(No Model.) 3 Sheets—Sheet 1.

E. MERRITT.

PEGGING MACHINE.

No. 263,559. Patented Aug. 29, 1882.

Fig. 1.

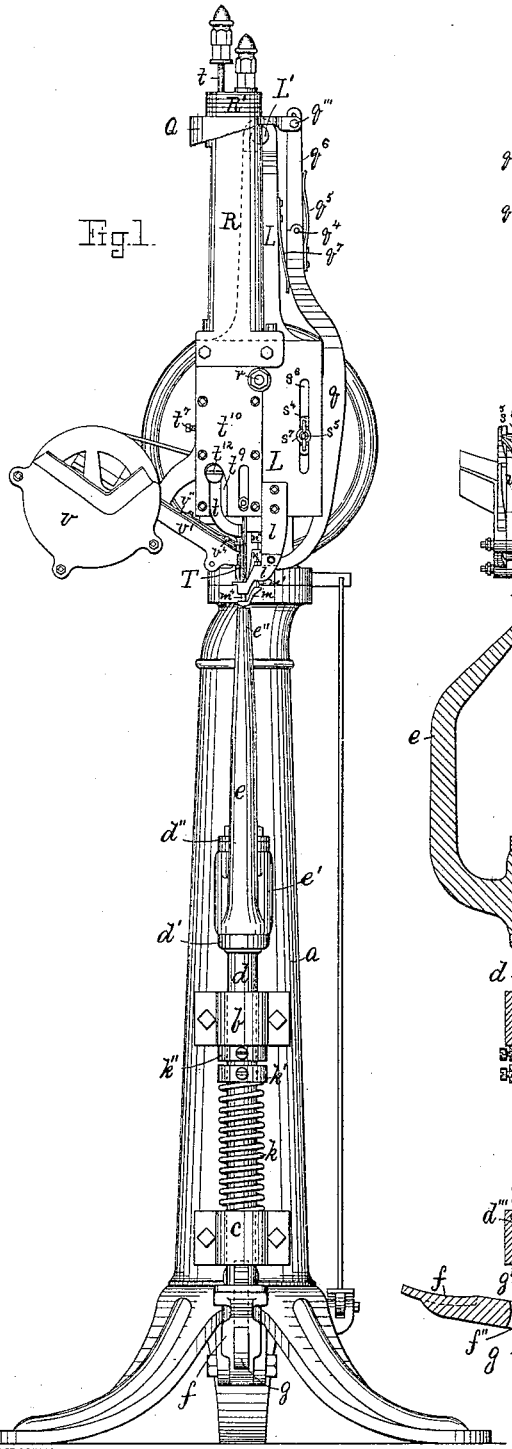
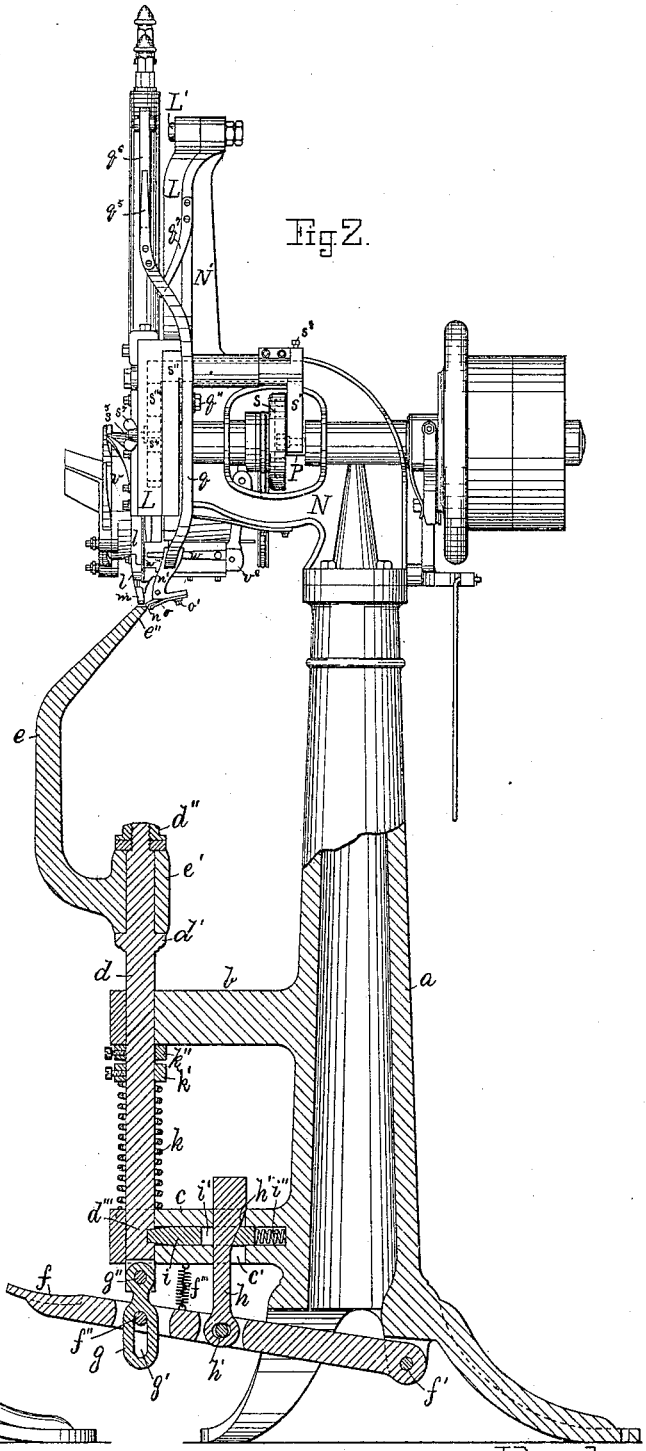


