

(No Model.)

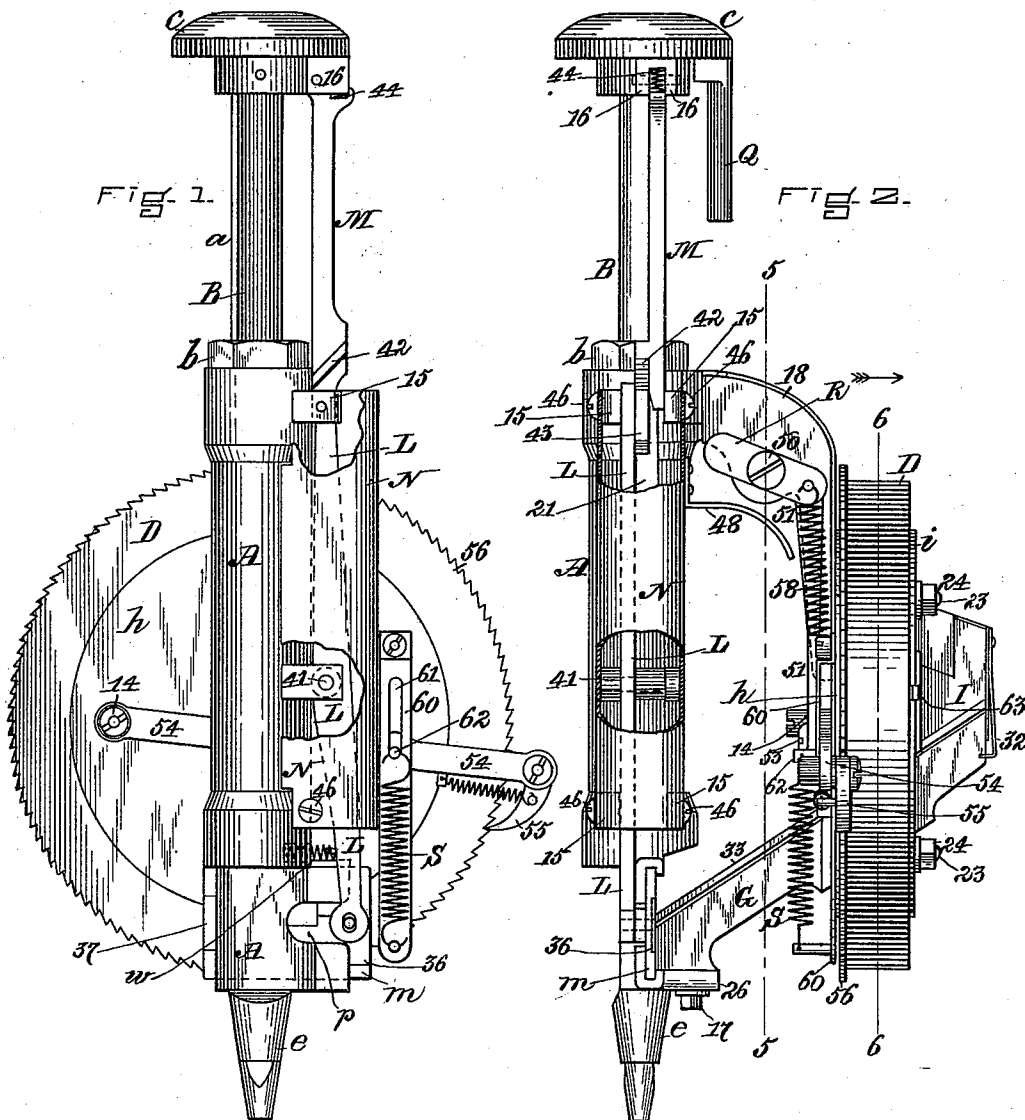
4 Sheets—Sheet 1.

J. HYSLOP.

HAND MAGAZINE TACK DRIVING MACHINE.

No. 543,135.

Patented July 23, 1895.



WITNESSES.

