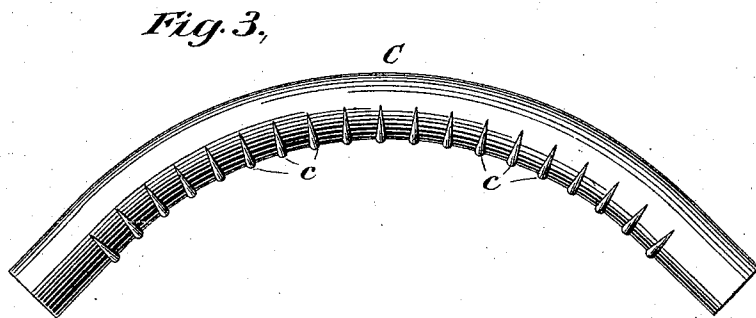
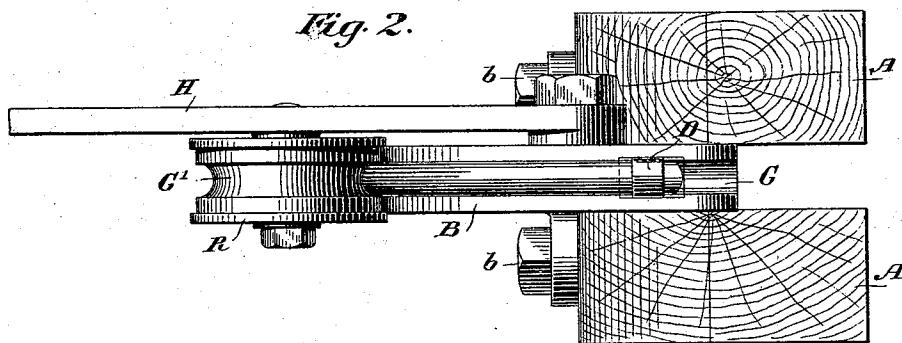
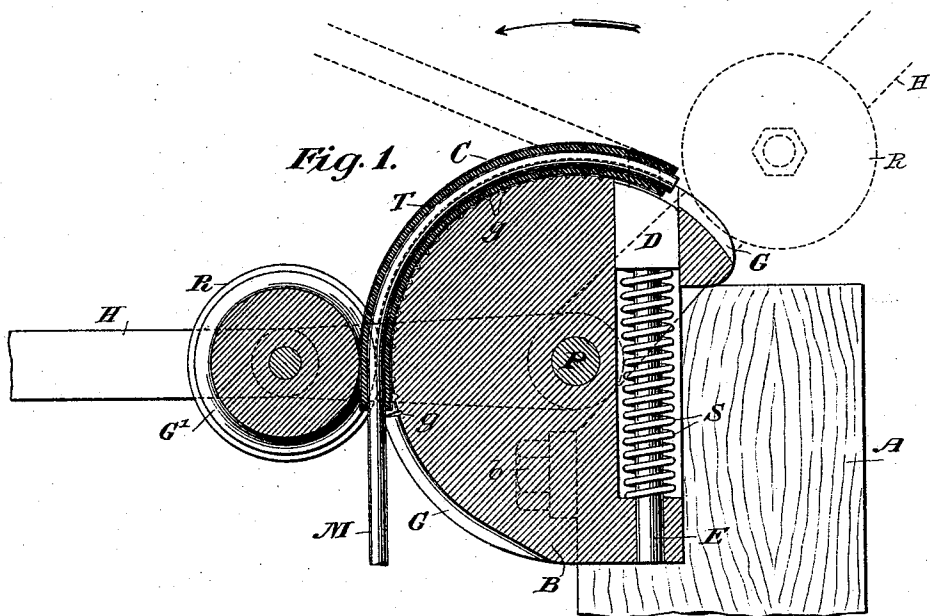


(No Model.)

E. T. GREENFIELD.
METAL COVERED ELBOW.

No. 517,276.

Patented Mar. 27, 1894.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN T. GREENFIELD, OF NEW YORK, N. Y.

METAL-COVERED ELBOW.

SPECIFICATION forming part of Letters Patent No. 517,276, dated March 27, 1894.

Application filed July 14, 1891. Serial No. 399,470. (No model.)

To all whom it may concern:

Be it known that I, EDWIN T. GREENFIELD, a citizen of the United States, residing at New York, county and State of New York, have made a new and useful Invention in Compound Tubular Elbows, of which the following is a specification.

My invention is directed particularly to a novel form of compound elbow designed especially for use in connection with electrical conduits, and to this end it is constructed of insulating material surrounded by a metal sleeve or tube, both of said parts being bent into the form of an elbow in a manner hereinafter described.

