

(No Model.)

2 Sheets—Sheet 1.

M. V. B. ETHRIDGE.

TACK DRIVING MACHINE.

No. 349,387.

Patented Sept. 21, 1886.

Fig. 1.

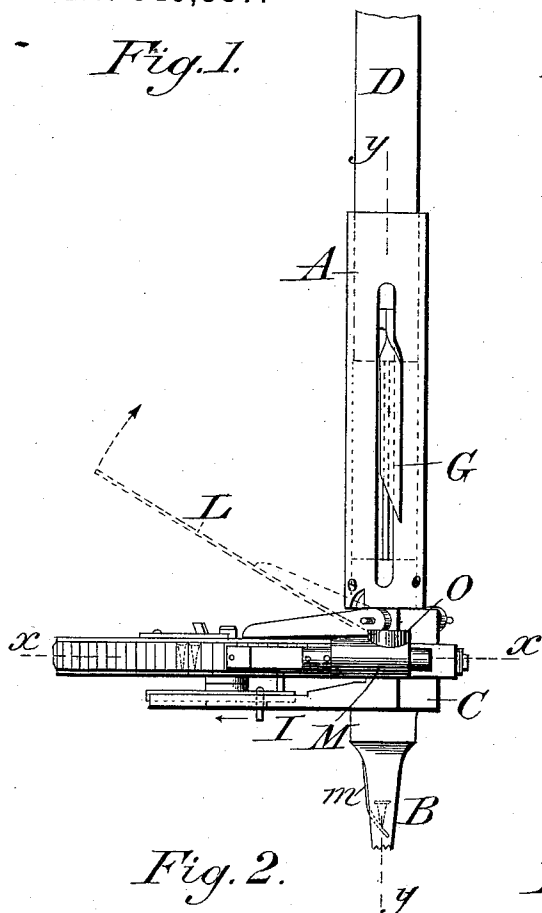


Fig. 2.

Fig. 4 a

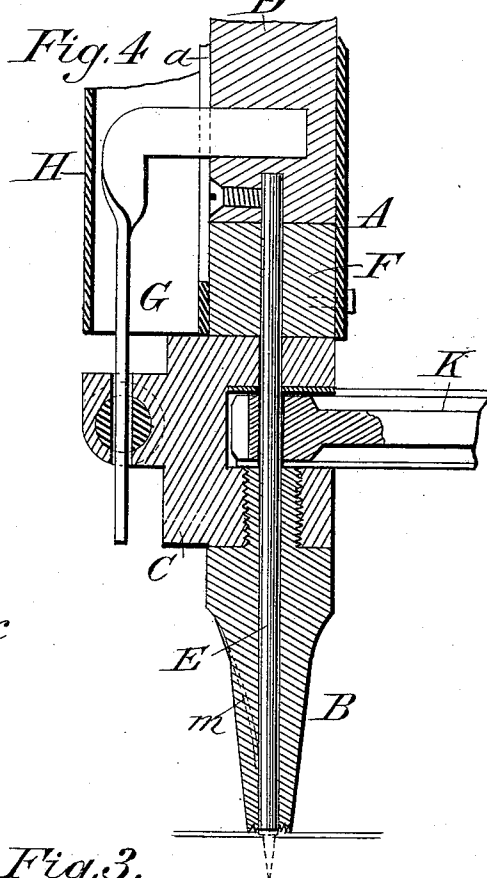


Fig. 3.

