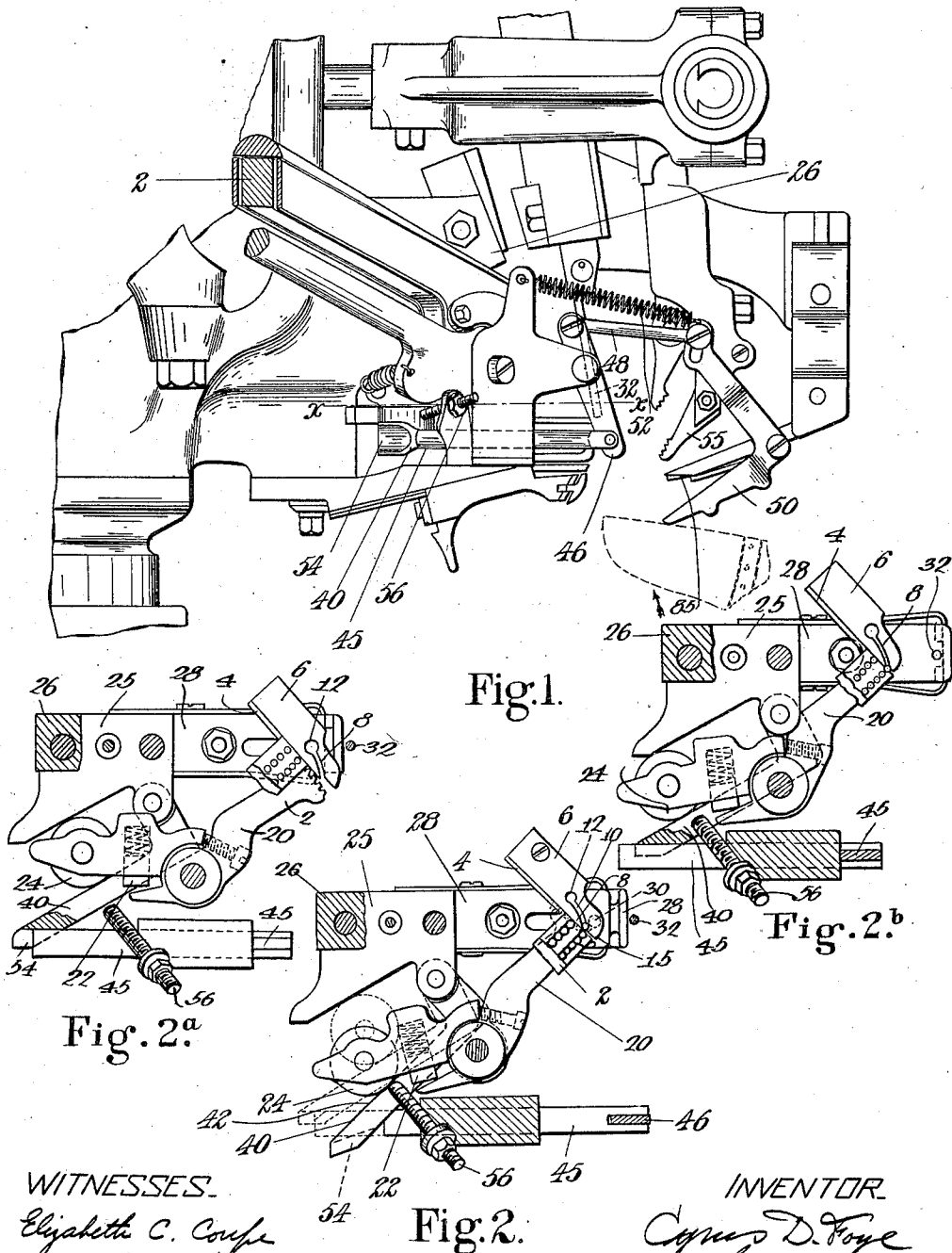


C. D. FOYE.
TACK FEEDING MECHANISM.
APPLICATION FILED MAY 16, 1908.

1,032,279.

Patented July 9, 1912.

3 SHEETS—SHEET 1.



WITNESSES.

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Fig. 2.

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3 SHEETS-SHEET 2.