My invention will be fully understood by referring to the accompanying drawings taken in connection with the following specification.

Figure 1, is a vertical sectional view of the preferred form of apparatus used in making my improved elbow and illustrating also such an elbow in process of construction. Fig. 2, is a plan view as seen looking at Fig. 1, from the top toward the bottom of the drawing, while Fig. 3 is a plan view of my improved form of compound elbow.

Referring now to the drawings in detail, A represents a pair of standards or supports secured to a table, bench or other stationary support not shown. To the upper end of these supports is secured by bolts *b* a grooved forming block B, made preferably of metal and having on its upper surface a groove G of the diameter of the piping or tubing from which it is desired to construct the elbows. The operative portion of this groove G is provided with a series of lateral grooves *g g* designed to form corrugations *c* on the inner side of the completed elbow as shown in Fig. 3. H is a lever pivotally secured to one side of the forming block B with a forming roller R having a groove G' of the same diameter as the groove G.

D is a sliding locking block having a loop or eye at its upper end as clearly shown in Fig. 2, of substantially the same diameter as the exterior diameter of the tube C, from which it is desired to form the elbow. This sliding block D is secured to a vertically sustained rod E and held normally in a position slightly above the face of the groove G by a spiral spring S.

T represents a short section of tube made preferably of paper or analogous fibrous material and impregnated with insulating material in a manner well understood by those skilled in the art of preparing conduit tubes, and C is a tube of brass, copper or analogous metal which fits snugly about the paper tube T.

M is a mandrel made of soft rubber, leather or analogous yielding material adapted to fit tightly in the interior of the tube T.

The method of operation by which my improved elbows are formed with the above described mechanism is as follows: Short straight sections of the described metal covered tubing are first heated in boiling water or in any other manner preferred, the heating being for the purpose of preventing the cracking or checking of the outer portion of the paper tube during the process of constructing the elbow. One end of the short tube is then inserted in the eye of the locking block D, said eye projecting slightly above the face of the groove G under pressure of the spring S. The mandrel M, of soft rubber, leather or other yielding material is then covered with soap stone or some material which will permit of its ready withdrawal and is forced through the tube T. The handle H is then drawn in the direction shown by the arrow in Fig. 1, from the position indicated in dotted lines to that indicated in full lines. During the first operation of the stroke of this operating handle, the eye and locking block D are forced into the position shown and caused to hold the tube securely as it is bent over the forming block B during the progress of the roller R to its final position shown in full lines. The compound tube, therefore, assumes, when completed, the conformation shown in Fig. 3, of a completed elbow, the corrugations *c* being formed by the lateral grooves *g* in the groove G of the forming block B. The handle H and forming roller R are returned to their first position and the elbow is withdrawn from the locking block D, after which the mandrel M is removed, the completed elbow being ready for sale and use.

I am aware that heretofore pipe elbows have been constructed consisting of cast iron having a vitreous lining with a filling between the vitreous lining and the metal as disclosed in patent to E. H. Austin, No. 209,103, granted

October 22, 1878, and I make no claim herein broad enough to include such a structure, my invention being directed to an elbow made of an insulating tube, surrounded by a thin metallic jacket or sleeve, which partakes of the curved conformation of the insulating tube when it is bent or formed, and in my preferred form of elbow the metallic jacket or sleeve is corrugated on its inner curve in order to give greater strength thereto, and to aid in retaining the curved insulating tube in its bent or curved shape after the elbow is completed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. An elbow made of insulating material and a close fitting surrounding metallic jacket or sleeve.
2. An elbow made of non-corrosive material and surrounded by a close fitting metallic jacket or sleeve.
3. An elbow made of a bent metallic tube which incloses an insulating tube, the two being firmly united together, substantially as described.

4. An elbow made of an insulating tube surrounded by a thin metallic jacket or sleeve corrugated on its inner curve and adapted to hold the insulating tube in its curved position, substantially as described.

5. A curved elbow made of concentric tubing, the inner tube being of insulating material, the outer tube of metal and corrugated on the inner curve of the elbow, substantially as described.

6. A curved elbow made of concentric tubing the inner tube being of fibrous material saturated with an insulating compound, and the outer tube of metal having lateral corrugations on the inner curve of the elbow, substantially as described.

7. A curved elbow composed of concentric tubes T and C, the inner tube C being of paper treated with an insulating material, and the outer tube of metal and corrugated on the inner curve of the elbow, substantially as described.

EDWIN T. GREENFIELD.

Witnesses:

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