(No Model.) 2 Sheets—Sheet 1.

# I. HARRIS.

## PROCESS OF FORGING STOPS FOR CABLE RAILWAYS.

No. 343,271. Patented June 8, 1886.

Fig. 1.

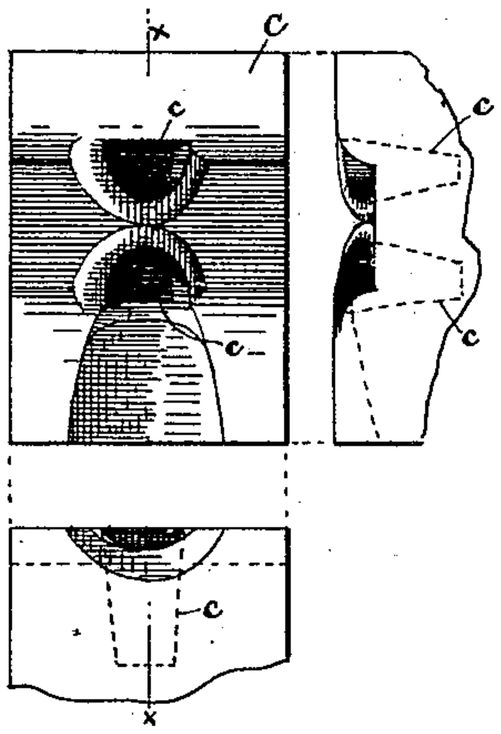



Fig. 2.

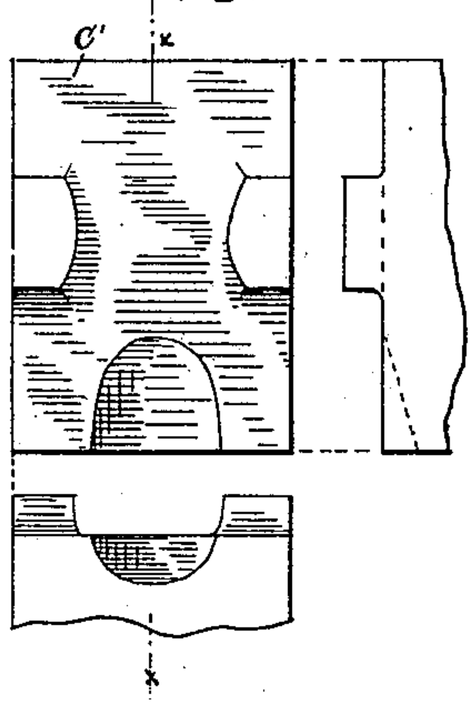



Fig. 3.

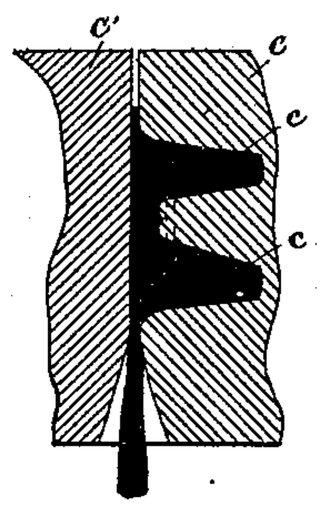



Fig. 4.

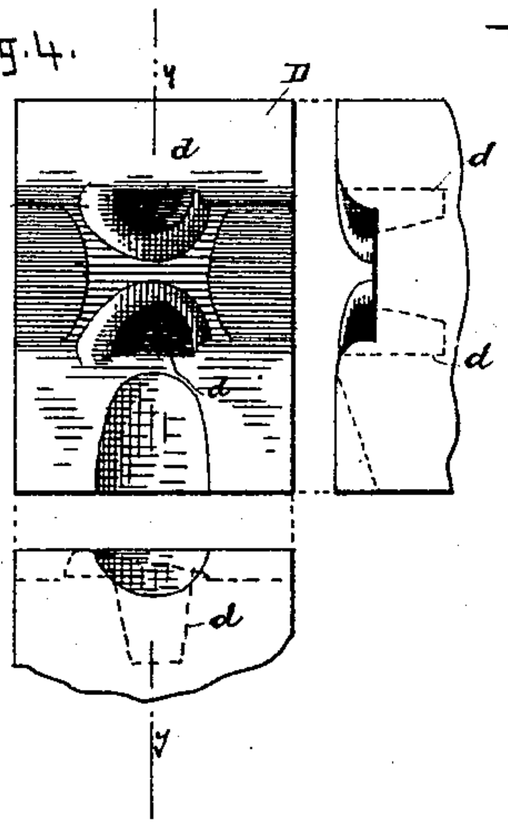



Fig. 5.

