2 Sheets—Sheet 1.

T. B. COX.

Machine for Making Lasting-Tacks.

No. 199,416. Patented Jan. 22, 1878.

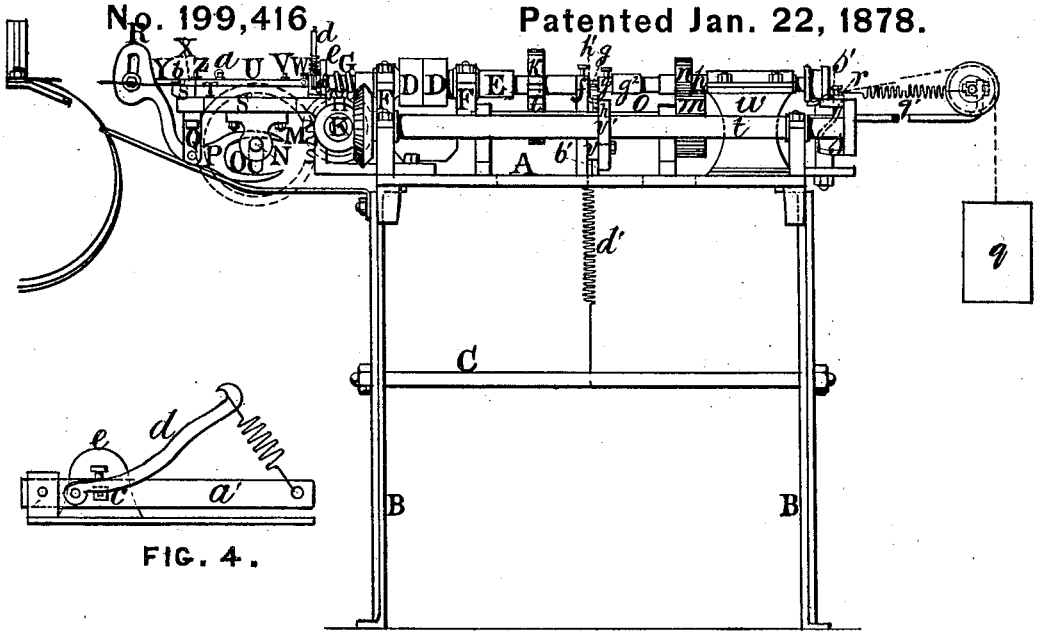

FIG. 4.

FIG. 1.

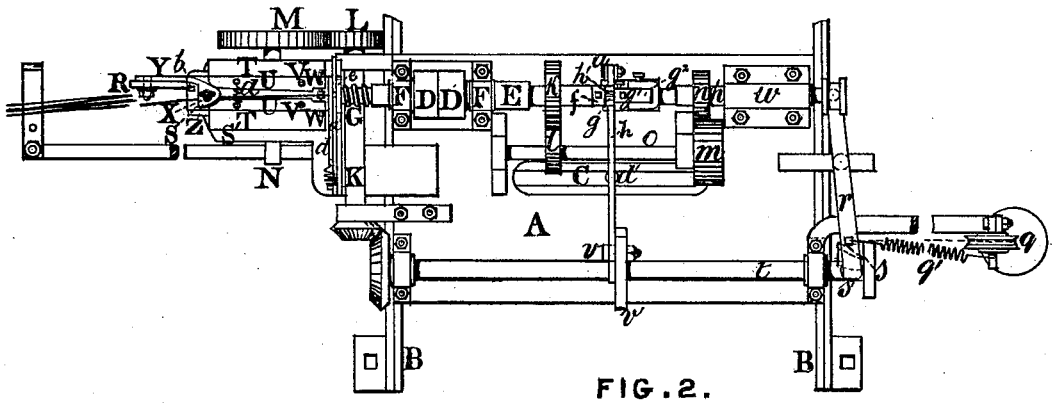

FIG. 2.

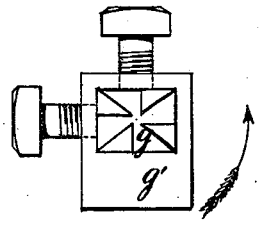

FIG. 5.