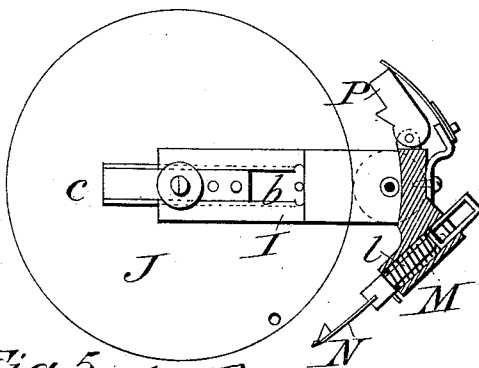
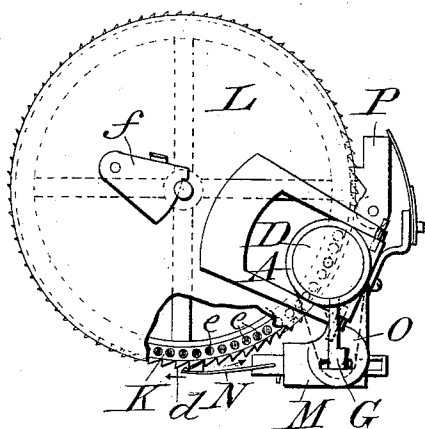


Fig. 5.

Witnesses

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By his Attorney *John C. Parker*

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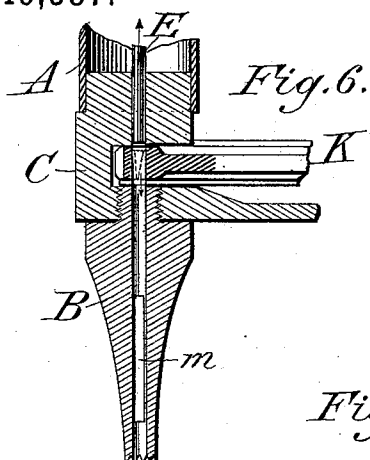


Fig. 6.

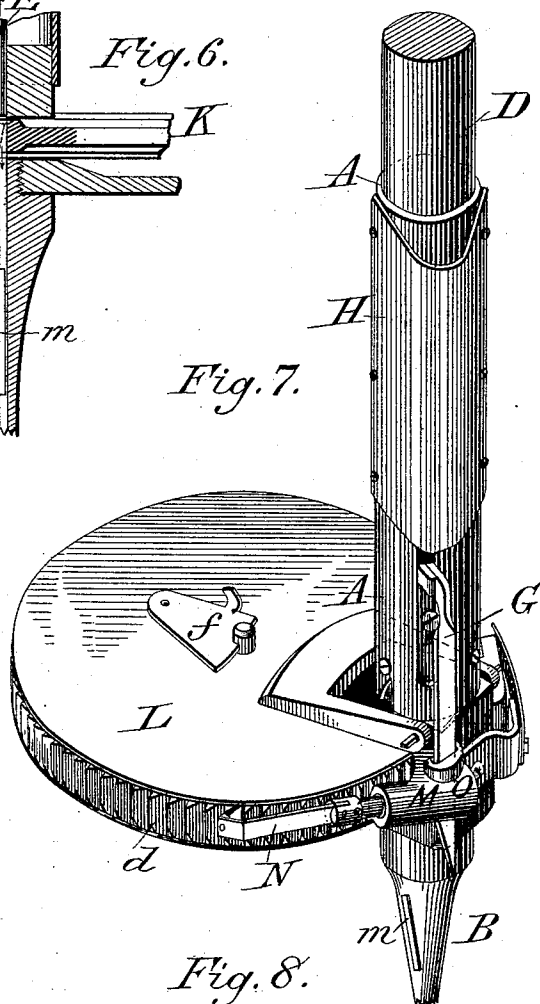


Fig. 7.

