

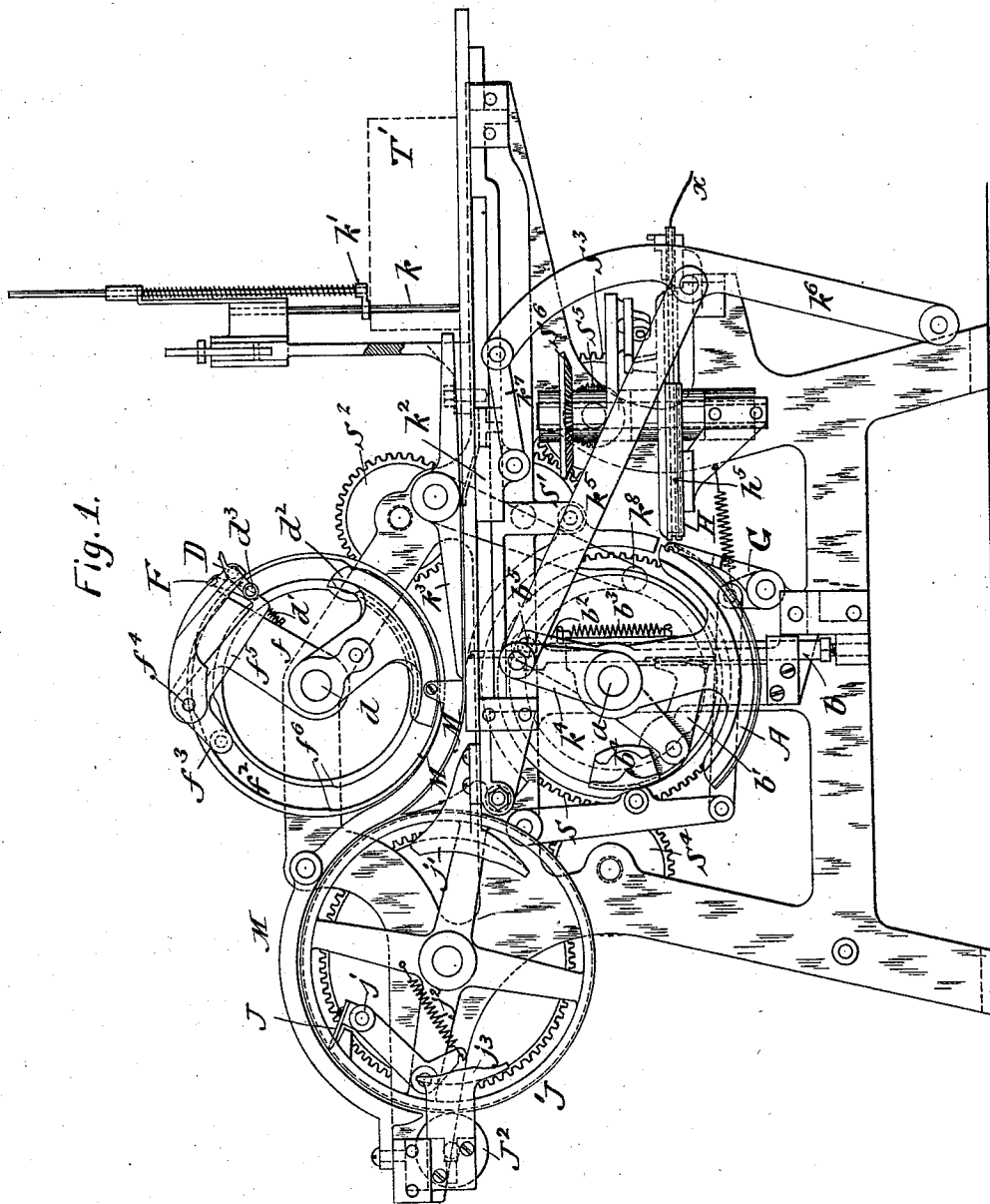
(No Model.)

4 Sheets—Sheet 1

H. L. CHAPIN.
MACHINE FOR STRINGING TAGS.

No. 555,637.

Patented Mar. 3, 1896.



Witnesses

O.R. Mitchell.

John R. Snow.

