A. L. ENGBERG.

TACK SAVING DEVICE.

APPLICATION FILED JUNE 15, 1907.

1,029,857.

Patented June 18, 1912.

2 SHEETS—SHEET 1.

FIG. 2.

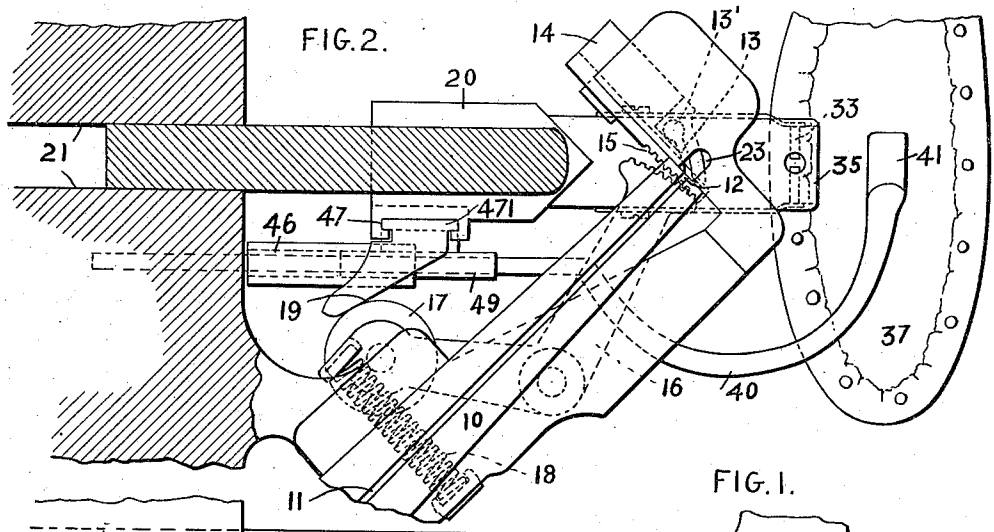
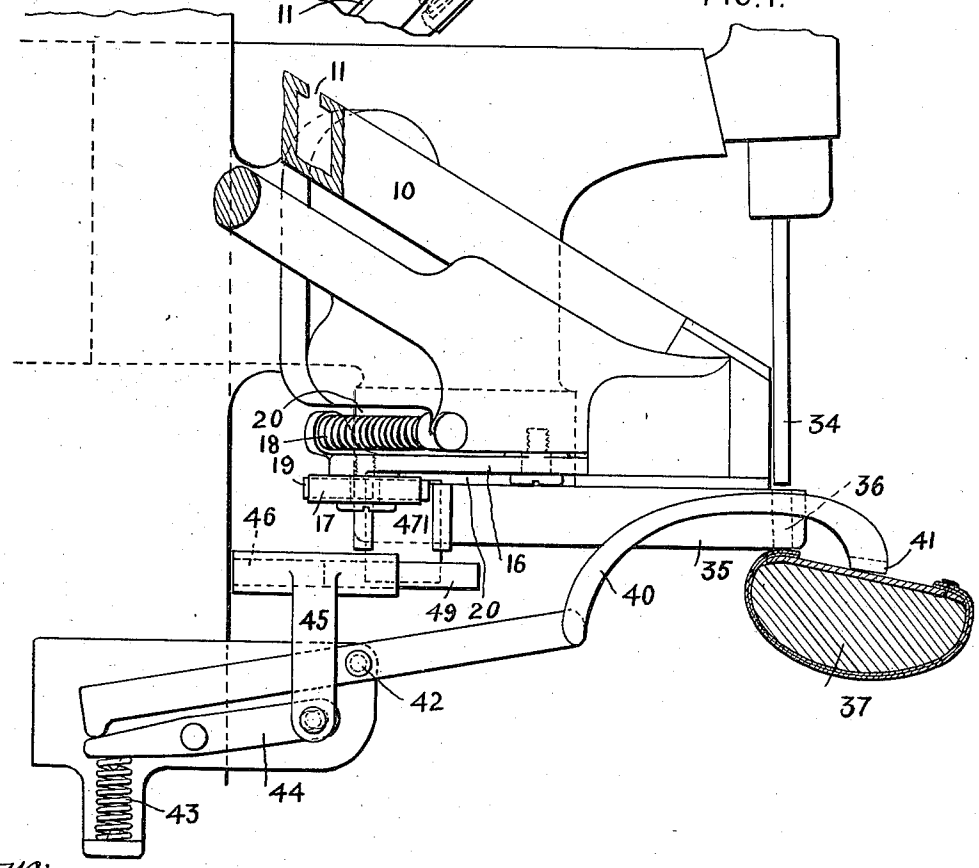