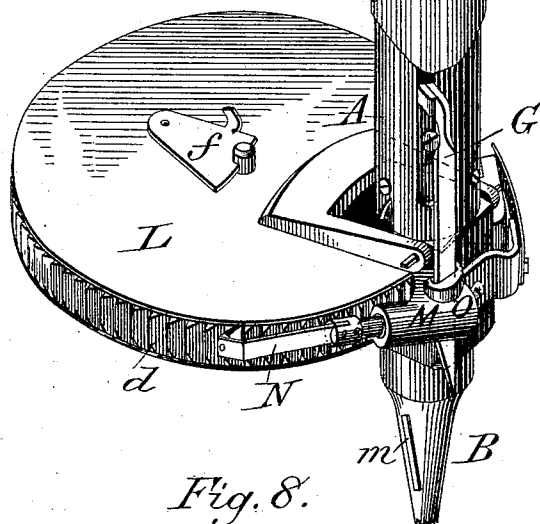
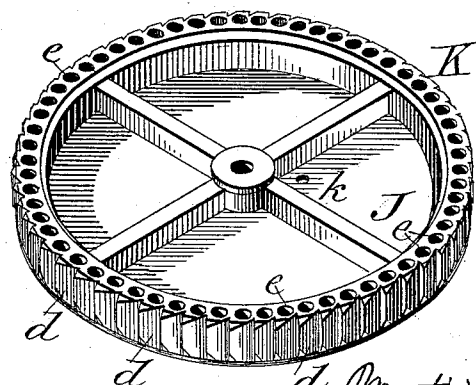


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

MARTIN V. B. ETHRIDGE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
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TACK-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 349,387, dated September 21, 1886.

Application filed June 12, 1886. Serial No. 204,905. (No model.)

To all whom it may concern:

Be it known that I, MARTIN V. B. ETHRIDGE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Tack-Driving Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in hand tack-driving machines; and it consists in the construction, arrangement, and combination of parts, as will be hereinafter fully described.

In the annexed drawings, illustrating my invention, Figure 1 is a front elevational view of my improved tack-driving machine. Fig. 2 is a top plan view of the same, a portion of the cover of the tack-supply case being broken away to expose the perforated tack-supply wheel. Fig. 3 is a bottom plan view of the tack-supply case in outline, and the accompanying parts arranged to show the case as readily removable for filling with tacks, said accompanying parts being in section on line *xx* of Fig. 1. Fig. 4 is a vertical section on the line *yy* of Fig. 1. Fig. 5 is a detail section, on line *xx* of Fig. 1, of the spring-actuated pawl which operates to revolve the tack-supply wheel. Fig. 6 is a partial vertical section similar to the section of Fig. 4, and shows a tack about to pass from the supply-wheel into the conical portion below the plunger. Fig. 7 is a perspective view of the entire machine. Fig. 8 is a perspective view of the tack-supply wheel.

Like letters of reference designate like parts in all the figures.

The main frame of the device consists of a cylindrical chamber or barrel, A, a conical lower portion, B, and an interposed connecting part, C, secured between the barrel and the conical portion, and fashioned in a manner suitable for the convenient attachment thereto of the tack-supplying mechanism and other adjacent parts.

Within the barrel A is located the rod D, which is adapted to be reciprocated by hand, and to the lower end of which is attached the plunger-rod or driver proper, E, which passes vertically downward through a suitable channel in the head or diaphragm F of the barrel A, the metallic connecting part C, and the conical portion B, as shown in Fig. 4.

The barrel A is provided with a longitudinal slot through which passes a rod, G, whose inner end is fastened to the rod D, and whose outer portion is bent or otherwise formed so as to lie parallel to and move coincident with the plunger-rod E. A guard, H, is in general secured to the barrel A for the purpose of covering the rod G during its movements, and thus of preventing any interference with the easy manipulation of the machine by the operator. An arm, I, extends outward from the part C at right angles to the axis of the barrel, and serves to support the tack-supply case. This arm is provided with a longitudinal slot, *b*, having grooved sides, in which slides a plate, *c*. To this is pivoted a circular plate, J. Upon the plate J is affixed a tack-supply wheel, K, consisting of a rim and, preferably, spokes and a central hub. The rim is provided with a series of dentations, *dd d*, or ratchet-teeth along its outer periphery, and it is pierced with a series of holes, *eee*, of a length equal to the width of the rim, and extending from edge to edge of the same, their length being sufficient to receive an ordinary tack. It will thus be seen that the device for supplying tacks to the plunger-rod at each reciprocation consists, essentially, of a casing which is removable from the machine at pleasure, and which comprises a bottom plate, J, and a dentated and perforated wheel, K, said wheel being revoluble upon a spindle which projects from the slide *c* through a central perforation in the plate J, and through the hub of the wheel K, and said plate J, when in proper position, being held immovable by the passage through an aperture, *k*, of another pin upon the slide *c*, the pin and the spindle together serving to keep the plate correctly located. The casing is closed by means of a cover-plate, L. This latter plate is slotted, as shown in Fig. 7, to inclose the main cylinder, and is pivoted to the latter by pivots on each side of

