No. 633,886. Patented Sept. 26, 1899.

T. J. McTIGHE.

MANUFACTURE OF ELECTRIC RAILWAY RAIL BONDS.

(Application filed Mar. 23, 1897.)

(No Model.)

Fig. 1.



Fig. 2.

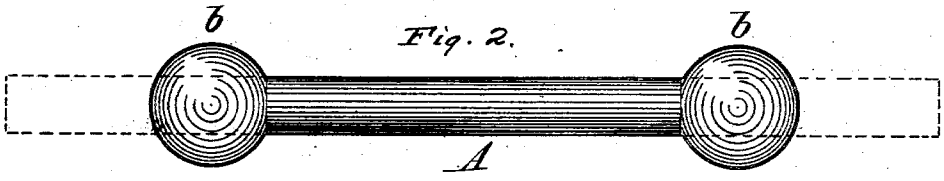


Fig. 3.

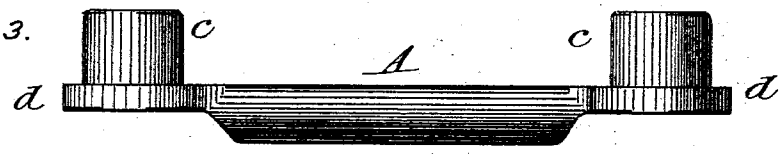


Fig. 4.

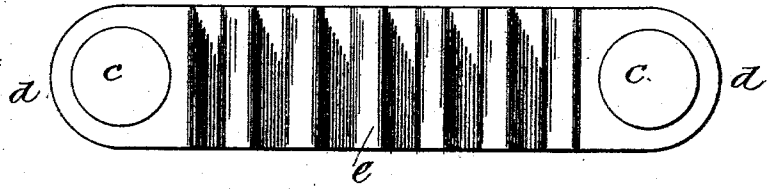
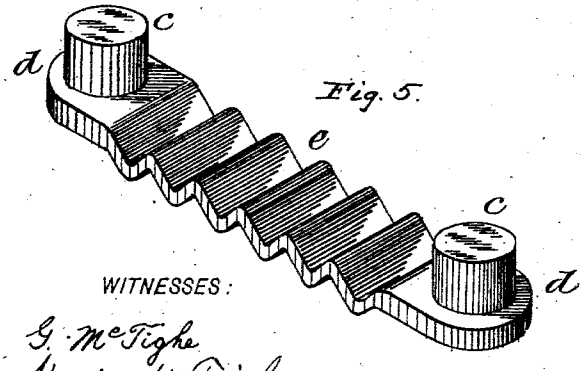


Fig. 5.



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MANUFACTURE OF ELECTRIC-RAILWAY RAIL-BONDS.

SPECIFICATION forming part of Letters Patent No. 633,886, dated September 26, 1899.

Application filed March 23, 1897. Serial No. 628,836. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. McTIGHE, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Electric-Railway Rail-Bonds, of which the following is a specification.

My invention relates to the manufacture of electric-railway rail-bonds; and it consists in the method of procedure by which I am enabled to take a piece of copper wire of suitable length and by successive steps give it the required form without waste of metal or substantial reduction of its sectional area, thus preserving the conductivity and carrying capacity of the original wire.

The invention further consists in the rail-bond produced and of the special form described.

In the drawings, Figure 1 shows the wire cut to the proper length for the purpose of my invention. Fig. 2 shows the same after the first upsetting. Fig. 3 shows it after the second shaping operation. Fig. 4 shows in plan the bond after the final operation, and Fig. 5 is a perspective view of the complete and finished bond.

In carrying my invention into practice I use a power-press or drop-press provided with suitably-shaped dies, whose form for the different steps of my process are obvious and need not be particularly described. I take the piece of copper wire A of proper length and first upset it at both ends to form the enlargements *b b* of substantially spherical form, each being of proper diameter to furnish the metal required for shaping the parts in subsequent operations. With another set of dies I press the enlargements *b b* laterally, forming thereby the solid rivets *c c* and the shoulders or flanges *d d*, as shown, the metal of the enlargements *b b* flowing forward to form the rivets and laterally to form the flanges. The central portion of the blank still remains round, as in the original wire, but in such shape would have no substantial flexibility to allow for the expansion and contraction of the rails to which such a device is to be applied. I therefore use next a pair of flattening-dies preferably having corrugated or fluted faces, and the pressure of these on the middle portion of the blank results in widening and thinning it and forming it into flutings or corrugations, as at *e* in Figs. 4 and 5. Obviously the flattening-dies may have plain faces and the corrugating may be done after the flattening.

Such a rail-bond is admirably adapted to the purpose, being of a flat form and capable of being attached to the rails beneath the splice-plates. Being short, but little copper is required for a large capacity, the rivets can be made extremely large, thus insuring a wide margin of contact, and the whole bond is in one integral piece. It is applied to the rail by drilling the latter and riveting or spreading the ends of the rivets after they have been passed through the corresponding rail ends.

I claim as my invention—

1. The method of manufacturing rail-bonds from wire or rod, consisting in upsetting the blank endwise to form the end enlargements *b b* substantially spherical in form, pressing such enlargements transversely to form the rivets *c c* and flanges *d d*, and flattening the intermediate portion of the blank into the corrugated form shown, substantially as described.

2. The method of manufacturing rail-bonds from wire or rod, consisting in upsetting the ends of the blank into enlargements, pressing such enlargements transversely into flanged rivets, and flattening and widening the intermediate portion of the blank, substantially as described.

Signed at Brooklyn, in the county of Kings and State of New York, this 22d day of March, A. D. 1897.

THOMAS J. McTIGHE.

Witnesses:
JOHN J. ROONEY,
C. R. SPENCE.