

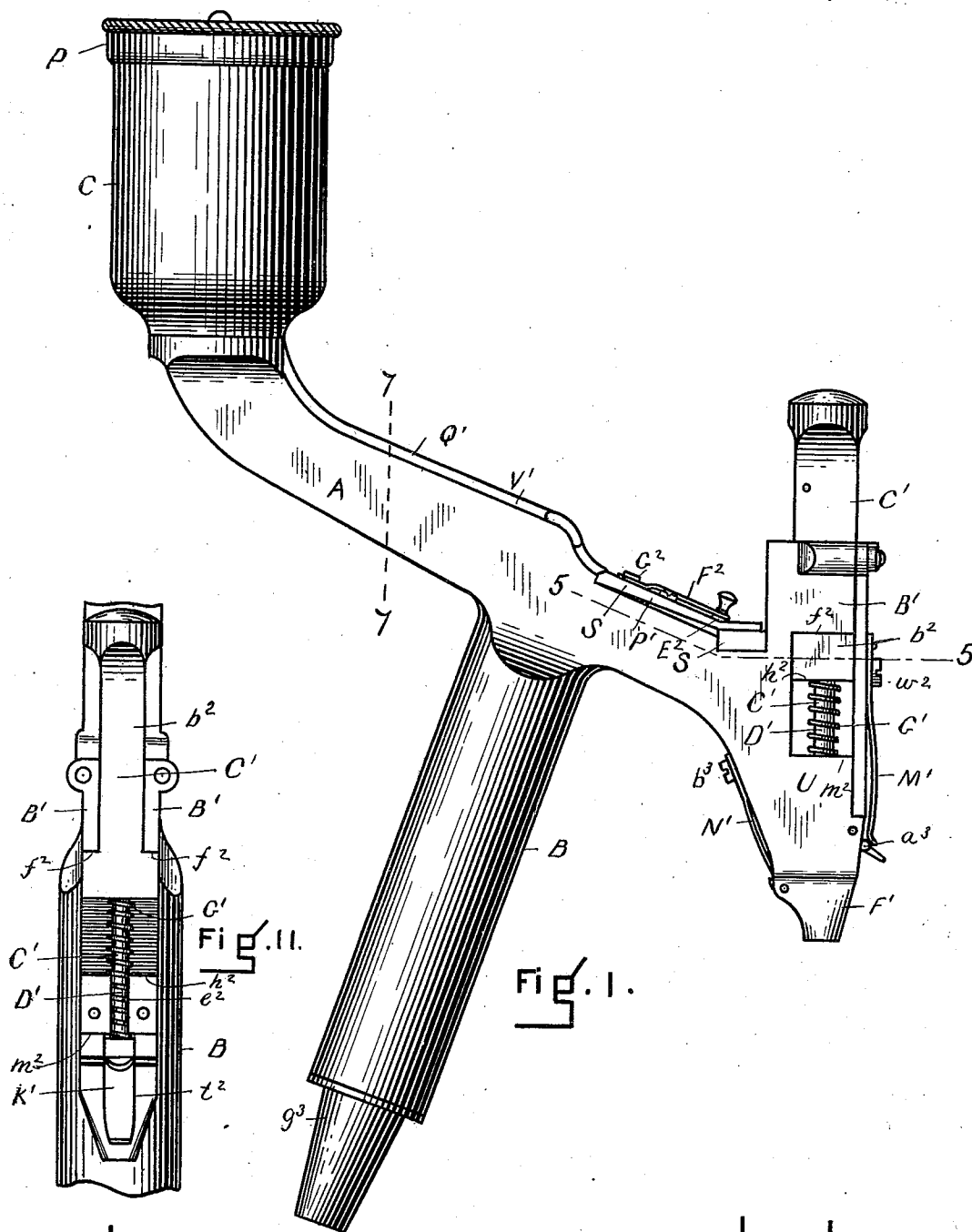
(No Model.)

3 Sheets—Sheet 1.

C. W. KING.
HAND TACKING MACHINE.

No. 508,547.