FIG. 1.



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2 SHEETS—SHEET 2.

FIG. 3.

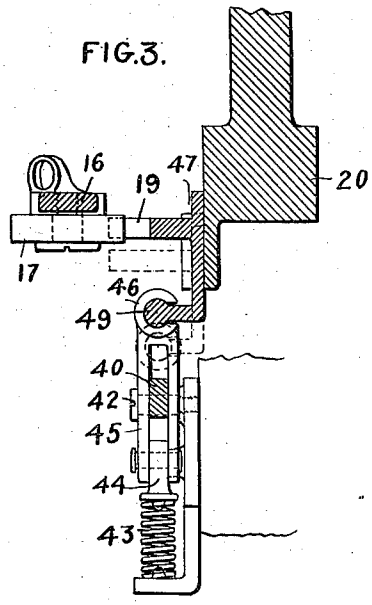
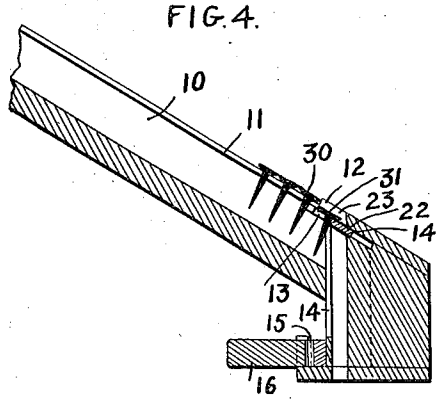


FIG. 4.



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UNITED STATES PATENT OFFICE.

ARVID L. ENGBERG, OF LYNN, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TACK-SAVING DEVICE.

1,029,857. Specification of Letters Patent. **Patented June 18, 1912.**

Application filed June 15, 1907. Serial No. 379,165.

To all whom it may concern:

Be it known that I, ARVID L. ENGBERG, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Tack-Saving Devices, of which the following is a specification.

This invention relates to machines for inserting fastenings and more particularly to the tacking mechanism of a lasting machine in connection with which it is herein shown. In presenting work to a tacking mechanism an operator frequently times his movements so that he starts the machine before the work is in position to receive a tack and continues the machine in operation more or less after withdrawing the work. This involves a loss of tacks which in the aggregate is an item of appreciable expense. In some classes of work, particularly in lasting shoes, the operator sometimes finds it desirable to withdraw the shoe temporarily from tack-receiving position without finding it convenient to stop the machine and this occasions an additional waste of tacks.

An object of the invention is to prevent this waste of tacks and it is a feature of this invention to provide means under control of the operator for controlling the supplying of tacks without stopping the machine.

A further and very important feature of this invention consists in a machine adapted to drive a plurality of tacks in succession and means controlled by the position of the work for determining the operation of the supplying means.

In the embodiment of the invention herein shown for the purpose of explaining the invention the tack-supplying means comprises a tack separator and a device for controlling the operation of the separator which extends into position where it may be shifted by the presentation of the shoe and also, preferably, in the reverse direction by the removal of the shoe from tack-receiving position. The separator is actuated by a cam and as shown said controlling device is arranged to shift relatively said cam and the part through which it communicates motion for establishing and interrupting operative connections between the cam and the separator. These and other features of the invention, including certain combinations of parts and details of construction, will be explained in the following description of the illustrated embodiment of the invention and will then be pointed out in the claims.