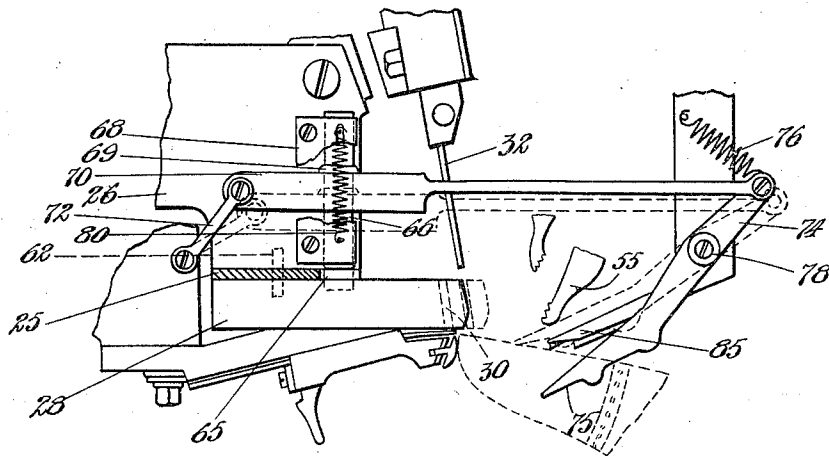


Fig. 3.

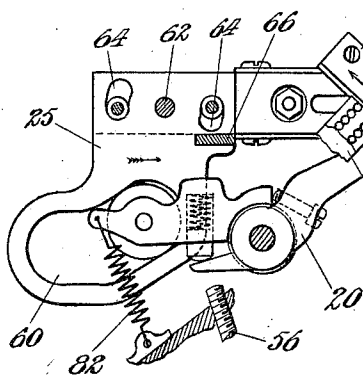


Fig. 4.

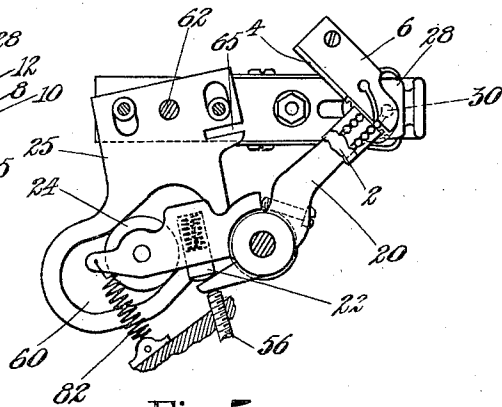


Fig. 5.

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3 SHEETS-SHEET 3.

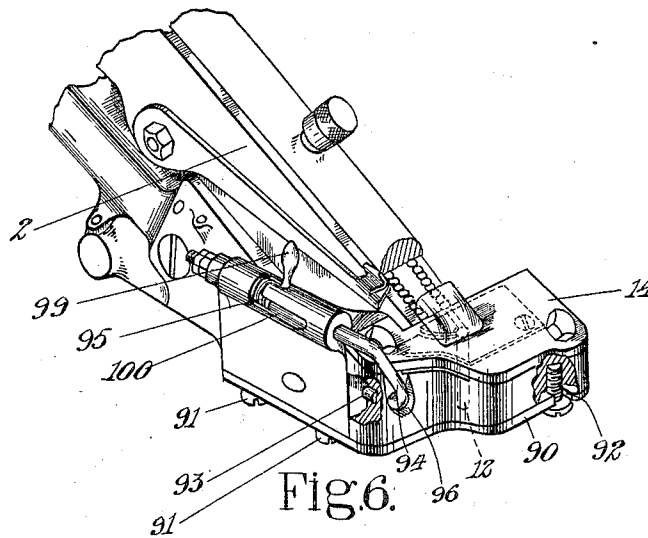


Fig. 6.

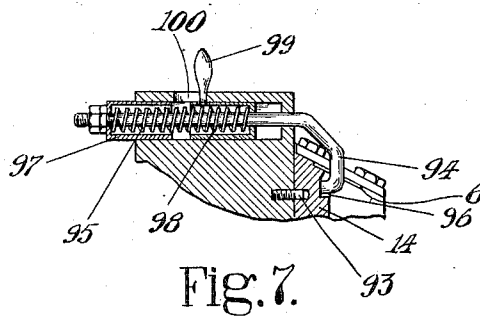


Fig. 7.

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UNITED STATES PATENT OFFICE.