Fig. 2.



Witnesses.

Henry Chadbourn.

Sarah M. Goodrich

Inventor.

Edward Merritt

by Albert Andrews

his atty.

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Fig. 10.

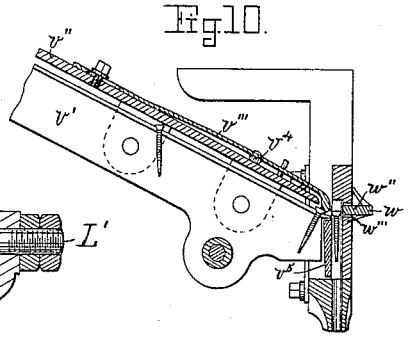

Fig. 9.

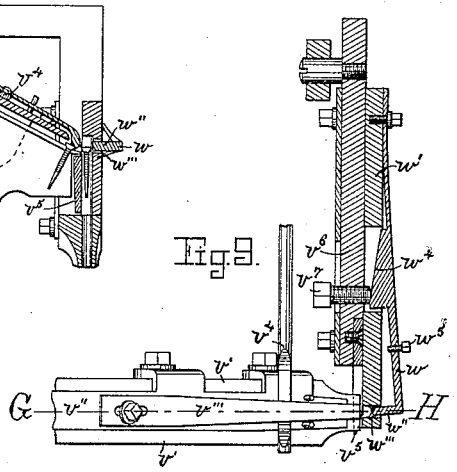

Fig. 3.

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Fig. 7.

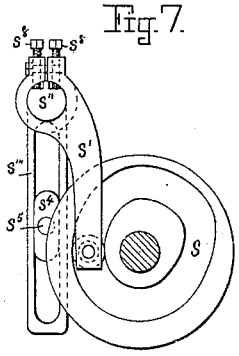


Fig. 6.

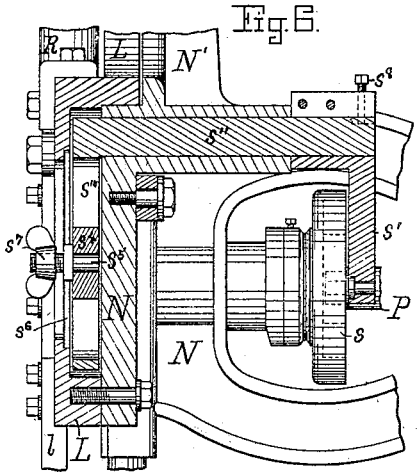


Fig. 5.