Patented Nov. 14, 1893.



WITNESSES

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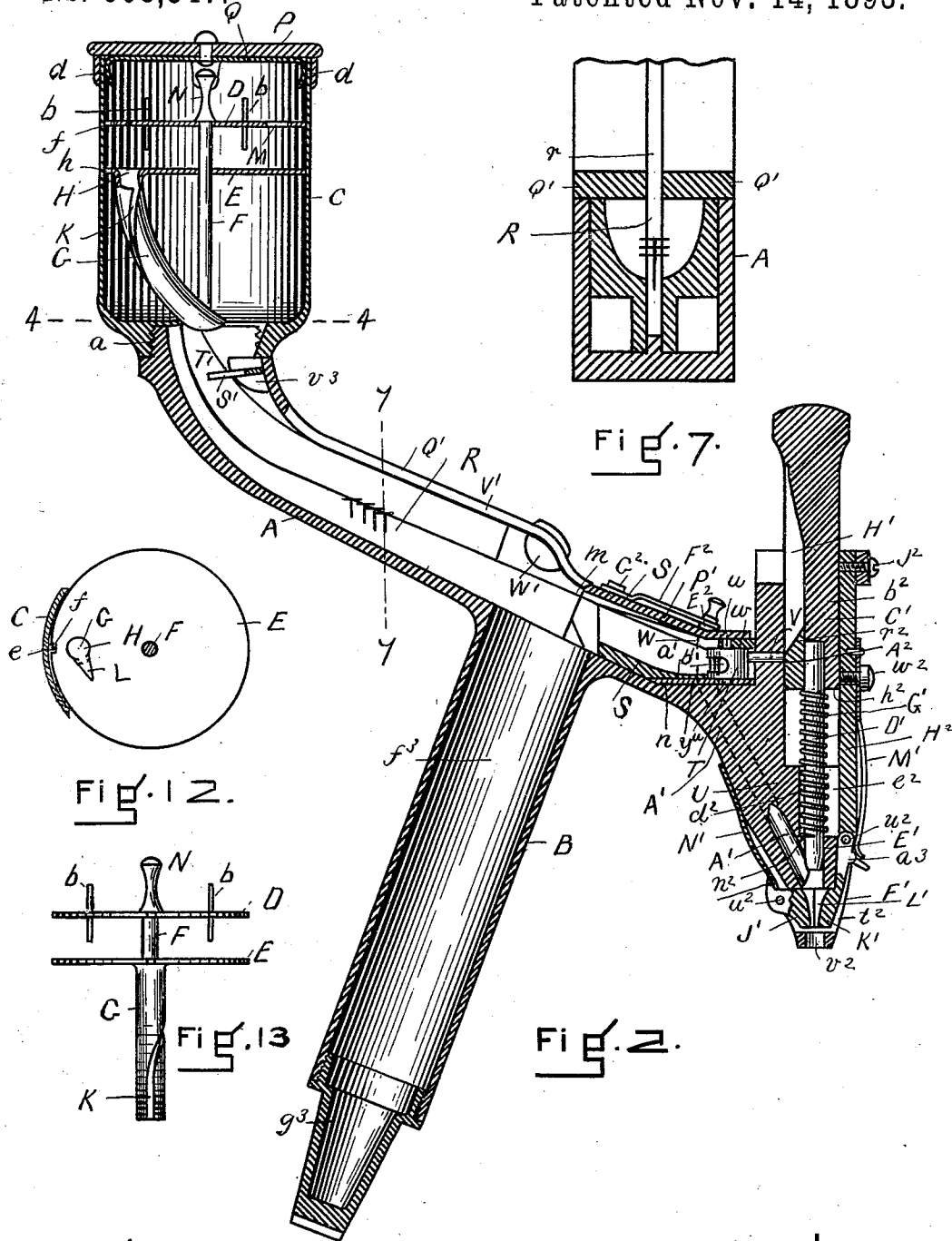
(No Model.)

3 Sheets—Sheet 2.

C. W. KING.
HAND TACKING MACHINE.

No. 508,547

Patented Nov. 14, 1893.



