J. E. COFFIN.

Machine for Driving Tacks.

No. 168,878. Patented Oct. 19, 1875.

Fig. 1.

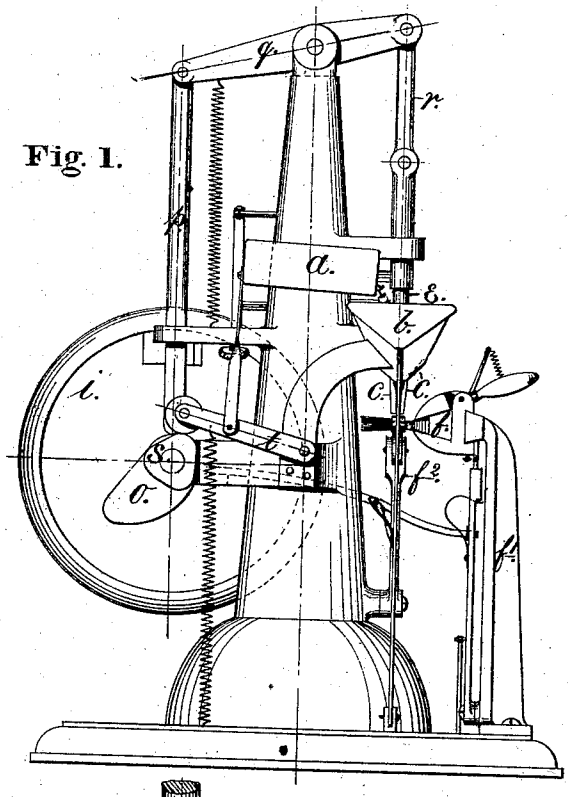

Fig. 2.

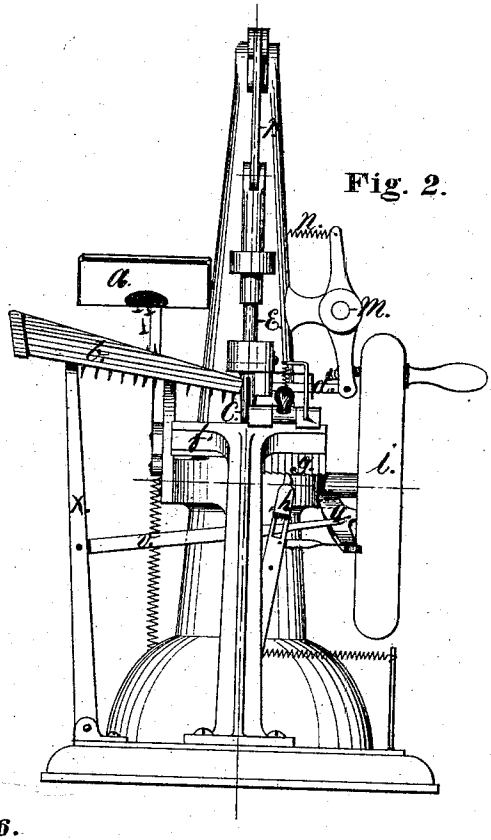

Fig. 6.

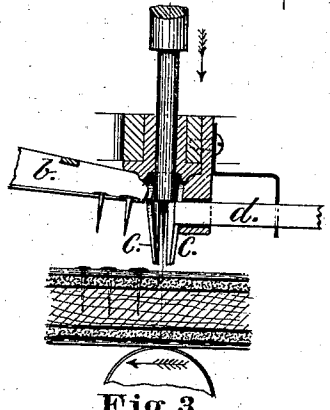

Fig. 3.

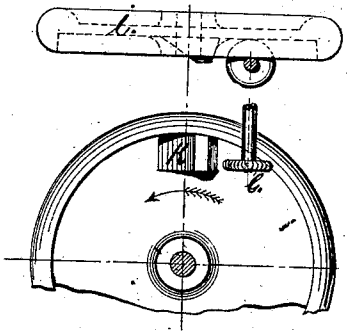

Fig. 5.

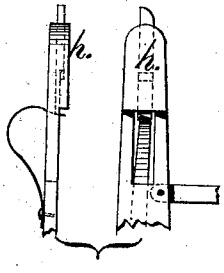

Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN E. COFFIN, OF MYSTIC RIVER, ASSIGNOR OF ONE-HALF HIS RIGHT TO L. W. MORSE, JR., OF GROTON, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR DRIVING TACKS.

Specification forming part of Letters Patent No. **168,878**, dated October 19, 1875; application filed September 10, 1875.

To all whom it may concern:

Be it known that I, JOHN E. COFFIN, of Mystic River, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Machine for Driving Tacks; and I do hereby declare that the following specification, taken in connection with the drawings, and making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a side elevation of my improved tack-driving machine. Fig. 2 is a front view of the same. Fig. 3 is a vertical section through the plunger, showing the mechanism for driving the tacks. Fig. 4 is an enlarged view of the feeding-pawl. Figs. 5 and 6 are enlarged views of the driving-wheel, showing the cam by which reciprocating motion is imparted to the magnet and the feeding device.

The machine shown in the drawing is especially designed to drive the tacks in the leather bands or straps which surround the wooden backs or heads of whitewash-brushes; but it is adapted for analogous use with any other article.