In the accompanying drawings: Figure 1 represents in elevation a portion of a lasting machine with one form of the invention applied thereto; Fig. 2 represents the same in plan view; Fig. 3 is an elevation of certain parts of the apparatus in section, viewed as from the right-hand side of Figs. 1 or 2; Fig. 4 is an elevation of part of the apparatus represented in Figs. 1 and 2, the section being taken on a plane passing vertically through the slot 11.

Referring to the drawings: 10 represents a conductor for tacks in the form of an inclined raceway having a slot 11 in which tacks may rest in single file and down which they pass by gravity to the end of the slot at 12 where they are free to enter the slot 13 in the separator 14 whenever the slot 13 is properly positioned therefor, as represented in Fig. 4. The separator 14 slides across the end of slot 11 with a reciprocating motion, being moved by racks 15, one of which is on a lever 16, the other end of which is cam operated and carries a roller 17. As represented in Fig. 2 the cam 19 has displaced the lever from the normal position in which spring 18 tends to hold it, said cam being mounted on a block 20 which has a reciprocating horizontal motion in ways 21. When the lever is thus displaced by cam 19, separator 14 occupies the position shown in Fig. 2; but when the cam has moved to the left in Fig. 2 the spring 18 throws the separator to the right. The head of the foremost tack in slot 11 in the position marked 30 in Fig. 4 rests upon the top of the raceway as there shown; and whenever the movement of the separator brings slot 13 into register with slot 11 the tack slips from position 30 to position 31 of Fig. 4, where its head rests on the arm 22 of the separator. During the travel of the separator to the right the tack in position 31 is restrained from traveling with it by the wall 23 of the stationary end block which abuts against the lower end of the raceway and has a recess in alinement with the raceway slot 11 and a guideway for the separator 14. The tack head moves gradually lengthwise along said wall 23 as is required

by the fact that the tack shank is embraced in the slot 13 until the enlarged portion 13′ of the slot in the separator comes under the tack, when the tack is free to drop through the vertical passage in the end block so that its point falls into the driver passage 36 and between the fingers 33 in the tack carrier 35, which is connected to the reciprocating block 20 and moves from tack-receiving position under the vertical passage in the end block to the delivering or tack-driving position under the driver 34, where it is shown in Figs. 1 and 2. The mechanism thus far described is part of the lasting machine to which the invention is shown attached.

In operation the workman starts the machine running by pressing a foot lever when he is about to bring the last carrying the shoe into position to be subjected to the operation of the machine; and the construction and action of the other parts of the machine, not necessary here to describe as they may be of any ordinary and well known type, are such as to cause the separator to slide to and fro, receiving tacks one by one from the position 30 in slot 11 and dropping them through the vertical passage shown in Fig. 4 between the supporting springs 33 of the tack carrier. This carrier 35 reciprocates with the block 20 in a right and left direction as viewed in Figs. 1 and 2. As it moves to the right the cam face 19 engages the roller 17 swinging lever 16 and actuating the separator 14, moving it to a position for feeding the next tack 30, while the spring fingers 33 are, by the same motion, carried to the position shown in Fig. 2 where the driver passage 36 in the tack carrier 35 is in register with driver 34, which thereupon descends, entering passage 36 and driving the tack upon the last 37. Thus the mechanism constitutes a constantly operating tack driver adapted to insert a plurality of fastenings in succession.

