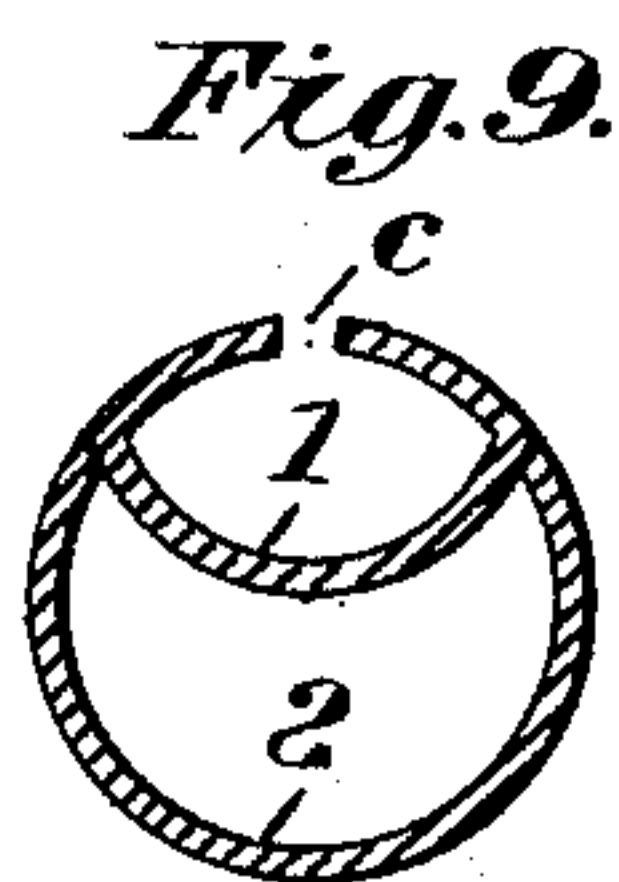
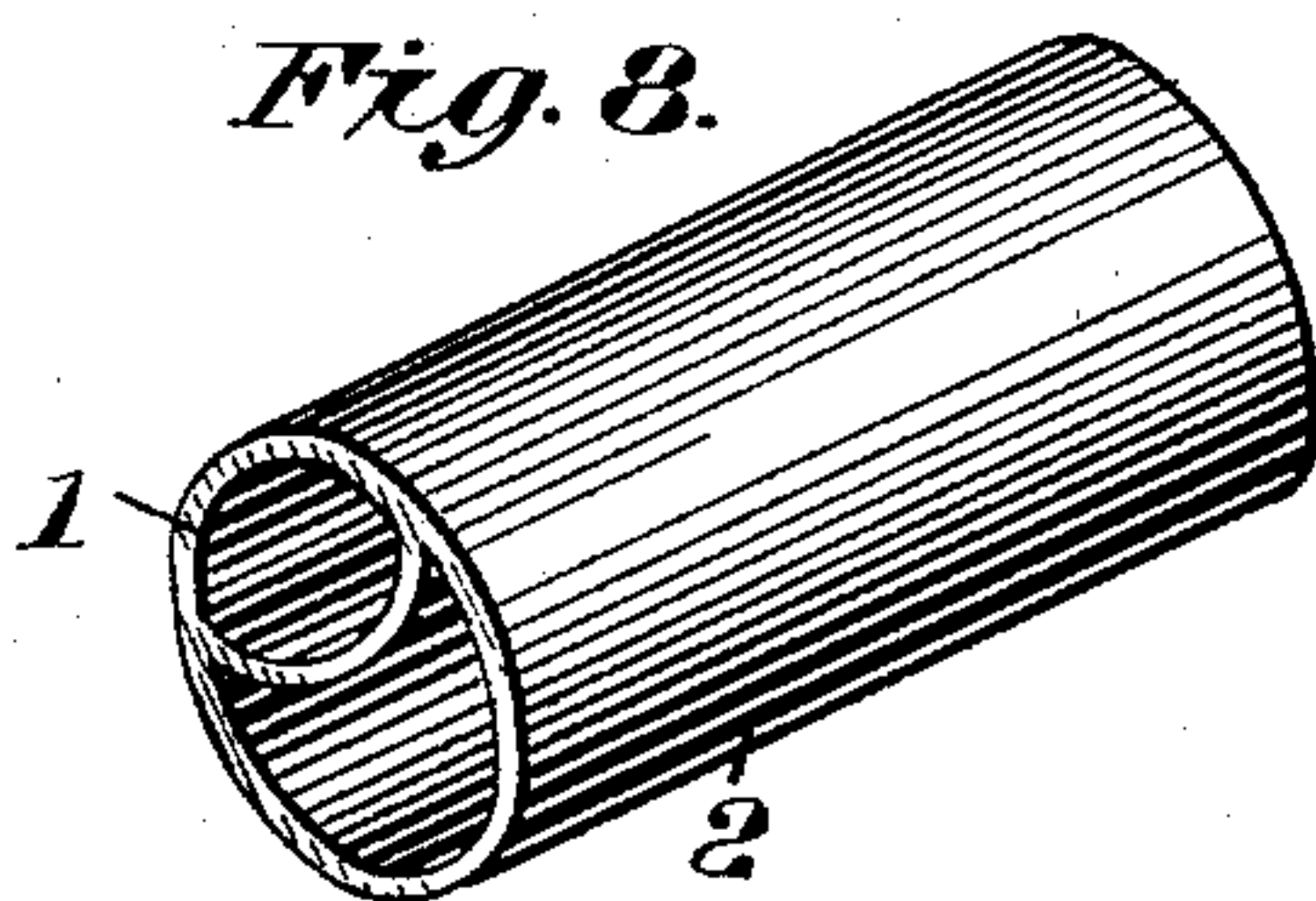