A. D. Crow.

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(No Model.)

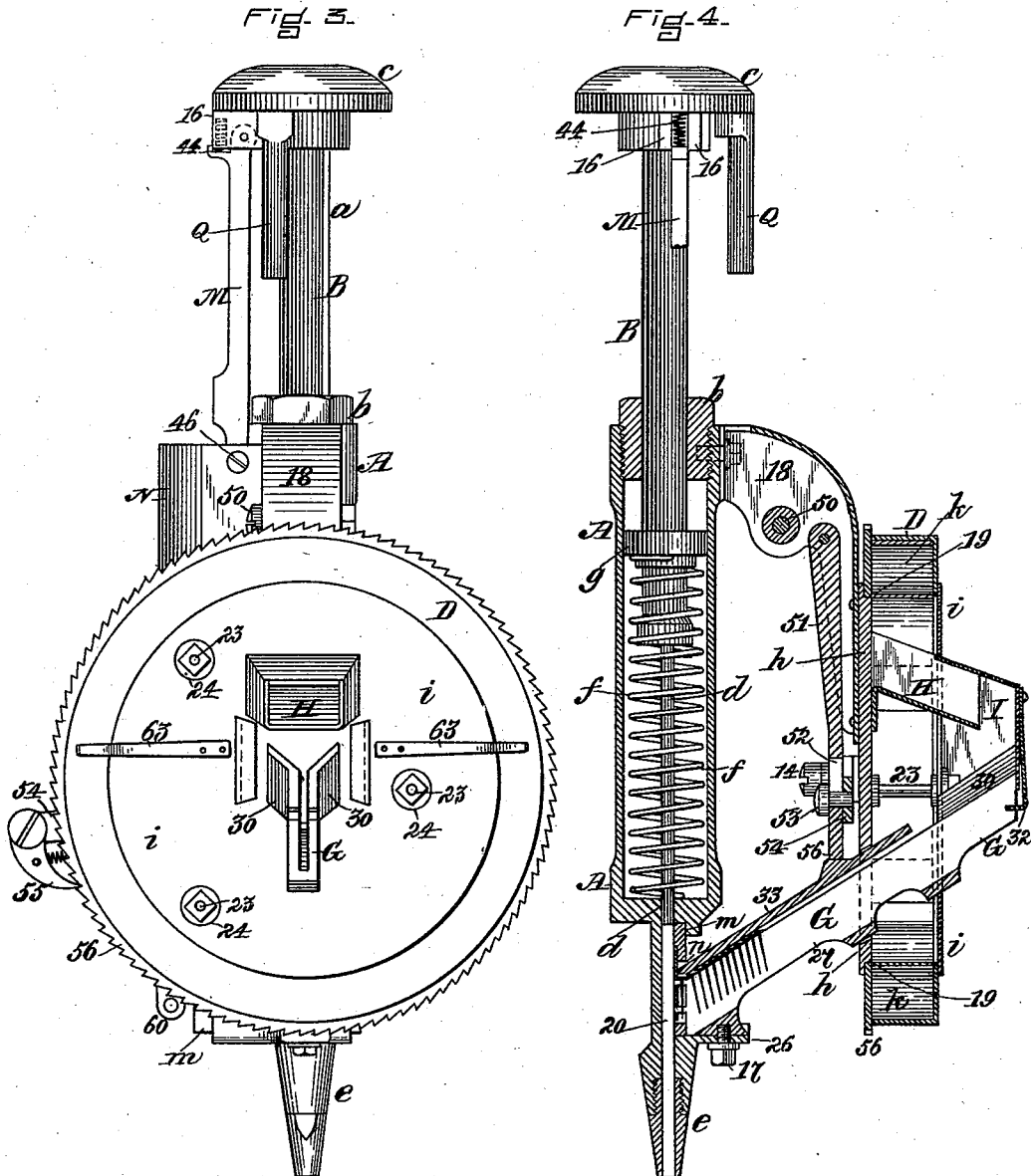
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WITNESSES.