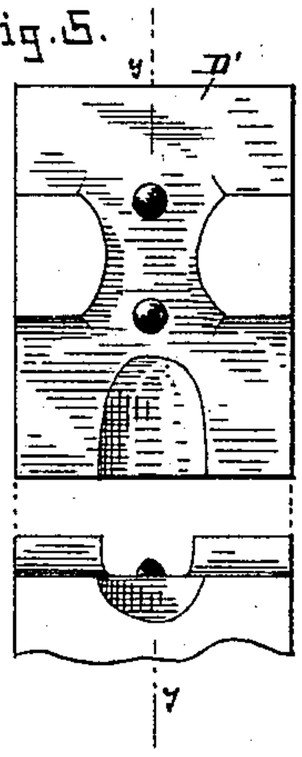



Fig. 6.

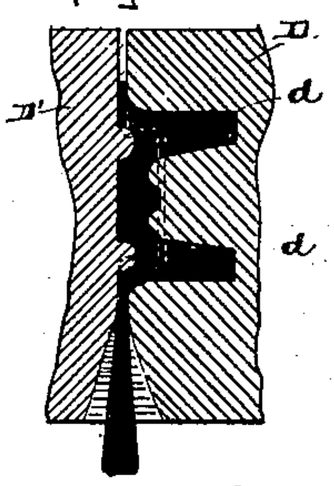
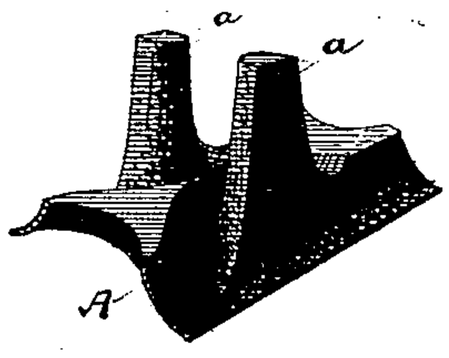



Fig. 7.




WITNESSES

N. S. Armstrong.
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Attorney

(No Model.) 2 Sheets—Sheet 2.

# I. HARRIS.

## PROCESS OF FORGING STOPS FOR CABLE RAILWAYS.

No. 343,271. Patented June 8, 1886.

Fig. 8.

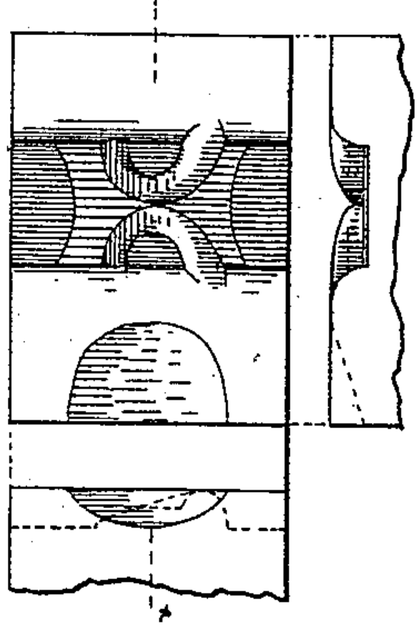


Fig. 9.

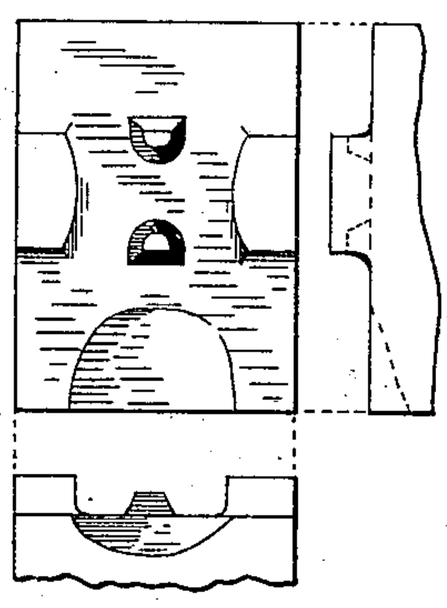


Fig. 10.