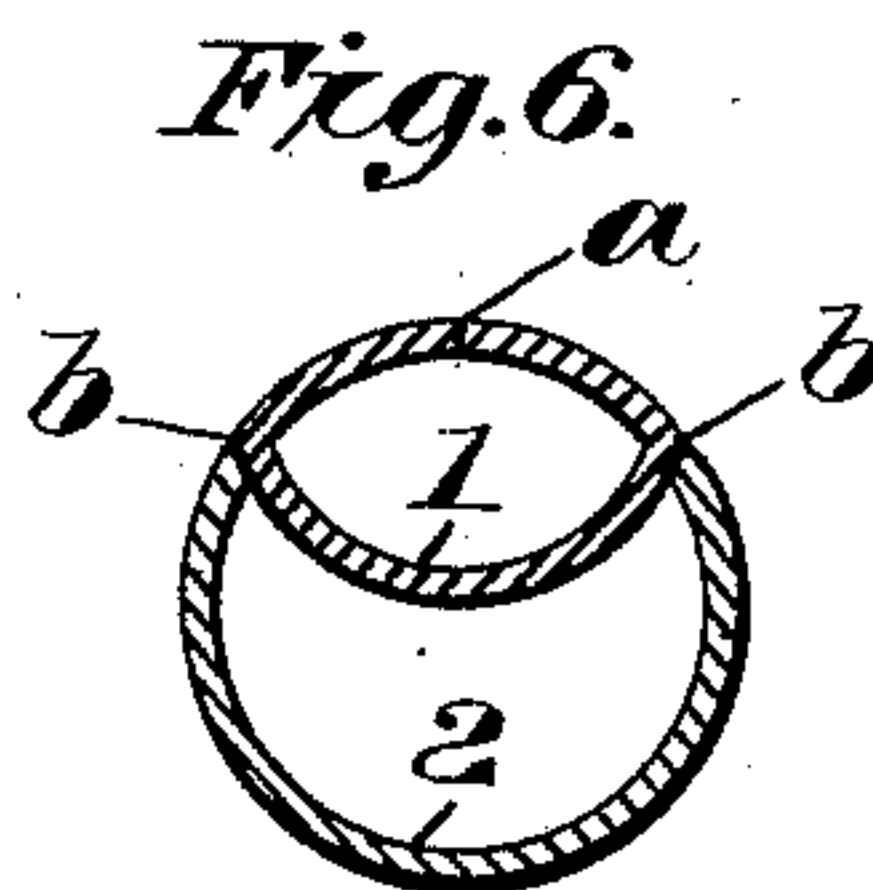
