

(No Model.)

3 Sheets—Sheet 1.

A. F. PRESTON.
HAND NAILING IMPLEMENT.

No. 510,442.

Patented Dec. 12, 1893.

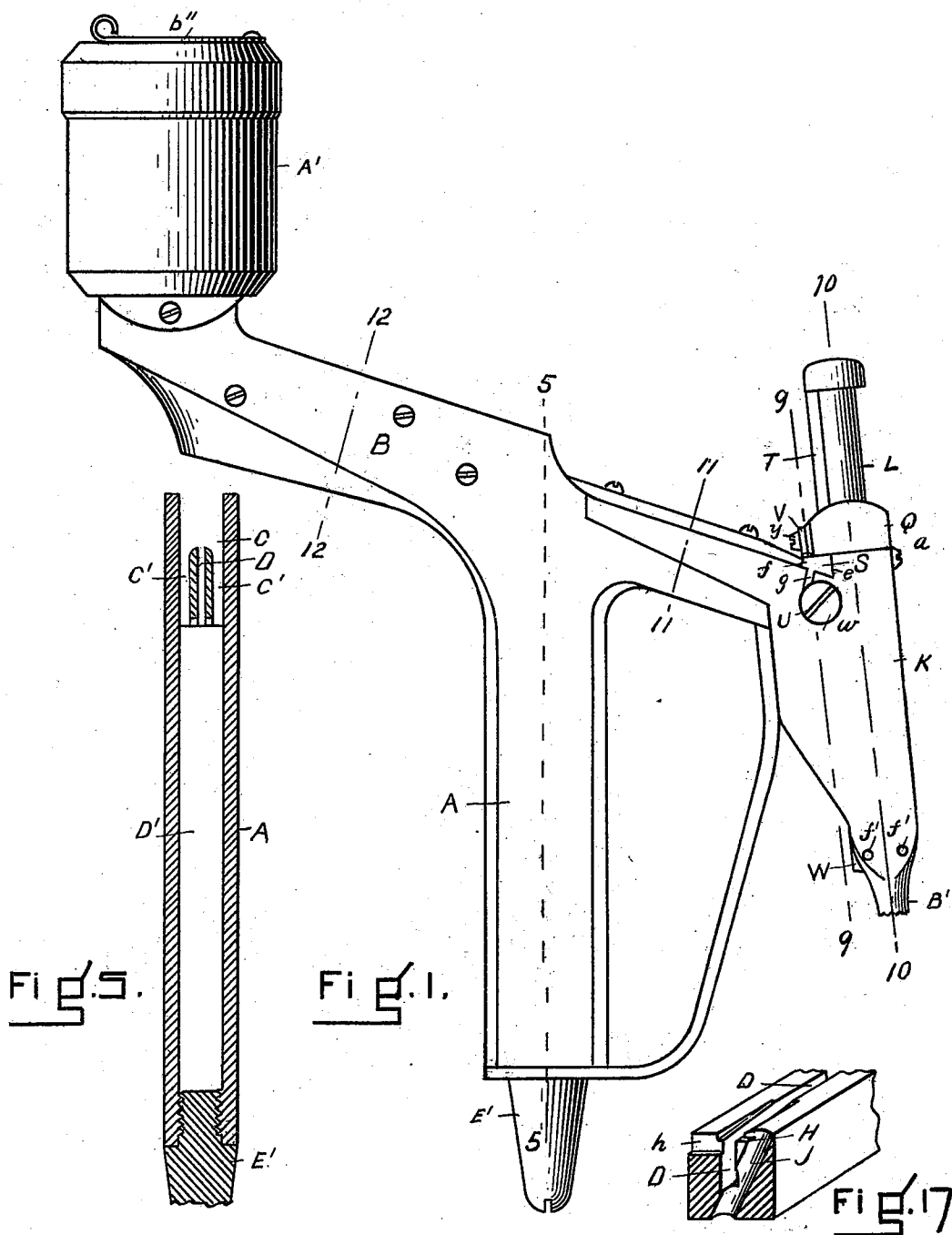


FIG. 5.

FIG. 1.

FIG. 17

WITNESSES.

Larrie E. Nichols.

Mattie Kellough.