A control arm 40 having a foot 41 adapted to be engaged and lifted by the work whenever the latter is put in place to receive tacks, is pivoted on the machine at 42 and is held with the foot normally down by spring 43. In the form of the invention shown in Figs. 1, 2, and 3 this control lever engages another lever 44 one end of which is connected by a pin and slot to a leg 45 of a table 46 which, because of said connection, rises and falls when the foot 41 rises and falls. Upon this table the cam 19 rests and it slides vertically in ways 47 on the block 20. The cam is free to slide over the table by which it is supported so that it can partake of the reciprocating, horizontal movement of block 20 without losing its engagement with table 46. When the workman puts a last in the position shown in Fig. 1, raising foot 41, table 46 is raised and with it cam 19 is raised into alinement with the roller 17 where it will engage the roller during its horizontal reciprocating movement, thus establishing operative connection with the tack-supplying means and particularly with the tack separator 14. When the work is removed, allowing the foot 41 to fall, table 46 falls by its own weight and the pressure of the spring 43, and cam 19 descends below the level of roller 17 so that it does not engage with the roller and the operative connection is interrupted, notwithstanding the reciprocating horizontal motion which it has as long as the workman continues the machine in operation. Therefore the tack separator 14 is not operated and no tack can pass from the slot 11 into slot 13. The pressure of the roll 17 against the cam 19, caused by the spring 18, insures that the cam will not descend at once if the work should be removed from foot 41 while the roll is on the high part of the cam, but said roll and the separator connected with it will remain under control of the cam until the parts have completed their back stroke. The table 46 may be contrived in any suitable manner; as represented in the drawings, its form is shown most clearly in Fig. 3 where it is seen to be in the form of a cylinder having an opening cut longitudinally in one wall to admit an arm connecting the cam carrier 471 with a rod 49 which slides longitudinally within the cylinder.

Having explained the nature of this invention and fully 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 tacking machine constructed and arranged to drive a plurality of tacks in succession, in combination, mechanism for separating loose tacks from one another and feeding the tacks one at a time including a driving member and a driven member, these two members being normally in non-operative relation; means for their movement into operative relation; and a movable part normally positioned in the operative position of the work and arranged to maintain said members in operative relation during the insertion of a plurality of tacks.

2. In a tacking machine, in combination, tack feed mechanism including a driving member and a driven member normally not in alinement with each other; means for their movement into alinement; and a part controlling said movement normally positioned in the operative position of the work.

3. In a tacking machine, in combination, tack feed mechanism including a continuously operating part, a tack separator actuated thereby, said machine being organized to drive an indefinite number of tacks in succession, and means to throw said separator and said operating part into and out of

operative relation, said means including an element normally occupying the position of the work.

4. In a tacking machine, in combination, tack feed mechanism including a continuously operating part and a tack separator having an operative connection comprising mutually contacting parts one of which is movable to make and break the contact, and a lever arranged to be engaged by the work and connected with said movable part.

5. In a machine organized to insert an indefinite number of tacks in succession, the combination with tack feeding devices and tack driving means, of means for actuating said devices comprising a continuously moving cam member and means additional to the tack driving means and controlled by the position of the work for rendering said cam member operative or inoperative for actuating the feeding devices.

6. A machine of the class described adapted to drive a plurality of tacks in succession and having in combination means for separating loose tacks from one another and feeding the tacks one at a time, actuating mechanism therefor, and means governed by the position of the work for suspending the operation of said separating and feeding means without interrupting the operation of the machine as a whole.

7. A machine of the class described having, in combination, means for supplying tacks, actuating mechanism therefor including a cam movable on its carrier into and out of operative relation to a coöperating part of the mechanism, and a part adapted to be shifted in presenting and removing the shoe for determining the position of the cam on its carrier.

8. A machine of the class described having, in combination, mechanism for supplying tacks in position to be driven including a movable tack separator, said mechanism being constructed and arranged to begin separation of a tack during one cycle of the machine's operation and to present the tack in position to be driven during a subsequent cycle, and means under control of the operator for discontinuing the movements of the separator without preventing the presentation of the partially separated tack in position to be driven.

9. A machine of the class described having, in combination, tack-supplying means including a reciprocating separator, a cam for producing the advance of the separator and controlling the return of the separator, and means for rendering the cam operative or inoperative arranged to permit the cam to remain in control of the separator until the end of the return stroke.