the slot, as shown. It is also perforated centrally, to fit over the spindle on which the supply-wheel revolves, and is held in position, when closed, by means of a catch, *f*, or other suitable device. The cover-plate *L* is therefore not shown to be completely removable, it being permanently pivoted to the machine; but other modes of attaching it may obviously be devised, it being only necessary that it shall close the perforations *eee* of the supply-wheel. Each of the perforations *eee* contains a tack, and while the wheel *K* is made to gradually revolve the plates *J* and *L* remain stationary, and no tacks can pass out of the wheel, except as each perforation is brought successively over a single aperture with which the bottom plate, *J*, is provided, as shown in Fig. 3.

When the tack-supply casing is fixed in place by passing the slide *c* inward upon the arm *I* as far as the guide-slot will allow, said casing will rest partially within a slot of the part *C*, as shown in Fig. 4, so that one of the perforations of the wheel may come directly in line with the channel through which the plunger-rod operates. Consequently, as the rod *B* descends each time it will pass through a perforation and drive a tack before it; but at each descent it will pass through a different perforation, the wheel having been revolved sufficiently during the upward movement of the rod to cause the next perforation to register in line with the channel, and thus a continual supply of tacks will be afforded to the plunger until the supply-wheel has made a complete revolution and all the tacks have been removed from the perforations, when the wheel can be removed and refilled.

The mechanism for revolving the supply-wheel is as follows: Upon the part *C*, or thereabout, is situated a stationary tubular box, *M*, so as to be in a horizontal plane with the supply-wheel. This box contains a rod whose inner end is formed with a rectangular slot. A spring, *l*, is also located within the box in such a manner as to move the rod lengthwise when occasion requires, as will be hereinafter described; and one end of said rod, which lies outside of the box, carries a pawl, *N*, the elastic character of whose shank causes it to bear upon and engage with the toothed periphery of the supply-wheel. It is thus evident that the pawl may be transferred from one dentation and lodged in the next by the endwise movement of the rod within the box, and this movement is intermittently effected, as occasion requires, by means of the rod *G*, for the said tubular box *M* is formed with a vertical tubular extension, *O*, communicating with the interior of the box *M*, and below the inner opening of which is located the inner end of the slot in the contained rod, as shown in Fig. 3. Now, the extremity of the rod *G* is inclined or beveled to a point. Therefore as said rod descends it will enter the extension *O*, and the beveled end will enter the slot in the inclosed rod, and as the rod *G* continues to descend the pawl *N* will be driven by the endwise move-

ment of the rod to which it is attached over into the next tooth. Evidently, if the pawl-carrying rod is allowed to resume its former position under the tension of the spring *l*, (and if nothing holds the supply-wheel,) said wheel will be revolved a short distance. Opposite to the pawl *N*, although in the same plane therewith, and pivoted to the part *C*, is another pawl, *P*, engaging the teeth of the supply-wheel in the opposite direction, and held against said wheel by means of a spring. (See Figs. 2 and 7.) This pawl prevents a reverse movement of the supply-wheel, when it is gradually revolved in one direction, by the occasional movement of the spring-actuated pawl.