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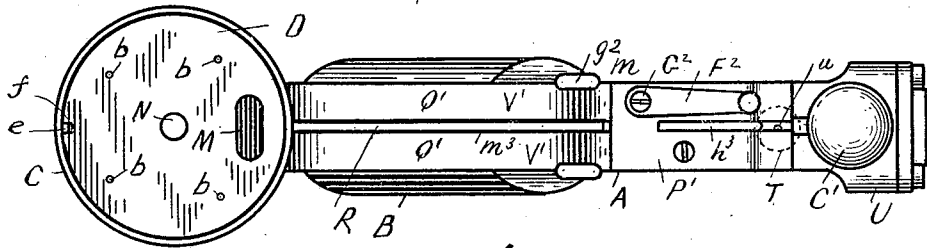


Fig. 3.

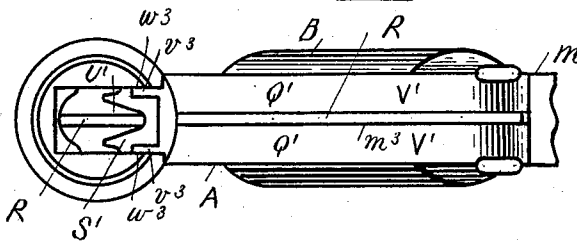


Fig. 4.

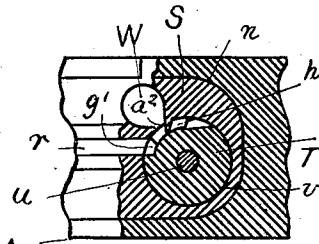


Fig. 10.

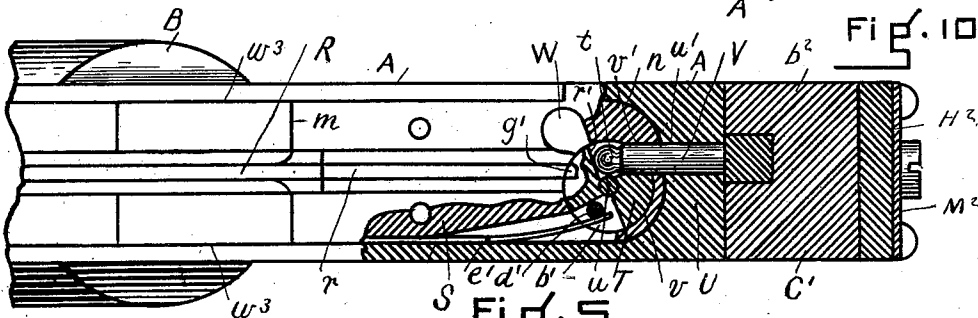


Fig. 5.

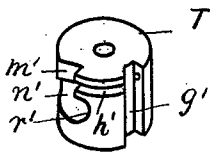


Fig. 8.

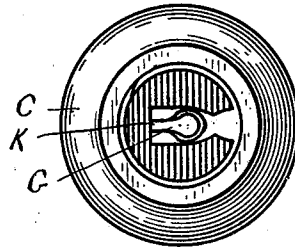


Fig. 6.

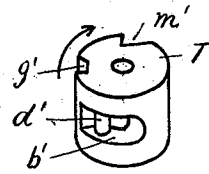


Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES W. KING, OF NEWTON, MASSACHUSETTS.

HAND TACKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 508,547, dated November 14, 1893.

Application filed January 23, 1893. Serial No. 459,398. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. KING, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Hand Tacking-Machines, of which the following is a full, clear, and exact description.