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(No Model.)

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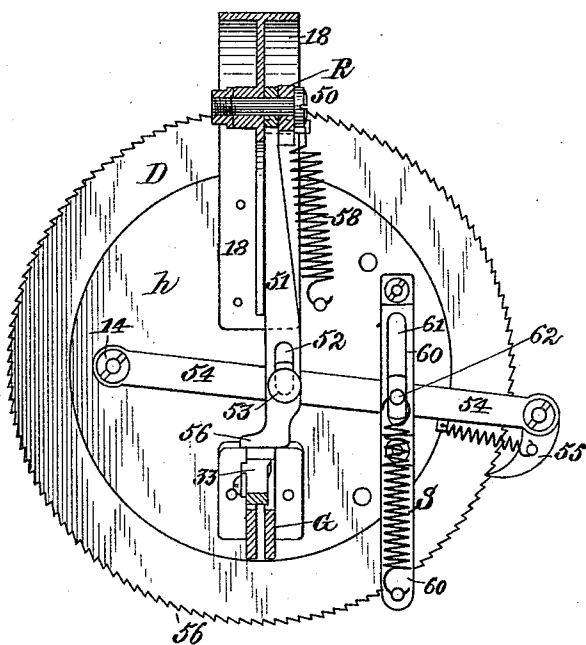
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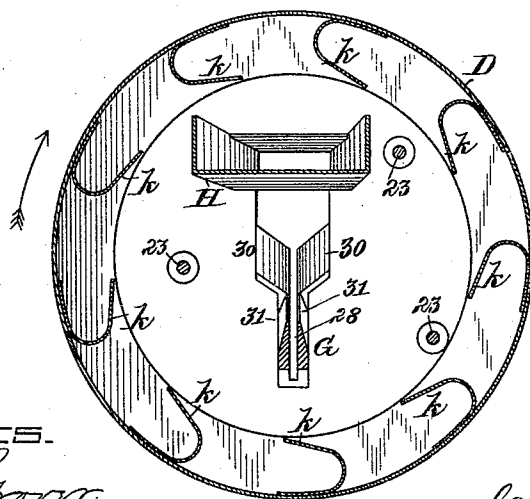
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Fig-5-



FT 5-6



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(No Model.)

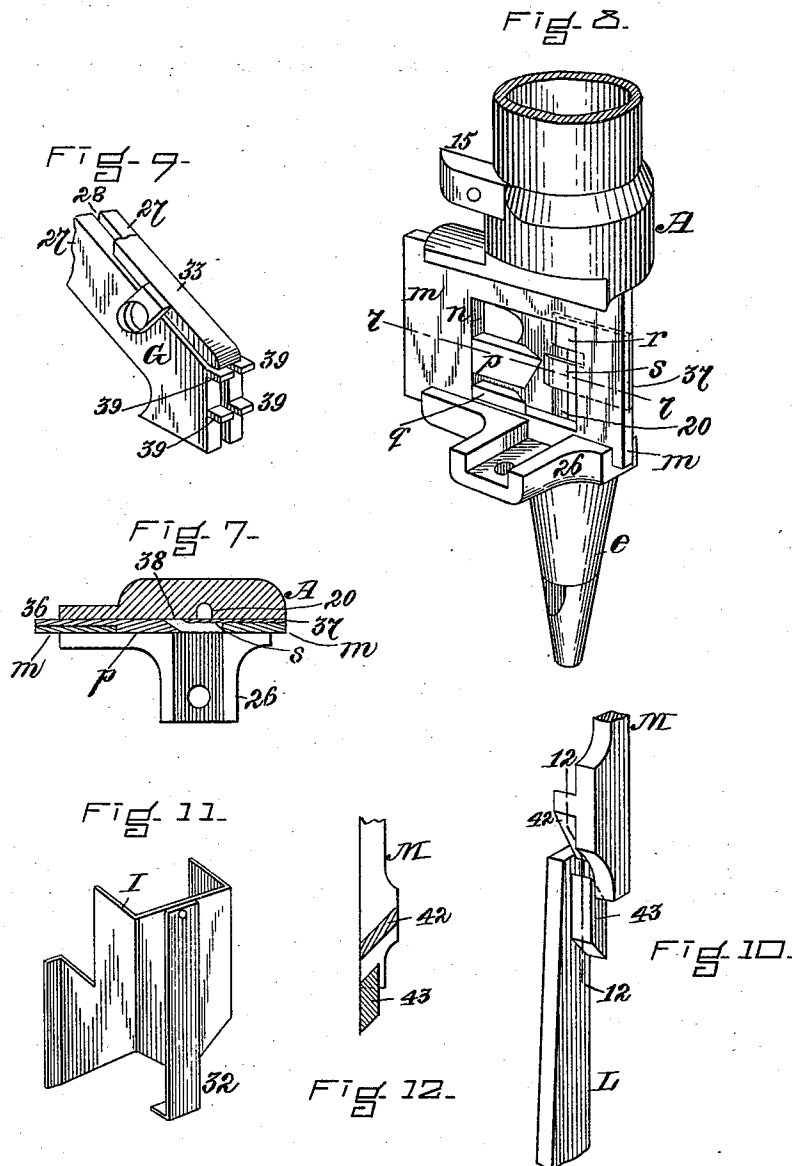
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WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN HYSLOP, OF ABINGTON, ASSIGNOR OF ONE-HALF TO WILLIAM B. ARNOLD, OF NORTH ABINGTON, MASSACHUSETTS.