CYRUS D. FOYE, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TACK-FEEDING MECHANISM.

1,032,279.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed May 16, 1908. Serial No. 433,255.

To all whom it may concern:

Be it known that I, CYRUS D. FOYE, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Tack-Feeding Mechanisms, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to mechanism for inserting fastenings and particularly to means for supplying fastenings in an inserting machine.

The invention has for its object to provide improved means for controlling the delivery of fastenings whereby waste of fastenings by delivery to the inserting mechanism when no work is in position to receive them will be avoided.

The invention is herein shown, for the purpose of explanation, as embodied in the tacking mechanism of a lasting machine of the type shown in United States Letters Patent No. 584,744, but nothing herein is to be understood as limiting the invention to use in any particular machine except as definitely stated in the claims.

A very important feature of this invention consists in the provision in a tack delivery controlling mechanism of means for delivering a tack in position to be driven during the first actuation of the driver after the controlling mechanism has been set to start the delivery of tacks. In this respect this invention possesses a marked advantage over the prior art as represented by the United States Letters Patent No. 663,471. In that construction a complete cycle of operation of the machine is required before a tack is presented for insertion. In the preferred constructions embodying the present invention the supplying mechanism is stopped with a tack in position to be delivered to the driver in its first descent after the supply mechanism is restarted. This feature of this invention has the advantage that no delay occurs in the use of the machine before a tack can be driven, and the further important advantage, when embodied in a lasting machine, that a tack is supplied in position to be driven for holding the portion of upper that is overworked in

the first cycle of the operation of the machine.

It is a further characteristic of the preferred embodiments of the invention that the tack supplying mechanism is not dependent upon the driver for its actuation and can be stopped without necessarily stopping the driver.

An important feature of the invention consists in providing a controllable connection between a continuously moving actuator and the tack delivering devices and means whereby said connection is adjusted automatically when the work, as for example, a shoe, is presented and removed. In the machine shown a cam plate serves as the actuator and receives a continuous reciprocatory movement while the machine is in operation. Coöperating with this cam plate is a lever that actuates the tack separator and causes a tack to be separated from a row of tacks in the raceway and delivered to the tack block at each operation of the machine. I have located a movable shifting device in position to be engaged by the shoe when the latter is presented to receive a tack from the tack block and have connected this shifter with the tack supplying mechanism so that the latter is controlled by the position of the shifter. In accordance with a further feature of this invention the parts of the tack supplying mechanism are arranged to maintain connection at all times while being adjusted by the shifter to start and to discontinue the delivery of tacks. In an illustrated embodiment of this feature of the invention the cam plate has a movable connection with its carrier and the shifter is connected with means by which the cam plate is locked in a fixed relation to its carrier. Obviously many other arrangements might be devised which would be the mechanical equivalents of that shown.

In accordance with another feature of this invention the lever that actuates the tack separator is held in operative relation to the cam plate by a movable controlling member which is connected to the shifter and adapted, when no shoe is in the machine, to permit the lever to remain at rest at the outer limit of the throw effected by the cam plate.

A novel characteristic of this invention which is of great importance is that when

the delivery of tacks is discontinued the feeding devices come to rest in such a stage of their cycle of operation that a tack will be delivered at once when the devices are restarted. In the illustrated mechanism the tacks are supplied by reciprocatory separating and delivering devices which separate a tack during their stroke in one direction and deliver the tack during their return movement. Provision is therefore made that the mechanism shall come to rest with a tack separated and ready to be delivered on the first stroke after the mechanism is again set into operation.

A further improvement in the tack supplying mechanism comprised in this invention consists in a novel construction of the feeding mechanism whereby access can be readily gained to the tack separating devices for removing tacks that sometimes get caught or jammed in said devices, or for replacing worn parts of said devices. To this end the end block or delivery table over which the separated tack is moved to be delivered is formed so that it can be readily detached from the other portions of the feeding mechanism and will expose the separating devices to the view and manipulation of the operator.

These and other features of the invention, including certain details of construction and combinations of parts, will be more fully explained in connection with the following description, and will then be pointed out in the claims.