Inventor

Herbert Lewis Chapin
by his attorney,
J. E. Maynard

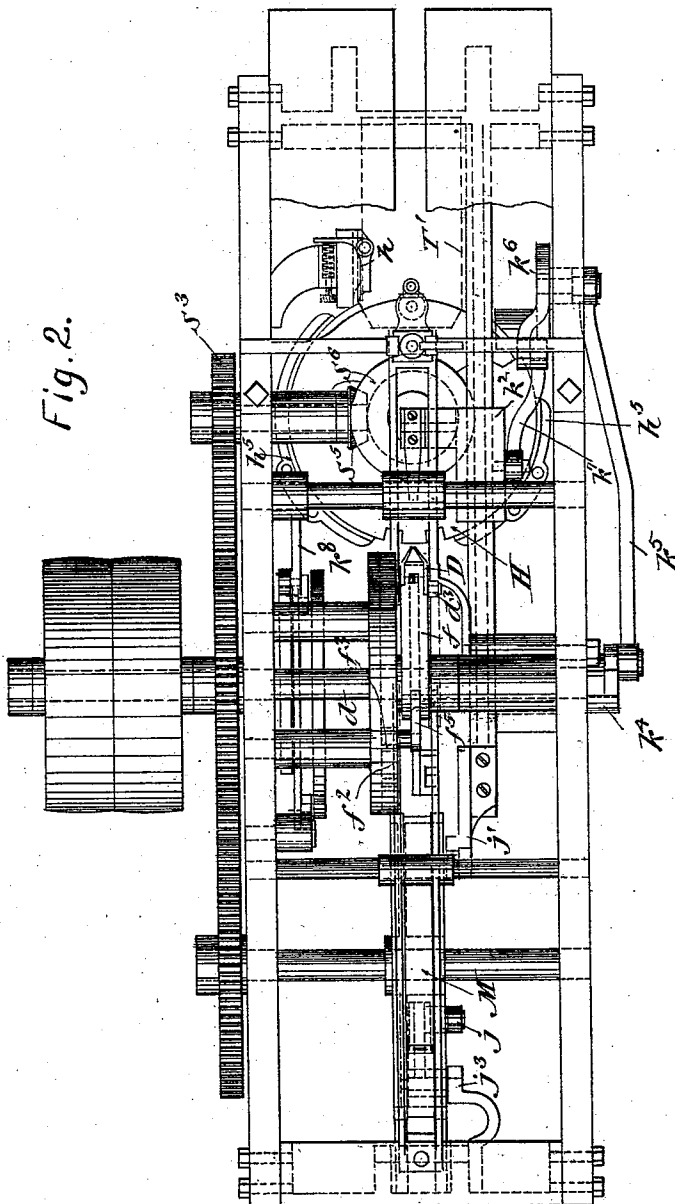
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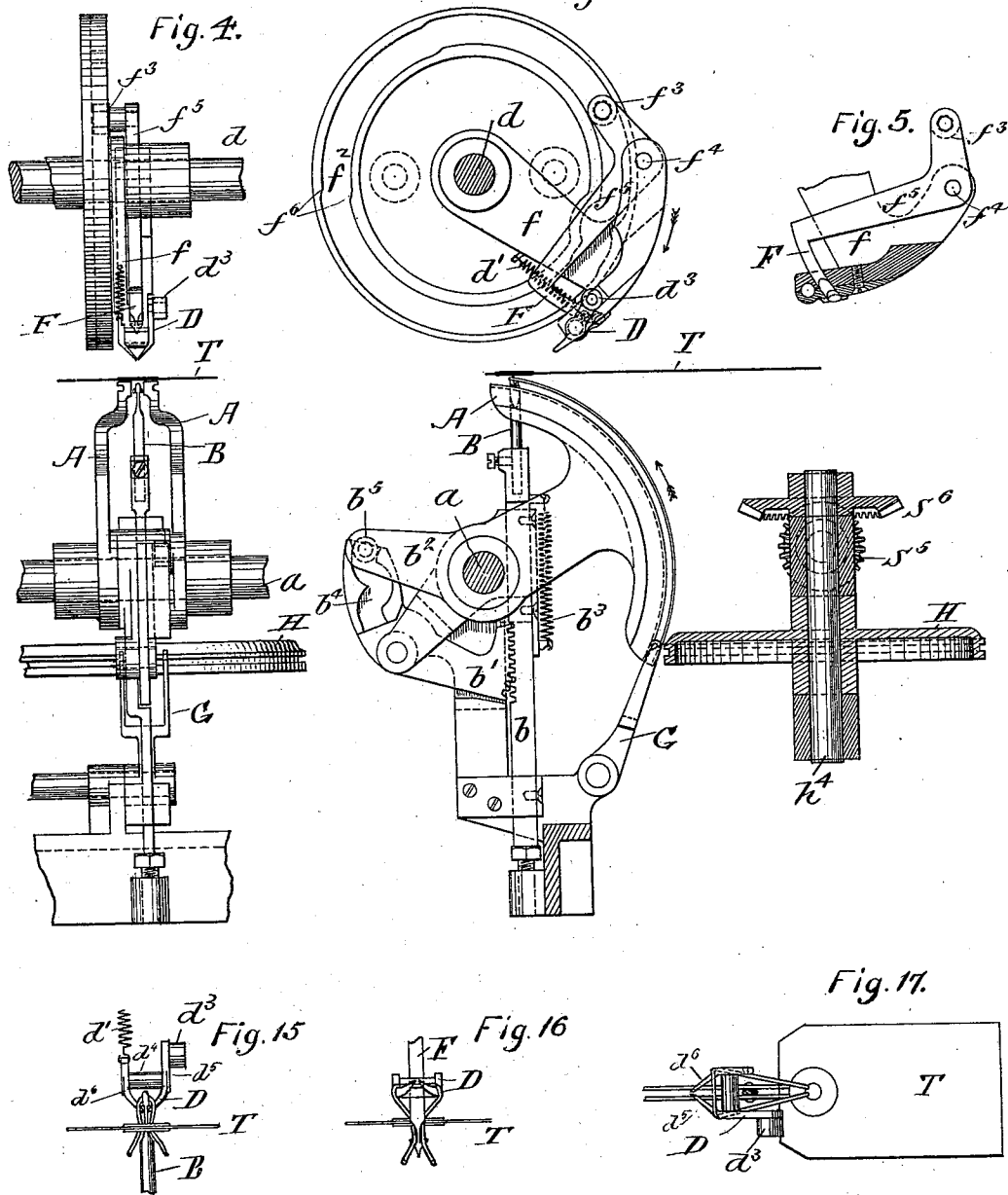
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Fig. 3.



