(No Model.)

P. CLIFFORD & J. COUPAL.

SOLE FASTENING WIRE.

No. 393,885. Patented Dec. 4, 1888.

Fig. 1.



Fig. 2.

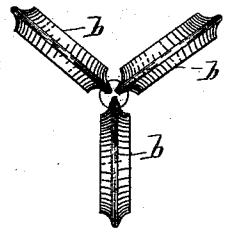


Fig. 3.

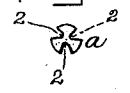


Fig. 4.

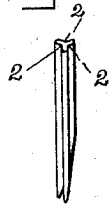


Fig. 5.



Fig. 6.



Fig. 7.



Witnesses:
H. Brown.
W. C. Ramsay.

Inventors.
Patrick Clifford.
Joseph Coupal.
by Wright Brown Quinby & Coudley.
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

PATRICK CLIFFORD AND JOSEPH COUPAL, OF QUINCY, MASSACHUSETTS.

SOLE-FASTENING WIRE.

SPECIFICATION forming part of Letters Patent No. 393,885, dated December 4, 1888.

Application filed October 10, 1887. Serial No. 251,942. (No model.)

To all whom it may concern:

Be it known that we, PATRICK CLIFFORD and JOSEPH COUPAL, of Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Sole-Fastening Wire, of which the following is a specification.

This invention has for its object to provide a wire for use in sole-nailing machines which form nails from a continuous wire and drive them into boot and shoe soles.

The invention consists in a wire for the purpose named having continuous semicircular longitudinal grooves rolled in the wire and forming approximately triangular ribs thereon, whereby the surface area of the wire is increased and the wire is enabled to firmly hold the material into which it is driven and will not be capable of turning therein.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a cross-section of a cylindrical wire from which our improved wire is made. Fig. 2 represents a view of the rolls in the operation of grooving the wire. Fig. 3 represents a cross-section of the improved wire. Figs. 4, 5, 6, and 7 represent views of a sole-fastening nail formed from said wire.

The same letters of reference indicate the same parts in all the figures.

In carrying out our invention we take cylindrical wire, *a*, of brass, copper, or other suitable metal, and pass the same between a series of rolls, *b b b*, which are arranged to act simultaneously on the wire and indent the same, as shown in Fig. 2, the rolls being rotated and caused to make their indentations in the form of continuous grooves 2 2 2. The metal displaced by the formation of said grooves is disposed in ribs which radiate from the center of the wire in the cross-section of the latter. The rolls are formed to make the grooves semicircular in cross-section and of such depth as to leave a core at the center of the wire of about the same thickness as each rib. The ribs are approximately triangular in cross-section, the base or wider portion of each being on the periphery of the wire, the narrow neck which unites each rib to the core being the apex of the triangle. The wire thus formed is to be supplied in coils of indefinite length for use with a sole-nailing machine.

The advantages of this form of wire are as follows: The enlargement of the surface area of the wire and the formation of the semicircular grooves therein give it a greatly-increased holding-power, the semicircular grooves receiving correspondingly-shaped tongues of the material into which the nail is driven, and said tongues have sufficient thickness to enable them to firmly hold the wire and prevent it from turning. The approximately-triangular ribs interlocked with the tongues above mentioned make the union of the nail and material strong and permanent.

The wire is compacted and strengthened by the rolling operation.

When the wire is beveled, as shown in Figs. 4, 5, and 6, by cutting across one of the ribs the ends of the other two ribs are brought to an edge, forming a wide point wholly at one side of the nail, said point being of greater width than could be formed by beveling a cylindrical wire. This peculiar form of point enables the beveled end of the nail to be much more perfectly clinched or turned in driving than a cylindrical nail similarly beveled.

The reduction of the thickness of the wire and the distribution of its material enables the wire to be more easily cut by the cutting appliances of the nailing-machine; hence less power is required to operate the latter.

The thin central core or web which connects the ribs of the wire can be severed at the outer end of the nail, so that the ribs may be spread to form an enlargement or head, as shown in Fig. 7.

We are aware that it is not new to draw a metal rod in a wire-drawing machine so as to form radial flanges on the rod; but we are not aware that wire has ever been rolled to form semicircular grooves and intermediate approximately-triangular ribs, as here shown.

We claim—

1. Sole-fastening wire having continuous longitudinal semicircular grooves rolled therein and ribs of approximately-triangular form

between said grooves, the bases or under portions of said ribs being upon the periphery of the wire, as set forth.

2. A sole nail or fastening composed of wire having longitudinal semicircular grooves and approximately-triangular ribs between said grooves, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 8th day of October, A. D. 1887.

PATRICK CLIFFORD.
JOSEPH COUPAL.

Witnesses:
ARTHUR W. CROSSLEY,
W. C. RAMSAY.