

(No Model.)

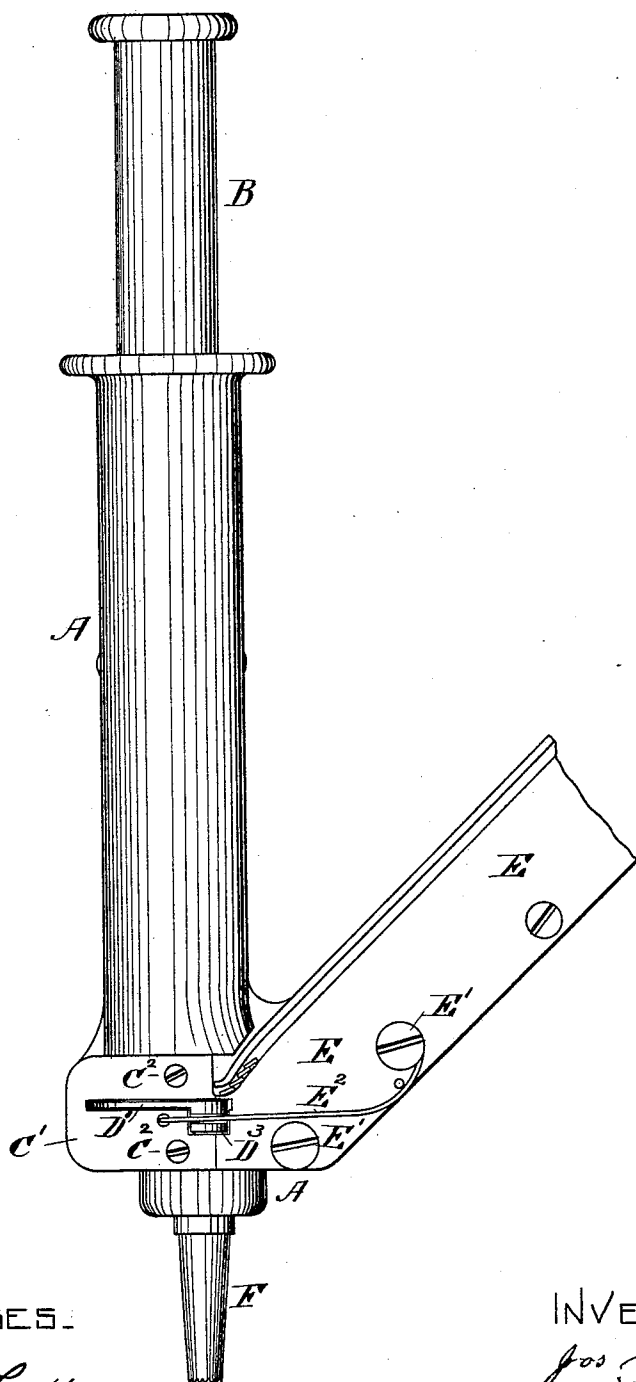
4 Sheets—Sheet 1.

J. E. CRISP & L. D. JUNKINS.

TACK DRIVING MACHINE.

No. 500,225.

Patented June 27, 1893.



WITNESSES:

Frank H. Parker

Matthew M. Blunt.

FIG. 1.

INVENTORS:

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L. D. Junkins

(No Model.)