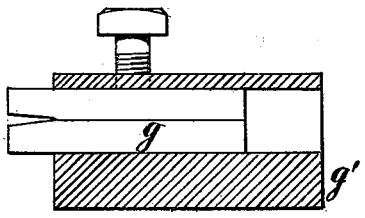

FIG. 6.

ATTEST=

Arthur C. Fraser.
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Thomas Barber Cox
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2 Sheets—Sheet 2.

T. B. COX.

Machine for Making Lasting-Tacks.

No. 199,416. Patented Jan. 22, 1878.

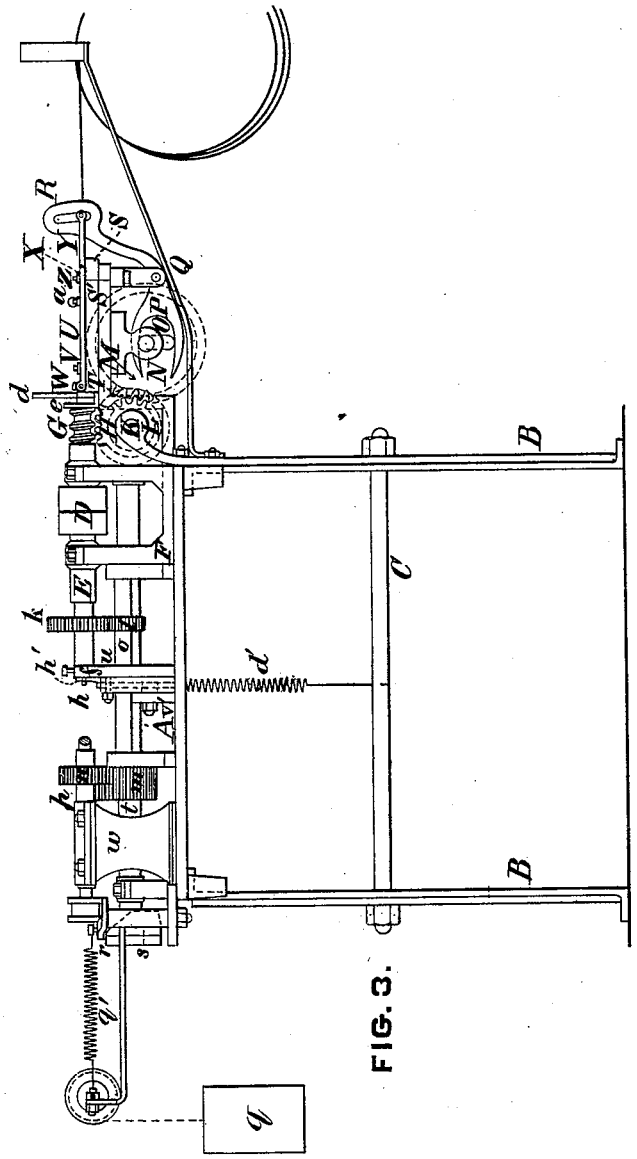

FIG. 3.

FIG. 8.

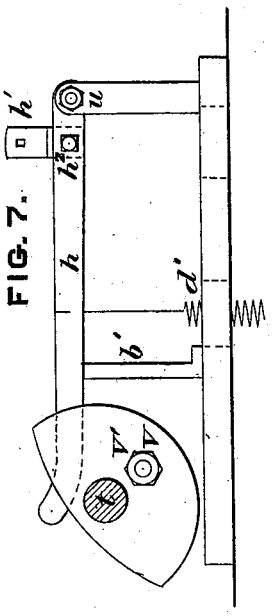

FIG. 7.

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UNITED STATES PATENT OFFICE.

THOMAS BARBER COX, OF BLOXWICH, GREAT BRITAIN.

IMPROVEMENT IN MACHINES FOR MAKING LASTING-TACKS.

Specification forming part of Letters Patent No. **199,416**, dated January 22, 1878; application filed May 11, 1877; patented in England, August 15, 1876.

To all whom it may concern:

Be it known that I, THOMAS BARBER COX, of Bloxwich, in the county of Stafford, in the Kingdom of Great Britain, have invented certain new and useful Improvements in Machinery for Making Lasting-Tacks, of which the following is a specification:

This invention, as its title indicates, relates to machinery for the manufacture of steel lasting-tacks.