INVENTOR

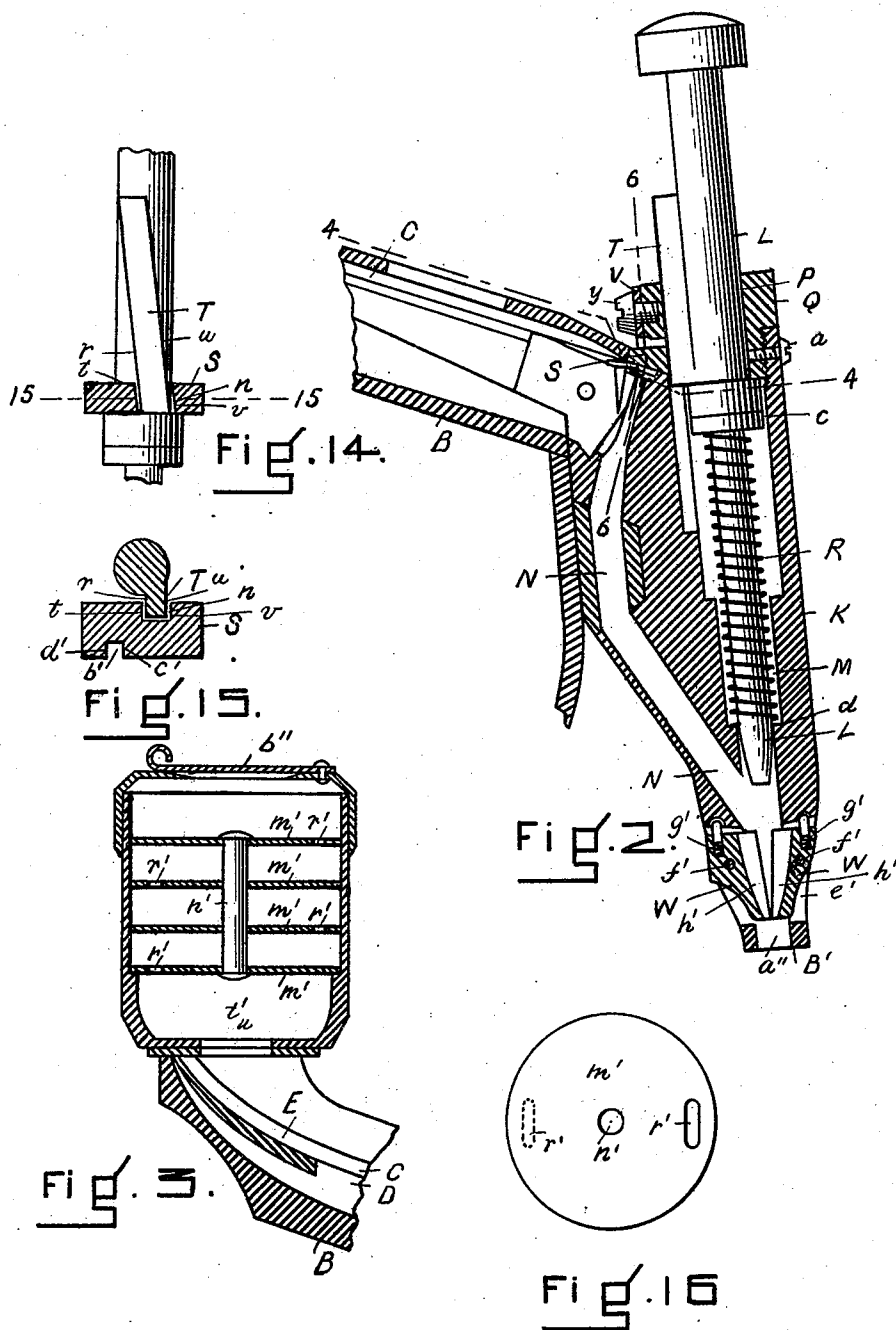
Albert F. Preston.

Per Edwin W. Brown.
Attorney.

A. F. PRESTON.
HAND NAILING IMPLEMENT.

No. 510,442.

Patented Dec. 12, 1893.



WITNESSES.
Louis C. Nichols.
Mattie Hellough.

INVENTOR
Albert F. Preston.
Per *Edwin H. Brown.*
Attorney.

(No Model.)

3 Sheets—Sheet 3.

A. F. PRESTON.
HAND NAILING IMPLEMENT.

No. 510,442.

Patented Dec. 12, 1893.