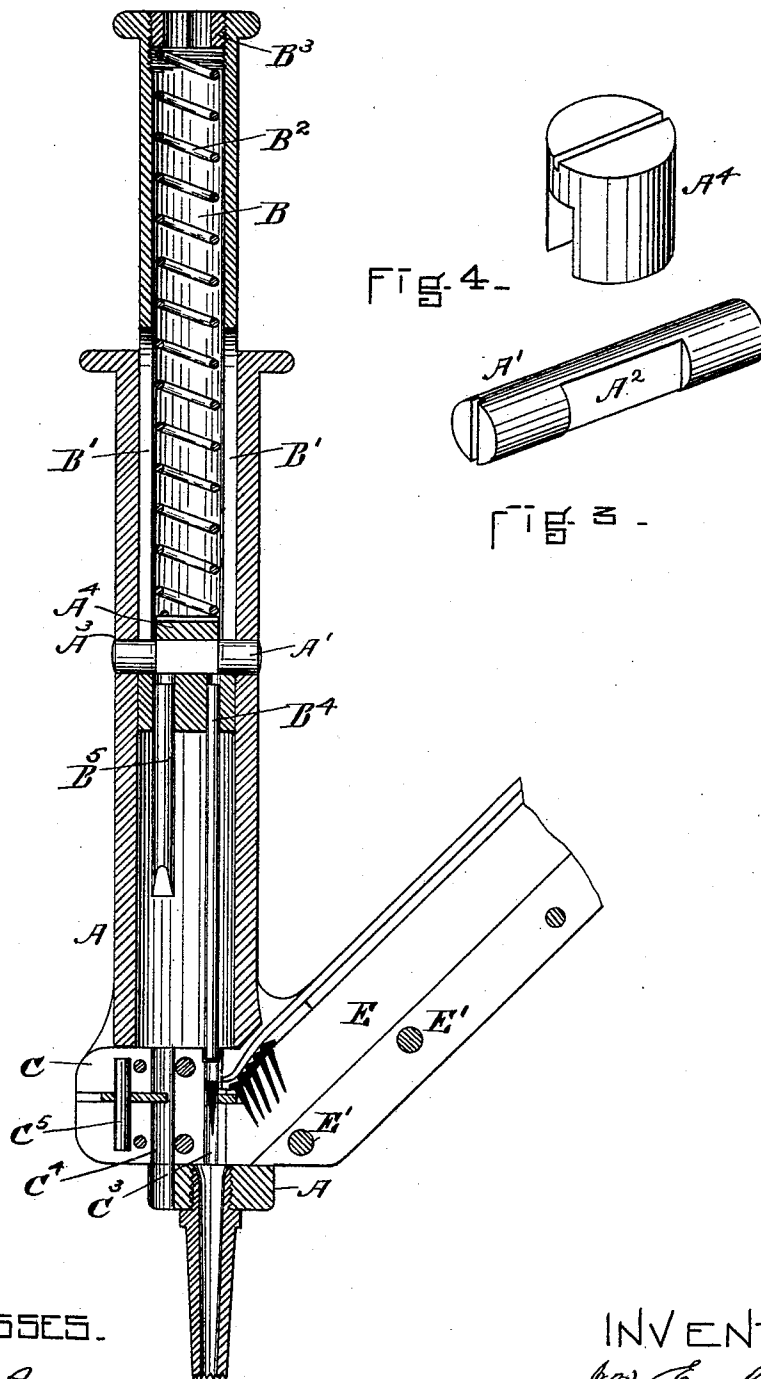
4 Sheets—Sheet 2.

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FIG. 2.

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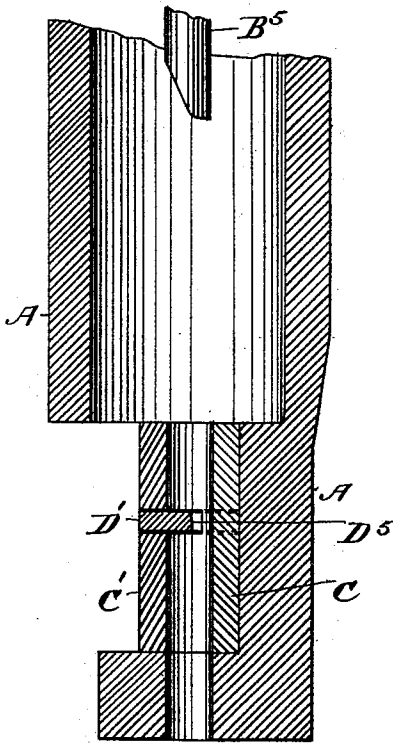


Fig. 8.