Figure 1 is a side elevation of a portion of the lasting machine, before referred to, with the present improvements applied thereto; Fig. 2 is a sectional plan view on the line $x-x$ of Fig. 1; Figs. 2^a and 2^b are views showing different positions of the parts illustrated in Fig. 2; Fig. 3 is a side view showing another construction; Figs. 4 and 5 are plan views showing in different positions parts that appear in Fig. 3; Fig. 6 is a perspective view of the end portion showing the raceway and the tack feeding mechanism, and illustrating also means for removably attaching the end block or delivery table of the raceway; Fig. 7 is a sectional view showing the latch for the delivery table.

The machine is provided with a raceway having one or more grooves to the lower ends of which tacks are automatically conducted. A device 4, shown as a blade traversing the end of the raceway, passes between the lowermost tack in the raceway groove that occupies the operative position and the tack next above the lower one. A delivering plate 6 having a pointed finger 8 and a slot 10 inclined to the path of its movement forces the separated tack toward the discharge opening 12 in the table or end block 14 Fig. 7. The separating and de-

livering devices 4 and 6 are connected for endwise movement to a rack bar 15 that is engaged by teeth on the front end of a lever 20. This lever is shown as formed in two parts which are connected to yield against the pressure of the spring arranged in a socket in one part of said lever and pressing against a plunger 22 which engages the other part of the lever. The lever has a roll 24 on its rear end that engages the inclined face of a cam plate 25. This plate is permanently mounted upon its carrying slide 26 which is connected to the main shaft of the machine for continuous endwise reciprocation as shown in said Letters Patent No. 584,744. The slide 26 also carries the tack block 28 which has the driver passage 30 provided with any usual tack supporting fingers. The tack block moves from a retracted position where it receives a tack from the discharge opening in the end block 14 to an advanced position over the work and under the driver 32. In this movement the cam plate advances, throwing the rear end of the lever 20 outwardly and carrying the front end to the left and the tack separating and feeding devices into the position in which they are shown in Fig. 2. In this position the lowermost tack in the operative raceway groove can slide down into the inclined slot 10. In the normal operation the reverse or backward movement of the tack block will be accompanied by a reverse movement of lever 20 during which the separated tack will be forced to the discharge opening 12 through which it will fall into the driver passage of the tack block at the time the latter reaches its receiving position.

In the construction shown in Figs. 1 and 2 the movement of the lever from the position shown in Fig. 2 for delivering a tack is effected by a movable cam plate 40. This plate is pivoted to a plate 25 fixed to the slide 26 and has a face 42 which preferably is at all times in contact with the roll 24 and which, with the plate 25, forms an inclined track for the roll. This inclined cam path, when the parts are in the position shown in dotted lines in Fig. 2, compels the roll to move inwardly as the plate moves backwardly.

This movable cam plate is held in its operative position during the normal operation of the machine by the controlling device 45 which is a slide connected by the lever 46 and link 48 with a manually operated member 50. A spring 52 holds the operating member normally in the position shown. When the operating member is actuated against the spring it projects the controlling device rearwardly where it engages the inclined spoon-shaped face 54 of the bar 40, rocking that bar into the dotted line position and positioning the roll 24 and

the separating devices connected with it in their proper relation to the plate 25 according to the point in the cycle of the machine's operation at which the presentation of the shoe takes place. This provides that a tack will then be delivered in regular time relation to the movements of the driver and other operating parts of the machine. Fig. 2^a shows in full lines the position shown in dotted lines in Fig. 2 and Fig. 2^b shows the position of the parts when the tack block has advanced with the tack to a position under the driver. As the shoe is presented the plunger 45 is forced inwardly against the cam plate 40, forcing it into operative position relatively to its driver and, finally, slides on to the spoon-shaped end 54, Fig. 2^a, of the cam plate 40 whereby the cam plate is locked in position relatively to the plate 25 and its driver and remains in that position as long as the plunger 45 remains in, or the shoe remains in, position. It will be seen that the bar 45 is in locking engagement with the end 54 of the cam 40 some time before the shoe is fully in position to be operated upon. The end 54, as the machine operates, slides back and forth along the plunger 45 and when the plunger is forced in to the fullest extent by the presentation of the shoe, considerable movement of the plunger must take place before the cam plate 40 becomes unlocked and the separating devices are rendered inoperative, just as is the case with the lock 66 of Figs. 3, 4 and 5 of the drawing. If the cam plate 25 is in its retracted position shown in Fig. 2 actuation of the cam plate 40 by the operating member 50 will move the lever 20 and cause the delivering device to move toward the right and drop a tack at once into the tack block. If the operating member 50 is actuated when the parts are in any other position than that shown in Fig. 2, then it will cause a tack to be delivered in the same cycle of the machine's operation and as soon as the tack block does reach its tack receiving position. By this provision for stopping the supplying devices with a tack in the delivering device the operator does not have to wait until the machine makes a complete cycle for separating and then delivering a tack, as it would have to do if it were stopped at the other end of its throw or if the lowermost tack were stopped in the raceway above the separating devices. This is of particular importance when the grippers 55 are employed and the tack is depended upon for securing the portion of upper pulled by the grippers. An adjustable stop 56 is shown for positioning the separating devices accurately with relation to the raceway groove.

