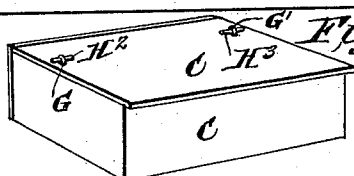
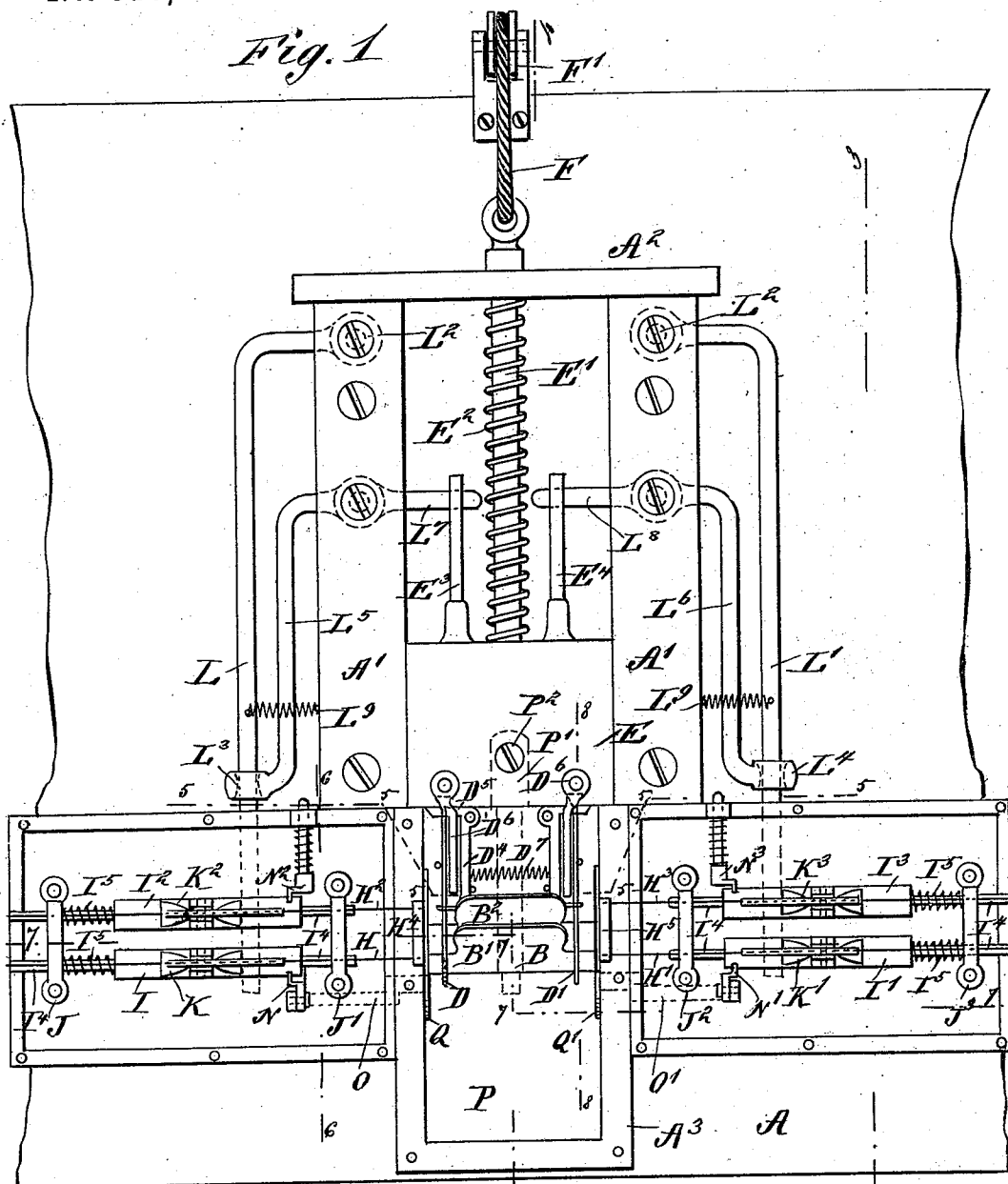


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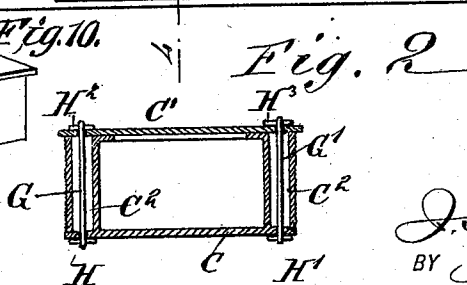
MACHINE FOR ATTACHING ELASTIC BANDS TO BOXES.