The method of manufacture consists in cutting the round tapered point of the tack out from a square steel wire the size of the head of the tack while the wire is cold, and then shearing off the wire far enough back to form a head.

The novel features in the mechanism consist in the various devices and combinations for accomplishing the above manufacture, all of which will be fully hereinafter described.

In the drawings, Figure 1 is a side elevation. Fig. 2 is a plan, and Fig. 3 is also a side elevation, showing the opposite side to Fig. 1. Figs. 4, 5, and 6 are enlarged detail views, as are also Figs. 7 and 8. These will be alluded to more definitely hereinafter.

Referring to the first three figures of the drawings, A represents the bed of a machine embodying my improvements, of which B B are the standards or legs, and C is a distance-piece or stretcher for bracing them. D D are ordinary fast and loose pulleys to receive the driving-belt. These pulleys are mounted on a hollow shaft, E, which runs in bearings F F. This shaft extends from the plate *e* to the support *f*, but does not enter into them.

A worm, G, cut in one end of the shaft E, meshes with a worm-wheel, H, a small part only of which is shown. This worm-wheel is keyed to a cross-shaft, K, and, through the medium of the spur-wheels L and M, gives motion to the cross-shaft N. On this shaft is fixed a cam, O, which plays between two jaws, or their equivalents, on the extremity of a lever, P. This lever is fulcrumed at Q, and slotted at the extremity R.

S is a plate, arranged to slide in V-guides T T and upon a supporting-plate, S′, which carries also the V-guides, and is itself attached to the bed A.

U U represent a pair of lever-griping jaws, working on fulcrums V V. The griping ends of the jaws are provided with adjustable grippers W W, which have squared heads and threaded shanks, being made preferably of hardened steel. One of the gripers is kept in position by a steel-pointed set-pin, and thus the requisite pressure may be obtained by screwing up the other griper, without the liability of forcing the tack-wire out of its proper position. The back ends of the griping-levers are forced apart and the gripers brought into play by means of the wedge-piece X, which is forced between them. This wedge-piece is provided with a shank, Y, which connects, by a pin, with the slot in the extremity of the lever P at R. The wedge X is retained in position, as far as vertical and lateral motion is concerned, by a stud-pin, Z, working in a slot in the same. The slot admits of some endwise motion of the wedge.

The wire of which the tacks are to be formed is, preferably, square in section, of the same size as the tack-head, and is fed to the machine from a reel or other holding device through a groove in the under side of the wedge.

It will be seen from the drawing that as the slotted end of the lever P plays up and down the wedge-piece will be moved back and forth. As it is pushed forward it spreads the back ends of the griping-levers and causes the gripers at the front end to close tightly on the wire. As the wedge-piece has now reached the end of its travel on the plate S, and as it continues to move forward, it carries with it the plate S and the levers U U mounted thereon, and the wire is pushed forward one tack's length.

The first result from the retraction of the wedge is to permit a spring, *a*, to draw the back ends of the griping-levers together again, and thus release the wire. As it continues to move back the wedge strikes a stop, *b*, on the plate S, which causes it to carry back the said plate and all the parts mounted thereon one tack's length.

It will be seen that the cam O does not, for a part of its revolution on each side of the center, move the cam-lever P, which, for this reason, remains at rest for a time, both at its highest and lowest point. Thus the neces-

sary time is allowed before the gripers move forward again.

The wire is fed through a steel tube, *c*, of corresponding size and section, (see Figs. 4 and 8,) and a lever, *d*, having a chisel-edge, and this edge, next to the end of the tube *c*, bears upon the wire as it is fed through the tube. This lever being held down to the wire by means of a spring, the wire is prevented from returning when the gripers have ceased to act upon it. The tube *c* is flush at one end with the plate *a'*, which supports said tube in its proper position, being held in place in the plate by a set-pin. From thence the tube passes through the plate *e*, thence through the hollow shaft E, in which and of which it is entirely free, terminating at the outer face of the upright *f*, which supports that end. The tube is flush with the upright *f*, the end presenting the appearance illustrated in Fig. 8, where the tube is shown full size. In this figure the black central square represents the wire. The part c^1 (the top of which is indicated by the dotted line) is a plate running the entire length of the tube, (except where one of the "steelings" c^2 takes its place,) and is riveted thereto, so as to cover the groove for the wire. The parts c^2 are steel plates, which may be about one and one-fourth inch long, tempered to serve as steelings or cutters. The tube is made by planing out a groove from a rod of steel, and then riveting the plate c^1 over the same, as before stated.

