2 Sheets—Sheet 1.

L. GODDU.

MACHINE FOR MAKING FASTENINGS FOR THE SOLES OF BOOTS AND SHOES.

No. 188,354. Patented March 13, 1877.

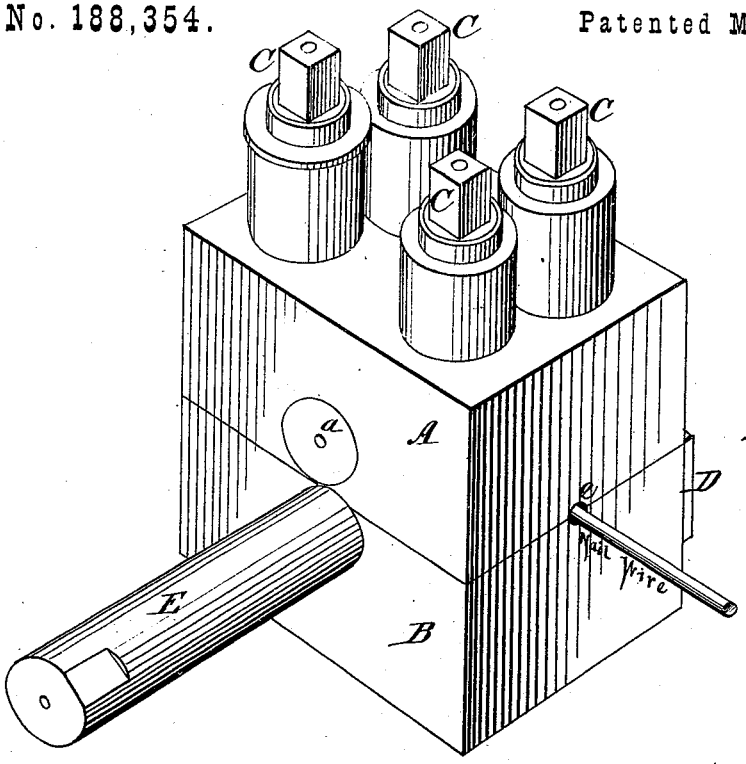
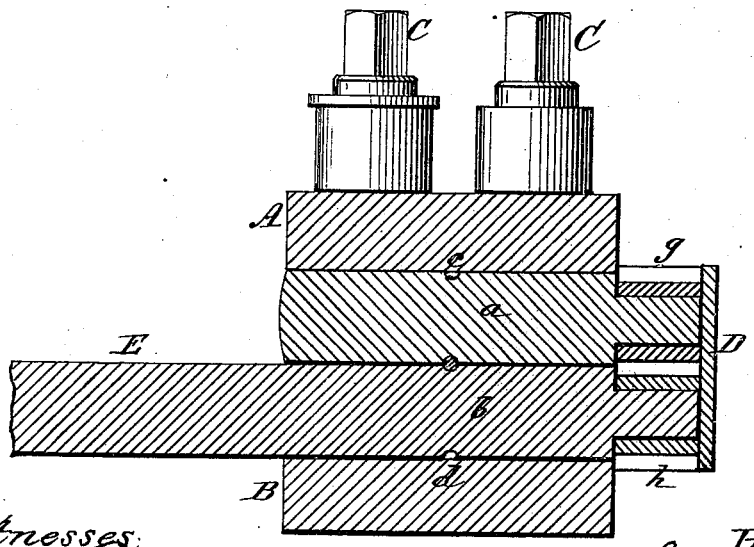


Fig. 1.

Fig. 2.



Witnesses:
J. A. Rutherford
Floyd Norris

Inventor:
Louis Goddu
by Johnson and Johnson
Attys

2 Sheets—Sheet 2.

L. GODDU.

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Fig. 6.

Fig. 3.