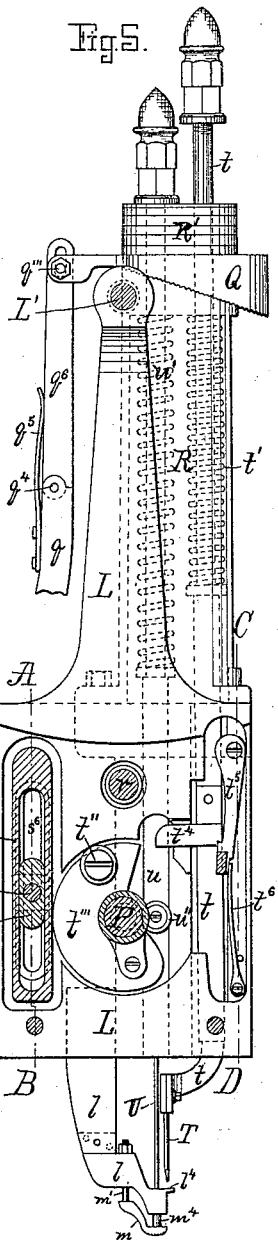


Fig. 4.

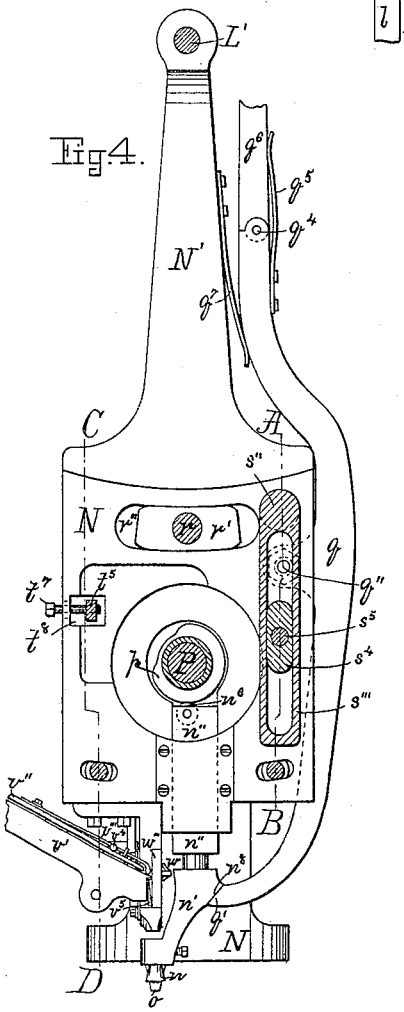


Fig. 8.

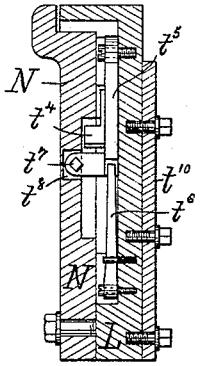
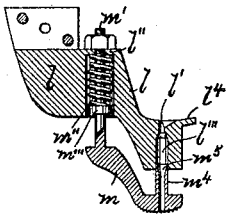


Fig. 11.



Witnesses

Henry Chadbourn

Sarah M. Goodrich

Inventor

Edward Merritt

by Albert Greene

his atty

UNITED STATES PATENT OFFICE.

EDWARD MERRITT, OF BROCKTON, MASSACHUSETTS.

PEGGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,559, dated August 29, 1882.

Application filed May 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD MERRITT, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Nailing-Machines for Boots and Shoes; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in nailing-machines for boots and shoes, and it is carried out as follows, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of the machine and its standard. Fig. 2 represents a side elevation of the machine, showing its horn and standard in section. Fig. 3 represents an enlarged central longitudinal section of the machine. Fig. 4 represents a front view of the machine, showing the swinging head and hopper as removed. Fig. 5 represents an inside view of the swinging head. Fig. 6 represents a vertical section on the line A B, shown in Figs. 4 and 5. Fig. 7 represents a detail view of mechanism for operating the swinging head of the machine. Fig. 8 represents a vertical section on the line C D, shown in Figs. 4 and 5. Fig. 9 represents a horizontal section on the line E F shown in Fig. 3, showing the spring-gage, nail-separator, and raceways. Fig. 10 represents a section on the line G H, shown in Fig. 9; and Fig. 11 represents a detail sectional view of the yielding and detachable throat.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a in Figs. 1 and 2 represents the standard, to the upper end of which the nailing-machine is secured. The front of the standard *a* is provided with arms, projections, or brackets *b* and *c*, which serve as bearings for the vertically-adjustable spindle *d*, which carries the horn *e* on its upper end, the lower end of said horn having for this purpose a hollow hub, *e'*, fitting loosely on the upper end of the spindle *d* and resting on a collar, *d'*, thereon, as shown in Figs. 1 and 2.