In the construction shown in Figs. 3, 4 and 5, which also possesses the advantage that the mutually contacting parts of the

driving and driven members of the separator actuating mechanism are always in operative engagement, the cam plate 25 is provided with a closed cam track 60 and is pivotally connected at 62 with the slide 26, having pin and arc slot connections also at 64. The cam plate has also a slot at 65 that is adapted to receive the controlling device 66 which is a bar movable vertically between the slide 26 and a cap plate 68 mounted on the slide 26. The bar has a shoulder 69 that rests upon a lifter 70 which is supported by the parallel links 72 and 74, on the latter of which is formed the operating member 75. A spring 76 holds the operating member and its connected parts in the position shown in full lines in Figs. 3 and 5. When the said member is rocked about its fulcrum 78 against the tension of spring 76 the lifter is lowered, allowing the controlling device 66 to drop upon the cam plate, and the spring 80 forces said device into the slot 65 the next time the slot comes under the device. When the controlling device is lifted the cam plate continues its reciprocatory movements with the slide 26 to which it is always connected, but it has in addition a swinging movement about its pivotal connection at 62 and the spring 82 is permitted to hold the lever 20 always in the position shown in Fig. 5 and determined by the stop 56 with a tack ready to be delivered as soon as the controlling device is adjusted.

The operating members 50 and 75 are each shown as arranged relatively to the shoe bottom rest 85 of the lasting machine in position to be engaged and moved by the shoe while it is being presented in position to receive the tack. By this arrangement the controlling device is operated without special attention from the operator to cause the feed of tacks to be commenced when the shoe is put into position to receive the tacks. The controlling device is operated reversely by the spring 52 or 76 to cause delivery of tacks to be discontinued automatically when the shoe is removed from receiving position. It is to be observed that the delivery of tacks is immediately discontinued when the shoe is removed, the tack then in the feeding devices being retained in the delivering plate until the controlling device is reversely actuated, whereupon the suspended tack is at once transferred to and discharged into the tack block.

The end block or delivery table 14 is preferably attached to the raceway for convenient removal and for this purpose the supporting plate 90, which is permanently attached to the raceway by the screws 91, has an open ended slot 92 to receive a guiding stud shown as a screw depending from the lower face of the delivery table. The raceway, or the raceway supporting bracket, has a positioning stud 93 projecting from its

end face which fits into a socket in the face of the table 14. The raceway bracket also carries a latch 94, the shank of which is acted upon by a spring 95 that presses the latch rearwardly and holds its front hook-shaped end in a seat 96 in the front face of the table. A guiding thimble 97 embraces the rear end of the shank of the latch and the spring while a second thimble 98 is similarly fitted over the front end of the spring and has an outstanding handle 99 which projects through a bayonet joint slot 100 in the supporting bracket. This arrangement provides that the handle can be moved rearwardly in the locking portion of the slot 100, compressing the spring by sliding the thimble 98 rearwardly and then the handle and thimble can be turned until the handle is in the long arm of the slot, after which it can be moved forwardly, relieving the tension on the latch which can be unseated and turned to release the delivery table which may be removed by a forward movement which will free it from the stud 93 and the slot 92. Reverse manipulation of the parts will restore the delivery table securely in operative position. The occasion for removing the delivery table to obtain access to the feeding devices arises frequently because of the presence of misformed tacks or foreign matter which clogs the delivery mechanism, and it is therefore of great advantage for the operator to be able to remove the delivery table quickly without the use of machinist's tools.