HAND MAGAZINE TACK-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,135, dated July 23, 1895.

Application filed February 28, 1895. Serial No. 540,086. (No model.)

To all whom it may concern:

Be it known that I, JOHN HYSLOP, a citizen of the United States, residing at Abington, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Hand Magazine Tack-Driving Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of my improved hand tack-driving machine, a portion of the hand-guard being broken away to show the parts inclosed thereby. Fig. 2 is a side elevation of the machine. Fig. 3 is a rear view of the machine with the cover for the end of the raceway removed. Fig. 4 is a central vertical section of the machine. Fig. 5 is a vertical section of the machine on the line 5 5 of Fig. 2. Fig. 6 is a vertical section through the tack-magazine on the line 6 6 of Fig. 2, looking in the direction of the arrow. Fig. 7 is a horizontal section on the line 7 7 of Fig. 8. Fig. 8 is a perspective view of the picker-slide and pickers and parts adjacent thereto. Fig. 9 is a view of the lower end of the raceway. Fig. 10 is a detail in perspective. Fig. 11 is a view of the cover for the rear end of the raceway. Fig. 12 is a vertical section on the line 12 12 of Fig. 10.

My invention relates particularly to that class of tack-driving machines which are operated by hand and are provided with a magazine or tack-reservoir from which the tacks pass by an inclined raceway to a position in the tack-channel beneath the tack-driver, which is secured to a plunger located within a shell or casing and operated by hand against the resistance of a spring.

To simplify and improve the construction of machines of this character and render them stronger, more durable and effective, and less liable to derangement than heretofore is the object of my invention, which consists in certain novel features of construction and combinations of parts, as hereinafter fully described, and specifically pointed out in the claims.

In the said drawings, A represents a tubular shell or casing, within which is placed a vertically-sliding plunger B, which is pre-

vented from rotating on its axis by a spline *a* sliding through a groove in a cap-nut *b*, said plunger being provided at its upper end with a convex head *c* to enable it to be conveniently depressed by the hand of the operator.

To the lower end of the plunger B is secured the tack-driver *d*, Fig. 4, which fits within the tack-channel 20, formed in the lower end of the casing and extending through the tapering nose-piece *e*, said tack-driver passing down through said channel to drive the tacks, as hereinafter described, when the plunger is forced down by the hand against the resistance of a spiral spring *f*, which encircles the plunger and is confined between a collar *g* thereon and the bottom of the interior of the casing, as shown in Fig. 4, said spring *f* serving to return the parts to their normal positions when the pressure of the hand on the head *c* is relieved.