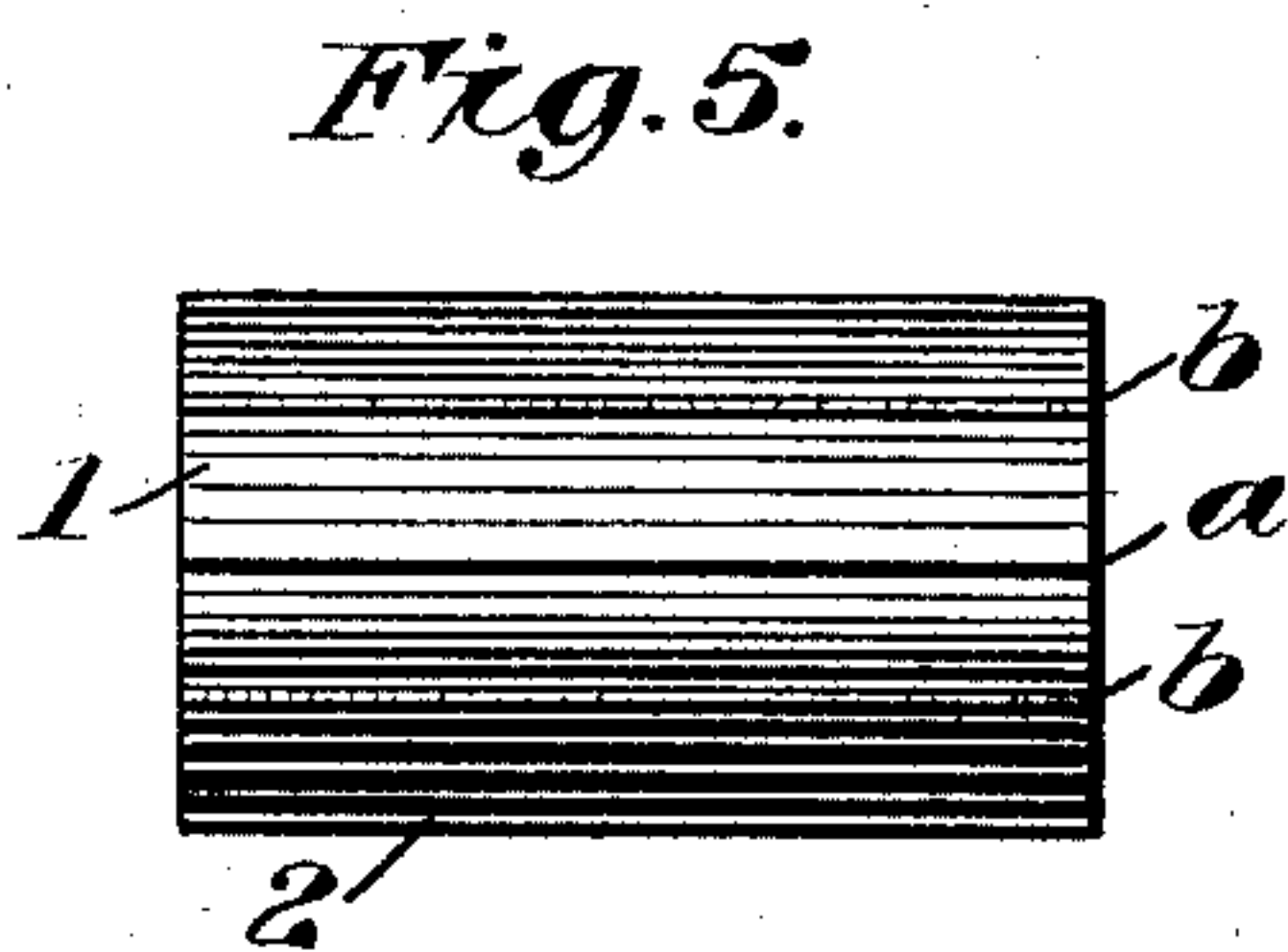
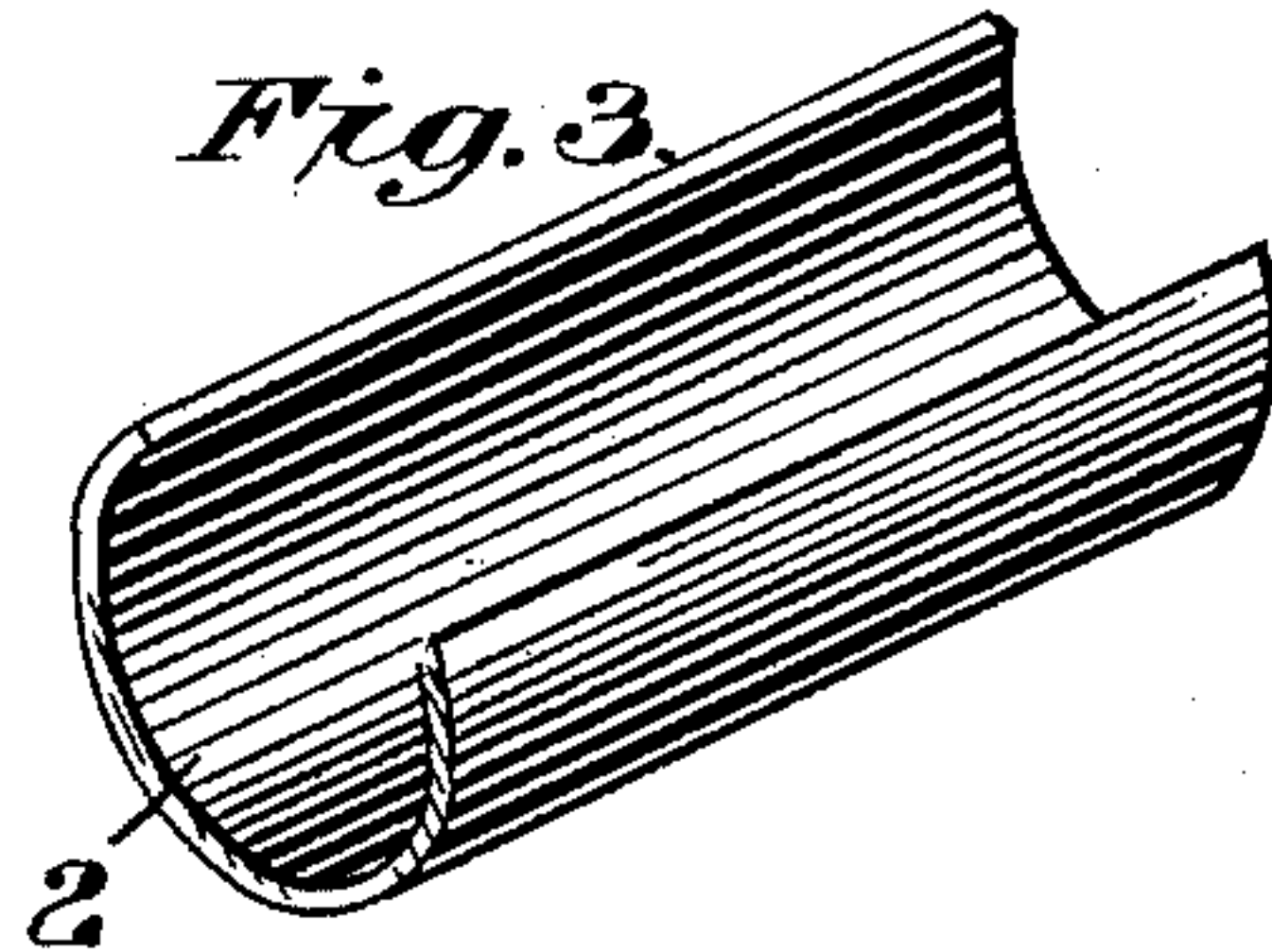