d'' is a nut on the upper end of the screw-threaded portion of the spindle *d*, to hold the hub *e'* in its proper place on said spindle *d*.

e'' is the upper end of the horn *e*, and serves to support the shoe when in process of being nailed. The horn *e* is loose to turn round on the spindle *d*, which latter is vertically adjustable in the bearings *b* and *c*, by means of the treadle-lever *f*, hinged at *f'* to the lower end of the standard *a*, and the slotted link *g*, having slot *g'*, through which the pin *f'''* passes loosely, said pin being secured firmly to the forward part of the treadle-lever *f*, as shown in Fig. 2. The upper end of the link *g* is hinged at *g''* to the lower end of the horn-spindle *d*, as shown.

To the treadle-lever *f*, between the pins *f'* and *f'''*, is hinged, at *h'*, the rod or bar *h*, which passes through a vertical perforation, *c'*, in the bearing *c*, and is provided in its upper end with a wedge, *h''*, that passes through a perforation, *i'*, in the horizontally-adjustable locking-bar *i*, the forward end of which is adapted to lock into a recess, *d'''*, on the spindle *d*, so as to hold the said spindle in a rigid position at the highest point of the horn, which it carries during the driving of the nails. The bolt *i* is automatically held in a forward locked position by means of the coiled spring *i''* behind it, as shown in Fig. 2. By pressing down on the treadle-lever *f* the locking-bar *i* is caused to recede from the recess *d'''* by the action of the wedge-bar *h h''*, and by farther depressing the lever *f* its pin *f'''* acts on the slotted link *g g'* to lower the spindle *d* and its horn *e* sufficiently to allow the work to be placed on the top of the horn. By releasing the pressure on the treadle-lever *f* the spindle *d* and its horn *e* are automatically caused to ascend by the influence of the coiled spring *k*, placed around the spindle *d*, between the bearing *c* and the collar *k'*, until the recess *d'''* comes opposite to the locking-bar *i*, when the latter is caused to lock into it by the influence of the spring *i''*, as shown in Figs. 1 and 2. *k''* is another adjustable collar on the spindle *d*, which serves as a stop against the under side of the bearing *b* when the horn *e* has reached its highest position, as shown. Thus it will be seen that the horn *e* is vertically adjustable to admit the work to be placed upon its upper end and to remove it therefrom when nailed, but during

the process of nailing the boot or shoe the horn is rigidly held without yielding in a vertical direction.

f''' is a spring secured to the lever f and to the under side of bearing c, so as to cause the lever f to ascend and to be held in its upper position (shown in Fig. 2) when the pressure on it is relieved.

The throat.—This is composed of two parts, namely, first, a rigid piece, l, secured to the lower end of the oscillating head L—such rigid piece has a perforation, l', through it for receiving the awl, driver, and nails; and, secondly, a yielding nose-piece, m, having a spindle, m', and a spiral spring, m'', projecting up through a perforation in the stationary throat part l, as shown in Fig. 11, such spring m'' acting against the annular projection l'' in the rigid throat part l and against a collar, m''', on the spindle m', and thus automatically holding the yielding nose-piece m to its lowest position, except when forced upward more or less by the variations in the thickness of the boot or shoe sole that is supported on the upper end of the horn e during the process of nailing, the horn e being rigid without any vertical adjustment in nailing the sole. The object of the yielding nose-piece m is to keep the lower end of it always in contact with the upper surface of the boot or shoe sole during the progress of the work of nailing. The yielding nose-piece m has an upwardly-projecting hollow sleeve, m^4, which is guided in a corresponding perforation, l''', in the rigid part l, and such sleeve m^4 has a countersink, m^5, in its upper end to guide the nails properly through it when dropping from the perforation l''' in the stationary part l.