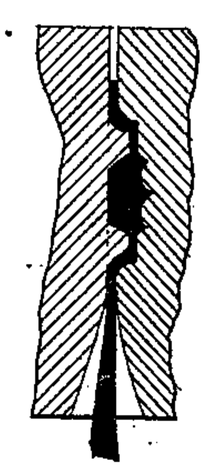


Fig. 11.

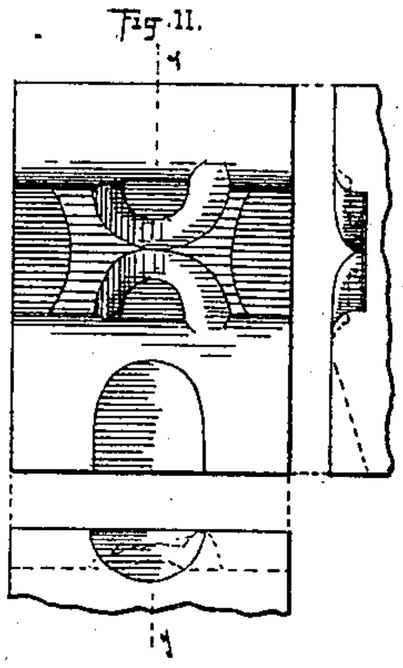


Fig. 12.

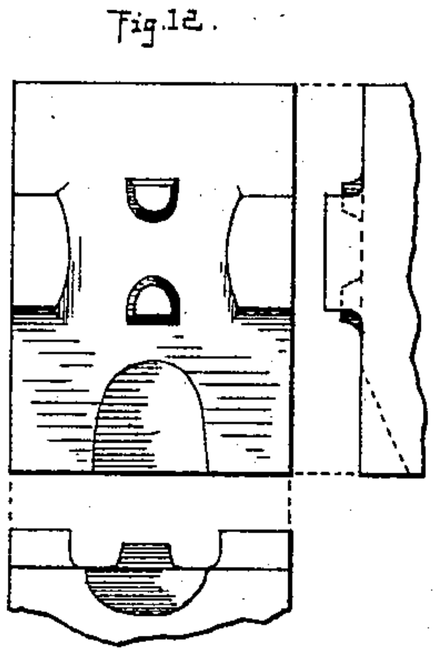


Fig. 13.

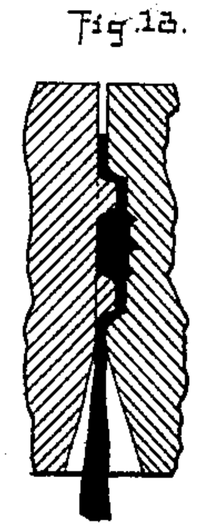


Fig. 14.

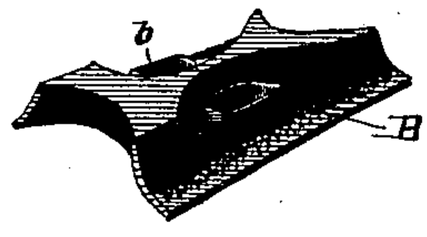
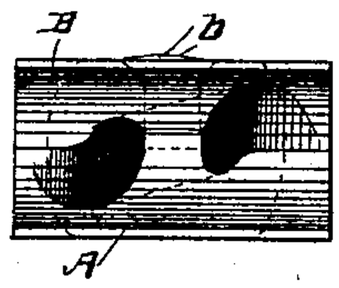



Fig. 15.

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# UNITED STATES PATENT OFFICE.

IRA HARRIS, OF CLEVELAND, OHIO.

## PROCESS OF FORGING STOPS FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 343,271, dated June 8, 1886.

Application filed November 12, 1885. Serial No. 182,516. (No model.)