Patented Dec. 12, 1893.



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MACHINE FOR ATTACHING ELASTIC BANDS TO BOXES.

No. 510,706.

Patented Dec. 12, 1893.

Fig. 3

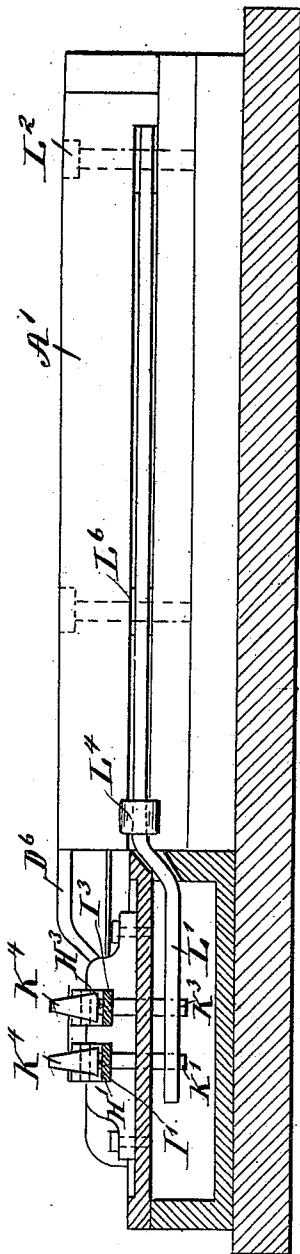
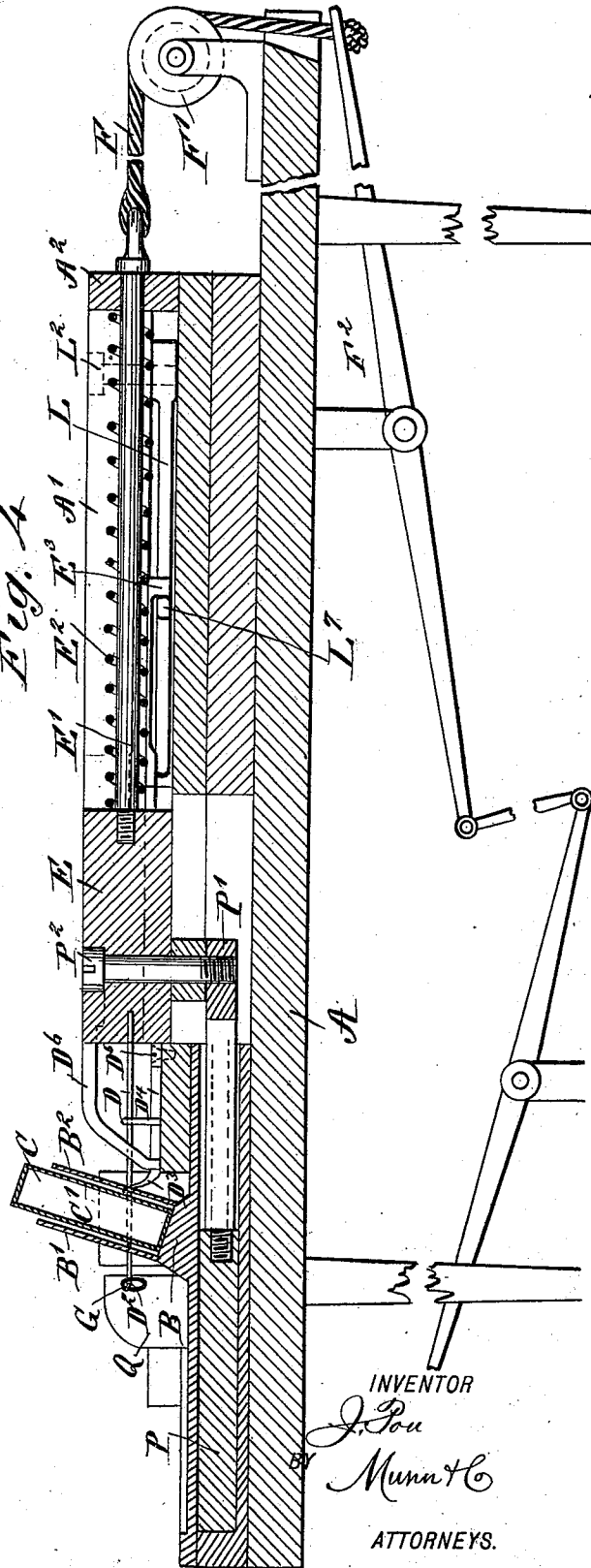


