

No. 643,591.

Patented Feb. 13, 1900.

D. W. CASWELL.
TUBE JOINT.

(Application filed Dec. 7, 1897.)

(No Model.)

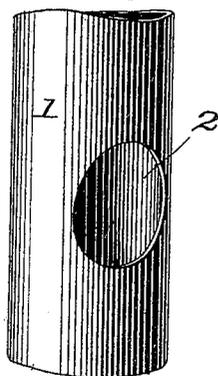


Fig. 1.

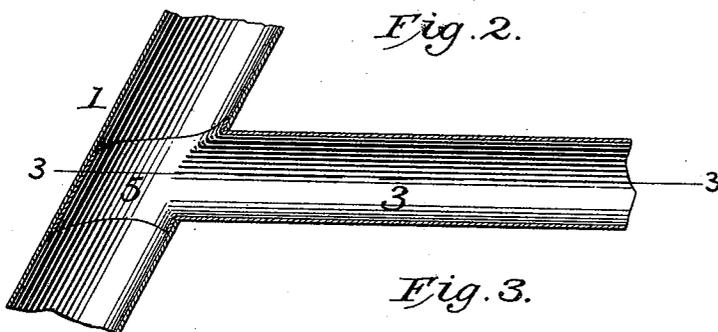
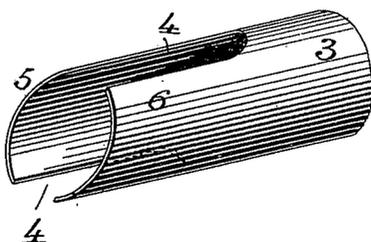


Fig. 2.

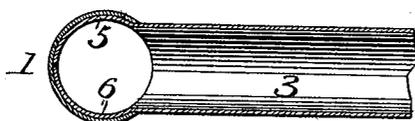


Fig. 3.

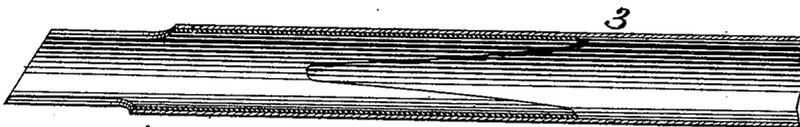


Fig. 4.



Fig. 5.

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UNITED STATES PATENT OFFICE.

DANIEL W. CASWELL, OF CHICAGO, ILLINOIS.

TUBE-JOINT.

SPECIFICATION forming part of Letters Patent No. 643,591, dated February 13, 1900.

Application filed December 7, 1897. Serial No. 661,025. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. CASWELL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tube-Joints, of which the following is a specification, reference being had to the accompanying drawings and to the numerals of reference marked thereon.

My invention relates to the construction of tubular metallic frames, the special feature being the manner of joining one tubular portion to another.

The object of my invention is to unite at an angle one tube with another, more especially in the construction of bicycle-frames, whereby the joints are made in a simpler and cheaper manner and more rapidly than at present, besides possessing greater strength and less weight.

Referring to the drawings, Figure 1 shows in perspective two tubes as they appear ready for joining by direct connection in the practice of my invention. Fig. 2 is a vertical section of the same after being joined. Fig. 3 is a horizontal section on the line 3 3 of Fig. 2. Fig. 4 is a longitudinal section of a tube with a reinforcing-piece secured thereon. Fig. 5 represents a finished reinforced joint.

Similar numerals of reference indicates similar parts in the respective figures.

1 is a tube, which in this instance represents a portion of the head-tube of a bicycle-frame. Through this tube a hole is bored corresponding in size and shape with the tube to be united to it. A second tube 3, here representing a portion of the top reach or bar of a bicycle-frame, is slitted or slotted longitudinally at one end on opposite sides, as shown at 4, for a suitable distance back from the end. These slots or cuts, as shown, are to permit of the spread of the end of the tube. The tubes 1 and 3, being prepared as indicated, are now ready for joining. For this purpose the slotted end of the tube 3 is inserted in the opening 2 of the tube 1 and held securely therein at the angle desired, after which the tongues 5 6, formed by the slots in the tube 3, are spun outwardly, as seen in Figs. 2 and 3, until they fit closely the inside circumference of the tube 1. The parts are now

to be brazed together, when the union will be complete.

Tubes joined as above described present advantages over those now in use in that the structure is simpler and cheaper, as fewer parts are employed, the thimble or other reinforcing means ordinarily used being dispensed with. There is therefore not only economy in labor, but also in material and weight.

In the modification of my invention shown in Figs. 4 and 5 there is placed within the end of the tube 3 a reinforcement consisting of a section of tubing fitting closely against the inner wall of said tube. The ends of the tube 3 and the reinforcing-tube are then slotted, inserted through the hole 2 in the tube 1, and spun around and in contact with its inner wall to the side opposite the hole 2. The parts are then brazed together. A joint thus reinforced permits the use of lighter-gage tubing than can be safely employed with the reinforcement omitted. If a tube of heavier gage were used instead of thin tube 3 and its reinforcing-piece, it would be difficult, if not impossible, to bend or spin the divided ends of the tube into close contact with the inner surface of the tube 1. By my invention, however, the layers of thin metal forming the ends of the tube and the reinforce, being free to move upon each other, are readily folded or spun into position around the inner wall of the tube 1.

This improvement in either of its forms is obviously applicable to a variety of arts and uses.

Having described my invention, I claim—

1. In combination in a bicycle-frame joint, a main tube and a secondary tube, said main tube having an aperture formed to receive the end of the secondary tube, and said secondary tube having its end, which is inserted within said main tube, split and forced outwardly into close contact with and around substantially the whole circumference of the inner surface of said main tube, substantially as described and shown.

2. A metal-tube joint, consisting of a tube perforated through its side wall, in combination with a second tube having a slotted end,

the said slotted end being inserted through the perforation formed in the first-named tube and spun against its inside circumference and brazed thereto, substantially as set forth.

3. A metal-tube joint, consisting of a tube perforated through its side wall, in combination with a second tube having a slotted end, the said slotted end being inserted through the perforation formed in the first-named tube and spun around its inner surface in the form of an eye and brazed thereto, substantially as set forth.

4. A metal-tube joint, consisting of a tube perforated through its side wall, in combination with a second tube having a cylindrically-reinforced end, the said reinforced end being slotted and inserted through the perforation formed in the first-named tube, then spun or pressed against its inside circumference and finally brazed thereto, substantially as set forth.

5. A metal-tube joint, consisting of a tube perforated through its side wall, in combination with a second tube having a hollow cylindrical reinforcing-piece placed in one end, the said reinforced end being slotted and inserted through the perforation formed in the first-named tube, the free ends of the slotted tube and reinforce being spun or pressed

around the inner surface of the perforated tube in the form of an eye and the parts brazed, substantially as set forth.

6. In a metal-tube joint, the combination of two tubes, the end of one tube being slotted and inserted at an angle through a perforation formed in the wall of the second tube, the said perforation being of the size and shape of the line of intersection of the two tubes, the slotted end of the inserted tube being folded or spun against the inside wall of the perforated tube and brazed thereto, substantially as set forth.

7. A tube having a perforation in its side wall, combined with a slotted tube inserted through the said perforation, and having each of the two parts of its slotted inserted end folded or spun in an opposite direction around the inner circumference of the perforated tube, the said two parts of the slotted end being brazed together and to the inner circumference of the perforated tube, substantially as set forth.

In testimony whereof I hereunto set my hand and seal.

DANIEL W. CASWELL. [L. S.]

Witnesses:

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