D is the rotary tack magazine or reservoir, which is adapted to contain a supply of tacks, and is supported by and rotates between two stationary disks or covers *h i*, the former *h* having a shoulder 19 turned on its inner side, which fits within a large circular aperture in the front of the magazine, as shown in Fig. 4, holding it in place on that side and forming a bearing on which it rotates. The opposite covering-plate *i* is supported on studs 23 projecting horizontally from the cover *h*, and passing through said cover *i*, outside of which said studs are provided with nuts 24, by which the parts are held securely in position in such manner as to permit the magazine to be rotated by mechanism to be hereinafter described. The inner cover *h* is connected at its upper end with the shell or casing A by a connecting bracket or brace 18, and also by means of the raceway or chute G, which is secured to the cover *h*, and also at its lower end by means of a screw 17 to a horizontally-projecting portion 26 on the lower portion of the casing A.

Within the magazine D, around its inner periphery, are arranged a series of buckets *k*, which lift or pick up the tacks in small quantities as the magazine revolves, and drop them onto an inclined stationary shelf or conductor H placed within said magazine, and by which the tacks are delivered with absolute

certainty into the upper open end of the raceway G, which extends entirely through the magazine, as shown in Fig. 4, said upper end being located in a proper position to receive the tacks as they drop from the conductor H, which thus prevents any tacks from falling back into the magazine without first dropping onto the raceway. This raceway is similar in construction to that shown in United States Patent No. 467,104, granted to me January 12, 1892, and is composed of two parallel bars 27, Fig. 9, set at such distance apart as to leave a space 28 between them for the reception of the shanks of the tacks, the heads of which rest upon and are supported by the upper edges of the bars 27, by which they are guided as they slide down to the lower edge thereof. The upper end of the raceway is enlarged and provided with inclined or flaring sides 30, which direct and guide the tacks as they fall thereon into the space 28, those that fall into the right position being caught by the head, with the shank projecting down into the said space 28. Immediately below the flaring sides 30 the tops of the bars 27 are beveled off on opposite sides, as shown at 31, Fig. 6, so that when the surplus tacks that have not entered the space 28 slide down between the sides 30 and reach the beveled portion 31 they will fall off on either side of the raceway and drop back into the magazine. The rear end of the raceway and the portion of the conductor H, which projects beyond the covering-plate *i*, are inclosed within a detachable cover I, Figs. 4 and 11, which fits thereon, as shown in Figs. 2 and 4, and is held in place by a spring-catch 32, said cover preventing the tacks from being thrown out of the machine while being handled and operated. The raceway is provided with a cap-plate or cover 33, which is formed and screwed down thereupon in such manner as to leave a space between it and the bars 27, as shown in Fig. 4, to permit of the free passage of the heads of the tacks as they slide down the raceway, and at the same time prevent them from being displaced or thrown out by the jar or concussion to which they may be subjected.

The tacks are taken one by one from the lower or delivery end of the raceway G and transferred to a position in the tack-channel beneath the tack-driver by a suitable transferring device or mechanism, the tacks passing into the tack-channel 20 through an opening on one side thereof, as shown in Figs. 4 and 8. One device or mechanism which I have found to answer well for this purpose will now be described, said device being similar to that described in my aforesaid patent, No. 467,104, and forming no part of my present invention. Other devices or mechanism for transferring the tacks from the raceway or chute to a position beneath the tack-driver may, however, be employed if preferred.