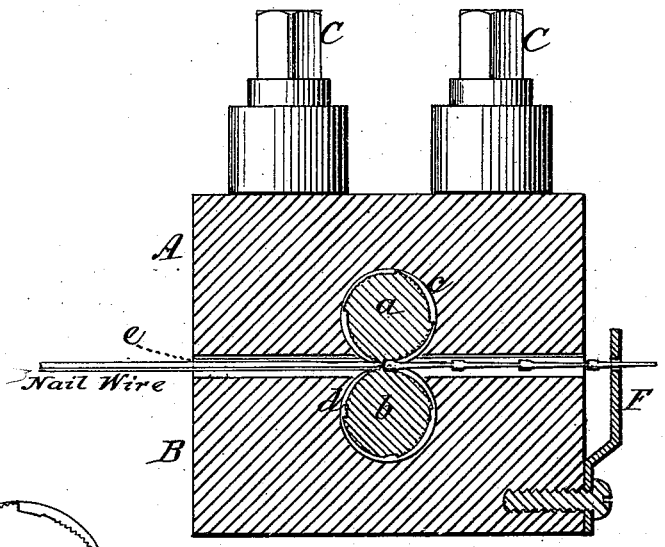
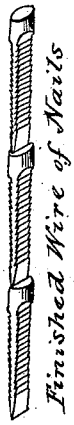


Fig. 5.



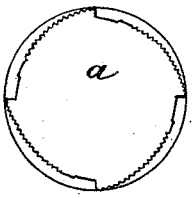
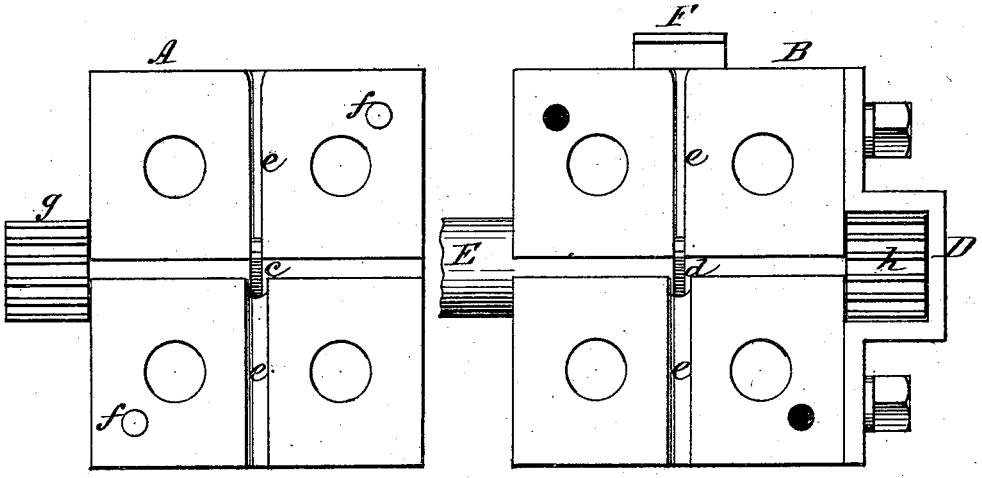


Fig. 4.



Witnesses;
J. A. Rutherford
Floyd Norris

Inventor;
Louis Goddu
by Johnson & Johnson
Attys.

UNITED STATES PATENT OFFICE.

LOUIS GODDU, OF WINCHESTER, ASSIGNOR TO THE AMERICAN CABLE SCREW WIRE COMPANY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING FASTENINGS FOR THE SOLES OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. **188,354**, dated March 13, 1877; application filed February 3, 1877.

To all whom it may concern:

Be it known that I, LOUIS GODDU, of Winchester, in the county of Middlesex and State of Massachusetts, have invented a new and useful improvement, being a Machine for Making Fastenings for the Soles of Boots and Shoes in integral wire or rods of distinct nails or pegs, having heads and points, of which the following is a specification:

The article to be manufactured consists of a sole-fastening for boots and shoes and other purposes, formed in continuous lengths of integral wire or rods of distinct nails or pegs having heads and points, and adapted to be fed by the inserting machine, and severed into nails or pegs, such severance being made either before or after the nail has been inserted, the heads of the integral nails or pegs serving as the means for making and governing the feed, and determining the point at which each nail is separated from the continuous wire.

The machine for producing this article forms the subject of my present invention.

I employ rolls of small diameter, having dies of suitable coincident indentations the counterpart of the nail to be made, and incased in solid bearings, which support them directly above and below where the pressure is applied to keep the surface of the rolls in contact. At right angles to these rolls the passage for the wire is made in and through the solid incasement or bed, so that the wire can be fed to, and carried from, the rolls as it is formed into nails or pegs. The coincident indentations of the rolls are corrugated to effect the feed of the wire, and to form corrugations upon the side or sides of the shanks of the integral nails or pegs, if desired. The surfaces of the rolls meet and join in their incased solid bearings; and to obtain such an arrangement of the rolls, their incased bed is divided into two sections, secured together by strong screw-bolts, by which they can be adjusted as may be required to adapt the rolls for their proper work.