The complete operation of the entire machine will therefore be as follows: Suppose the plunger or driver-rod at the upper limit of its stroke. (See Fig. 6.) One of the perforations of the supply-wheel is coincident with the plunger-channel, and a tack, from which the support was removed by the bringing of the supply-wheel into the said position, has fallen from the position shown in Fig. 6 to the position shown in Fig. 1, where an inwardly-inclined spring, *m*, fixed within a slot in the cone *B*, serves to uphold it. A tack is therefore now in the position to be driven. The plunger-rod descends to drive the tack. As it does so, it passes through the perforation *e*, in line with its course. The supply-wheel evidently cannot now be revolved in either direction, since the plunger, being passed through it, holds it immovable. When the plunger-rod descends, the pointed rod *G* descends also, entering the tubular box and imparting an end-thrust to the contained rod, which will cause the catch or pawl *N* to slip over into the next tooth. When the plunger-rod is again raised, the spring-actuated pawl *N* will not operate to revolve the supply-wheel until the lower extremity of said plunger has passed to a height sufficient to emerge from and clear the supply-wheel, when, there being no longer any restraining force to hold said wheel, the tension of the spring *l* in the tubular box will pull the catch or pawl, and thus revolve the wheel a short distance, so that the next perforation of the series will be in line with the plunger, the tack contained within such perforation will drop into place, and the operation will proceed as before.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a tack-driving machine, the combination of the plunger-barrel, the plunger-rod operating therein, the tack-supply wheel provided with perforations near its outer edge and ratchet-teeth on its periphery, and mechanism, substantially as described, for rotating the same step by step, so as to place a tack before the plunger at each downward stroke, substantially as described.

2. The combination of the plunger-barrel, the conical lower portion, the connecting part

between said barrel and cone, the plunger-rod, the tack-supply case containing a wheel provided with perforations near its outer edge and ratchet-teeth on its periphery, and mechanism, as described, for automatically revolving the said wheel at intervals, substantially as shown and described.

3. In a tack-driving machine, a removable tack-supply case consisting of a bottom plate having a single perforation, a cover-plate and a revoluble supply-wheel located between said plates, and having a series of ratchet-teeth on its rim, and provided with a series of perforations near its edge that hold the tacks, and that register successively with the aperture in the bottom plate, substantially as described.

4. The combination of the plunger-barrel, the conical portion, the metallic connection C, between said barrel and cone, the tack-supply case pivoted on an arm of said metallic connection and removable therefrom, the dentated and perforated supply-wheel, the spring-actuated pawl which engages the dentated wheel, and the plunger-rod, all arranged to operate substantially as shown and described.

5. The combination, with the main frame of the machine and the dentated and perforated revoluble tack-supply wheel, of a plunger-rod carrying a second rod parallel thereto and moving coincident therewith, said plunger-rod proper being adapted at each reciprocation to pass through the perforations of the wheel suc-

cessively, and said parallel rod being adapted to operate a spring-actuated pawl to revolve the wheel, substantially as shown and described.

6. The combination of the tack-supply case, consisting of the upper and lower plates and an interposed dentated and perforated wheel, the lower plate having a single aperture with which the perforations in the wheel register successively, the main frame of the machine, the plunger-rod, and its parallel rod, the spring-actuated pawl operated by said parallel rod, and the reverse pawl for holding the wheel, as shown and set forth.

7. The combination of the main frame, consisting of barrel A, cone B, and connection C, the plunger D, carrying plunger-rod E and parallel rod G, the revolving dentated and perforated tack-supply wheel K, and means for revolving the latter, consisting of the spring-actuated pawl N, operated by the rod G at each descent, substantially as shown and described.

8. In a tack-driving machine, the tack-feeder K, provided with a series of perforations, *eee*, and ratchet-teeth *d*, substantially as described.

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

MARTIN V. B. ETHRIDGE.

Witnesses:

CHAS. HALL ADAMS,
MARTIN McDONOUGH.