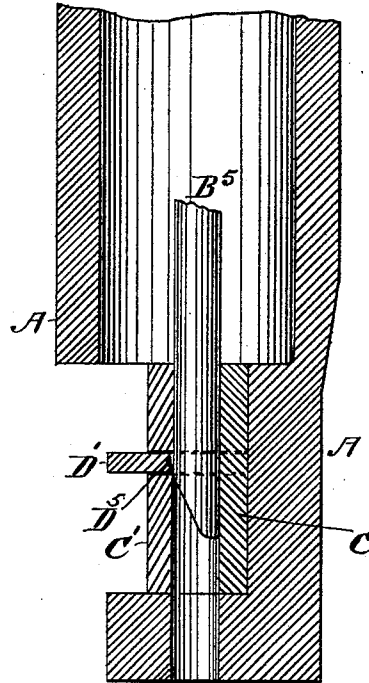


Fig. 9.

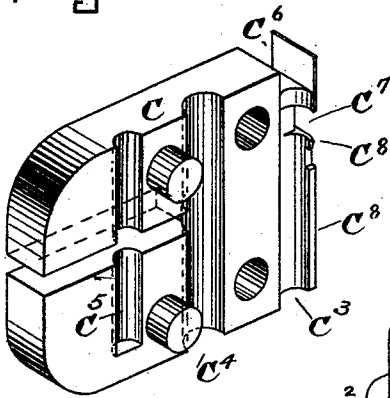


Fig. 5.

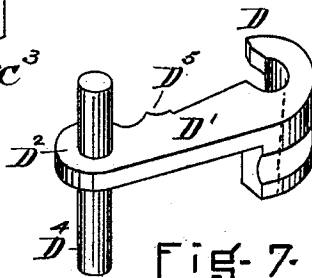


Fig. 7.

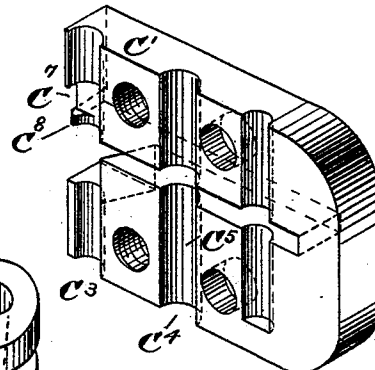


Fig. 6.

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4 Sheets—Sheet 4.

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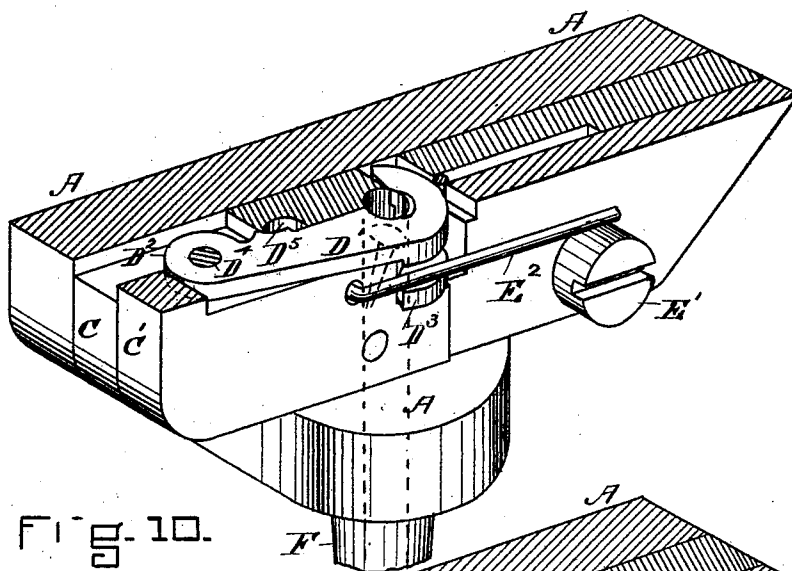


FIG-10.