Having explained the nature of this invention and described a preferred construction embodying the same, I claim as new and desire to secure by Letters Patent of the United States:—

1. In a machine having mechanism for supplying fastenings, a driver for inserting the fastenings, and actuating mechanism for causing a succession of fastenings to be driven while the machine continues in operation, mechanism for controlling the feeding of fastenings constructed and arranged to cause the feeding mechanism to be started and stopped independently of the driver and to deliver a fastening into position to be inserted in time relation with the first descent of the driver after the controlling mechanism has been set.

2. In a machine of the class described, the combination with a driver and tack supplying mechanism operated independently of the driver, arranged to insert a plurality of tacks in uninterrupted succession, of means under control of the operator for suspending the operation of a moving part of the supplying mechanism to interrupt the delivery of tacks while the driver continues in operation, said supplying mechanism being constructed and arranged to cause a tack to be delivered in regular time relation

with the first descent of the driver after the controlling means has been set.

3. In a machine of the class described, mechanism for supplying and driving fastenings comprising the separating means 4 and delivering means 6, combined with means under control of the operator for arresting the operation of said mechanism with a tack ready to be separated and delivered, and means operated by presentation of the work for actuating the separating and delivering means.

4. In a machine of the class described, mechanism for supplying and driving fastenings comprising separating means and delivering means comprising an endwise movable plate 6 having a slot extending obliquely with relation to its direction of movement, combined with a driver and means under control of the operator for arresting the operation of said mechanism at a predetermined time when a separated tack is in the oblique slot of said plate, said controlling means being arranged to cause the separated tack to be delivered and driven during the first descent of the driver after the operation of the supplying mechanism has been resumed.

5. In a machine of the class described, a driver, tack separating and delivering means, a tack block continuously reciprocated between the driver and said means, mechanism under control of the operator to suspend the delivery of tacks while the tack block continues to reciprocate and arranged to cause the delivery of a tack to the tack block upon the first movement of the block into receiving position after said controlling mechanism has been set to resume the delivery of tacks.

6. In a machine of the class described, the combination with tack supplying mechanism, of an actuator occupying continuously an operative relation to said mechanism and comprising a cam plate, a reciprocating slide carrying the cam plate, and means under control of the operator for positioning the cam plate relatively to the slide while the machine is running.

7. In a machine of the class described, the combination with tack supplying mechanism, of an actuator occupying continuously an operative relation to said mechanism and comprising a cam plate, a reciprocating slide carrying the cam plate, and means arranged to be engaged by the work for positioning the cam plate relatively to the slide.

8. In a machine of the class described, arranged to insert a plurality of tacks in uninterrupted succession, the combination with tack supplying mechanism, of an actuator for said mechanism having continuous connection therewith, means for imparting to said actuator a continuous reciprocatory move-

ment in the directions for operating the supplying mechanism, and means controlled by the withdrawal of the work from tack receiving position for rendering the actuator ineffectual to operate the supplying mechanism for delivering tacks.

9. In a machine of the class described, tack supplying mechanism having a lever, a reciprocating cam plate for operating the lever, a slide on which the plate is carried, a connection between the cam plate and the slide, permitting relative movement thereof, and means adapted to be adjusted into and out of position for causing the cam plate to move with the slide for operating the lever.

10. In a machine of the class described, tack supplying mechanism having a lever, a reciprocating cam plate for operating the lever, a slide on which the plate is carried, a connection between the cam plate and the slide, permitting relative movement thereof, and means adapted to be adjusted by the work to cause the cam plate to move with the slide for operating the lever when the work is in position to receive a tack.

11. In a machine of the class described arranged to insert a plurality of tacks in uninterrupted succession, tack supplying mechanism, a reciprocating tack carrier operatively connected with the supplying mechanism to actuate the latter, and means adapted to be adjusted for discontinuing the movement of the supplying mechanism while the tack carrier continues to reciprocate, said machine having provision for bringing the supplying mechanism to rest with a tack ready to be delivered at once when the machine is restarted.

12. In a machine of the class described, the combination with tack supplying mechanism and actuating means therefor comprising a driving member, a swinging plate pivoted on said driving member and in continuous engagement with said supplying mechanism, of means controlled by the position of the work for locking the swinging plate to the driving member.