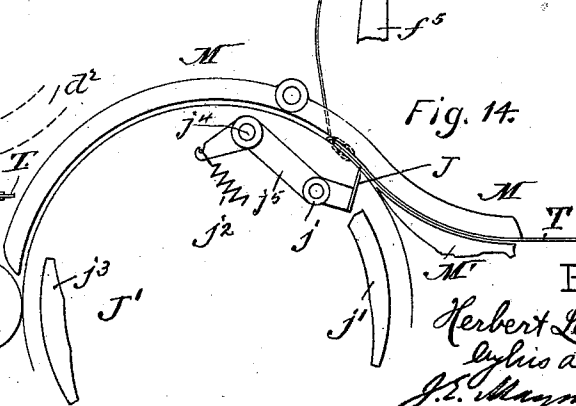
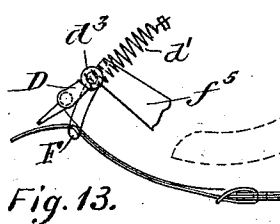
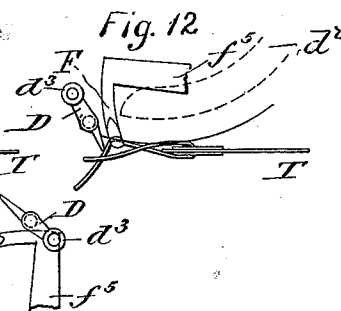
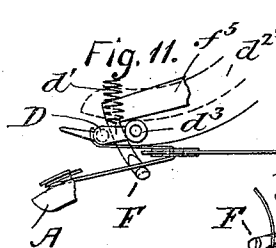
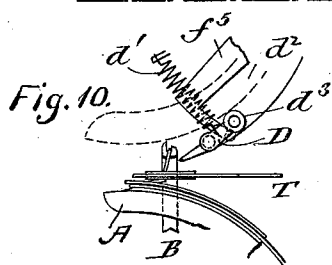
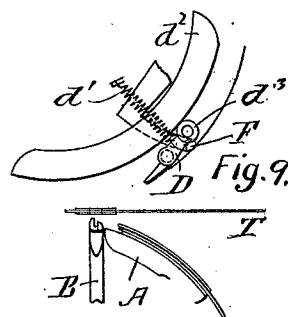
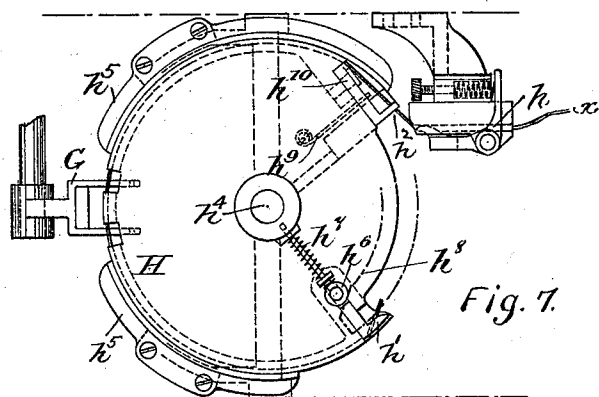
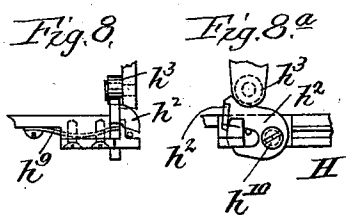
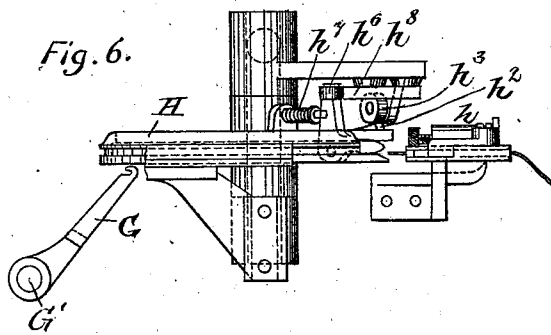
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By his attorney,
J. E. Maynard