Presser-foot.—n is the presser-foot, which is attached to the lower end of the vertically-adjustable shank n', to which is also secured, by means of the screw o', the laterally-adjustable gage o, to regulate the distance from the edge of the sole in which the nails are to be driven. o'' is a slot-hole in the gage o, through which the screw o' passes, and by means of which the gage o is adjusted laterally. The upper end of shank n' is loosely supported in the vertically-adjustable sleeve n'' and pressed downward by the influence of the coiled spring n''', located within said sleeve n'', as shown in Fig. 3, to allow said presser-foot to yield upward and adjust itself automatically to variations in the thicknesses of the leather of the boot or shoe sole. The lower end of the sleeve n'' is provided with a pin or screw, n^4, the inner end of which projects into a groove, n^5, in the shank n' to prevent the latter from being forced out or detached from the sleeve n'' by its spring n'''. The sleeve n'' is movable up and down in bearings in the forward part of the frame N, and is actuated downward by means of a cam, p, on the driving-shaft P, acting on a roll, n^6, in the upper end of the sleeve n'', and is moved upward by the influence of a spring, p', secured to the frame N and having its forward end acting on a projection, n^7, in the rear of the sleeve n'', as fully shown in Fig. 3. The object of this arrangement is to bring a pressure on the upper surface of the boot or shoe sole at all times, except when the feed takes place, and to admit an automatic adjustment of the presser-foot to the variations in the thicknesses of the sole which is operated upon.

In using a yielding throat and yielding presser-foot, combined with a rigid horn, as described, it is necessary to adjust the downward stroke of the awl and driver, so as to correspond with the adjustment of the yielding nose-piece of the throat and the yielding presser-foot; and for this purpose I provide the presser-foot shank n' with a wedge or inclined projection, n^8, as shown in Fig. 4, which actuates an inclined surface, q', in the lower end of the rocking lever q, which is hung to the head N at q'' and joined in its upper end at q''' to a horizontally-adjustable wedge, Q, introduced between the under side of packings R′ and the upper end of the driver and awl bar sleeve R, which latter is secured to the swinging head L, that is hung at L′ to the upper end of the frame-arm N′, as shown in Figs. 2, 3, and 5. The lever q has a hinge or joint at q^4 and a spring, q^5, secured to the lever below such joint and pressing on the part above it for the purpose of allowing the upper end, q^6, of said lever to yield, if the shank-wedge n^8 should act on the lower end, q', of said lever, when the pressure of the awl or driver bar is on. Said spring q^5 serves also to automatically force the upper lever end, q^6, and the wedge Q into position when such pressure on the awl or driver bar is relieved. Another spring, q^7, is secured to the frame-arm N′, as shown in Figs. 2 and 4, and caused to act against the lever q below its joint q^4, so as to automatically hold the lower end of the lever q in contact with the wedge n^8 on the presser-foot shank n'.

I may prefer to construct the wedge Q in such a manner as to operate only on the driver-bar to regulate the amount of its downward stroke without changing the stroke of the awl-bar, and the point of the awl to stop always at a normal distance from the under side of the sole, whether thick or thin.

Swinging Head.—L is the swinging head, which is hung at L′ to the upper end of the stationary frame-arm N′, as before stated. To the swinging head L is secured, about midway on it, a stud, r, the inner end of which rests in a block, r', which is supported and is movable in a curved groove, r'', in the front of the frame N, so as to relieve the strain on the upper fulcrum-pin, L′. The swinging head L is rocked on its fulcrum by means of the grooved cam s on the driving-shaft P, which actuates the lever s', attached to the shaft s'', located in bearings in the frame N. The forward end of the shaft s'' has a slotted lever, s''', in which is located a block, s^4, provided with a stud, s^5, that projects through a slot-hole, s^6, in the front of the swinging head L, on the outside of which it is provided with an adjustable thumb-nut, s^7, by

which means the said block s^4 can be raised or lowered to adjust the feed of the swinging head L accordingly. The lever s' is made adjustable on its shaft s'' by means of set-screw s^8, or equivalent device, for adjusting the throat for variations in the feed to its proper position in relation to the nail-delivery tube.