Fig. 4



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(No Model.)

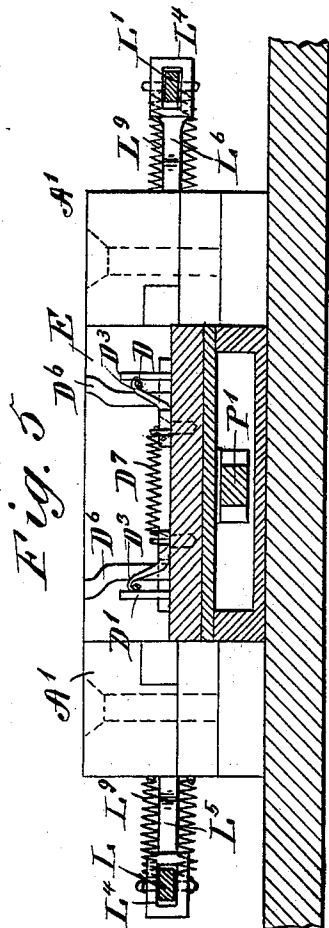
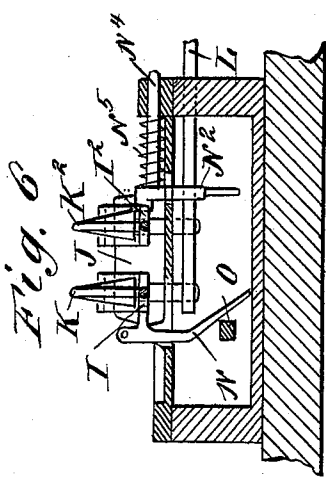
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J. POU.

MACHINE FOR ATTACHING ELASTIC BANDS TO BOXES.