Within guideways at the lower end of the casing A is fitted a horizontally-reciprocating

slide *m*, having a rectangular opening *n* through which the lower end of the raceway or chute passes, said opening being of sufficient length to permit of the movement of the slide *m* across the end of the raceway. To the inner side of this slide *m* is secured a thin plate 36, Fig. 7, provided with two wedge-shaped picker-teeth *p q*, which co-operate with two inclined or wedge-shaped picker-teeth *r s* on a plate 37, also secured to the inner side of the slide *m*, opposite to the teeth *p q*, an inclined space 38, as shown in Fig. 7, being left between the two sets of picker-teeth into which the tack is forced and by which it is caused to pass into the tack-channel as the slide is pushed forward. At the lower end of the raceway G are formed two pair of projections 39, the upper pair embracing the lowermost tack under the head and the lower pair embracing it near the point, by which means the tack is held in a vertical position ready to pass into the tack-channel. When the parts are in their normal position the picker-teeth *p q* extend across the bottom of the raceway and serve to hold back the entire line of tacks therein. On the forward movement of the slide *m* the wedge-shaped picker-teeth *p q* pass between the two lower tacks, thus separating them and acting as a stop to hold back the entire line of tacks above the lowest one, at the same time that the beveled sides of the pickers *p q* push the tack, which is held between the projections 39, through the inclined space 38 between the two sets of picker-teeth into the tack-channel through the opening at the side thereof, the inner end of the space 38 being at that time in line with or opposite to the tack-channel. The slide *m* is then returned to its original position ready to operate on the next tack in the same manner, the movement of the slide and its pickers being so timed as to cause the tack to be forced into the tack-channel at the proper moment to be acted upon by the tack-driver. The slide *m* is moved across the end of the raceway against the resistance of a spring *w*, Fig. 1, by a lever L, fulcrumed at 41 to the side of the casing A and pivoted at its lower end to said slide, the spring *w* being placed between said lever and the casing A. This lever L is moved in one direction positively against the resistance of the spring *w* to advance the slide *m* by a swinging lever M, pivoted to the plunger B between ears 16, directly beneath its head, said lever M being provided with a double wedge-shaped block or projection 42, Figs. 2, 10, and 12, which, when the plunger is depressed, passes behind a similar wedge-shaped block or projection 43 at the upper end of the lever L, as shown in Fig. 10, thus forcing the said upper end outward and moving the slide *m* inward, as desired. As soon as the block 42 has passed below and out of contact with the block 43, the lower end of the lever L is moved outward by the spring *w*, which carries the slide *m* back to its original position,

as shown in Figs. 7 and 8, a spring 44 placed within a recess under the head *c* of the plunger and bearing on a shoulder or offset at the upper end of the lever *M* serving to keep the lower end of said lever in contact with the side of the casing *A*. The lever *M* then continues to descend with the plunger to the end of its stroke, but on its return or upward movement the block 42 passes in front of the block 43, causing the lever *M* to be swung outward at its lower end, which movement is permitted by the spring 44, which, after the block 42 has cleared the block 43, carries the lower end of the lever *M* again into contact with the smooth way or surface 21, formed on the side of the casing *A*, in which position it is maintained by said spring 44, ready to again pass down behind the block 43 on the next downward movement of the plunger to move the lever *L* and slide *m*, as before described, said lever *L* being always at rest except during a small portion of the time occupied by the descent of the plunger. The slide *m* is therefore operated very quickly and consequently plenty of time is afforded before its next movement for the tacks to right themselves in the raceway, while they also receive the benefit of the blow or concussion produced when the tack is driven, which assists their movement down the raceway to the delivery end thereof. The lever *L* is inclosed for the greater part of its length within a hollow sheet-metal guard *N*, detachably secured to the casing *A* by screws 46, which enter projections 15 on the side of the casing *A*, said guard permitting the implement to be grasped and held with one hand, leaving the other hand free to operate the plunger, and to this guard *N* is secured a downwardly-curved outwardly-projecting piece 48, which fits over the hand and prevents the implement from slipping down while being held thereby and moved from point to point to drive the tacks in different locations. The upper end of the lever *L* and the lower end of the lever *M*, when in their normal positions, lie between the upper pair of projections 15, Fig. 2, which serve as guides and prevent any lateral movement of these levers, and the lower end of the swinging lever *M* in its descent bears against and slides in contact with the flat smooth way or surface 21, Fig. 2, on the side of the casing *A*.