This invention relates to a machine for automatically driving tacks or nails one after another, and intended to be used more especially in connection with a machine for last-
ing boots or shoes, although applicable for use for other purposes and the invention consists of a machine for automatically driving
tacks or nails, constructed and arranged for operation all substantially as hereinafter fully described, reference being had to the accom-
panying sheets of drawings, in which—

Figure 1 represents the present machine in side view; Fig. 2 a longitudinal central vertical section; Fig. 3 a plan view. Fig. 4 represents a detail plan view below line 4—4 Fig. 2; Fig. 5 a detail plan, and detail horizontal section, below line 5—5 Fig. 1. Fig. 6 is a detail plan view. Fig. 7 is a vertical cross section on line 7—7 Figs. 1 and 2. Figs. 8 and 9 are perspective views of one of the parts in two different positions. Fig. 10 is a detail horizontal section just above the horizontal section of Fig. 5. Fig. 11 is a detail front or end view. Fig. 12 is a detail plan view. Fig. 13 is a detail side view of one of the parts.

In the drawings A represents the body of the machine tacker, B a handle for grasping and holding it by the hand, C a receptacle for the tacks consisting of a vertical cup, which is adapted to screw on to the upper end of the body as at *a*, open at its bottom, and having two horizontal partitions D, E, therein which
freely fit the internal sides of the cup and are connected together by a central post F, which extends down below the lower partition E, and has secured to its lower end the lower end of a curved tube G which at its upper end is secured to the lower partition at one side or edge of the partition and at such place has an opening H communicating with the chamber of the tube, the tube having a longitudinal open slot K, in its side extending throughout its length in a spiral direction and where the tube is secured to the partition, the partition is cut away outside of the diameter of the tube

in a small V-shaped opening L, over such spiral slot.

The upper partition D has an elongated opening M at one side as shown in Fig. 3, and it has four vertical pins or wires *b*, which pass through it, extending above and below the partition, the upper partition also having a central vertical handle N by which the partitions can be removed from the receptacle when desired; the receptacle has a cover P which fits over its upper end to close it, and it is held in place by a four armed spring plate Q secured at its center to the inner side of the cover, each arm being bent down as at *d* and forming a spring, to bear against the inner side of the receptacle. A pin *e* projects radially and horizontally from the inner side of the receptacle and the upper partition has an open slot *f* in its edge which when the partitions, and more particularly the tube or spout, is in the proper place engages with the pin and prevents the partitions turning, and when desirous of removing the partitions, they can be raised by their handle, the lower partition also having an opening or slot *h* in its edge which enables it to freely pass by or over the pin *e*. The hole M through the upper partition is on the opposite side of the receptacle to the opening H in the lower partition communicating with the spirally slotted spout or tube.

In the body is an inclined raceway R which is shown in longitudinal central section in Fig. 2, and in plan in Fig. 5, this raceway down to the point *m* being in the body of the machine, and it is continued in a block S which is inserted in a recess *n* in the machine body. This raceway consists of a longitudinal vertical groove *r* and in the body each side extends upward from the groove being inclined as shown in cross section in Fig. 7.

Opposite the lower end of the raceway in the block S is a small cylinder or block T which is arranged to make a partial turn, or revolution or swing back and forth on a pivot *u* in a chamber or socket *v* in the block but at an angle to the inclined raceway, or horizontally in relation to the head U *f* for the proper position for holding the tacker in use as shown in Figs. 1 and 2. The cylinder or block is inserted in its socket or chamber from the under side of the block S and is held therein against a shoulder or portion *w* of the

block S partially over the socket, by a plate y secured in a depression a' in the under side of the block, which plate and the portion w of the block serve to hold the pivot u for the cylinder. Across one side of the cylinder T is an opening b' in which is a vertical pin d' against which pin is arranged to bear a flat spring e' secured in a recess in the side of the block by a screw.

g' is a vertical slot in the side of the cylinder which when it is in its normal position is opposite to or coincident with the end of the raceway groove r . In this cylinder just below its top is a horizontal transverse open slot h' one end of which opens into the farther side of the vertical slot g' and the other end terminates in an opening m' in the upper end of the cylinder, below which last opening m' is another deeper open horizontal slot n' . Against its shoulder r' is arranged to bear the round end t' of a pin V arranged to move back and forth in a horizontal socket u' in the head U of the body, and in an opening v' in the block S as shown in section in Fig. 5 more particularly.