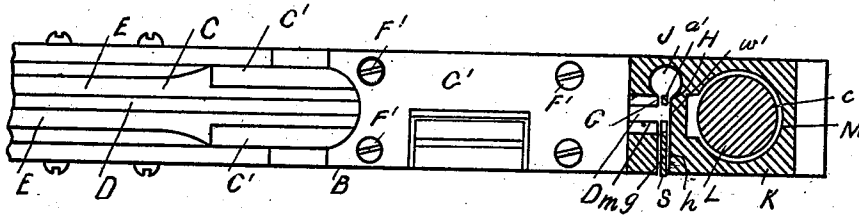


Fig. 4.

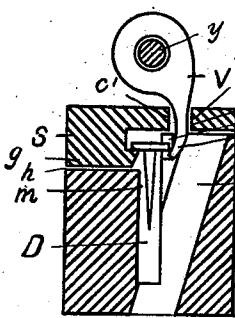


Fig. 6.

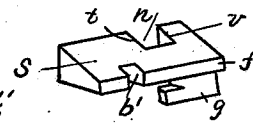


Fig. 13.

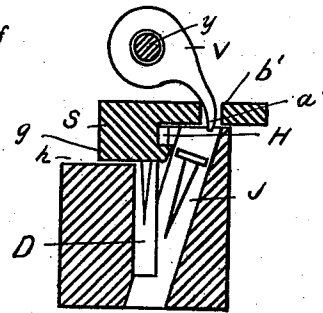


Fig. 7.

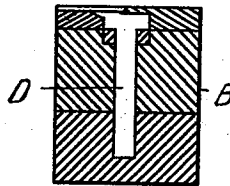


Fig. 11.

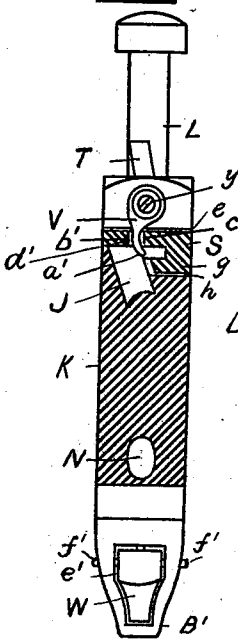


Fig. 9.

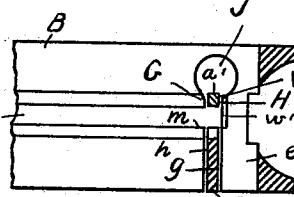


Fig. 8.

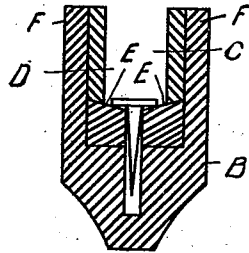


Fig. 12.

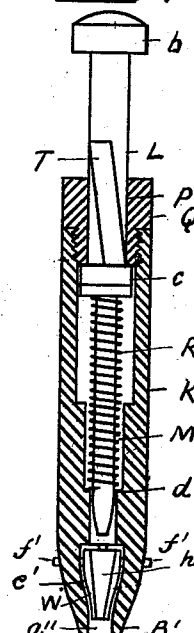


Fig. 10.

WITNESSES
Carrie E. Nichols.
Minnie Kellogg

INVENTOR
Albert F. Preston.
Per Edwin H. Brown
Attorney.

UNITED STATES PATENT OFFICE.

ALBERT F. PRESTON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE COLUMBIAN LASTING MACHINE COMPANY, OF PORTLAND, MAINE.

HAND NAILING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 510,442, dated December 12, 1893.

Application filed March 31, 1891. Renewed October 25, 1892. Again renewed May 4, 1893. Serial No. 473,031. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. PRESTON, of Lynn, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Hand Tacking and Nailing Machines, of which the following is a full, clear, and exact description.

This invention relates to improvements in hand tacking machines, for use more particularly in connection with the lasting machine, for which Letters Patent of the United States were issued to me dated January 1, 1889, and numbered 395,630, although it is applicable to other machines for lasting boots and shoes. It is also applicable as well to other uses where any thing is to be secured by tacks or headed nails, and the invention consists of a hand tacking machine for feeding tacks or headed nails to a driver and driving the same, all constructed and arranged for operation substantially as hereinafter fully described and shown, reference being had to the accompanying sheets of drawings in which is illustrated a hand tacking machine constructed in accordance with this invention.