I will now describe the manner in which the tack-magazine is rotated intermittently by the movement of the plunger which operates the tack-driver.

Q is a stud or pin which projects down from the under side of the plunger-head, parallel with the plunger, and is adapted on the descent of the latter to strike one end of a short lever *R*, Fig. 2, pivoted at 50 to the bracket 18. To the opposite end of the lever *R* is pivoted a rod or bar 51, having a slot 52, Fig. 5, within which fits a headed stud 53, projecting from a long lever 54, one end of

which is pivoted to the cover *h* at 14, the opposite end being provided with a spring-actuated pawl 55, which engages the ratchet-teeth 56, formed around the periphery of the tack-magazine *D*. The parts being in their normal positions with the stud 53 resting at the bottom of the slot 52, as shown in Fig. 5, when the plunger is depressed by a blow of the hand the pin *Q* in its descent strikes the lever *R*, raising its opposite end and with it the rod 51, which, through the connections described, raises the long lever 54 against the resistance of a spring *S* and causes the pawl 55 to pass over the ratchet-teeth 56. On the ascent of the plunger the lever *R* is relieved of the pressure of the stud *Q*, when the bar 51, having at its lower end a foot or hammer 56, is forcibly thrown down by a spring 58 connected therewith and caused to strike a blow on the cap or cover 33 of the raceway, the concussion thus produced displacing any tacks that are not in the proper position on the raceway and keeping them in motion as required. The release of the bar 51 also releases the lever 54, which is then instantly drawn down by its spring *S*, causing the pawl 55 to rotate the magazine as required. The spring 58 is preferably made of a little greater strength than the spring *S*, and consequently as the hammer-bar 51 is provided with a slot 52 it is free to be thrown down by the spring 58 independently of the downward movement of the lever 54, which rotates the magazine, and hence a quicker smarter blow is struck by the hammer on the raceway than would be the case if the bar 51 and lever 54 were positively connected together. The spring 58, however, even if it was no stronger than the spring *S*, would act quicker, as the spring *S* has to rotate the magazine with its contents, and consequently its movement is retarded somewhat thereby. The lever 54 is kept in position against the cover *h* by a guide-strap 60, secured to said cover, and having a vertical slot 61 in which fits a stud 62, projecting from said lever, whereby the parts are steadied and guided during their movement, the spring *S* being attached at one end to the stud 62 and at the other end to a pin projecting from the strap 60. To the rear cover *i* are secured two flat friction-springs 63, Fig. 3, which bear upon the magazine near its periphery and act as brakes to prevent it from being rotated too freely under the action of its spring-propelling mechanism.

It will be seen that although the magazine is rotated by mechanism operated by the plunger *B*, it receives no positive motion therefrom, as the spring-actuated lever 54 gives a quick elastic impulse to the magazine, which is left free to rotate by its own momentum a greater distance than that traversed by its actuating lever and pawl. Consequently, as the magazine is free to rotate by its own momentum independently of the movement of its actuating mechanism, it is

not subjected to the sudden jar or concussion which would occur if it was positively connected with said mechanism, and which would prevent any control of the tacks in the magazine, and hence the liability of breakage or derangement of the working parts of the machine is reduced to a minimum.

What I claim as my invention, and desire to secure by Letters Patent, is—

10 1. In a hand tack-driving machine having a single straight channel within which the nail-driver operates, the combination of a plunger carrying a tack-driver, a rotary tack-magazine or reservoir free to revolve independently of its actuating mechanism, a raceway or chute leading from said magazine directly into the channel in which the nail-driver operates, and means controlled by the plunger for intermittently rotating the tack-magazine, substantially as described.

2. In a hand tack-driving machine having a single straight channel within which the nail-driver operates, the combination of a plunger carrying a tack-driver, a rotary tack-magazine free to revolve independently of its actuating mechanism, an inclined raceway or chute leading from the magazine directly into the channel in which the nail-driver operates, and means for taking a single tack from the raceway, placing it directly within the single straight channel under the tack-driver and driving the same tack so placed, all at a single downward movement of the plunger, substantially as described.