*To all whom it may concern:*

Be it known that I, IRA HARRIS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Processes of Forging Clamps or Stops; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improved process of forging the male portion of clamps or so-called "stops," for connecting the two parts of wire cables that are being employed in the construction of cable roads, the said process consisting in the steps hereinafter described and claimed. The cables referred to are made in two parts, each part being itself a small cable consisting of several strands of large steel wire running spirally, in the usual manner. At suitable and equal distances—perhaps six or eight inches, more or less—a single strand of each part is bent laterally and toward each other, forming small loops, and clamps are employed to connect, respectively, these pairs of loops, by means of which the two parts of the cable are held parallel, but separated, perhaps an inch, more or less, the clamps forming so-called "stops" that engage the teeth of the driving-disk, the latter being connected with the car. These clamps are made in halves for embracing the loops, the two parts of the clamp being respectively male and female. The male part has lugs that extend through the loops of the cable and through holes in the female part, and are riveted on the outside of the latter after the parts are assembled. A cable several miles in length requires a great number of these clamps or stops, and any improvement in the manufacture of such clamps is therefore of great commercial value. Heretofore in forging these clamps it has been considered necessary to forge the lugs extending in a lateral direction, and to then reheat and set the lugs at right angles to the plate, this latter being done at a subsequent operation.

I have devised a process by which the lugs of the male plate or portion of the clamp are forged in the required position, extending at right angles from the body of the plate, the same being done at one operation and without reheating.

In the accompanying drawings are illustrated suitable dies for carrying out my process in the drop-press.

Figure 1 is a plan view of the top breaking die, showing also in diagram a side and end elevation of the same. Fig. 2 is a plan view of the bottom breaking-die with side and end elevations in diagram. Fig. 3 is a vertical section through the two dies on the line *x x*, Figs. 1 and 2. Fig. 4 is a plan view of the top forging or finishing die, with diagrams showing side and end elevations. Fig. 5 is a plan view of the bottom forging-die, the diagram showing an end elevation. Fig. 6 is a section of the two dies on the line *y y*, Figs. 4 and 5. Fig. 7 is a view in perspective of the male portion of the clamp forged in these dies. Figs. from 8 to 13, inclusive, illustrate the breaking and forging dies for the female part of the clamp. No claim of novelty is made in reference to these latter dies which are used in carrying out my process, said novelty being confined to the forging of the male portion of the clamp. These dies are merely shown to give a clear understanding of the manner of forging the entire clamp. Fig. 14 is a view in perspective of the female portion of the clamp. Fig. 15 is an end elevation of the entire clamp in position riveted together.

A represents the male portion of the clamp, and B the female portion. (See Figs. 7 and 14.) The part A has lugs *a*, that pass through the loops of the cable and through the holes *b* of the part B. The lugs *a*, as shown, stand upright or at right angles to the plate A. Heretofore it has been considered impracticable to forge these lugs in such upright position; but, on the contrary, it was supposed that these lugs must be forged in a lateral or divergent position, and by a subsequent operation of reheating, bending, and swaging the lugs the latter were brought to the upright position shown in Fig. 7. With my improved process, by means of suitable dies in the drop-press the male portion of the clamp is formed complete at one operation, as aforesaid.

C and C′ are respectively the top and bottom breaking-dies. The die C has deep chambers *c*, into which the heated metal of the blank is

forced by the action of the dies C′, forming prongs from which to shape the lugs *a*. The chambers *c* should be of such size, depth, and tapering form that enough metal will be forced therein to form the lugs *a*, and that the product of the breaking-dies, with such prongs attached, may be readily removed.

D and D′ are respectively the top and bottom forging or finishing dies, the former having chambers *d*, into which the prongs formed by the breaking-dies are forced and brought to the proper form and size to form the lugs *a*. The plate A meantime is forged by these dies, the entire operation in the breaking and forging dies requiring but a few moments, and is done without reheating the metal.

What I claim is—

The process or method herein described of forging the male part of clamps or so-called "stops" for cables, by means of a drop-press and suitable dies, said process consisting, essentially, first, in forcing a portion of the heated metal of the blank into a chamber of the breaking-die, so as to form long prongs extending substantially at right angles to the face of the die; second, in finishing or shaping these prongs in suitable chambers in the forging-dies to form lugs of the desired form and size, said lugs extending substantially at right angles to the body of the forging, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 10th day of November, 1885.

IRA HARRIS.

Witnesses:
N. S. AMSTUTZ,
JAMES K. MEOBEE.