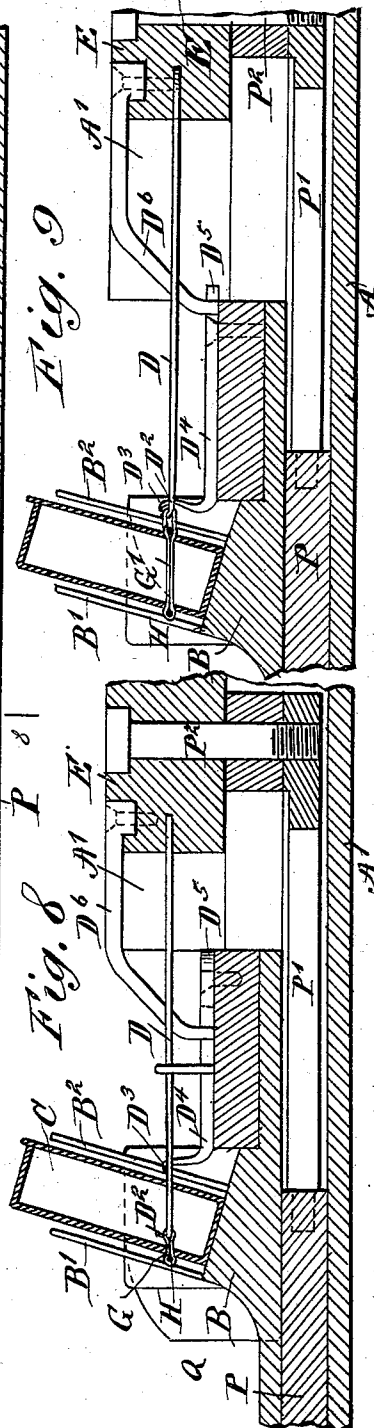
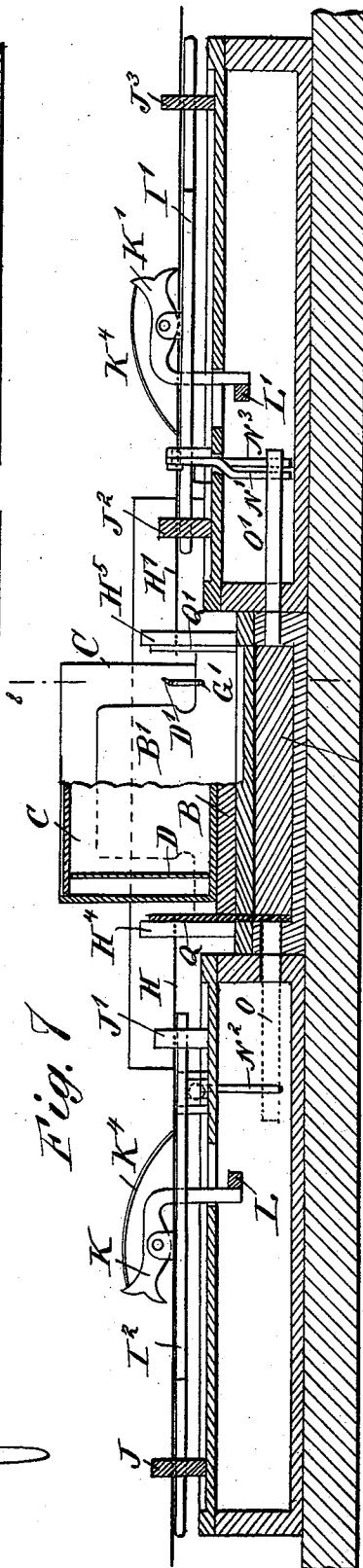
No. 510,706.

Patented Dec. 12, 1893.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSÉ POU, OF HAVANA, CUBA.

MACHINE FOR ATTACHING ELASTIC BANDS TO BOXES.

SPECIFICATION forming part of Letters Patent No. 510,706, dated December 12, 1893.

Application filed December 3, 1892. Serial No. 453,938. (No model.)

To all whom it may concern:

Be it known that I, JOSÉ POU, of Havana, Cuba, have invented a new and Improved Machine for Attaching Elastic Bands to Boxes, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for conveniently, rapidly and accurately attaching elastic bands or other springs to match boxes and other similar devices, to hold the cover or lid in a closed position.

The invention consists of a reciprocating needle adapted to pass through the cover and bottom of a box to form openings therein and provided with a hook for supporting an elastic band and drawing it through the openings in the box, and wire feeding devices for feeding a wire on each side of the box through the elastic band.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a sectional side elevation of the finished box. Fig. 3 is an enlarged transverse section of the improvement on the line 3—3 of Fig. 1. Fig. 4 is a similar view of the same on the line 4—4 of Fig. 1. Fig. 5 is an enlarged sectional front view of the improvement on the line 5—5 of Fig. 1. Fig. 6 is an enlarged transverse section of the same on the line 6—6 of Fig. 1. Fig. 7 is an enlarged sectional front view of the same on the line 7—7 of Fig. 1. Fig. 8 is a transverse section of the same on the lines 8—8 of Figs. 7 and 1. Fig. 9 is a like view of the same in a different position, and Fig. 10 is a perspective view of the finished box.

The improved machine is mounted on a table A, supporting a block B, having a slightly inclined top surface as plainly shown in Fig. 4, and also provided at the front and rear with guard plates B' and B², between which the match box C, is placed to hold the same in position on the block B during the operation of attaching the rubber bands and

wires to the box to hold the lid C', of the box in position. Each box C is provided on its sides with special compartments C², through which are adapted to pass the needles D and D', for forming openings in the cover C', and the bottom or back of the box for the passage of the rubber bands, as hereinafter more fully described, the said rubber bands passing through the compartments C² so as not to come in contact with the matches or other articles placed in the main compartment of the box. The needles extend horizontally and are secured with their shanks in a block E, mounted to slide transversely in suitable guideways A', arranged on top of the table A.