As the wire is being advanced beyond the last-mentioned steelings or cutters the shaping-tools *g*, (shown enlarged in Figs. 5 and 6,) which are carried in a box, g^1, and held there by two set-pins, as shown, advance and shape the tack, after which they are pulled back again. These cutters are arranged to revolve in the direction of the arrow.

A plate or steeling, h^1, (best seen in Fig. 7,) has a hole through it of the proper size to fit the wire, and of the same shape. This plate is so adjusted with reference to the tube *c* that the hole just mentioned rests just in front of the hole in the tube when the plate is at rest, and the wire extends through it. The plate h^1 is attached to a lever, *h*, by a pin, h^2, and fits snugly the space between the lever and the mouth of the tube. The plate has, however, a shoulder, which rests on the top of the lever *h*, and this takes the strain off the pin h^2, and prevents any movement on the same. The upper part of the steeling h^1, where the wire passes through, is the same thickness as the head of the tack, and forms a stop for the ends of the shaping-tools. When the shaping-tools are drawn back the lever *h* rises and the steeling h^1 cuts off the tack at the back of the head. The finished tack then falls through an opening in the bed into a suitable receptacle.

The lever *h* has its fulcrum at *u*, and is raised by a friction-roller, *v*, on a stud in the disk or crank *v'*, keyed to the shaft *t*. The side of the lever bears against the said disk, and thus keeps the steeling h^1 up close against the support *f*. The lever is drawn down by a spring, *d'*, or some equivalent device, and rests upon the support *b'*. The shaft *t* derives motion from the cross-shaft K through bevel-wheels, as shown, and bears on its end a cam, *s*, which acts upon a friction-roller, *s'*, on the end of a lever, *r*. This lever engages the end of a spindle, *p*, which rotates and plays endwise in a long journal-bearing, *w*, bears the clamp g^2, which holds the shaping-cutters, and is driven through the medium of the gear-wheels *k l m n* from the shaft E.

The shaping-tools are advanced to their work by means of a weight, *q*, a spring, *q'*, or other equivalent device. When the shaping-tools become somewhat dull, both weight and spring may be used.

The plate *e* is of steel, and acts as a stop to the thrust of the worm G, especially when the tack is being sheared off, thus relieving the bearings F F from side strain.

The cam O is varied in length for different lengths of tacks.

I prefer to proportion the gearing so that the shaft E has a speed of from eight hundred to nine hundred revolutions per minute. The cross-shaft K has one-thirtieth of this speed. The shafts *p* and *t* have each half the speed of K.

I prefer to use drawn rather than rolled wire when it can be obtained, as it can be had in longer lengths, and is more uniform in size.

The wire is kept lubricated and cooled by means of soap-suds while the tack is being cut.

This invention is included in my English Patent No. 2,512, sealed August 15, 1876.

Having thus described my invention, what I claim as new is—

1. The combination of the shaft N, lever P, cam O, wedge-piece X, and sliding plate S, all arranged to operate in substantially the manner set forth.

2. The combination of the sliding plate S, wedge-piece X, griping-levers U U, and gripers W W, all constructed and arranged to operate substantially as set forth.

3. The combination of the lever P, cam O, shaft N, sliding plate S, griping-levers U U, gripers W W, wedge-piece X, tube *c*, constructed as shown, lever *d*, shaping-tools *g*, box g^1, cam *s*, lever *r*, spindle *p*, gear-wheels *k l m n*, shaft *o*, weight *q*, or its equivalent, disk or cam *v'*, lever *h*, spring *d'*, or its equivalent, and steeling or cutter h^1, all arranged substantially as shown, for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS BARBER COX.

Witnesses:

JAMES A. WYNN,

STEPHEN WATKINS.