Figure 1, is a view in side elevation. Fig. 2, is a detail vertical central longitudinal section from the front a short distance along the raceway for feeding the tacks. Fig. 3, is a detail vertical central section at the other end of the raceway. Fig. 4, is a plan and sectional view below line 4—4, Fig. 2. Fig. 5, is a vertical cross section on line 5—5, Fig. 1. Figs. 6 and 7, are detail cross sections of some of the working parts, in two different positions. Fig. 8, is a detail plan and sectional view. Figs. 9 and 10, are vertical cross sections on line 9—9 and 10—10, respectively Fig. 1, looking to the right. Figs. 11 and 12, are cross sections on line 11—11, and 12—12, respectively Fig. 1. Fig. 13, is a perspective view of one of the parts. Fig. 14, is a detail view in elevation and partial section. Fig. 15, is a detail cross section on line 15—15, Fig. 14. Fig. 16, is a detail plan view and Fig. 17, is a cross section and perspective view. Figs. 6 and 7, are taken as looking toward the raceway from the direction of the driver the reverse of Fig. 9.

Some of the figures are enlarged to more clearly show the invention.

In the drawings A, represents a post on which the various working parts of the machine are supported, also serving as a handle by which to hold the machine in the left hand when using it and on the top of this post is a bar B, extending in an inclined direction, as shown in Fig. 1, more particularly. In this inclined bar is a raceway C, for feeding the tacks to the driving mechanism, shown in plan view in Fig. 4, and in cross section in Figs. 11, and 12, extending from near the upper end of the bar, as shown in Fig. 3, to its other end, as shown in Figs. 2 and 4. This raceway is composed of a central vertical groove or passage D, and from each upper edge of the groove, each side gradually rises, as at E, in an inclined direction having an outer rib F, as shown in cross section in Fig. 12, which serve as guards or shields, as well as for other purposes. The lower end of the raceway extends sidewise or in a right angular direction backward, as at G, and its groove H, opens into a socket or passage J, which extends downward, inclining forward and meets and merges near its lower end into the bottom portion of the vertical inclined groove D, of the longitudinal raceway and side groove H, substantially at the junction, as shown in cross section in Figs. 6, 7 and 17. Attached to the lower end of the inclined raceway bar, is an upright K, which leans a little toward the post, as shown in Fig. 1, and which supports and carries the driver L, for the tacks, it being arranged to move up and down in a vertical passage M.

The passage J, connects and communicates with another passage N, which is practically a continuation of it which extends downward in an inclined direction in the upright and at its lower end opening into the vertical or driver passage M, as shown in Fig. 2.

The driver L, is arranged to slide up and down and be guided at its lower end in the passage M, its upper part extending up through and guided in a socket P, in a collar Q, screwing into the upper end of the upright, the collar being secured from movement by a

set screw *a*, and the driver having a head *b*, on its upper end.

R is a spiral spring encircling the driver which bears against the under side of a shoulder *c*, of the driver and shoulder *d*, in the passage M, which serves to hold the driver up for its lower end to be above the passage N, leading from the passage M, as shown in Fig. 2, more particularly, the upward movement of the driver being limited by the abutment of the shoulder *c*, against the collar Q.

S is a bar or block adapted to slide back and forth across the inclined raceway in a groove or socket *e*, at the lower end of the race way. This block has a flange *f*, extending up and laying across and over the lower end of the raceway groove and its side extension and has extending down from its under side, at right angles thereto, a flat piece *g*, in the same longitudinal line of the sliding block, and which when the block is in its normal position, as shown in Figs. 4, 6 and 9, lays in an extension *h*, of the groove H, the rear or operating end of the piece *g*, being then flush with the side *m*, of the longitudinal raceway groove, as shown in Figs. 4 and 8, more particularly.

On the side of the driver L, is a flat piece T of same width throughout its length and arranged diagonally on the driver, as shown in Figs. 2, 10 and 14, its lower end when the rod is up laying in an inclined groove *n*, in the side of the sliding block S, which groove runs in the same diagonal direction, as the inclined piece T, of the driver, as shown in Fig. 14, so that when the driver is moved down, the inclined piece T, passes down the sliding block groove *n*, and by its edge *r*, bearing against the end *t*, of the groove moves the sliding block backward the distance of its incline from a vertical line; in such movement of the sliding block its edge piece *g*, passes along into the side groove H, and in front and across the lower end of the inclined raceway groove D and in such position it is held so long as the driver is down, but as the driver moves up the other edge *u*, of the piece T, acts on the other end *v*, of the groove of the sliding block and moves the block back into its normal position, its edge piece *g*, moving into the extension *h*, of the side groove, the block being stopped by the screw head *w*, of the screw U, screwing into the upright, as shown in Fig. 1.