On the rear end of the block E is secured a rod E', guided in a cross piece A², connecting the bearings A' with each other, as plainly shown in Figs. 1 and 4. On this rod E' is coiled a spring E², which rests with one end on the cross bar A² and with its forward end on the block E so as to hold the latter in a normal forward position, as plainly shown in Figs. 1 and 4. The rear end of the rod E' is connected with one end of a rope F, passing over a pulley F', journaled on the table A, the said rope then extending downward to connect with the free end of a treadle F², arranged on the floor and adapted to be actuated by the feet of the operator, the latter sitting on the front of the machine to handle the boxes C by placing the same in position on the block E and removing the same therefrom after the bands are attached, as hereinafter more fully described. Each of the needles D is provided on its front end with a small hook D², adapted to support an elastic band G, or G' hung on this hook by the operator seated in front of the machine.

It will be seen that when the operator presses the treadle F², the rope F exerts a pull on the rod E' so as to cause the block E to slide rearwardly, thereby moving the needles D and D' away from the fixed block B and its supporting guard plates B' and B². The operator can now place the box C into position on the inclined top surface of the block B between the guard plates B' and B² and when the pressure on the treadle F is released, the spring E' returns the block E so that the needles D and D' pass through the cover C' and the compartments C², to finally pass through

the bottom or back of the box into the position as shown in Fig. 4. The operator now places rubber bands G and G' onto the hooks D² of the needles D and D' respectively, so that on the next rearward movement of the block E and needles, the said rubber bands G and G' are drawn through the compartments C² of the box C, the outer ends however, being engaged by wires H and H', and the inner ends by wires H² and H³, to hold the bands in a stretched position in the compartments so as to hold the lid C' shut on the box. The wires H, H', H² and H³, are moved by suitable feeding devices presently to be described, to engage the rubber bands in the manner above set forth.

The wire feeding mechanisms are provided with longitudinally-extending bars I, I', I² and I³, over which pass the wires H, H', H² and H³, each unwinding from a suitable reel arranged to the sides of the machine. Each of the bars I, I', I² and I³ is formed with reduced ends I⁴, fitted to slide longitudinally in suitable bearings, the bars I and I² being thus mounted to slide in bearings J and J', and the other bars I' and I³ in bearings J² and J³, supported on the table A. The wires H and H' are in alignment with each other and are adapted to pass between the guard B' and the back of the box C, while the other wires H² and H³, are likewise in alignment, but are adapted to pass between the guard plate B² and the cover C' of the box. Each of the bars I, I', I² or I³ is mounted to slide and is pressed by a spring I⁵, coiled on the outermost reduced portion and pressing with one end against the respective bearing J or J³ and with the inner end on the enlarged part of the respective bar. On the bars are fulcrumed the gripping levers K, K', K² and K³, respectively, each pressed on by a spring so as to move the lever in gripping contact with the respective wire passing over the corresponding bar I, I', I² or I³. Each of the gripping levers is formed with a downwardly-extending arm, and the arms of the levers K and K² are adapted to be engaged by the free end of a lever L and the arms of the levers K' and K³ are likewise adapted to be engaged by a lever L'. The levers L and L' extend transversely and are pivotally-connected at L², with the guideways A' for the block E, as plainly shown in Figs. 1 and 3. The levers L and L' are engaged by eyes L³ and L⁴, of shifting levers L⁵ and L⁶, also fulcrumed on the guideways A' and provided with longitudinally-extending arms L⁷ and L⁸, respectively, adapted to be engaged by hooks E³ and E⁴, projecting from the rearward end of the block E. A spring L⁹, is connected with each of the arms L and L' to swing the same inwardly out of contact with the depending arms of the levers K, K² and K', K³ respectively.

It will be seen that when the block E is in its innermost position, as illustrated in Figs. 1 and 4, the hooks E³ and E⁴ engage the arms

L⁷ and L⁸ of the levers L⁵ and L⁶ respectively, so as to hold the other levers L and L' in an outermost position, that is against the depending arms of the gripping levers K, K² and K', K³, respectively, thus holding the said gripping levers out of contact with the respective wires on the corresponding bars I, I² and I', I³ respectively.

