are closed in this instance by means of a sliding cam-surface 29, which has an extension thereon which extends into and moves in the horizontal slot 30' in a bar 30, secured  
 25 to the upper ends of the stand 21 and 22. The cam-slide 29 is moved by a lever or arm 31, pivoted at its lower end to the base 1 and connected with the slide 29 by a pin 32. The ends of the nippers, which are engaged by  
 30 the cam-slides 29, are provided with friction-rolls 33, as shown.

It will be seen that by moving the operating-arm 31 to the left, as shown in Fig. 1, the outer pair of nippers are closed upon the  
 35 threading-needle 27 to grip and hold it, while the inner pair are allowed to be opened by the spring 28 to release the threading-needle 27 and the lace thereon.

The threading-needle 27 is preferably made  
 40 of a flat strip of metal of the desired length and has at its threading end a movable point 27', which is slotted or cut out centrally to fit on the reduced end of the needle 27 and is held thereon to have a pivotal motion by pin  
 45 34. The end 27' is made of substantially the shape shown in the drawings, Figs. 3 and 4—that is, of wedge shape—having the thickened inner end and the pointed extremity. The engagement of the upper and lower edges of the  
 50 inner end of the point 27' with the shoulders 27'' on the needle 27, as shown in Fig. 4, limits the rocking or tilting motion of the point 27'. By this construction as the strip of lace with a series of openings therein is drawn onto  
 55 the needle the point 27' will pass through one opening, and then the body of the lace passing over the thickened end of the movable point 27' will move it into the position shown by dotted lines in Fig. 4 and cause it to pass  
 60 into the next opening. The body of the lace will again move it into the position shown by full lines in Fig. 4 and cause it to pass into the next opening, and so on, so that the lace will be strung onto the needle 27 by the movable  
 65 point 27' passing through the openings therein as the lace is moved along by the friction-rolls 3 and 4. The opposite end of the

threading-needle 27 is connected with a ribbon-holder 35, which preferably consists of a flat strip of metal of desired length, preferably three or four feet, and provided with  
 70 turned-over edges to receive and hold the edges of the ribbon which is drawn into it and also to receive and hold the inner end of the threading-needle 27. The outer end of the  
 75 ribbon-holding strip 35 is preferably connected to and held stationary by a stand or bracket 36, secured at its lower end in a fixed position. A spool 37, carrying the ribbon, is mounted in a suitable support to turn as the  
 80 ribbon is drawn off. A spool (not shown) may be used for carrying the lace at the other end of the machine.

From the above description, in connection with the drawings, the operation of my machine will be readily understood by those  
 85 skilled in the art, and is as follows: The threading end of the needle 27 extends between the friction-rolls 3 and 4 in the groove therein, with the threading-point 27' extending out beyond the rolls. The opposite end  
 90 of the needle 27 is connected with the ribbon-holding strip 35, into which the ribbon has been drawn, and said end is held and gripped by the pair of outer nippers, as shown in Fig.  
 95 1. The end of the strip of lace is strung onto the threading end of the needle and passed between the friction-rolls 3 and 4 and the movable frame 19 closed onto the rods 15 to put a tension on the ribbon. The friction-  
 100 rolls 3 and 4 are operated through the pulley 6 and belt 7 to draw the lace onto the threading-needle 27, the movable point 27' of the needle 27 entering the row of perforations in the lace, as above described. As much  
 105 lace is drawn onto the needle 27 as it will hold to the point where it is held by the outer nippers. Then these nippers are released and the inner nippers closed onto the lace and needle 27 by shifting the lever-arm 31 to the  
 110 right, Fig. 1. The lace is now moved by the attendant along the needle 27 onto the ribbon-holding strip 35 until the lace is taut on the needle. The inner nippers are then released, and the outer nippers gripped onto  
 115 the lace and needle by moving the lever-arm 31, and more lace is drawn in by the rolls 3 and 4 onto the needle until it is again filled, and then the lace is again drawn onto the strip 35, as above described, and the operation  
 120 repeated until the ribbon-holding strip 35 is filled. The strip 35 is then disconnected from the inner end of the needle 27, and the lace is drawn off of the strip 35 and the ribbon with it, leaving the ribbon in the lace  
 125 ready for use.

It will be understood that the details of construction of my machine and the several parts thereof may be varied, if desired. The ribbon-holding strip 35 may be dispensed with  
 130 and the needle grooved or recessed at its inner end to have the ribbon extend therein, with the movable point 27' at the other end thereof.

My machine may be operated by hand or



automatically, and more than one needle and ribbon-holding strip may be used arranged side by side.

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

10 1. In a machine of the class described, the combination with a needle, having a movable point at one end, and means for holding the needle, of friction-rolls for drawing the lace onto the needle, and a tension device for the lace substantially as shown and described.

15 2. In a machine of the class described, the combination with movable clamps or nippers, and means for opening and closing them, and friction-rolls, of a needle held by the nippers, and having a movable point at one end, onto which the lace is drawn by the friction-rolls, substantially as shown and described.

20 3. In the machine of the class described, the combination with two pairs of clamps or nippers, and means for closing one pair and opening the other, and friction-rolls, and means for operating the same, of a strip for holding the ribbon, a needle connected there-  
25 with and held by the nippers, and having a movable point to enter the perforations in the lace, which is strung on the strip and needle, substantially as shown and described.

30 4. In a machine of the class described, the combination with two pairs of clamps or nip-

pers, and means for closing one pair and opening the other, and friction-rolls, and means for operating the same, and a tension device for the lace, of a strip for holding the ribbon, 35 a needle connected therewith and held by the clamps, and having a movable point to enter the perforations in the lace, which is strung on the strip and needle, substantially as shown and described. 40

5. In a machine of the class described, the combination with movable clamps or nippers, and means for opening and closing them, and friction-rolls of a needle, consisting of a flat strip of metal, to be held by the nippers, and 45 having a movable point at one end, onto which the lace is drawn by the friction-rolls, substantially as shown and described.

6. A friction-roll, comprising a central shaft, two disks of pliable material mounted 50 thereon, an intermediate disk with a circumferential groove therein, and two outside disks or collars, one fast on said shaft, and the other loose, and an adjusting-nut turning on a thread on said shaft, and extending within a 55 recess in the loose disk, to adjust the same substantially as shown and described.

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Witnesses:

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