UNITED STATES PATENT OFFICE.

HERBERT L. CHAPIN, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO THE
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MACHINE FOR STRINGING TAGS.

SPECIFICATION forming part of Letters Patent No. 555,637, dated March 3, 1896.

Application filed October 1, 1894. Serial No. 524,544. (No model.)

To all whom it may concern:

Be it known that I, HERBERT LEWIS CHAPIN, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Machine for Stringing Tags, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my machine with one side of the frame removed in order to show some of the working parts. Fig. 2 is a plan. Fig. 3 is a side elevation, partly in section, showing the measuring-wheel, the seizing-fingers, the looper, the stringing-needle, the loop-spreader, their relation to each other, and the means by which the movement of the stringing-needle and the loop-spreader are controlled. Fig. 4 is an edge view of Fig. 3, showing the relative position of the stringing-fingers, the looper, and the stringing-needle. Fig. 5 is a detail, partly in section, showing the looping-needle and its carrier. Fig. 6 is a side view, and Fig. 7 is a plan, showing a tension device, the measuring-wheel, the cutter, the string-clamp, and the seizing-fingers which take the string from the wheel. Figs. 8 and 8^a are details of the cutting mechanism. Figs. 9, 10, 11, 12, and 13 are detail views of the looper, the stringing-needle, the loop-spreader, and the looping-needle, illustrating their relative position during the stringing of the tag. Fig. 14 is an elevation showing the tag after it has been strung and seized by the delivering mechanism and the means by which the seizing-pin of the delivering mechanism is actuated. Fig. 15 is a detail showing the loop-spreader about to take the string from the stringing-needle. Fig. 16 is a detail showing the string engaged by the loop-spreader and the looping-needle in position to take it from the loop-spreader, and Fig. 17 is a plan of Fig. 16.

Stringing tags consists in attaching a piece of string of the proper length to a tag and leaving the ends free and is usually done by inserting the doubled end of the string through the eye in the tag and then bringing the two free ends of the string through the loop thus formed; and the main feature of my invention is a machine for doing this, consisting of mechanism for seizing a string near its mid-

dle, inserting the doubled end through the eye of the tag, and then bringing the free ends of the string through the loop thus formed.