In order to hold the several bars I, I', I², I³ in an outermost position against the tension of the springs I⁵, I provide locking levers N, N', and locking bars N² and N³, respectively, engaging corresponding notches in the sides of the said bars, as plainly illustrated in Figs. 1 and 6. The levers N and N' are pivoted on suitable brackets erected on the frame A and their lower ends are adapted to be engaged by arms O and O', respectively, projecting from the sides of a block P, connected by a rod P' and bolt P², with the block E, so that the latter in its rearward or forward movement carries the block P in the same direction. The locking bars N² and N³ are also adapted to be engaged by the arms O and O' after the latter have passed the depending parts of the levers N and N' on the rearward sliding motion of the block P. Each of the locking bars N² and N³ is secured on a rod N⁴, mounted to slide transversely in a suitable bearing erected on the frame A. A spring N⁵, is coiled on each rod N⁴ to press the bar N² or N³ outward to hold the same in engagement with the corresponding notch in the respective wire supporting bar I² or I³.

In order to disengage the rubber band G or G' from the hook D² of the respective needle D or D' after the wires H² and H³ have been inserted at the innermost ends of the said bands at the front surface of the cover C', the following device is provided: A finger D³, is adapted to push that end of the rubber band G or G' off the corresponding hook D², as illustrated in Fig. 9, at the time the block E moves in its outermost rearward position, the said finger D³ being formed on the outer ends of a bell crank lever D⁴, provided with an angular arm D⁵, adapted to be engaged by an arm D⁶, secured on the block E. Thus when the latter moves rearwardly the end of the arm D⁶ finally engages the angular arm D⁵ of the lever D⁴ so as to impart a swinging motion to the same, whereby the finger D³ moves over the hook D² of the respective needle D or D' and thus pushes off the end of the respective rubber band G and G'. A spring D⁷ connects the arms D⁴ so that on the return movement of the block E, said arms are caused to assume their normal position.

The operation is as follows: When the several parts are in the position illustrated in Figs. 1, 3 and 4, the block E is in its innermost position and the needles D and D' have passed through the box C as above described, and then the operator places the elastic bands G and G' respectively, on the hooks D² of the needles, after which the operator presses the treadle F² so as to cause a rearward sliding

of the block E. As soon as the block E commences to move rearwardly, the hooks E³ and E⁴ disengage the arms L⁷ and L⁸ of the levers L⁵ and L⁶ respectively, to permit the springs L⁹ to impart an inward swinging motion to the levers L and L' respectively, whereby the said levers move away from the depending arms of the gripping levers K K', K² and K³. The springs K⁴ of the latter now cause said gripping levers to engage the wires H, H', H² and H³ respectively, extending over the corresponding bars I, I', I² and I³ respectively. The rearward sliding of the block E causes a receding of the needles D and D', so that the rubber bands G and G' held on the said needles are carried along and drawn through the apertures previously formed by the needles in the back or bottom of the box C. As soon as the needles have passed with their hooks inside of the compartments C² and part of the rubber bands still extends on the outside of the back or bottom of the cover, the arms O and O' strike the locking levers N and N' respectively, so that the latter disengage the notches in the respective bars I and I', whereby the latter are released and forced inwardly toward each other by the action of their springs I⁵. This inward sliding of the bars I and I', carries the wires H and H' in the same direction, as the wires are clamped to the said bars by the spring-pressed gripping levers K and K' respectively. The inner ends of the wires H and H' then pass through the projecting ends or loops of the elastic bands G and G' at the outer surface of the back or bottom of the box, as plainly illustrated in Fig. 8. It is understood that the movement of the bars I and I' is limited by the enlarged part of the bars striking against the bearings J' and J² so that only a certain length of wire is fed onto the back of the box C in engagement with the respective loops of the bands G and G'. Now, on the further rearward movement of the blocks E and P, knives Q and Q' held on the block P cut the wire on the sides of the box, and at about this time the needle hooks D² of the needles D and D' have now passed clear through the compartments C² and the cover C', it being understood that the rubber bands G and G' are now stretched, their outer ends being held in place by the pieces of wire cut off from the wires H and H'. As soon as the hooks D² of the needles D and D' are passed, the sides of the guard plate B² within the arms O and O' engage the arms N² and N³ to move the same rearwardly, thereby releasing the bars I² and I³ respectively. The latter are thus forced inward toward each other by the action of their springs I⁵, so that the wires H² and H³ are fed into the loops of the bands G and G' at the front surface of the cover C'. At the same time, the arms D⁶ on the block E trip simultaneously, the two levers D⁴, so that their fingers D³ push the ends of the bands G and G' off the hooks D² of the needles D and D', so that the rubber bands engage the

