3 Sheets—Sheet 1.

J. M. LAUGHLIN.

MACHINE FOR MAKING HORSESHOE NAILS.

No. 189,112. Patented April 3, 1877.

Fig. 2.

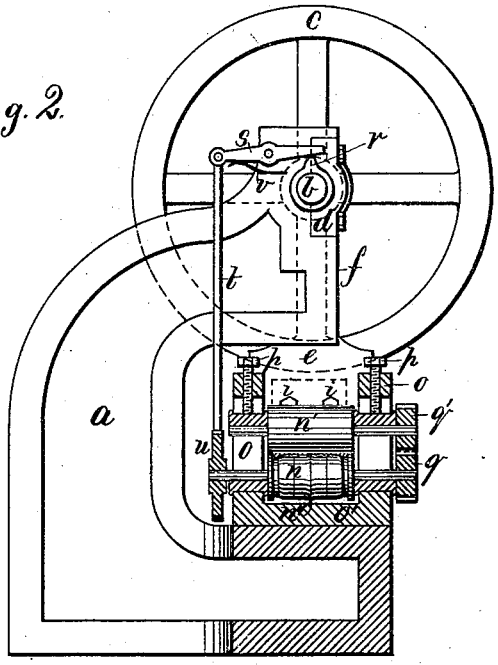

Fig. 1.

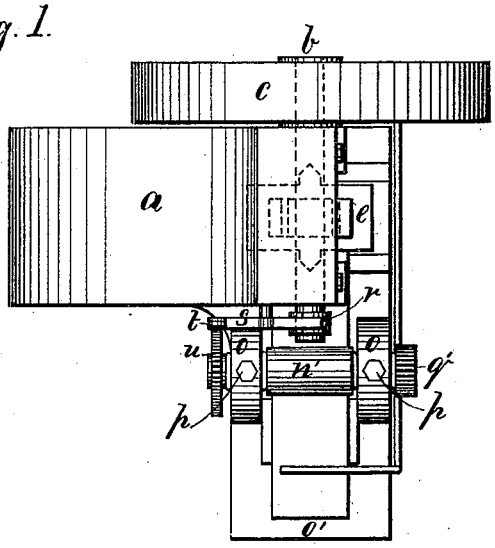

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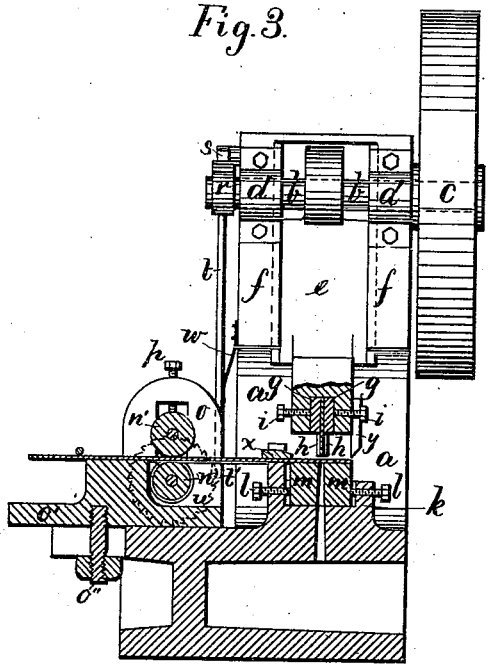
Fig. 3.



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3 Sheets—Sheet 3.

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MACHINE FOR MAKING HORSESHOE NAILS.

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Fig. 4.

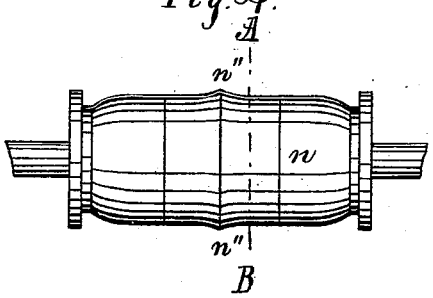
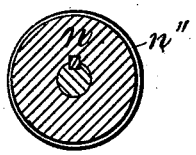


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH M. LAUGHLIN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING HORSESHOE-NAILS.

Specification forming part of Letters Patent No. **189,112**, dated April 3, 1877; application filed September 21, 1876.