The awl-bar t is movable up and down in the sleeve R. It is forced down by means of a spring, t', as usual, and is moved up against the influence of such spring by means of stud and roll t'' on the cam t''', attached to driving-shaft P, actuating a foot, t^4, secured to the awl-bar t, as shown in Fig. 5, such foot t^4, when reaching its highest position, is automatically held and locked by means of a swinging lever, t^5, or catch actuated to lock by means of the spring t^6, and provided with an adjustable set-screw, t^7, passing through it into a recess, t^8, in the frame N. Said screw t^7 is for the purpose of relieving the catch t^5 from the awl-bar foot t^4 at the proper time, or when the head L is thrown to the commencement of its stroke, which is done by the end of such screw t^7 striking against the side of the recess t^8 in the frame N, by which the catch t^5 is disengaged from and liberates the awl-bar t, which is then instantaneously forced down by the influence of its spring t'. The lateral motion of the lower end of the awl-bar to throw it in a line with the throat-opening and out of it to allow the driver to enter is carried out by means of the curved cam-slot t^9 in the plate t^{10} and a projection, t^{12}, on the awl-bar in the same manner as described in my patent of December 27, 1881, No. 251,453.

T is the awl secured to the lower end of the awl-bar, as usual.

u is the driver-bar, which is movable up and down in the sleeve R—downward by means of the coiled spring u', and upward against the influence of said spring by means of the cam t''', secured to the driving-shaft P, and a stud and roll, u'', on the driver-bar u—in the same manner as described and shown in my aforesaid patent of December 27, 1881.

U is the driver secured to the lower end of the driver-bar u, as usual.

The hopper v, the raceways v', raceway-cover v'', nail-spreader v''', and wedge v^4 for operating the nail-spreader, as well as the wedge-picker v^5, are carried out, arranged, and operated in the same manner as shown and described in my aforesaid patent of December 27, 1881.

The spring-gage w, for the purpose of gaging the nail for allowing the wedge-picker v^5 to enter between the first and second nails, is arranged as follows: Its inner end is secured to the stationary bracket w', that serves as a guide or bearing for the wedge-picker bar v^6, and said spring-gage w has on its outer end a projection, w'', entering through a side perforation in the nail-receiver w''', that forms the outer end of the bracket w', and said projection is adapted to close against the lower end of the raceways v' when the wedge-picker v^5 is withdrawn and the nail-spreader v''' raised, to prevent the nail from dropping into the nail-receiver w''' until the wedge-picker v^5 picks it and forces it in the nail-receiver w''' and closes the same, at the same time forcing the nail-gage w back to allow the nail to drop freely through the nail-receiver w''' and its point to rest against the upper flange, l^4, of the throat. Said spring-gage w is operated by an adjustable screw, v^7, in the picker-bar v^6, acting on a wedge or incline, w^4, on the inside of the spring-gage w, as shown in Fig. 9. The gage w is provided with an adjustable set-screw, w^5, to regulate the throw of said gages and its projection w'' in relation to the wedge-picker v^5 for various sizes of nails.

The operation of the improved nailing-machine is as follows: The driver U being at its lowest point, and the swinging head L moved to one side to the extent of its stroke, the shoe is placed on the top of the horn e by depressing the same with the foot by means of the treadle f, and by removing the pressure on said treadle the horn e is forced upward by the influence of coiled spring k, and causing the horn spindle d to be securely locked by the locking-bar i and the heel or thinnest part of the shoe-sole kept in contact with the yielding nose-piece m and presser-foot n, so that during the operation of nailing the sole, as the material increases in thickness it forces the yielding nose-piece m and presser-foot n upward, and in thus forcing the presser-foot upward its wedge n^8 acts on the incline q' on the lower end of lever, q, to move the latter, and with it the wedge Q, beneath the packing R' on the driver and awl bars, and thus allowing the two latter to be forced down only sufficiently to drive the nail and to vary their descent to correspond with the depression of the nose-piece m and presser-foot n as the sole which is being nailed may vary in thickness. At this point the wedge-picker v^5 is at its backward stroke, allowing the nails in the raceways v' to be forced down against the spring-gage w. The shaft P is then set in motion by belt-power applied to its pulley X, causing the driver-bar u to be raised, and at the same time the head L is swung on its backward stroke by means of cam and levers, as described. The nose-piece m rests constantly on the shoe-sole through the whole operation, there being no pressure of the said nose-piece on the shoe-sole, except by the light spring m'' forcing it down. While the swinging head L is thus moving the wedge-picker v^5 is carried forward by the spring y acting on the upper end of the lever y', hinged at y'' and connected in its lower end to the wedge-picker, it being released by its cam y''' on the shaft P, thus forcing one nail into the nail-receiver w''' by the screw v^7 in the sliding block striking the wedge w^4 on spring-gage w, and by forcing it back the nail is thus allowed to drop into the nail-receiver w''' and with its point resting against the lip l^4 on the throat l. When