3. In a hand tack-driving machine having a single straight channel within which the nail-driver operates, the combination of a plunger carrying a tack-driver, a rotary tack-magazine free to revolve independently of its actuating mechanism, an inclined raceway or chute leading from the magazine directly into the channel in which the nail-driver operates, a transferring device at the delivery end of the raceway for separating the tacks and transferring them directly into the straight channel in which the nail-driver operates, and suitable connections whereby the downward movement of the plunger operates the tack-separating and transferring device, and the mechanism for rotating the magazine, substantially as set forth.

4. In a hand tack-driving machine having a single straight channel within which the nail-driver operates, the combination with the plunger carrying the tack-driver, and the tack-chute or raceway communicating directly with the straight channel within which the nail-driver operates, of a slide carrying the tack-separating and transferring device for taking the tacks from the raceway and placing them within the said straight channel and directly beneath the tack-driver, a lever and spring for operating said transferring device, and means connected with the plunger

for operating the lever against the resistance of the spring and permitting it to return to its normal position at each downward movement of the plunger, substantially as described.

5. In a hand tack-driving machine, a rotary tack-magazine or reservoir free to revolve independently of its actuating mechanism, combined with a spring-actuated propelling device adapted to impart a spring or elastic impulse to the magazine to intermittently rotate the same without limiting the range or amount of its movement derived from said impulse, substantially as set forth.

6. In a hand tack-driving machine, the combination with a plunger, carrying a tack-driver, a raceway or chute, a rotary tack-magazine or reservoir free to revolve independently of its actuating mechanism, and means for imparting a spring or elastic impulse to said magazine for the purpose of intermittently rotating the same without limiting the amount of its movement derived from said impulse, substantially as described.

7. In a hand tack-driving machine, the combination with the plunger carrying the tack-driver, the rotary magazine, the chute or raceway leading from the magazine to the tack-channel, a hammer adapted to strike the raceway and produce a concussion for the purpose of displacing any tacks not in proper position upon the raceway, and means controlled by the plunger for intermittently rotating the magazine and operating the hammer, substantially as set forth.

8. In a hand tack-driving machine, the combination with the plunger carrying the tack-driver and provided with a vertical stud or pin Q, extending downward from the upper end of the plunger, the rotary magazine provided around its periphery with ratchet teeth, the raceway or chute, the lever R, adapted to be acted upon by the pin Q, on the descent of the plunger, the slotted hammer-bar 51, the lever 54, provided with a stud 53, fitting within the slot of the bar 51, and carrying at its outer end a spring-actuated pawl engaging the ratchet teeth of the rotary magazine, and the springs S, and 58, all operating substantially as and for the purpose set forth.

9. In a hand tack-driving machine, the combination with the plunger carrying the tack-driver, the raceway or chute communicating with the tack-channel, the slide carrying the tack separating and transferring device for taking the tacks from the raceway and placing them in the tack-channel, the lever L, pivoted at its lower end to said slide, and provided with a wedge-shaped block or projection 43, the spring-actuated swinging lever M, pivoted to the upper end of the plunger and provided with a wedge-shaped block 42, adapted to co-operate with the wedge-shaped block 43, to actuate said lever L, and thereby move

the slide in one direction, and a spring for returning said slide and lever to their normal positions, substantially as described.

5 10. In a hand tack-driving machine, the combination with the tack-magazine free to revolve independently of its actuating mechanism, and provided with a spring-actuated propelling device for intermittently rotating the same, of a stationary friction or brake spring

adapted to bear upon the rotating portion of said magazine, substantially as and for the purpose set forth.

Witness my hand this 23d day of February,
A. D. 1895.

JOHN HYSLOP.

In presence of—

P. E. TESCHEMACHER,
ALICE E. HUMISTON.