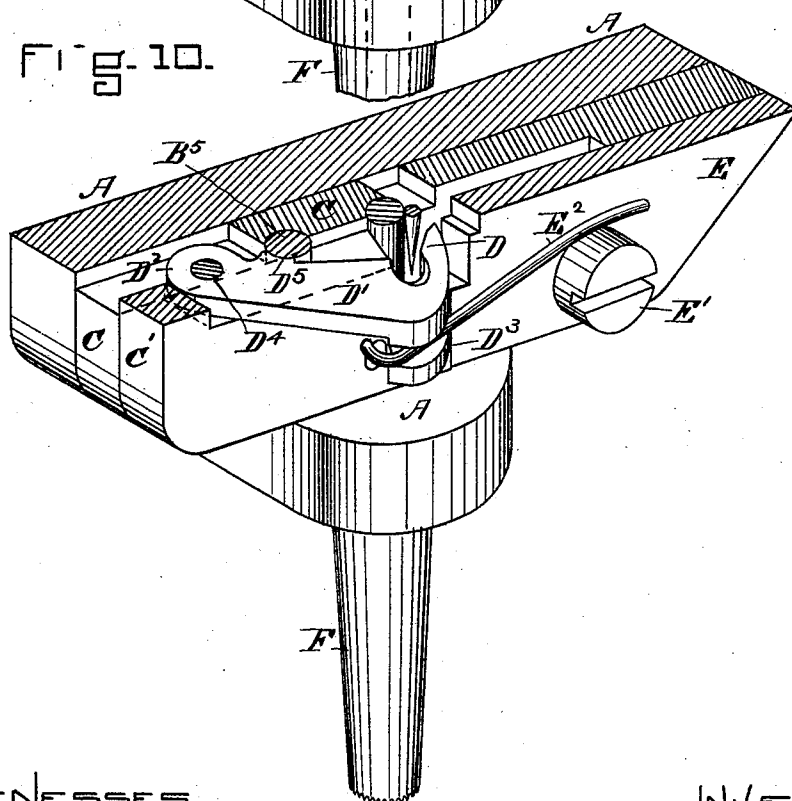


FIG-11

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UNITED STATES PATENT OFFICE.

JOSEPH E. CRISP AND LEANDER D. JUNKINS, OF SOMERVILLE, MASSACHUSETTS, ASSIGNORS TO THE COPELAND RAPID LASTER MANUFACTURING COMPANY.

TACK-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 500,225, dated June 27, 1893.

Application filed May 11, 1892. Serial No. 432,564. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH E. CRISP and LEANDER D. JUNKINS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tack-Driving Machines; and we do hereby declare the following, with the annexed drawings, to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements upon hand tack drivers, which are provided with an inclined chute or guide-way for leading loose tacks to the tack feeding and driving mechanism.

It consists of simple and effective mechanism for separating the tacks from the column in the lower end of the chute and moving and holding them under the driver of the machine.

It also consists of improved mechanism for guiding and limiting the motion of the plunger carrying the driver whereby the action of the spring for raising said plunger serves to automatically lock the various parts securely together as will be hereinafter described.

In the drawings forming part of this specification, Figure 1, is a side elevation showing the machine and sufficient of the guideway to show its relation thereto. Fig. 2, is a vertical cross section of Fig. 1. Fig. 3, is a perspective view of the cross-pin guiding and limiting the motion of the plunger. Fig. 4, is a perspective view of the lock for holding the cross-pin in position, by the action of the raising spring and which also acts as a piston within the hollow plunger. Figs. 5 and 6, are enlarged views of the interior of the throat. Fig. 7, is an enlarged perspective view of the separating feeding and holding device. Figs. 8 and 9, are enlarged vertical cross sections, showing the manner of moving the device Fig. 7. Figs. 10 and 11 are enlarged perspective views of the lower part of the machine cut at horizontal cross section at the upper side of the tack separating and feeding and holding device, and showing its mode of operation.