the swinging head L reaches the extent of its backward stroke the awl T is allowed to force through the throat *l* and to penetrate the shoe-sole by the screw t^7 in the catch t^5, striking against the side of the perforation t^8 in the frame N and forcing the said catch back and unlocking it from the foot t^4 on the awl-bar *t*, thus liberating the latter to the downward action of its spring *t'*. At the time the awl T enters the shoe-sole the presser-foot *n* instantly releases its hold on the sole, and thus allows the shoe to be fed ahead by the awl and the swinging head L to a position bringing the throat-opening *l'* and nail-receiver w''' in a line with each other, when the nail drops, its point resting against the side of the awl T. The presser-foot *n* is then at once forced down against the shoe-sole by its cam *p*. At this time the awl T begins to withdraw from the sole and throat *l'*, being lifted by its cam, when the nail which was resting against it enters the throat *l'*, and its point is directed into the perforation made in the sole by the awl T, when the driver U is forced down by the coiled spring *w'*, being liberated by its cam *t'''*, and thus drives the nail into the shoe-sole, when the same operation is repeated until the whole shoe-sole is nailed, when the shoe is removed from the horn *e* by the depression of the treadle *f*, and another shoe is placed on the top of the horn *e*, the spindle *d* of which is automatically locked, as before, by the bolt *i*, and so on.

What I wish to secure by Letters Patent, and claim, is—

1. In a nail-driving machine, the combination of the vertically-adjustable horn-carrying spindle *d* and rotary horn *e*, coiled spring *k*, treadle *f*, slotted link *g*, locking-bolt *i*, inclined releasing-link *h*, and springs $f''' i''$, as set forth.

2. In a nail-driving machine, the locked rigid horn *e*, in combination with the oscillating head L, having throat-piece *l* attached, and the vertically-yielding presser-foot *n*, and vertically-yielding perforated nose-piece *m*, as set forth.

3. In a nail-driving machine, the combination of the oscillating head L, the yielding presser-foot bar *n'*, its wedge n^8, and rocking lever *q*, as described, having wedge Q in its upper end, and adapted to be operated by the vertical motion of the said presser-foot bar to regulate the downward stroke of the awl-bar *t* and driver-bar *u*, as set forth.

4. In a nail-driving machine, the rigid throat-piece *l*, secured to the swinging head L, and having perforation *l'*, in combination with the yielding nose-piece *m*, its hollow tube m^4, shank *m'*, and coiled spring *m''*, as set forth.

5. In a nail-driving machine, in combination with the awl-bar *t* and its spring *t'*, means for raising it to its highest position, an independent and separate locking device to hold it in such position, and a releasing device to automatically release it at the proper time, as set forth.

6. In a nail-driving machine, the combination of swinging head L, vertically-movable awl-bar *t*, driving-shaft P, roll and pin *t''*, foot t^4, locking-lever t^5, spring t^6, and set-screw t^7, adapted to strike against the recess t^8 in the frame N, as set forth.

7. In a nail-driving machine, the combination of swinging head L, thumb-nut s^7, stud s^5, block s^4, slotted rocking lever *s'''*, rock-shaft *s''*, adjustable lever *s'*, regulating-screws s^8, and cam *s*, as set forth.

8. In a nail-driving machine, in combination with the raceways *v'*, nail-receiver w''', sliding picker-bar v^6, and picker v^5, the spring-gage *w*, with its wedge w^4, projection *w''*, regulator-screw w^5, and adjustable screw v^7, in the sliding picker-bar v^6, as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWARD MERRITT.

Witnesses:
ALBAN ANDRÉN,
HENRY CHADBOURN.