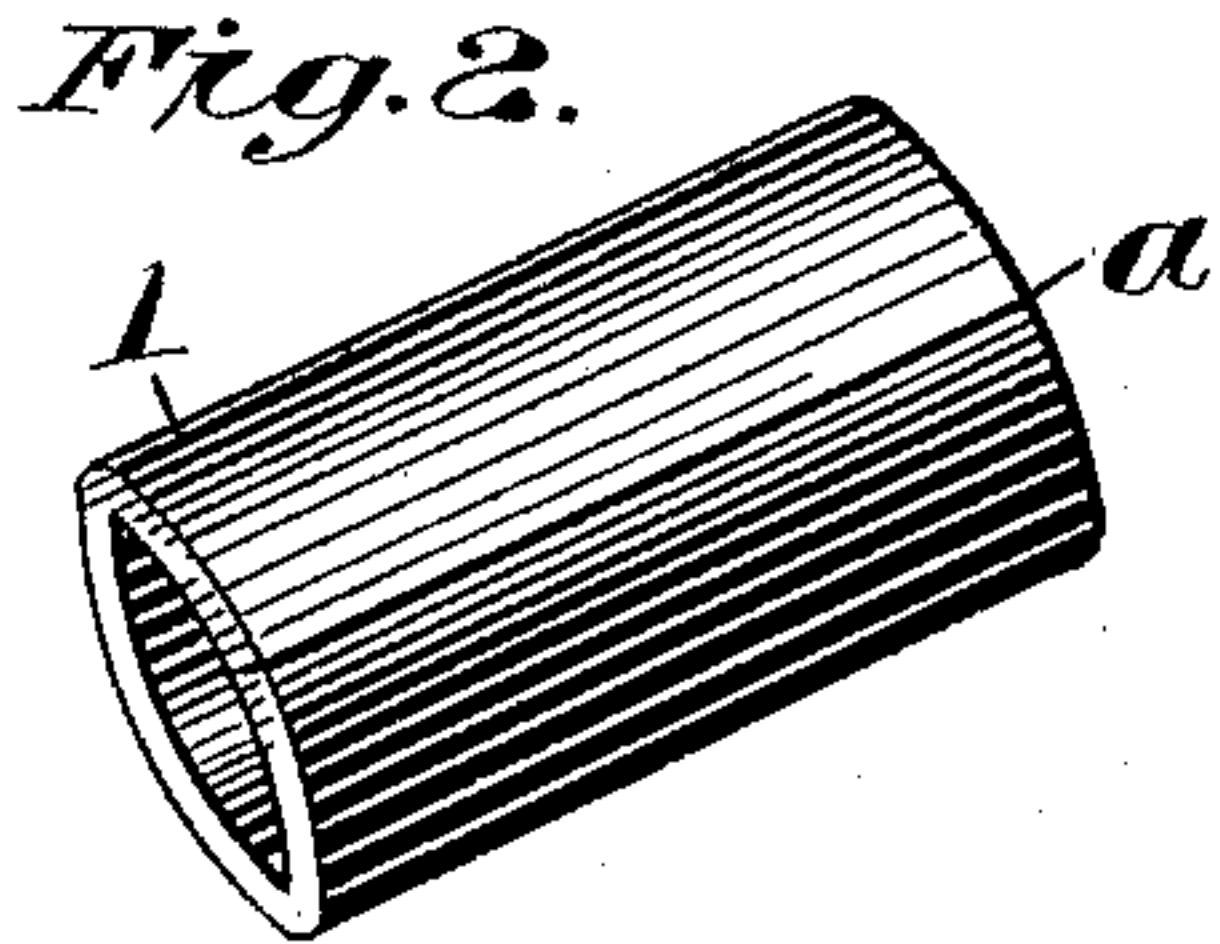