The shell of the machine A is made from any suitable metal, and to its interior the

plunger B is fitted so that it will reciprocate and be guided therein as shown by Figs. 1 and 2. The plunger B is made hollow from the top to near its lower end, and is provided with the slots, B', B' through its sides. These slots are made correct in length to allow the desired reciprocation of the plunger when the round parts of the cross pin A' are passed through them, and secured in the hole A³ in the sides of the shell A. To secure the cross pin A' in position its center is flattened at A² to fit the slot cut in the short cylindrical piece A⁴, Fig. 4, and this piece is held thereon by the action of the raising spring B² upon its top surface as shown by Fig. 2. The raising spring B² operates within the plunger B as shown and is secured therein by the screw plug B³ at its upper end. The piece A⁴ is fitted to the hole inside of the plunger B and acts as a piston therein, thus operating as a dash pot and forming an air cushion and preventing the usual severe concussion incident to the quick rise of spring elevated plungers. The cross pin A' could be flattened on one side so that the lower end of the raising spring B² would enter therein and prevent said pin from moving endwise in case the air cushion was not desired. To the lower end of the plunger B are secured the driver B⁴ and the reciprocating cam B⁵, which moves outward the tack separating and feeding device.

The throat composed of the parts C, and C', is secured to a projection formed on and below the shell A by the screws C², C³, and in this throat are formed suitable holes C³ for the driver and C⁴ for the reciprocating cam to pass through Figs. 2, 5, and 6. One end of the throat terminates near the hole for the driver C³, and there is a passage formed at C⁷ for the heads of the tacks to pass through into the driveway. The lower inner sides of this passage are inclined toward the center of the driveway to cause the heads of the tacks to pass over, and drop down said incline into the driveway after they have been moved inward by the operative edge of the feeding finger D. Below this passage C⁷, the end of the throat is cut at C⁸ to allow the passage of the tack shanks to the driveway and the back

part C of the throat is cut out at C⁶ so that it can be removed past the lower end of the driver when required.

The inclined chute or roadway E is of the usual construction and its lower end is fitted close to the end of the throat, where it is secured by the screws E', E', to a suitable part of the same projection to which the throat is secured. The relation of throat and chute is such as will cause the lower tack in the chute to rest against the driver for the action of the tack separating and feeding mechanism when said driver is down.

The tack separating and feeding mechanism Fig. 7, may be made of one or more pieces as preferred. It consists of the finger D, the arm D', the hinge D² and the gate D³. This device is hung upon the pin D⁴ fixed in the hole C⁵ and operates in a suitable slot C⁷ cut through the parts of the throat. The end of the throat and the contacting end of the chute are also cut away to allow the motion of said feeding device. The tack separating and feeding finger D is made quite thin and operates with its upper face just under the incline formed in the throat at C⁷ so that it will engage with the tack shanks near the head where it can move them easily. This finger D is so formed that when inward as shown by Fig. 10, it completes the circle of the driveway and is provided at that place with an inclined corner to insure the descent of the tack head past its upper edge. The outer edge of this finger forms a rest for the column of tacks in the chute, and from the place where the tacks rest to its point, this edge being formed at such a curve that as it is swung outward to catch and feed another tack, the column of tacks is constantly descending and has acquired sufficient momentum to quickly drop the lower tack past the separating point, and against the driver when the finger D has reached the position shown by Fig. 11. The inner edge of the feed finger D, is inclined from the driveway to a point which will a little more than pass back of the shank of a tack whose head is resting against the driver when said finger moves inward from the position shown by Fig. 11, so that on the inward or active motion of said finger, it will engage with said tack shank and by its incline draw the tack into the driveway, while at the same time the outer edge of the feed finger will separate and push the column of tacks in the chute back to their starting point ready to again commence their descent as before described. The gate D³, extends down from the feed finger D to below the point of the longest tack the machine is designed to drive, and when closed separates the driveway from the passage in the chute. Its lower part is inclined toward the center of the driveway and contracts the passage sufficiently to hold the tacks, drawn in by the feed finger, suspended by their heads under the driver, until the driver descends, when the gate yields outwardly and allows the tack to

