

P. H. FRIEL.  
DIE FOR COVERING TUBES.

(Application filed Jan. 11, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

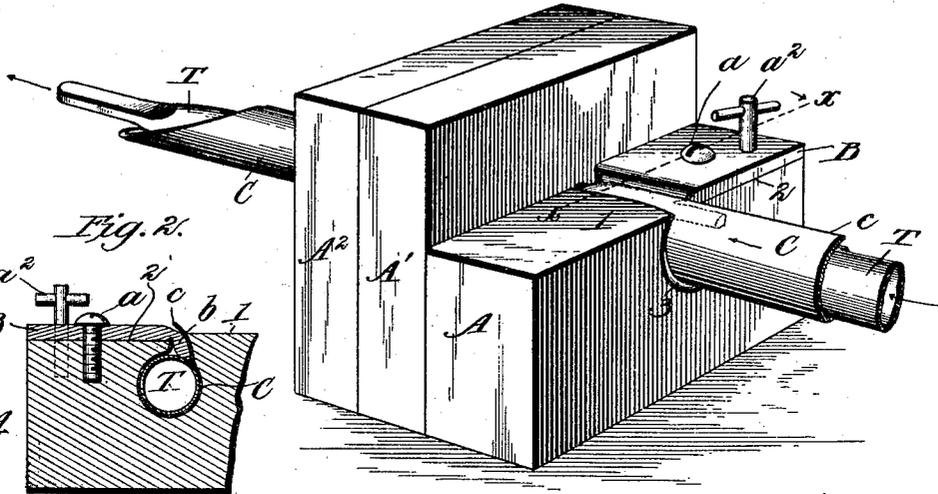


Fig. 2.

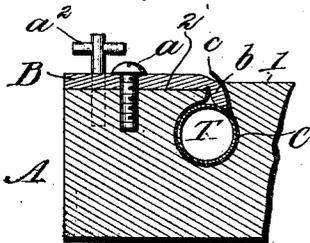


Fig. 3.

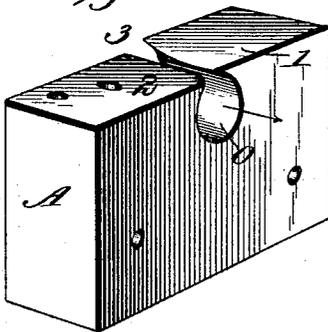


Fig. 4.

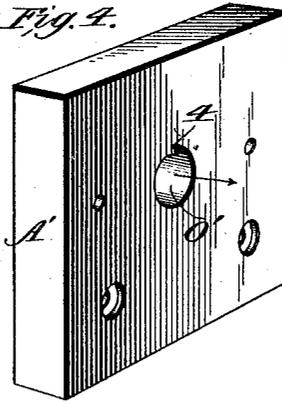


Fig. 5.

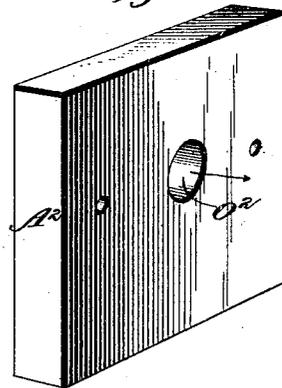


Fig. 6.

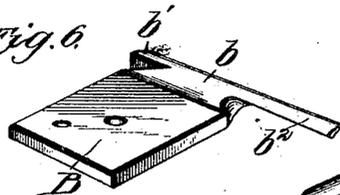
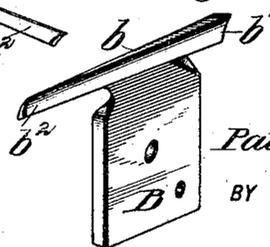


Fig. 7.