To all whom it may concern:

Be it known that I, JOSEPH M. LAUGHLIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Horseshoe-Nails; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in machines for making horseshoe-nails; and consists of the combination of a beveling-machine composed of a pair of rollers, one of which is provided with an annular ring or projection for the purpose of forming the groove in the nail-plate that serves for the formation of the point or bevel of the nail when punched by the punching-machine; the said beveling-machine having an intermittent but positive motion imparted to it from the punching-machine, and suitable connecting mechanism between the two machines. The object in view is to bevel and run the nail-plate between the rollers, and to let the rollers and nail-plate held between them remain at rest during the time the punch on the punching-machine performs its work in punching the nails from the plate. After the punch has performed its work, and has ascended above the plate, the rollers are automatically set in a rotary motion, and thus bevel and present a new portion of the plate to the action of the punching-machine. The width of the nail-plate may be such as to present one or more lengths of nails to be punched at one operation from the said plate, and the punching-machine may be provided with one or more punches, so as to punch one or more nails at each descent of the punching-machine, as may be desired.

In this manner, I am able to produce a finished nail from a nail-plate with one single machine that embodies in itself a beveling and feeding machine, consisting of the rollers aforesaid, and a punching-machine.

The nail-plate that is shaped between the rollers is to be presented to the action of the punch, of the exact shape, or nearly so, of the longitudinal section of a nail, and the nail-plate is to be in form of long and narrow strips of homogeneous metal, the advantages of which are that I am able to produce better nails, and to run the machine a longer time without stopping.

On the accompanying drawings, Figure 1 represents a plan of my invention. Fig. 2 represents a sectional side elevation of the same. Fig. 3 represents a sectional front elevation. Fig. 4 represents a side view of the roller used for shaping the nail-plate, and Fig 5 represents a cross-section on the line A B shown in Fig. 4.

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

a represents the frame of an ordinary punching-machine, of which *b* is the driving-shaft. *c* is the driving or balance wheel. *d d* are the bearings, and *e* the block or head moved up and down in the guides *f f* by means of a crank or eccentric on the driving-shaft *b*, or in any other well-known manner. *g g* are the punch-holders in the lower part of the head *e*, and *h h* are the punches secured in their proper positions by means of the screws *i i* or equivalent device. *k k* represent the die-holders provided with set-screws *l l*, or equivalent and well-known devices for adjusting and securing the die *m* in its proper position in relation to the punches *h h*. *n n'* represent the rollers, movable around their axis in bearings in the frames *o o*, and provided with regulating-screws *p p* and locking-gears *q q'* in the ordinary way. The roller *n* receives an intermittent rotary motion from the driving-shaft *b* on the punching-machine, by means of the eccentric *r*, secured to the shaft *b*, acting upon a lever, *s*, the rear end of which is connected to a rod, *t*, having a pawl, *t'*, in its lower end that operates a ratchet-wheel, *u*, on the shaft of the roller *n*. Springs *v w* are shown, for the purpose of raising the pawl *t'* as soon as the eccentric *r* ceases to act upon the lever *s*, and for the purpose of holding the said pawl *t'* in contact with the teeth of the ratchet-wheel *u*.

I wish, however, to state that the exact connecting mechanism from the punching-machine to the rollers, as shown in the drawings,

for the purpose of producing an intermittent motion on the rollers from the rotary driving-shaft on the punching-machine, is not absolutely necessary to produce the effect desired, and I can to equal advantage substitute therefor other and well-known devices without departing from the spirit of my invention.

The lower roller *n* is provided with an annular beveling-projection, *n''*, by which the groove is formed in the nail-plate during the rotation of the rollers. Figs. 4 and 5 fully show this construction of the lower roller, and I prefer to make this roller as well as the upper one in three pieces, and secured to an arbor, and confined thereon by means of keys or set-screws, &c., so as to be able to make the central part of the roll harder than the ends, as well as for the purpose of replacing the central part, which is most likely to wear out before the end pieces.

X represents a guide or rest for the nail-plate, for the purpose of preventing the latter from rising upward when the punch ascends after having punched the nail from the plate. *y* is the waste-cutter, secured to the head *e* of the punching-machine for the purpose of automatically cutting up, the waste stock that remains on the nail-plate after the nails are punched therefrom. The frames *o o* for the rolling-machine are made in one piece with the sole-plate *o'*, that is adjustable, by means of the set-screw *o''* or equivalent device, toward and from the punch on the punching-machine, for the purpose of adjusting the proper position of the rolling-machine in relation to that of the punching-machine.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

The combination, with a punching-machine, of a beveling-machine, provided with beveling-rollers for forming a groove, substantially as described, and suitable connecting mechanism, by which a rotary but intermittent motion is imparted to the rollers *n n'* from the punching-machine, as and for the purpose set forth.

In testimony that I claim the foregoing as my own invention, I have affixed my signature in presence of two witnesses.

JOSEPH M. LAUGHLIN.

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HENRY CHADBOURN.