In the block S diagonally back of the opening v in which the cylinder moves and communicating therewith, and just back of the lower end of the raceway groove r , is a vertical opening W which extends down to and communicates with an inclined passage A' as shown in dotted lines in Fig. 2. Extending inward horizontally into the cylinder socket v is a thin pointed piece, arm or stripper a^2 of the block S which horizontally is in position to project freely into the horizontal opening h' in the cylinder as shown in Fig. 10.

Adapted to slide up and down between two arms B' of the head U is the tack driver, plunger or bar C' consisting of a portion b^2 substantially oblong in cross section, its lower portion being in the form of a rod or spindle D' which extends down through a socket d^2 in the head of larger diameter than the rod and open to its outside at e^2 by a space smaller than the socket but large enough for the rod D' to be moved out through it, the lower end of the driver rod D' extending down into a socket E' in the foot portion F' of the head to freely slide up and down therein. The driver has two shoulders f^2 which abut against the under sides of the arms B' of the head as a stop to the upward movement, and the lower end h^2 of the square portion abuts against the shoulder m^2 of the head as a stop to the downward movement, respectively of the driver. Around the driver spindle or rod D' is a spiral spring G' which is disposed in the socket d^2 bearing against the shoulder n^2 and against the under side or end h^2 of the driver which acts by its tension to keep the driver at its highest position and to return it thereto if moved down and free to move. The side of the driver nearest the cylinder has a vertical-longitudinal groove or slot H' which is opposite to and in line with the socket u' in which the pin V is arranged to slide back and forth.

The lower surface of this slot extends outward to the side in a downward inclined direction, as at r^2 shown in section in Fig. 2, making an inclined bearing surface for the pin V for operation thereof as will be hereinafter described.

Below the socket E' the foot has an open space t^2 from side to side into which project pieces J' K' one at each side of plates respectively pivoted to the head at u^2 meeting in the center, the adjacent side of each piece having a vertical tapering groove, making as a whole a tapering socket L' above socket v^2 in the lower end, these pieces being arranged respectively to swing to and from each other within the open space t^2 .

A spring M' secured to the head by screws w^2 bears by its forked free ends against a shoulder a^3 on the piece K' to keep it closed, and on the opposite side of the head is another spring N' secured by a screw b^3 , which bears against the inner side of the piece J' to keep it in its closed position. The inclined passage A' opens into and communicates with the side of the passage E' for the driver rod just above the conical or tapering socket L' of the two swinging pieces.

A plate P' is secured on the top of the block S which covers over the raceway therein, having a narrow longitudinal groove h^3 which is over the raceway groove in the block, which plate groove is too narrow to allow of the escape of the tacks, but open enough for the operator to see the heads as they pass along the raceway, the plate being high enough or grooved longitudinally on its under side to allow free passage of the heads of the tacks, between it and the raceway.

The portion of the raceway in the body of the machine is covered by a plate Q' which has a longitudinal groove m^3 over the raceway groove, which is not wide enough to allow the tacks to escape but sufficiently wide to allow the tacks to be seen as they pass along the raceway. The upper end of this plate has two lugs v^3 on its under side which fit in between the sides w^3 of the body and a horizontal plate S' which projects into the chamber T' of the body below the opening in the bottom of the receptacle, in which plate is an elongated opening U'. The lower end of this plate is in two parts or arms V' V' each of which has an under lug W', they both fitting in between the sides w^3 of the body and are arranged to press against the side by the spring of the arms, holding the plate in place. On the side of each arm V' to this plate is a small projection g^2 by which the two arms can be pressed toward each other when desirous of removing the plate from the body.