Motion is imparted to one of the rolls, which is connected by equal gear to the other roll, and the effect of the corrugations of the rolls is to draw the wire between them in forming the nails, the gears being arranged and adapted to make and maintain the coincident indentations in the wire by maintaining the coincidence of the head-forming indentations in the rolls. The arrangement of shoulders formed by the equal gears and of an outside fixed cap prevent the rolls from having any longitudinal movement. A trimming-plate is arranged at the exit-opening of the wire-passage in the solid bed, for taking off any fine burr on the edges of the wire which might be left upon it in passing through the rolls.

Two or more sets of dies can be made on the rolls for separate use, thus saving the expense of making new rolls when one set is worn too much for use, the operation being conducted with one set of dies at a time, so that a single set of rolls can be used to increase the capacity of the machine, while their incased bed is adapted for the removal of such rolls as may be required.

The wire is fed from a coil into the machine, and coiled as it is delivered therefrom in continuous lengths of wire or rods of distinct headed nails or pegs.

The effect of the small rolls is to stretch the wire in the direction of its length, and not to make any part of the nail of greater width than the diameter of the wire, and to accomplish this it is of absolute importance that the rolls should be supported so as to prevent any springing by the pressure against them in rolling the wire with its heads, for the least springing or yielding of the rolls would cause the metal to spread, and the nails to be of irregular shape and useless.

In the accompanying drawings, Figure 1 represents a view in perspective of a machine embracing my invention for making integral-headed sole-fastenings; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a vertical cross-section; Fig. 4, the two sections of the solid bed-bearings for the rolls laid open to expose the coincident nail forming indentations, and Fig. 5 a piece of the continuous wire of integral nails or pegs as produced by my machine.

The die-rolls *a b* are arranged one above the other in solid metal beds A and B, which

completely incase them and form their bearings, having bored-out cavities or bearings, into which the rolls are exactly fitted, so as to expose a small portion of their circumference, and to allow them to meet when joined in their solid beds. These die-rolls are made of small diameter—say, about three-quarters of an inch, and their pressure must be great enough to reduce the thickness of the wire, and form the heads by stretching the wire, and not by flattening or making any part of the nail of greater width than the wire. It is the small size of the rolls that enables me to accomplish this result, and in the employment of such rolls means are required to prevent the slightest springing or yielding of these rolls by the pressure above and below them in rolling the wire. For this purpose the solid beds incase the entire rolls, so that it is impossible for them to spring, while giving a solid support directly above and below where the pressure is applied.

The dies *c d* are grooves formed in the rolls the counterpart of the nails or pegs to be formed, and the size of the circumference of the rolls stated will give four nails. The length of the nail or peg to be formed, however, will determine this matter. Each groove is divided into an equal number of tapering indentations with cross-cavities, so that when the rolls are properly geared these indentations will be coincident, and form the heads and points of the nails alike on both sides of the wire, the heads and points joining throughout the continuous length, and for this purpose the taper of the indentations must be so gaged that the heads and points of each nail shall be joined with the required strength to allow the wire to be coiled, handled, and operated in the inserting-machine. The wire-passage *e* is formed equally in the solid beds in line with the dies, forming a straight groove extending from both sides of the rolls through which the wire is fed and supported, being entered from one side of the solid bed, and passing out at the other, producing in effect an inclosed way for the wire into and from the dies.

The surfaces of the indentations or dies have transverse corrugations, which serve to draw the wire uniformly through the rolls, and to corrugate the sides of the shank of each nail, leaving only a plain space for the clinching-point.

The construction of these dies may, of course, be adapted to the form of any style of nail or peg, as, for instance the head may be formed only on one side of the wire, as in Fig. 6, in which case the rolls would not have coincident indentations. Each die-roll has its own solid bed or metal case, and these are joined just in line with the circumference of the rolls with true surfaces, and secured together by strong screw-bolts C, which pass vertically at suitable points through screw-threaded openings in the upper, and into screw-threaded openings in the lower, solid bed, holding them together so as to resist the pressure upon the rolls. Dowel-pins *f* are provided on one of these sections or beds, to enter corresponding holes in the other, to effect a perfect matching of the dies.