13. In a machine of the class described, the combination with tack supplying mechanism and means for actuating said mechanism comprising a driving member, a cam plate carried by said member and having continuous operative relation to said mechanism, and means controlled by the position of the work for locking the cam plate to the driving member.

14. In a machine of the class described, the combination with tack supplying and driving mechanism arranged to insert a succession of tacks during continuous operation of the machine and including a tack delivering device, of a continuously moving actuator maintaining constant connection with the delivering device, and means for

adjusting said actuator to control the operation of the delivering device.

15. In a machine of the class described, the combination with tack supplying mechanism including a tack delivering device, of a continuously moving actuator maintaining constant connection with the delivering device, and means including a part that is moved automatically when the work is withdrawn from tack receiving position to effect an adjustment of said actuator for stopping the delivery of tacks.

16. In a machine of the class described, the combination with tack feeding devices, of actuating mechanism therefor comprising a cam plate having a movable side bar, the controlling member therefor and an operating device 50 arranged in position to be engaged by the shoe when the latter is moved into position to receive a tack.

17. In a machine of the class described, the combination with tack feeding devices, of actuating mechanism therefor comprising a plate, forming one side of a cam track, a movable bar forming the other side, and means under control of the operator for positioning the bar.

18. In a machine of the class described, the combination with a raceway, of a stationary delivery table removably supported in position to receive tacks from the raceway, and means for locking the delivery table rigidly in operative relation comprising table positioning means and said locking means also including a manually actuated latch to secure the table in position.

19. In a machine of the class described, the combination with a raceway and a delivery table, of a manually controlled latch operatively connected with the raceway and provided with a hook adapted to engage in a seat in the table and a spring arranged to actuate the latch endwise to clamp the table against the raceway.

20. In a machine of the class described, the combination with the raceway, the delivery table and the sliding and swinging latch 94 operatively connected with the raceway and having a hook for engaging the table.

21. In a tack supplying mechanism, the combination with a delivery table and raceway, of a support for the table, positioning devices for the bottom and one side of the table, and means adapted for manual operation to hold the table upon the positioning means in operative relation to the raceway.

22. In a tack supplying mechanism, the combination with a delivery table and raceway, of the swinging and sliding latch 94, the spring coöperating therewith, the two thimbles 97 and 98 embracing the ends of the spring, the handle 99 connected to one of the thimbles, and the handle guide having the angular slot 100.

23. In a tack supplying mechanism, the combination with a delivery table and raceway, of a latch comprising a hook constructed and arranged for manual operation to connect the table in operative relation to the raceway and having provision for holding the hook in an inoperative relation to the table.

24. In a machine of the class described, the combination with tack delivering means, devices connected with the driving mechanism of the machine to receive a normal movement adapted for actuating said delivering means to deliver a tack during each cycle of the machine's operation, and means under control of the operator for causing said devices to receive a different movement whereby the delivering of tacks is prevented.

25. In a machine of the class described, tack feeding and driving devices arranged and operated to insert a plurality of tacks in uninterrupted succession, a continuously moving actuator for said devices arranged to permit its operative connection with the feeding devices to be interrupted during continued operation of the machine, and means additional to the tack feeding and driving devices arranged to be moved by the work for actuating said tack feeding devices at any time into the relation to their actuator which they would have occupied if they had not been disconnected.

26. A machine of the class described having, in combination, a tack driver, a recip-

rocating tack carrier, a tack raceway, a tack separator, a two-part lever the members of which are yieldingly connected and one of which members has operative connection with the separator to reciprocate it, a path cam on the carrier, a roll on the other lever member actuated by the path cam, and means arranged to be controlled by the removal of the shoe from tack receiving position for opening said path cam to render one side of it ineffective for making return oscillation of the lever.

27. A machine of the class described having, in combination, a tack driver, a reciprocating tack carrier, a tack raceway, a tack separator, a two-part lever the members of which are yieldingly connected and one of which members has operative connection with the separator to reciprocate it, a cam plate on the carrier, a roll on the other lever member actuated by the cam plate, and means arranged to be controlled by the removal of the shoe from tack receiving position for disconnecting the cam plate to discontinue the vibration of the lever and separator.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS D. FOYE.

Witnesses:

JOHN F. REID,
ARTHUR L. RUSSELL.