Just above the sliding block on the side of the upright, is a piece V pivoted thereto, at *y*, to freely swing thereon, the lower pointed end *a'* of which projects down into and through an opening *b'* in the flange *f*, of the sliding block to such a distance, that when the sliding block is in its normal position, as shown in Figs. 6 and 9, more particularly, the end of this swinging piece will lay in the side groove H, just back of the rear side of the groove D, of the longitudinal raceway, and as the sliding block is moved, by the downward movement of the driver, it swings this piece V, on its pivot, by the edge *c'* of the block

opening *b'*, pressing against the same, up, out and free of the side raceway, and as the block returns to its normal position, the other edge *d'* of the block opening *b'* moves the swinging piece V, back and down into the side raceway groove again, into its normal position, at the side of the inclined raceway groove.

At the lower end of the driver passage M in the upright is an opening *e'*, below the driver L, and in the same vertical plane are two blocks W pivoted at *f'* to the upright and arranged to swing to and from each other, the blocks having springs *g'* respectively, secured to the upright and bearing against the upper end of each block, as shown in Fig. 2, more particularly, which springs serve to keep the two blocks together and if swung apart to move them back again. Each block has a central vertical open tapering groove *h'* in its side contiguous to the other block, which makes a conical socket when together, in the same central vertical line as the central longitudinal line of the passage M.

On the upper end of the inclined raceway bar B, is a receptacle A' having four horizontal partitions *m'* supported on a central rod *n'* dividing the receptacle into five separate chambers, one above the other, each partition having an opening *r'* through it at one side, the opening in each partition being on the side of the receptacle opposite to the openings in the partitions next to it, as shown in cross section in Fig. 3, so that communication between the upper chamber and the lower chamber *t'* shall not be in a direct line. The lower chamber *t'* has a central oblong opening *u'* in its bottom which is just over the upper end of the inclined raceway, as shown in section in Fig. 3, more particularly. The partitions fit loosely thereon, so that the rod with the partition can be removed from the receptacle at pleasure.

The operation of the machine is as follows: Tacks are placed in the upper chamber of the receptacle A' and the machine shaken somewhat, by which the tacks will gradually fall down through the openings *r'* in the partitions and chambers onto the upper end *v'* of the inclined raceway and thence pass down the inclined raceway. As the tacks pass down the inclined raceway because of its incline and of the lateral incline of its sides or edges E, above the raceway groove D, the point or leg of each tack will pass into the longitudinal vertical groove of the inclined raceway, and its head rest and lay on the lateral inclined surfaces, and sliding down the same will strike and rest against the lower end *w'* of the groove D, in front of the side groove H, the next tack following it in the same manner and resting against the first tack and so on. A tack when the parts are in their normal position can not enter the side raceway groove H, of the inclined raceway groove, because the swinging piece V, is disposed therein, and it cannot move into the extension *h*, of the side groove because the

edge piece *g*, of the transverse sliding or cut off block *S*, lies therein. The driver is then struck a smart blow which forces the driver down into its lowermost position and which closes up the lower end of the inclined passage *N*, leading to its driveway passage *M*; as the driver passes down, the inclined bar or piece *T* of the driver moves the sliding block *S*, backward, and its piece *g*, moves with it the first tack that is at the lower end of the inclined raceway groove *D*, into the side raceway groove *H*, at the same time the pivoted piece *V* moves up out of the groove to allow for such movement of the tack, the tack then falling into the short side way inclined passage *J*, down into the inclined passage *N*; as the sliding block moves this first tack from the inclined raceway, its sliding block piece *g*, moves in front of the lower end of the longitudinal groove *D*, of the inclined raceway, and prevents the second tack passing to the lower end of this groove, in front of the side groove; as the driver is returned to its upper and normal position by the action of its spring *R*, the lower end of the driver passes up by the lower end of the passage *N*, allowing the first tack, that has arrived there, to fall down into the passage *M*, and into the conical socket, between the two swinging blocks *W* in position for the driver *L*, when afterward moved down to drive the tack; at the same time the sliding block is returned to its normal position, by the inclined bar or piece of the driver and the edge piece *g*, of the block moved back from the front of the lower end of the inclined raceway groove, so that the next or second tack will pass to such lower end in front of the side groove, but which is prevented from passing to the side groove by the swinging down of the pivoted piece *V*, into such groove. The machine being held in the left hand the lower end *B'* of the upright is placed on the part where the tacks are to be driven and then the driver is struck another blow, forcing down the driver, striking the first tack, which is then in the conical socket, between the pivoted blocks *W*, and driving the tack through the outlet passage *a''* into the article; this movement moves the transverse sliding block *S* as before, pushing over the second tack into the side groove which drops down into the passage *J*, the edge piece *g*, then being over or across the end of the inclined raceway groove, preventing the third tack from moving any farther down; as the driver is raised, the second tack then falls into the conical socket in the blocks *W*, and the third tack into the lower end of the inclined raceway groove ready to be pushed into the side groove to fall down into the passage *N*, to pass to the driver, and so on for each tack. The movements of the driver down and up and the movements of the sliding block across the inclined raceway with the pivoted pieces, are so timed in relation to each other that only