10. A machine of the class described having, in combination, tack separating devices and an operating cam connected with a continuously moving part and adapted to be actuated by the work from and toward the plane in which the separating devices are located for governing the operation of said devices according to the position of the work.

11. A machine of the class described having, in combination, tack separating devices and a reciprocating slide, the cam 19 mounted on said slide for actuating the separating devices, and means controlled by the position of the work for moving the cam upon its carrying slide from and toward a plane in which it will actuate the separating devices.

12. A machine of the class described having, in combination, tack separating devices, a reciprocating slide, a cam actuated by said slide, and a lever or the like operatively connected with the separating devices, and means controlled by the position of the work for relatively moving said lever and said cam from and toward a position in which the separating devices will be actuated from said slide.

13. A machine of the class described having, in combination, tack driving devices, tack separating devices including a reciprocating separator, means including a cam for reciprocating said separator, said machine being organized to drive an indefinite number of tacks in succession, and means additional to the tack driving devices and controlled by the position of the work for causing the separator to remain substantially stationary at one end of its reciprocatory movement while the actuating cam continues in motion during repeated operations of the machine.

14. A nailing machine having in combination, tack driving devices, tack supplying mechanism comprising a reciprocating separator, a cam from which the separator derives its movements, said machine being organized to drive an indefinite number of tacks in succession, and means additional to the tack driving devices and controlled by the position of the work for causing the separator to remain during repeated operations of the machine out of the range of further actuation by the cam to discontinue the delivery of tacks.

15. A nailing machine having in combination, tack driving devices, tack supplying mechanism comprising a reciprocating separator, a cam from which the separator derives its movements, said machine being organized to drive an indefinite number of tacks in succession, and a member additional to the tack driving devices and shiftable by the work to cause the separator to remain substantially at rest at one end of its stroke while the cam continues its normal movements during repeated operations of the machine.

16. A machine of the class described hav-

ing, in combination, a tack driver, a reciprocating tack carrier, a tack raceway, a tack separator, a two arm lever one of which arms has operative connection with the separator to reciprocate it, a cam on the carrier to engage the other arm of the lever to move the lever in one direction, a spring to return the lever, and means arranged to be controlled by the shoe as the shoe is moved out of tack receiving position to move the cam out of position to actuate the said other lever arm.

17. A machine of the class described having, in combination, a tack driver, a tack carrier, a tack separator, connections from the carrier to the separator to actuate the latter, and a lever the front end of which carries a shoe rest and which extends backwardly along the side of the machine to the frame of which it is fulcrumed and the rear end of which lever is arranged to interrupt operative connection between the tack carrier and the tack separator.

18. A machine of the class described having, in combination, a tack driver, a tack carrier, a tack separator, connections from the carrier to the separator to actuate the latter, a lever the front end of which carries a shoe rest and which extends backwardly along the side of the machine to the frame of which it is fulcrumed and a spring acting on the lever to depress the shoe rest end of it, and means connected with the rear end of the lever to make and break operative connection between the carrier and the separator as the shoe rest end is lifted and released by the shoe.

19. In a machine of the class described, the combination with tack feeding devices, of means for actuating said devices comprising a movable cam member and means controlled by the position of the work for holding said cam member in operative or inoperative relation to the feeding devices.

20. A tacking machine, having in combination, tack feeding and driving mechanism arranged and operated to insert a plurality of tacks in uninterrupted succession including a continuously operating part, a tack separator actuated thereby, and means to throw the continuously operating part and the tack separator into and out of driving relation, said means including an element additional to the tack feeding and driving mechanism and normally occupying the position of the work.

21. In a machine of the class described, constructed and arranged to insert a plurality of tacks in uninterrupted succession, tack feeding devices, 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 into the relation to their actuator which they would have occupied if they had not been disconnected.

In testimony whereof I hereto affix my signature, in presence of two witnesses, this first day of June, 1907.

ARVID L. ENGBERG.

Witnesses:
EVERETT E. KENT,
WILLIAM S. YOUNGMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."