No. 655,905. Patented Aug. 14, 1900.

F. W. MAXSTADT.

WIRE JOINT AND METHOD OF MANUFACTURING SAME.

(Application filed June 11, 1900.)

(No Model.)

Fig. 1.

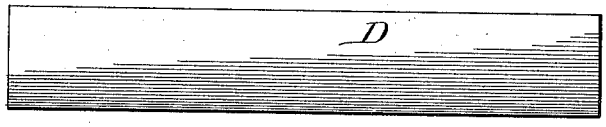


Fig. 2.

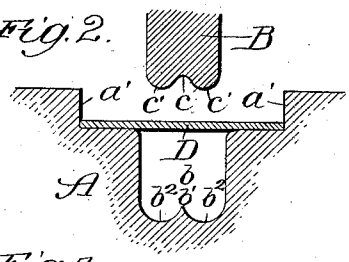


Fig. 3.



Fig. 4.

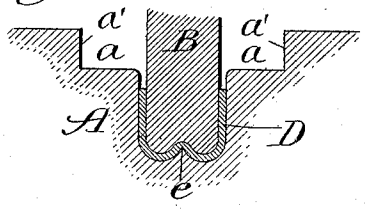


Fig. 5.



Fig. 6.

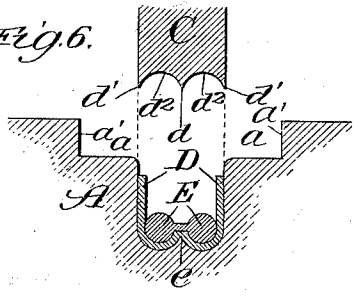


Fig. 7.



Fig. 8.

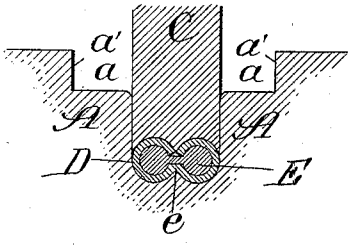


Fig. 9.

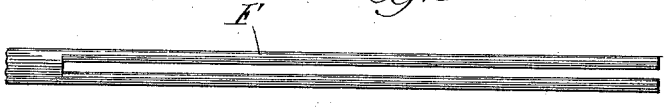
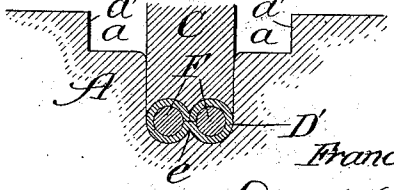


Fig. 11.



Fig. 10.



Witnesses:
Chas. E. Gaylord,
John Enders, Jr.

Inventor:
Francis W. Maxstadt,
By Dyrenforth, Dyrenforth & Lee,
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANCIS W. MAXSTADT, OF CHICAGO, ILLINOIS.

WIRE-JOINT AND METHOD OF MANUFACTURING SAME.

SPECIFICATION forming part of Letters Patent No. 655,905, dated August 14, 1900.

Application filed June 11, 1900. Serial No. 19,864. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS W. MAXSTADT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Wire-Joints and Methods of Manufacturing the Same, of which the following is a specification.

My invention relates to an improved article of manufacture for use in joining together the ends of electric conducting-wires, and it also relates to an improved method of manufacturing the same.

Joints of the class to which my invention relates comprise a pair of short parallel longitudinally-joined tubes of comparatively-soft metal. In forming a joint the wires to be joined should pass from opposite ends through the respective tubes, and they, with the contained wire ends, are twisted around each other to prevent withdrawal of the wires. Joints of this kind are employed quite extensively for telephone, electric light, and other electric conducting wires where carefully-constructed joints are necessary, and it is desirable in practice that the tubes should fit the wires so closely as to exclude all air and prevent access of moisture, because either fluid would have a tendency to corrode the incased surfaces of the wires and reduce their conductivity. It is also necessary that the joints shall be very strong, and as they are used in large quantities they should be as inexpensive as it is possible to make them. One form of the joint as hitherto provided consists of a conversely spirally rolled sheet of metal foil; but this construction, while attended with certain advantages over tubes of one thickness of metal as hitherto provided, has objectionable features which it is desirable to overcome. Joints of this class formed of one thickness of the metal have hitherto consisted usually of a pair of drawn tubes brazed together longitudinally, a comparatively-expensive construction in which undesirable variations in the size of the bores frequently occur.