The operation of the tacker is substantially as follows: Tacks are placed in the receptacle on top of the upper partition, and the cover placed thereon, the tacker being held in the left hand, which is then shaken until the tacks have passed down into and through the spi-

rally slotted tube, the heads of the tacks passing down the inside of the tube with the points projecting through the spiral slot and dropping onto the inclined raceway, their bodies and points projecting down into the groove, and sliding down the raceway until the first tack passes into the opening g' of the cylinder. The head of the driver is then struck a quick hard blow which forces the driver down until it is stopped by the abutment of its end or shoulder, against the shoulder of the head, its spiral spring then acting to move it back to its normal position. With the driver in its upper position, the pin V rests against the part A^2 of the driver, which holds the cylinder in position against its spring e' for the notch or opening g' to be in line with the lower end of the raceway groove so that in such position the tack will freely pass into the opening or notch in the cylinder from the raceway as described. As the driver is forced down the spring e' is allowed to exercise its pressure to turn the cylinder on its axis, in the direction of the arrow Fig. 9 by the pin V passing up the incline r^2 into the groove H' in the side of the driver and as the cylinder so turns the tack in the notch or opening is carried with it, and is forced against the point or arm a^2 extending into the horizontal slot h' which forces the tack to move out of its cylinder notch, and the cylinder having moved so that the notch g' will be in line with the passage W the tack is finally moved off the cylinder and dropped into this passage down which it passes, and through the inclined passage A' into the passage E' above the tapering socket L' in the two pivoted holders, and then into such tapering socket, the driver in the mean time having risen from the action of its spring, out of the way of the travel of the tack. The tack being now in position to be driven by the driver, the foot of the machine is then placed on the article where the tack is to be used and the driver forced down as before, which drives the tack into the article in position therefor, and lets the cylinder spring act upon it to move the second tack forward which in the mean time has passed into the opening in the cylinder, to be forced outward by the point, into the passage down which it drops, and passes to and stops against the driver rod which has passed down by the passage in driving the tack, but as soon as the driver rod rises and returns to its normal position, the tack drops down into the tapering socket between the two pivoted pieces and is there held as before to be driven by a blow upon the driver. Thus after the first tack has been allowed to pass down into position to be driven, by the operation of the parts as described, at each blow on the driver, a tack is driven and another is moved into place to be driven and so on as long as there are tacks in the machine. Just over the handle the body is cut away each side of the raceway making openings into a chamber f^3 in the handle, to allow the tacks that may not be in the raceway to

drop into it out of the way rather than on the floor, to be removed at pleasure by unscrewing the screw g^3 in the handle.

The carrying cylinder or block need not be round, although it is preferable to have it so, the cylindrical form being best adapted for its work and its parts in relation to the other part of the machine.

There is an opening in the plate P' over the passage W in the block S in which rests a knob E^2 on the under side of a spring arm F^2 secured by a screw G^2 to the plate P' which can be sprung up and swung to one side leaving the opening and passage W exposed to view so that it can be cleared of tacks if it should accidentally be clogged. The driver is inserted in place by placing the spring over its rod portion, then compressing it closely against the shoulder h^2 and inserting the spindle portion through the open space e^2 into its socket d^2 and placing its square portion in its seat when the lower end of the spiral spring will pass down into its socket, and when in place, a plate H^2 is secured on the outside by screws J^2 which keeps all parts in place and yet allows free movement of the driver up and down.

In Fig. 3 the cover is removed from the receptacle showing the upper partition in plan view.

The pins b extending through the upper partition serve to keep the tacks separate so that they will pass more freely down through the receptacle.

As the passage W is at one side of the central longitudinal line of the raceway, which is in line with the vertical axial line of the driver rod, the inclined passage A' inclines toward such central longitudinal line, as well as toward the driver rod passage E' to make proper communication with the passage. The opening m' in the upper end of the cylinder or block T allows the cylinder to be inserted in its chamber from the under side of the block S by freely passing over the end of the arm or stripper a^2 .

Having thus described my invention, what I claim is—

1. In a tack driving machine, an inclined raceway, a block or cylinder arranged at the lower end of said raceway to swing back and forth, a longitudinal slot or groove in the side of said cylinder which in its normal position is opposite to or coincident with said raceway to receive a tack therefrom, a shoulder on said cylinder, a passage or opening communicating with the chamber in which said cylinder turns, a spring bearing on said cylinder shoulder to act upon and swing said cylinder to carry the tack in its slot to said passage, and a movable stop or pin to engage with said cylinder.