one tack can pass to the blocks *W*, to be driven at a time. The jar caused by striking the driver acts to shake the receptacle sufficient generally to cause the tacks to pass through the openings in the several partitions and through the several chambers to the raceway sufficient to feed the driver as fast as it is operated, if not, a slight shake given to the machine by the person holding it will cause the tacks to be delivered sufficiently.

The construction of the inclined raceway in cross section in connection with its longitudinal incline and the outside edges or marginal ribs *F*, is such that no matter how a tack drops on to the raceway, before it reaches its lower end, it will have found its true position in the raceway for its proper presentation to the driver, that is, its body will be point downward in the groove *D*, with its head resting on the laterally inclined surfaces at each side, as shown in Fig. 12, more particularly.

The laterally inclined surfaces *E*, of the raceway are of less width than the length of the body of the tack, and the ribs or border edges not only serve to prevent the tacks from falling out of the raceway, but being nearer to the raceway groove than the length of the body of the tack, prevent any tack from lying at right angles or sufficiently so, on the inclined surfaces with its head in the groove, to interfere with its proper movement down the incline, so that it is forced naturally to lie at such an angle to the line of the groove that its point will surely fall into the raceway groove.

The raceway groove *D*, is of a width to allow the body of the tack free movement therein, but not wide enough for its head, so that it will surely rest upon its upper inclined edges.

At the middle portion of the raceway, over the post or handle, are openings *C'*, one each side of the raceway groove, which extend down and communicate with a chamber *D'* in the handle, so that if any tacks happen to be clogged or thrown one side, at such place they will drop into one of the openings *C'* and fall down into the handle chamber from which they can be removed at pleasure by unscrewing the screw nut *E'*. This screw nut *E'* is lengthened out as shown into pin shape to be used to stand the machine up when not in use, by placing it in a socket in any suitable base. Over the upper side of the lower end of the groove of the inclined raceway, secured thereto by screws *F'*, is a plate *G'* which prevents the tacks after reaching this part of the raceway from jumping out from any jar given to the machine and yet allows free movement of the tacks under it along the raceway; also the sliding block flange *f*, prevents the tacks from jumping out of the raceway groove, and is high enough to allow free movements of the tacks under it.

When operating the machine the first blow given to the driver does not drive a tack, as the first tack will have only reached the lower end of the passage N, and it is therefore necessary to operate the parts for the first tack to pass from such passage into the passage in connection therewith into its position in between the blocks W, to be driven by the driver. After the first tack has been driven, at each blow given to the driver a tack will be driven and on the return of the driver into position to again drive a tack, another tack or the next tack will be in place to be driven, but in no case with proper handling of the machine can two tacks come together to the driver to interfere with the proper working of the machine. The groove of the side raceway is only wide enough for one tack to pass through it at a time and when the block S, is moved only the lowermost tack will be moved into it.