In the drawings, A is a box or hopper, into which the tacks are placed. An opening in this box allows the tacks to fall into the trough *b*, when vibration is imparted to the hopper, as will be hereafter more fully described. The trough *b* has a slit or longitudinal opening at its bottom, and is made of such shape and dimensions that the tacks will be supported by the heads, the points being suspended within the slit. This trough is set so as to incline toward the driving device. C C are the fingers for holding the tack to be inserted, and consist of light springs surrounding the tack, and thus supporting the same in a vertical position. *d* is a magnet, to which reciprocating motion is imparted, and which, passing between the fingers C C up to the first tack in the trough *b*, draws the tack by magnetic attraction within the fingers, the opening on this side being sufficient to allow the tack to pass through, and on the opposite side only sufficient to allow the magnet to pass. The tack is, therefore, retained by the fingers. E is the plunger or driver, to which vertical reciprocating motion is imparted, and which, descending, forces the tack downward into the material to be united by the same. The fingers C C, yielding to the force of the plunger, allow the tack and plunger to pass and close again when the plunger rises ready to receive the next tack. *f* is a clamping device, by which the whitewash-brush or other article to be operated upon is firmly held. This clamp *f* is secured in a dovetail slide, firmly supported on the standard f^1, and the material, such as a brush, as shown in the drawings, is supported directly under the plunger E by the rest f^2, having a disk at its upper end, on which the material rests, while it may also be easily moved by the feeding mechanism. The lower part of the clamp *f* is provided with a ratchet, *g*, into which the spring-pawl *h* (shown enlarged in Fig. 4) engages. Reciprocating motion is imparted to this pawl *h* and the clamping device, and the material held by the same is thus moved, after the driving of each tack, a proper distance to receive the next tack, so that the tacks will be driven evenly, at uniform distances apart, and in a straight line. Motion is imparted to the machine by the driving-wheel *i*, either by hand or power. On the inside of this wheel is a cam, K, (shown in Figs. 5 and 6,) which, in each revolution, comes in contact with an arm secured to the rock-shaft M, imparting a rocking motion thereto. On the other end of said shaft M an arm is secured, carrying the magnet *d*, to which a vertical reciprocating motion is thus imparted, by which the magnet is made to advance to the trough *b*, secure a tack and draw it into the fingers C C, and recede to allow the plunger to drive the tack. The cam K on the driving-wheel *i*, before completing each revolution, comes in contact with a projection on the hinged lever U, which is connected, by the rod V, with the hinged arm X, extending into the slit in the trough *b*, and at each vibration pushes the tack toward the lower end of the trough, and allows another tack to fall into the slit or opening. The arm U is also connected with the spring-pawl *h*, and at each vibration imparts reciprocating motion to the pawl by which the clamp and material is made to advance. On the shaft to which the driving-wheel *i* is secured is placed the cam O,

which, at each revolution, raises the rod *p*, and imparts vertical reciprocating motion to the plunger E through the beam *q* and connecting-rod *r*. The three-throw cam S is also secured to the main driving-shaft, and imparts, through the hinged arm *t*, a shaking motion to the hopper *a*.

The operation of this machine is as follows: Tacks being supplied to the hopper A, and the brush, or other article into which the tacks are to be inserted, secured by the clamping device *f*, so as to rest on the disk of the arm f^2, motion is imparted to the driving-wheel *i*. The cam K, coming into contact with the arm secured to the rock-shaft M, forces the magnet *d*, through the fingers C C, up to the first tack in the trough *b*, and, by magnetic attraction, draws one tack into or between the fingers C. The cam O now raises the rod *p*, and forces the plunger down on the tack, the fingers guiding the same. The tack is forced into the brush or other material, when the plunger rises, and the cam K on the driving-wheel comes in contact with the projection on the arm U, by which the pawl *h* is moved forward, and thus feeds the brush under the plunger a given distance to receive the next tack. The spring-pawl returns to its former position, and the arm X, retained by a spring, keeps the tacks up to the fingers C C. The operations are now repeated, the whole manipulation being performed by one revolution of the driving-wheel.

This machine is automatic in its operation, and inserts the tack at regular intervals, in a straight line, with great rapidity.

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

1. The combination, with the elastic fingers C C, of the reciprocating magnet *d*, for delivering and supporting the tacks under the plunger, substantially as described.

2. In combination with the reciprocating magnet *d* and elastic fingers C C, the vertically-reciprocating plunger E, arranged to operate together, substantially as and for the purpose set forth.

3. The sliding clamp *f*, in combination with the reciprocating spring-pawl *h* and rest f^2, constructed to support the article to be tacked, and to automatically feed the same to the driving device, substantially as described.

4. In combination with the driving-wheel *i*, the cam K, arranged to impart reciprocating motion to the magnet *d*, the feeding device, and hopper A, substantially as and for the purpose specified.

5. In a tack-driving machine, the combination of the following elements, viz: a receptacle from which the tacks are automatically delivered to the driving device, a reciprocating magnet by which the tack is placed under the plunger, a plunger for driving the tacks home, and an automatic feeding device, the whole operating in succession, substantially as herein described.

JOHN E. COFFIN.

Witnesses:
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L. W. MORSE, Jr.