2. In a tack driving machine, an inclined raceway, a cylinder or block at the lower end of said raceway, arranged to swing back and forth, a longitudinal slot or groove in the side of said cylinder arranged to be opposite to or coincident with the inclined raceway, a spring

- bearing upon a shoulder on said cylinder, a passage opening into the cylinder socket, a tack driver bar adapted to move up and down in a suitable raceway, a longitudinal groove in said bar, and an incline at its lower end, a stop or pin having its inner end arranged to engage with said cylinder and its other end disposed in said driver bar groove and arranged to bear upon said incline.
3. In a tack driving machine, an inclined raceway a cylinder or block at the lower end of said raceway arranged to swing back and forth, a longitudinal slot or groove in the side of said cylinder arranged opposite to or to be coincident with the inclined raceway, a spring bearing upon a shoulder on said cylinder, a passage opening into the cylinder chamber, a movable stop to engage with said cylinder, a driver bar adapted to move up and down in suitable guideways, and bear upon said stop or pin, and a spring to elevate said driver.
4. In a tack driving machine, an inclined raceway, a block inserted in a recess in the body of said machine having a continuation of said raceway, a cylinder arranged in said block to swing back and forth therein, a longitudinal slot or groove in the side of said cylinder which in its normal position is opposite to or coincident with said raceway to receive a tack therefrom, a shoulder on said cylinder, a passage or opening communicating with the chamber in which said cylinder turns a spring bearing on said cylinder shoulder to act upon and swing said cylinder to carry the tack in its slot to said passage, and a movable stop or pin to engage with said cylinder.
5. In a tack driving machine, an inclined raceway, in the body of the machine, a block inserted in a recess in the machine forming a part of the raceway, a cylinder or block arranged to swing back and forth in said block, a longitudinal slot or groove in the side of the cylinder arranged to be opposite to or coincident with the raceway, a shoulder on said cylinder, a spring bearing on said shoulder secured to the block, a movable stop or pin in the body of the machine to engage with said cylinder, a driver bar adapted to move up and down in suitable guideways and bear upon said stop or pin, and a spring to elevate said driver bar.
6. In a tack driving machine, an inclined raceway, a cylinder arranged to swing back and forth at the end of said raceway, a longitudinal slot or groove in the side of said cylinder arranged to be opposite to or coincident with the end of the raceway, a shoulder on said cylinder, a spring bearing on said shoulder, a transverse open slot or groove in the side of the cylinder and an arm or stripper arranged to project into said transverse groove or slot.
7. In a tack driving machine, an inclined raceway, a cylinder or block arranged to swing back and forth at the end of said raceway, a longitudinal slot or groove in the side of said cylinder arranged to be opposite to or coincident with the end of the raceway, a shoulder on said cylinder, a spring bearing on said shoulder, a transverse open groove or slot in the side of the cylinder, an arm or stripper arranged to project into said transverse groove or slot, a shoulder in said cylinder, a stop or pin engaging with said shoulder and adapted to move back and forth in guideways, a driver bar adapted to move up and down in guideways, a spring to elevate said driver bar, a longitudinal groove in the side of the driver bar, an inclined bearing at its lower end for the stop or pin to engage therewith or bear thereon.
8. In a tack driving machine, an inclined raceway, a receptacle for the tacks at the upper end of the raceway, a partition in said receptacle, a curved tube or spout connected by its upper end to said partition, its lower end over the inclined raceway, and a spiral open slot in the side of said tube the length of said tube, and an opening in said partition communicating with said tube.
9. In a tack driving machine, an inclined raceway, a receptacle for the tacks at the upper end of the raceway, a partition in said receptacle having an opening through it at one side, another partition below the first partition, a curved tube or spout connected by its upper end to said latter partition, its lower end over the inclined raceway, a spiral open slot in the side of said tube the length of the tube, and an opening in said latter partition communicating with said tube.
- In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.
- CHARLES W. KING.
- Witnesses:
EDWIN W. BROWN,
LEONA C. ARNO.