wires H² and H³ at the outer surface of the cover C'. At the same time the knives Q and Q' cut off the wires H² and H³ so that the pieces of wire engaging the bands G and G' on the front surface of the cover C' remain on the cover. The operator now removes the box C from the block B, inserts a new box in its place and then releases the pressure on the treadle F² so that the blocks E and P return to their normal positions. In doing so the needles D and D' penetrate the box, as above described to form openings for the passage of the rubber bands G and G', at the same time the hooks E³ and E⁴ again engage the arms L⁷ and L⁸ of the levers L⁵ and L⁶ respectively, to swing the same outward to cause a light outward swinging motion of the levers L and L' which by engaging the depending arms of the gripping levers K, K² and K³, K³ respectively, move the latter out of gripping contact with their respective wires, and then the still further outward swinging of the levers L, L', and further pressure on the depending arms of the gripping levers, causes a return or outward sliding of the several bars I, I² and I', I³ respectively, and consequent compressing of the springs I⁵. As the block P moves forward into its normal position, the arms O and O' release the arms N² and N³, and finally the levers N and N', so that the said levers and arms finally engage and lock the bars I, I' and I², I³ in position by engaging their notches as above described and illustrated in Fig. 1. The wires H, H', H² and H³ remain stationary during the return or outward movement of the bars I, I', I² and I³, so that on the next following inward sliding of the said bars, the wires are fed again inward in the manner above described, it being understood that the gripping levers K, K', K² and K³ lock the wires to the respective bars during their inward movement. The inner ends of the wires preferably pass through bearings H⁴ and H⁵, on the inner faces of which operate the knives Q and Q' held on the block P, so as to insure proper cutting of the wires during the sliding of the block E, as above described.

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

1. In a machine of the class described, the combination of a reciprocating needle adapted to pass through the cover and bottom of a box to form openings therein and provided with a hook for supporting an elastic band and drawing it through the said openings in the box, and wire feeding devices for feeding a wire on each side of the box, through the elastic band, substantially as described.

2. In a machine of the class described, the combination of a reciprocating needle adapted to pass through the cover and bottom of a box to form openings therein and provided with a hook for supporting an elastic band and drawing it through the said openings, wire feeding devices for feeding a wire on each

side of the box through the elastic band, and cutting devices for cutting off the wires after they have been passed through the said bands, substantially as described.

3. In a machine of the class described, the combination with a supporting block and guard plates held thereon for supporting the box, of reciprocating needles provided with hooks and adapted to pass through the box supported on the said block to form openings therein for the passage of the elastic band, and wire feeding devices operating in pairs on the retreat of the said needles so as to insert wires in the ends of the bands, substantially as shown and described.

4. In a machine of the class described, the combination with a supporting block and guard plates held thereon for supporting the box, of reciprocating needles provided with hooks and adapted to pass through the box supported on the said block to form openings therein for the passage of the elastic band, and wire feeding devices operating in pairs on the retreat of the said needles so as to insert wires in the ends of the bands, and means, substantially as described, for simultaneously actuating the said wire feeding devices with the return movement of the needles, substantially as shown and described.

5. In a machine of the class described, the combination with a supporting block and guard plates held thereon for supporting the box, of reciprocating needles provided with hooks and adapted to pass through the box supported on the said block to form openings therein for the passage of the elastic bands, wire feeding devices operating in pairs on the retreat of the said needles so as to insert wires in the ends of the bands, and cutting devices for cutting off the wires after they are inserted in the bands, substantially as shown and described.

6. In a machine of the class described, the combination of a reciprocating needle provided with a hook and adapted to pass through a box to form openings therein for the passage of the elastic band, wire feeding devices for feeding the wire on each side of the box through the elastic band, wire cutting devices for cutting off the wires after they have been inserted in the elastic bands, and fingers for pushing the bands off the hooks of the needles, substantially as described.