WITNESSES:

*Mrs. P. Bradford*  
*Edw. W. Syru.*

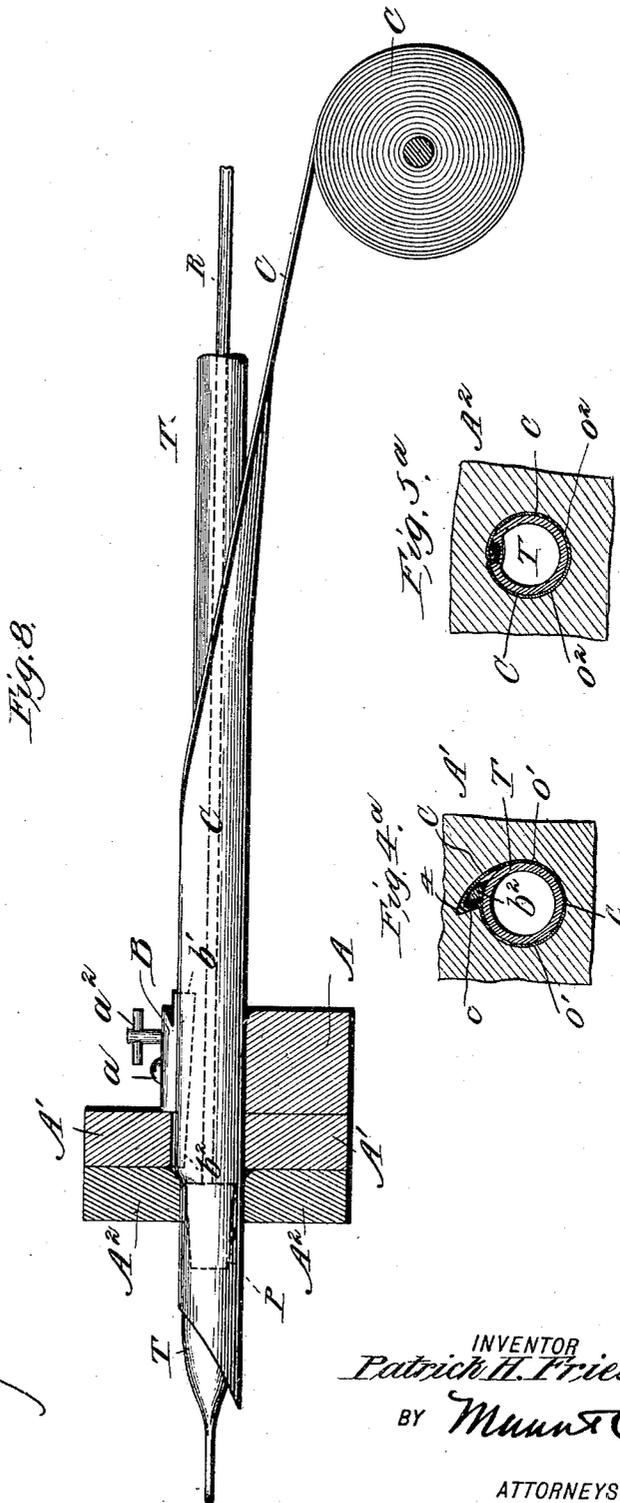
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P. H. FRIEL.  
DIE FOR COVERING TUBES.

(Application filed Jan. 11, 1902.)

(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

PATRICK HENRY FRIEL, OF KENOSHA, WISCONSIN.

## DIE FOR COVERING TUBES.

SPECIFICATION forming part of Letters Patent No. 696,865, dated April 1, 1902.

Application filed January 11, 1902, Serial No. 89,262. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HENRY FRIEL, of Kenosha, in the county of Kenosha and State of Wisconsin, have invented a new and useful Improvement in Dies for Covering Tubes, of which the following is a specification.

The object of my invention is to provide a simple, cheap, practical, and efficient die for covering a metal tube with a casing or outer jacket of another metal; and it consists in the peculiar construction and arrangement of parts whereby the work is neatly and rapidly done and the edges of the outer casing are closed with a strong and practically-invisible joint.

Figure 1 is a perspective view of the die with a portion of the tube and its covering in position. Fig. 2 is a cross-section on line  $xx$  of Fig. 1. Figs. 3, 4, and 5 are detached views of portions of the die. Fig. 4<sup>a</sup> is a sectional view taken through the block A', and Fig. 5<sup>a</sup> is a similar view taken through block A<sup>2</sup>. Fig. 6 is a top view, and Fig. 7 a bottom side view, of the folder; and Fig. 8 is a longitudinal section through the die.