The die-rolls are fitted endwise into their bearings, and are geared together by equal gears *g h*, upon their ends, outside of the solid beds, by which their nail-forming indentations are kept coincident. The die-rolls are prevented from having any endwise movement by means of the gears being a little greater in diameters than their rolls, to form shoulders, which bear against the sides of the solid beds, and a cap, D, firmly secured to one of the beds, against which the outer ends of the gears work, so that, when properly seated, the rolls are held true with their dies.

I prefer to make the lower roll the driving-roll, and to this the power is applied by joining an extension, E, of said roll, to a driving-shaft suitably arranged and driven, the connection being made by fitting the roll-extension into a socket in the driving-shaft and keying the two together, or by any other suitable means.

I combine with the exit end of passage for the integral nail-wire a plate, F, having an opening coincident with such nail-passage, the object of which is to trim off any fine burr or edge which might be left upon the wire in passing through the rolls, and thus deliver the continuous length of integral nails finished and complete, the opening in such trimming-plate being just equal to the diameter of the heads formed upon the wire by the dies, so that the opposite edges of the wire will be trimmed, as stated, as it leaves the solid bed.

By this method of rolling, the wire is not flattened, but simply stretched, and the malleability of the metal is thereby preserved, so that the nail-wire requires no annealing, and the nails will readily clinch when driven.

I have shown the rolls with a single die, but it is obvious that two or more sets of dies or die-grooves and wire-passages can be arranged upon such rolls and solid beds, between the fastening screw-bolts, so that when one set of the dies is worn another can be used, thus adapting the same roll and bed-bearings to increase the capacity of the machine, and save the expense of making new rolls until all the dies are worn too much for use, when the rolls can be removed and renewed, using the same bed-bearings, which, being of steel, and the bearings of the rolls equal throughout their length, will last a long time.

Suitable appliances are arranged to deliver the wire from a coil into the wire-passage and the dies, and to receive and coil the completed nail-formed wire as it leaves the trimming-plate.

The screw-bolts which secure the two bed-sections together have long loosely-fitting washers, upon which the screw-heads are clamped, to make the fastening more secure.

The drawings represent the machine in full

size, and with the solid bearings for the rolls of rectangular form; but these bearings may be of any form and construction, so long as the rolls are solidly supported at the points where the pressure is made.

The manufactured article may be used for uniting harness, hose, and the like.

I claim—

1. An improved machine, for forming sole-fastenings for boots and shoes, in integral wire or rods of distinct nails or pegs, with heads and points, having die-rolls embedded and incased in solid bearings, which support them directly above and below where the pressure is applied to keep the surface of the rolls in contact.

2. The combination, in a machine for forming headed sole-fastenings in continuous lengths of wire or rods of distinct nails or pegs, of die-rolls, embedded and incased in solid bearings, to give the required support, with a feed-passage for the wire made through said solid beds, across and in line with the meeting-surfaces of said rolls, for the entrance of the wire to and its passage from said embedded die-rolls.

3. An improved machine for forming sole-fastenings for boots and shoes, in integral wire or rods, of distinct nails or pegs, having heads and points, constructed and organized with die-rolls embedded and incased in solid bearings, a feed-passage for said wire, through solid beds, and having transverse corrugations in said dies, to effect a uniform feed of the wire and corrugate the shanks of the nails or pegs, substantially as herein set forth.

4. In a machine for producing headed sole-fastenings for boots and shoes in continuous integral lengths, substantially as described, die-rolls embedded and incased in solid bearings, and operated by equal gears to maintain the coincidence of the nail-forming indentations, substantially as herein set forth.

5. In a machine for producing headed sole-fastenings for boots and shoes, in continuous integral lengths, having die-rolls embedded and incased in solid bearings, constructed in separate beds or sections, secured together, in line with the meeting-surfaces of said die-rolls, for operation as herein set forth.

6. The combination, in a machine for producing headed sole-fastenings for boots and shoes, in continuous lengths, of integral wire or rods of die-rolls of small diameter embedded and incased in solid bearings, and held from end movement by means of the shoulders formed by the equal gears bearing against said solid bed, and the cap-plate bearing against the ends of said gears, substantially as herein set forth.

7. The combination, in a machine for producing headed sole-fastenings for boots and shoes in continuous lengths of integral wire or rods, of die-rolls embedded and incased in solid bearings, having a feed-passage for the wire in line with the meeting-surfaces of said die-rolls, of a trimming-plate for taking off any burr or wire edge from the nail-formed wire which may be left in passing through the rolls.

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

LOUIS GODDU.

Witnesses:
JAS. B. BELL,
N. S. HOTCHKISS.