My object is to provide a wire-joint of the class described, of a particularly strong, durable, and inexpensive construction, formed of a single piece of sheet metal and having bores which will fit with great accuracy wires of the gage for which they are intended; and my invention consists in the new and improved article as well as in the novel method of its manufacture.

In the drawings, Figure 1 shows a metal blank from which my improved joint is formed; Fig. 2, a sectional view illustrating the dies employed for carrying out the first step of the method. Fig. 3 shows the blank after it has been subjected to the first bending operation, this operation being illustrated in Fig. 4. Fig. 5 shows the blank with a mandrel in position ready for the second bending operation to be performed by the dies illustrated in Fig. 6. Fig. 7 shows the joint completed after it has been operated upon, as shown in Figs. 8 and 10. Fig. 9 shows a bifurcated mandrel used in the operation illustrated in Fig. 10, and Fig. 11 illustrates the joint as it appears in use when fastening together the ends of wires.

The views shown in Figs. 2, 4, 6, 8, and 10, illustrating the steps of the method, are on a scale twice the size of the other views.

A represents the female die used in all the steps of my method. B is the first male die, and C the second male die. Both dies are of a length approximating or exceeding the length of the blank D, from which the joint is formed. The die A is formed with an upper recess a, the sides a' of which are of a distance apart exactly coinciding with the width of the blank D. At the center of the recess a is a socket b, having the central projection b' and parallel concave recesses b^2. The male die B is formed at its lower end with a central concavity c, flanked by the convex projections c'. The blank D is placed in position, as shown in Fig. 2, and the die B is then pressed downward upon it to bend the blank into U shape with the central ridge e, as shown in Fig. 4. A mandrel E is then placed in position, as shown in Figs. 5 and 6, and the die C is then brought into operation. This die, as shown in Figs. 6, 8, and 10, has the sharp central and edge projections d d', respectively, and concavities d^2 corresponding in size and shape with the concavity b^2 of the female die. When the die C is pressed down upon the blank, it bends the latter over the mandrel E into the form shown in Fig. 8, wherein the longitudinal edges of the blank meet and the ridge e

is flattened. The mandrel E is then withdrawn and the bifurcated mandrel F is passed into the tubes, which are then subjected to another pressure from the die C to press the edges to the ridge and complete the joint, as shown in Fig. 10. The prongs of the mandrel F are of a diameter corresponding exactly with the gage of the wires for which the completed joint D′ is intended, and owing to the manner in which the latter is formed there will be no variation in the bores of the tubes such as is found frequently in drawn tubes. The operation may be performed very quickly, so that the cost of manufacture is comparatively little. The completed joint, being formed of one piece, is particularly strong, and as the tubes fit exactly the wires G, which they are intended to join, all air will be excluded from the joint when the wires are passed into the tubes.

When the joint is twisted, as shown in Fig. 11, the tubes will tend to bind very closely around the surfaces of the wires, thus increasing the strength of the joint.

What I claim as new, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a wire-joint formed from a single sheet-metal blank having the central internal ridge *e* and the longitudinal edges bent in opposite directions toward each other into permanent contact with said ridge to produce parallel closely-adjacent tubes which receive, and contact throughout their interior surfaces with, the wires to avoid intermediate air-spaces.

2. The method of forming a wire-joint D′, which consists in bending the longitudinal edges of a sheet-metal blank into U shape, inserting a mandrel into said bent blank and bending the edges of the blank toward each other over said mandrel, then removing said mandrel and introducing into said blank a second mandrel approximately of the gage of the wires to be joined, then bending the said edges farther in the same direction over said second mandrel to complete the joint, and then withdrawing said second mandrel.

3. The method of forming a wire-joint D′, which consists in bending the longitudinal edges of a sheet-metal blank into U shape with a central internal ridge, inserting a mandrel into said bent blank and bending the edges of the blank toward each other over said mandrel, then removing said mandrel and introducing into said blank a second mandrel approximately of the gage of the wires to be joined, then bending the said edges over said second mandrel into contact with said internal ridge to complete the joint, and then withdrawing said second mandrel.

FRANCIS W. MAXSTADT.

In presence of—
D. W. LEE,
A. D. BACCI.