It is obvious that the strings may be fed to the machine by hand; but I have invented a mechanism for taking the string from the ball or bobbin, severing the desired length and presenting the string to the seizing-arm of the stringing mechanism, and this constitutes the second feature of my invention.

It is also obvious that the tags may be fed to the machine by hand; but I have invented a device for feeding the tags, consisting in mechanism for taking the tags singly and carrying the tag to a position where the eye of the tag can receive the string from the stringing mechanism, and this constitutes the third feature of my invention.

In the drawings, *a* is the main shaft of my machine, to which is secured the looper *A*, which I have shown made of two segments of a circle with slots in the ends (see Fig. 4) to hold the string which it receives from the fingers *G*. The looper *A* revolving about shaft *a* carries the string to the needle *B*, which comes up between the two parts of the looper *A*, (see Fig. 4,) takes the string in the slot in its end and carries it through the eye of tag *T*. (See Fig. 10.) The needle *B* is actuated by its rack-bar *b*, segmental lever *b'*, and spring *b²*.

One arm of the segmental lever *b'* contains a cam-groove *b⁴* for the cam-roll *b⁵* fast to the arm *b²*, which is fast to shaft *a*.

Attached to the shaft *d* is the arm *f*, to which is secured the loop-spreader *D*, which I have shown made of two separate pieces *d⁵* *d⁶* (see Fig. 15) coming to a point to form the loop-spreader and connected by the pin *d⁴*, which passes through the arm *f*. The portion *d⁵* carries the cam-roll *d³*, and the portion *d⁶* is attached to the spring *d'*. The movement of the loop-spreader is governed by the cam-roll *d³*, its cam *d²*, and spring *d'*, it being brought into position to engage the string by the cam-roll *d³* striking the cam *d²* (see Figs. 10 and 11) and being reversed to release the string by the action of spring *d'* when cam-roll *d³* rolls off cam *d²*. (See Fig. 12. The arm *f* also carries the double-barbed needle *F*. (See Fig. 16.) This needle *F* is mounted on one arm of lever *f⁵*, which is se-

cured to arm f by pin f^4 , which serves as a fulcrum for lever f^5 , the other arm of which carries the cam-roll f^3 of cam-groove f^2 . When the cam-roll f^3 strikes the depression in the cam-groove, it causes the needle on the arm f^5 to move forward, and when the cam-roll comes out of the depression it causes the needle to come back, thus giving it a reciprocating motion. (See Figs. 11, 12, and 13.)

The shaft h^4 carries the measuring-wheel H. (See Figs. 6 and 7.) The periphery of wheel H is grooved in order to hold the string and is partly cut away (see Fig. 7) to allow the fingers G to pass beneath it on their back stroke, and it also has two slots in it to allow the fingers G to pass through it on their upstroke. The covers h^5 serve to prevent the string from falling out of the groove.

The wheel H has a radial groove in it to receive a rod which carries the non-movable member of spring-clamp h' . The movable member of this clamp is on one arm of a bell-crank lever, which has its fulcrum in the groove, and the other arm of which carries cam-roll h^6 . The pressure of spring h^7 , which is coiled about a rod, keeps the clamp closed until the cam-roll h^6 strikes against cam h^8 , when the arm which carries the cam-roll is pushed back against the force of spring h^7 , thus moving the other arm and opening the clamp, which is closed again by spring h^7 when cam-roll h^6 rolls off cam h^8 . The clamp h' takes the string from a ball or bobbin through a tension device h , of any suitable construction, and which I have shown made up of a bell-crank lever, one arm of which is pressed against by a spring which is controlled by a set-screw, and the end of the other arm rests in a groove in a block, through which groove the string passes, so that the pressure on the string is increased or diminished by the set-screw being screwed in or out.

The wheel H carries the cutter h , (see Figs. 8^a and 8,) journaled at h^{10} , which is actuated by the stationary roll h^3 , and the spring h^9 being depressed to cut the string when it strikes the roll and held back by the spring when free from the roll. The fingers G are mounted on rock-shaft G' and take the string from measuring-wheel H, passing beneath it on their back-stroke, where the wheel is cut away and coming up through the two slots and taking the string on their upstroke. (See Fig. 7.)