be moved down by the driver. The feed finger D, and gate D³ are swung out so that a tack can rest against the driver as shown in Fig. 11 by the inclined reciprocating cam B⁵ acting against the bearing D⁵ formed on the arm D' for that purpose. The inclined cam B⁵ is formed spirally to conform to the motion of the arm D', as it swings, and its relation to the driver is made such that unless the tack under the driver is fairly driven, the end of the feed finger D will not disclose the passage from the chute to the driver, and allow a tack to reach the position where the return motion of the feed finger will draw it under the driver, and allow the tack to be forced down upon the one already in the throat or nozzle of the machine. Secured to the chute E by one of the screws E' is the spring E² of sufficient strength to swing the feed finger D, and gate D³, to the position shown by Figs. 1, 2, 8 and 10, and cause them to carry and hold a tack under the driver when said driver is up. The cam B⁵, as it moves up, separates from the bearing D⁵, when the point of the feeding finger is resting upon a tack shank, and allows the spring E² to press the head of the tack shank against the side of the driver, through the medium of the feed finger D and the friction thus produced between driver and tack head causes the point of the tack to swing close to the body of the driver. When the lower end of the driver passes up beyond the point of the tack, the point of the tack swings into the driveway, and as the lower end of the driver passes above the tack head, the feed finger D and the gate D³ snap completely in, and spring the head of the tack into the driveway, where it is caught and held by the lower projecting part of the gate, until removed therefrom by a descent of the driver. If it is desired to examine the interior of the throat of the machine, the spring E² can be moved down from over the gate, and the gate and feed finger swung out giving free access thereto. Below the throat there is secured under the driveway a plain nozzle F in the usual manner so that it will correctly align with said driveway.

From the foregoing it will be seen that this invention has several advantages, as follows: First. The decreased weight of the plunger due to the interior hole for the raising spring, combined with the air cushion, largely diminish the destructive blow usual where spring raised plungers are positively stopped during their upward movement. Second. The plunger is more perfectly guided than where the spring for raising it operates in a pocket formed in the upper or lower part of the shell or guideway for said plunger. Third. The plunger is positively secured within the shell and when it is desired to remove it therefrom it can be quickly done. Fourth. The feed finger can be made very light without injury thereto, and there is little, if any chance of clogging the throat and nozzle by

accumulation of tacks therein. Fifth. There are no projecting parts to be injured by coming in contact with the lasting machine.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with the shell of a hand tack driving machine and suitable tack feeding mechanism of a hollow slotted plunger carrying the tack driver, a raising spring therefor secured therein, a flattened cross pin substantially as described for guiding the motion and limiting the rise of said plunger, which is held in position by the action of the raising spring, all operating substantially as shown and described.

2. The combination with the shell of a hand tack driving machine and suitable tack feeding mechanism, of a hollow slotted plunger carrying the tack driver, a raising spring therefor secured therein, a flattened cross pin and slotted piston substantially as described for guiding the motion and limiting the rise of said plunger, which are held in position by the action of the raising spring and form in

combination with the interior of said plunger a dash pot to reduce concussion at the termination of the rise of said plunger, substantially as shown and described.

3. In combination with the shell of a hand tack driving machine, the hollow plunger B, provided with the slots B', the screw plug B³, the spring B², the cross pin A', the slotted piston A⁴, the driver B⁴, the cam B⁵ and suitable tack separating and feeding mechanism all operating substantially as described.

4. In combination with suitable tack driving mechanism, and an inclined chute for guiding loose tacks to the driveway thereof, a tack separating, feeding and holding device consisting of the finger D, arm D' hinge D², gate D³ and bearing D⁵ constructed, located and operating substantially as shown and described.

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