The passage J, is made inclined in the direction shown and described, for several reasons among which may be mentioned the following: As the tack is pushed through the side raceway into this passage, its head naturally moves faster than its point, so that as it enters the passage it will incline somewhat, its point being nearer the inclined raceway than its head, the incline of the passage being arranged substantially in the same general direction that the tack would naturally be at such time, as shown in Fig. 7; also to have the passage merge into the inclined raceway and the side raceway grooves; substantially at their junction, by which when the tack is at the lower end of the inclined raceway groove, in place to be moved into the side raceway, its point will be over the inclined passage, and thus in position to properly enter therein and pass therethrough; also by the merging of the passage with the raceway grooves, the bottom of the grooves are cut away at such place, obviating all danger of the point of the tack striking against the same; thus the general arrangement of the passage in relation to the raceway and their grooves substantially as described and shown insures the tack always passing freely and properly through the passage to the driver. In lieu of having the passage merge into the raceway grooves it can be arranged so as to pass by it extending below but it is preferable to have it as particularly described and shown. The receptacle has a cover *b''* to prevent the tacks falling out, and the openings *r'* are preferably made oblong as shown in Fig. 16, in plan view.

The various parts of the machine are made of metal, suitable for the proper working of the parts, &c.

The shoulder *c*, has a piece of yielding material, on its under side, such as raw hide, in order when it strikes the shoulder, of the passage M, which is the limit of its downward movement, that the blow will not be too hard or rigid.

I do not in this application claim what is claimed in my application Serial No. 356,839.

Having thus described my invention, what I claim is—

1. In a tack driving machine, the combination in an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway and extending downward and inclining toward the longitudinal vertical plane of the inclined raceway and thence downward to the driving mechanism, of a block or slide arranged to move back and forth in said side raceway, and a tack driver arranged to move up and down in suitable guide ways and having a part which engages and acts to positively move the block or slide in both directions for the purpose specified.

2. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway, and extending downward and inclining toward and merging into and with the grooves of the inclined raceway and side raceway and thence extending downward to the driving mechanism, of a block or slide arranged to move back and forth in said side raceway, and a tack driver arranged to move up and down in suitable guideways and having a part which engages and acts to positively move the block or slide in both directions for the purpose specified.

3. In a tack driving machine, the combination with an inclined tack feeding raceway having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway, of a block or slide arranged to move back and forth in suitable guideways and provided with a downward piece projecting into said side raceway, and a tack driver arranged to move up and down in suitable guideways having a part which engages and acts to positively move the block or slide in both directions for the purpose specified.

4. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway, a block or slide arranged to move back and forth in suitable guideways, having an opening in its upper side and a downward piece projecting into said side raceway, of a swinging piece adapted to engage with said opening in said sliding block and projecting through the same into said side raceway back of said projecting piece, and a tack driver arranged to move up and down in suitable guideways and

having a part which engages and acts to positively move the block or slide in both directions for the purpose specified.

5. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway, a block or slide having a groove or shoulder arranged to move back and forth in said side raceway and having an opening in its upper side and a downward piece projecting into said side raceway, of a swinging piece adapted to engage with said opening in said sliding block and projecting through the same into said side raceway, back of said projecting piece, and a tack driver arranged to move up and down in suitable guideways and having a part which engages and acts to positively move the block or slide in both directions for the purpose specified.

6. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto and a passage formed in the body of the machine communicating with the end of said side raceway and extending downward and inclining toward the longitudinal vertical plane of the inclined raceway, of a block or slide having an inclined groove, and arranged to move back and forth in said side raceway and a tack driver arranged to move up and down in suitable guideways and provided with inclined edges to engage with said groove for the purpose specified.

7. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway and extending downward therefrom, of a block or slide arranged to move back and forth in said side raceway and a tack driver arranged to move up and down in suitable guideways and having a part which engages and acts to positively move the block or slide in both directions for the purpose specified.

8. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway and extending downward therefrom, of a block or slide having two shoulders and arranged to move back and forth in said side raceway, and a tack driver arranged to move up and down in suitable guideways and adapted to engage with said shoulders to move said block in both directions for the purpose specified.

9. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway and extending downward therefrom, of a block or slide having shoulders and arranged to move back and forth in said side raceway, and a tack driver arranged to move up and down in suitable guideways and provided with inclined edges to engage with said shoulders to move said block in both directions for the purpose specified.

10. In a tack driving machine, the combination with an inclined tack feeding raceway, having a side raceway extension at its lower end substantially at right angles thereto, and a passage formed in the body of the machine communicating with the end of said side raceway and extending downward therefrom, of a block or slide having an inclined groove and arranged to move back and forth in said side raceway, and a tack driver arranged to move up and down in suitable guideways and provided with inclined edges to engage with said groove to move said block in both directions for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALBERT F. PRESTON.

Witnesses:

EDWIN W. BROWN,
CARRIE E. NICHOLS.