7. In a machine of the class described, the combination with a reciprocating block, of needles having hooks and secured in the said block, levers provided with fingers adapted to push the bands off the hooks of the needles, and arms held on the said block, and adapted to actuate the said finger levers, substantially as shown and described.

8. In a machine of the class described, the combination with sliding and spring pressed bars, over which the wires pass, grippers for clamping the wires to the bars, and means for operating the grippers and moving the bars outward against the tension of their springs, of

locking levers for locking the bars against the tension of their springs and means for operating the locking levers to release the said bars, substantially as described.

9. In a machine of the class described, the combination with a reciprocating needle carrier, of sliding bars, a wire gripper on each bar for holding the wires to said bars, and means for operating the wire grippers from the needle carrier, substantially as described.

10. In a machine of the class described, the combination with a reciprocating needle carrier, of spring pressed and sliding bars, a wire gripper on each bar, and means for operating the wire grippers and sliding the said bars outward to compress their springs from the needle carrier, substantially as described.

11. In a machine of the class described, the combination with a reciprocating needle carrier, of spring pressed and sliding bars, a wire gripper carried by each bar, locking levers for locking the said bars against the tension of their springs, and means for operating the said levers and grippers from the needle carrier, substantially as described.

12. In a machine of the class described, the combination with a reciprocating needle carrier, of sliding bars over which the wires pass, grippers on the said bars and provided with downwardly projecting arms, pivoted and spring pressed levers engaging the arms of the grippers, and connections between the said levers and the needle carrier for operating the said levers therefrom, substantially as described.

13. In a machine of the class described, the combination with a reciprocating needle carrier provided with projecting hooks, of sliding bars over which the wires pass, grippers on the bars and provided with downwardly projecting arms, pivoted and spring pressed levers engaging the arms of the grippers, and pivoted arms engaging the said levers and adapted to be engaged by the hooks of the needle carrier, substantially as described.

14. In a machine of the class described, the combination with a reciprocating needle carrier, and arms connected with and operated by the needle carrier, of sliding and spring pressed bars over which the wires pass, grippers on the bars, means for operating the grippers and moving the said bars outward against the tension of the springs, and locking levers engaging the sliding bars and adapted to be engaged by the arms of the needle carrier, substantially as described.

15. In a machine of the class described, the combination with a reciprocating needle carrier, provided with hooks, and arms connected with and operated by the carrier, of spring pressed and sliding bars over which the wires pass, the grippers on the bars and provided with downwardly projecting arms, pivoted and spring pressed levers engaging the arms of the grippers, pivoted arms engaging the said levers and adapted to be engaged by the hooks of the needle carrier, and locking le-

vers engaging the sliding bars and adapted to be engaged by the arms carried by the said needle carrier, substantially as set forth.

16. In a machine of the class described, the
5 combination with a reciprocating carrier, and
needles having hooked ends carried by said
carrier, of spring pressed and sliding bars
over which the wires pass, grippers on the
bars, locking levers engaging the said bars,
10 pivoted fingers for removing the band from
the needles, and means for operating the grip-
pers, locking levers, fingers and moving the
sliding bars outward against the tension of
their springs from the needle carrier, sub-
15 stantially as described.

17. In a machine of the class described, the
combination with a reciprocating carrier pro-
vided with needles having hooked ends, of
sliding and spring pressed bars over which
20 the wires pass, grippers on the bars, means for
operating the grippers and moving the bars

outward against the tension of their springs,
from the needle carrier, locking levers en-
gaging the sliding bars, arms connected with
the needle carrier and engaging the locking 25
levers, pivoted fingers for pushing the bands
off the needles, and an arm carried by the
needle carrier and engaging the said fingers,
substantially as described.

18. In a machine of the class described, the 30
combination with a reciprocating carrier, and
a needle carried by said carrier and having a
hooked end, of a pivoted angular lever hav-
ing a finger on one member, and an arm se-
cured to the carrier and engaging one mem- 35
ber of the angular lever, substantially as de-
scribed.

JOSÉ POU.

Witnesses:

JUAN B. VIDAL,
ANTO. GREGOND.