The discharger J, which I have shown as a pin to engage the tag, is mounted on arm j^5 of a bell-crank lever, which is attached to one of the spokes of wheel J' by the pin j^4 , which serves as a fulcrum for the lever. Attached to the other arm of this lever is the spring j^2 , which is made fast to another spoke of wheel J'. The arm j^5 carries the cam-roll j of cam-surfaces j^1 and j^3 , which surfaces are attached to the framework of the machine. When the cam-roll j is released from cam j^1 , the discharger J is forced against the tag by means

of spring j^2 and is freed from the tag when cam-roll j reaches cam j^3 .

I have shown my machine as being driven by the shaft a , which imparts motion to the other parts by means of gears, the gear S, fast to shaft a , meshing with gear S', which meshes with gear S'', which in turn meshes with the gear fast to shaft d , thus driving shaft d and its connections. Shaft a is also connected to wheel II through gears S' and S'' and beveled gears S⁵ and S⁶ and to wheel J' through gear S⁴.

The operation is as follows: The string x is passed through the tension device h , (see Fig. 7,) when it is seized by clamp h' , which is held open by arm h^8 , but closes as soon as cam-roll h^6 is released from cam h^8 . The string held by clamp h' is carried around wheel II as it revolves until the cam-roll h^6 reaches cam h^8 , when clamp h' is opened and the string released. The cutter h^3 and the roll h^3 are so arranged with reference to cam h^8 that the cutter severs the string just before the clamp h' is opened. As soon as the string is severed, the fingers G seize it near its middle and carry it to the looper A, which revolves on shaft a and carries the string to the needle B, which in turn carries the doubled string through the eye of tag T, as shown in Figs. 9 to 12. The loop-spreader D then passes through the loop of the string, and the reciprocating barbed needle F, passing through the open loop, engages on its back stroke by means of its barb both portions of the string and brings them through the loop. The loop-spreader D then releases the loop, the cam-roll d^3 being released from cam d^2 and loop-spreader D reversed by its spring d^5 . Both portions of the string are clamped between the barbs of needle F and its carrier f , and the movement of the needle and its carrier around shaft d drags the tag T, the clamp h^3 having released it, as above explained, by the strings between guides m m' to a position where it is seized by discharger J, as shown in Fig. 14, when the ends of the string are released from needle F by the roll f^3 , being slightly moved by the cam f^6 , and the discharger J then carries the tag around between guide m and wheel J' until the discharger is pushed away from the tag by cam-roll j engaging with cam j^3 , when the tag is fed out by means of wheels J' and J² and drops into a receptacle.

The tag-feed shown in Figs. 1 and 2 is composed of a pin k , which passes through the eyes of a pile of tags T', a presser-foot k' , which presses lightly by its spring on the pile T', and a reciprocating slide k^2 , by which the lowermost tag of the pile T' is carried forward until its eye is in line with the needle B, where it is clamped by the clamp-lever k^3 . The slide k^2 is reciprocated by the crank k^4 , link k^5 , arm k^6 , and link k^7 , as will be clear from Fig. 1, and the clamp k^3 is reciprocated by the arm k^8 and its cam, as shown in Figs. 1 and 2. The pin k is so adjusted that it does

not extend through the lowermost tag of the pile T', and there is a feeding-finger (shown in dotted lines in Fig. 1 and in plan in Fig. 2) which extends from slide k^2 and whose point engages the eye of the lowermost tag, so that when slide k^2 moves forward the lowermost tag of the pile is carried under clamp k^3 , which reciprocates, slightly clamping that tag, when slide k^2 returns to its first place to take a second tag, the spring-pin pulling out of the eye of the tag held by the clamp and engaging at the end of the back stroke of slide k^2 with the eye of the lowermost tag of the pile T'.

15 What I claim as my invention is—

1. The tag-stringing machine above described consisting of mechanism for looping the string; mechanism for inserting the loop

through the eye of the tag, and mechanism for carrying the free ends of the string through the loop, all substantially as described. 20

2. In combination tag-feeding mechanism; string-feeding mechanism, and mechanism for looping the string; inserting the loop through the eye of the tag, and carrying the free ends of the string through the loop; all substantially as described. 25

3. The tag-feeding mechanism above described consisting of a pin to hold a pile of tags; a feed-slide; its feeding-pin; a clamp; and mechanism to operate the feed-slide and the clamp; all substantially as set forth. 30

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Witnesses:

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