In the drawings, A A' A<sup>2</sup> represent the three parts of the die, which are in the nature of steel blocks held together, as shown in Fig. 1. The block A is of less height than A' and A<sup>2</sup> and is also somewhat thicker. Along its upper edge it has a transverse opening O, which opens along the upper surface of the block with a tapering throat, as seen at 3, Fig. 3, which is the point where the tube and sheet-metal ribbon first enter the die. On one side of this opening the surface 1 of this die-block is higher than it is on the other side at 2. On the lower surface 2 there is held a detachable folder-plate B by means of a set-screw  $a$  and a thumb-pin  $a^2$ , which latter passes through the folder-plate and entering a hole in the subjacent die-block prevents the folder-plate from turning about the set-screw and holds said plate in true position. In the die-block A' the hole O' has along one side an eccentric V-shaped notch or groove 4 through the same, as seen in Fig. 4, which groove opens laterally into the central hole, while the opening O<sup>2</sup> in block A<sup>2</sup> is circular, as shown in Fig. 5.

The openings O O' O<sup>2</sup> when the blocks are brought together, as in Fig. 1, are in coinci-

dence with each other and give passage to the tube T and the metal strip C, which is to form an external jacket around the tube. This jacket is formed from a ribbon of sheet metal, which is fed from a spool or reel, as in Fig. 8, and which is formed around and firmly joined about the tube by pulling the tube T and the sheet-metal ribbon through the die, as indicated by the arrows in Fig. 1.

The former B has a shank portion  $b$ , with a short right-angular extension  $b'$  on one side and a longer right-angular extension  $b^2$  on the other side. When this former is in position, as shown in Figs. 1, 2, and 8, the short extension  $b'$  is on the outer or entering side of the die and the longer extension  $b^2$  is on the inner side and extends into the V-shaped groove 4 of block A' and through the same. The extensions  $b'$   $b^2$  are convex on the outside and concave on the inside, the concave surface corresponding in cross-section to the cross-sectional curve of the tube. The extensions  $b'$   $b^2$  constantly taper to a diminishing cross-section from  $b'$  to  $b^2$ . The function of this folder is to gradually fold or curl the outer edge  $c$  of the ribbon over the other edge. The first curling action is effected in the block A around the large end of former B, as seen in Fig. 2. Then as the tube and its covering pass into the block A' over the smaller extension  $b^2$  of the former the curled edge is folded around the other edge, as seen in Fig. 4<sup>a</sup>, and thence it passes into the die-block A<sup>2</sup>, as seen in Fig. 5<sup>a</sup>, where the folded parts are mashed down flat to produce a locked joint in which the edges are so compressed as to be scarcely noticeable.

I am aware that tubes have been covered with a sheet-metal strip in a somewhat similar way and that dies for this purpose of various forms have been devised, and I therefore only claim the peculiar construction and arrangement of the die for this purpose.

To form an inner bearing for the tube T as it is drawn through block A<sup>2</sup>, a steel plug P (shown in dotted lines in Fig. 8) is held stationary inside the tube by means of a rod R.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The die for covering round metal surfaces with an external jacket, consisting of

a block having a hole through the same opening on the upper surface of said block, a higher block having an opening through it with a V-shaped notch in its side and a folder attachment to the upper surface of the first-named block on one side of its opening and having two extensions, one extending outwardly, and the other one extending inwardly into the V-shaped notch of the opening of the higher block substantially as described.

2. The die for covering round metal surfaces with an external jacket, consisting of a block having a hole through the same opening on the upper surface of said block, another block having an opening through it

with a V-shaped opening in its side, a folder attached to the upper surface of the first-named block on one side of its opening and having two extensions one extending outwardly and the other one extending inwardly into the V-shaped notch of the opening of the higher block, and a third block having a plain round hole disposed behind the other blocks and adapted to flatten down the curled edge of the jacket substantially as and for the purpose described.

PATRICK HENRY FRIEL.

Witnesses:

JOSEPH C. NEWHOUSE,  
WILLIAM J. THREINER.