(No Model.)

E. J. STEELE.  
DUPLEX TUBE.

No. 435,193.

Patented Aug. 26, 1890.



Witnesses  
A. J. Tanner  
Wm. J. Tanner

Inventor  
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D. M. Hubbard.



# UNITED STATES PATENT OFFICE.

ELISHA J. STEELE, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE COE  
BRASS MANUFACTURING COMPANY, OF SAME PLACE.

## DUPLEX TUBE.

SPECIFICATION forming part of Letters Patent No. 435,193, dated August 26, 1890.

Application filed July 5, 1890. Serial No. 357,810. (No model.)

*To all whom it may concern:*

Be it known that I, ELISHA J. STEELE, a citizen of the United States, residing at Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Duplex Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain novel and useful improvements in duplex tubes and the method of producing the same, and has for its object to produce a tubing of round or oval section, whose interior shall be unequally divided into two passages or conduits, and likewise it is an object of my invention to provide an exceedingly simple method of assembling and uniting the parts of which the tube is made; and with these ends in view my invention consists in the method and in the construction which will be presently set forth, and then designated in the claims which are hereunto annexed.

In order that those skilled in the art to which my invention appertains may fully understand its construction and the method whereby it is produced, I will describe both of these in detail, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 is a transverse section through the oval tube, which is shown in perspective at Fig. 2. Fig. 3 is a perspective of the complementary portion of the finished tube, and Fig. 4 a transverse section thereof. Fig. 5 is a plan view showing the two parts in position to be united; Fig. 6, a transverse section of the two parts in position to be joined, but not joined; Fig. 7, a plan view of the parts shown at Figs. 3 and 4; Fig. 8, a perspective of the finished tube, and Fig. 9 a section showing a modification.

Like numerals and letters of reference denote the same parts in all the figures.

The purpose for which this duplex tubing is commonly used is to convey gas and at the same time furnish a protecting-cover for electric wires as used in so-called "combination-fixtures." It is therefore essential that the gas-duct should be tight, but it is not strictly

necessary that the way for holding the wires should be likewise. In fact the reverse may be convenient.

In the manufacture of my improved tubing I first take a strip of sheet metal and by means of suitable dies bend the same into the oval form shown at Figs. 1 and 2, thereby forming a tube 1, whose edges meet in a butt-joint. I then bend another strip of metal into the general U shape shown at Figs. 3, 4, and 7 and designated by the numeral 2. In bending the part 2 its curve should be substantially identical in radius with the major curves of the tube 1, so that when assembled, as hereinafter set forth, the completed article will be cylindric. Having thus made the two pieces, I place them in assembled position, as seen at Figs. 5 and 6, and then braze the abutting edges *b*, at the same time preferably brazing the joint *a* in the oval tube. The completed tube may then, if required, be passed through suitable dies, so as to conform its exterior to the exact shape required and also to smooth the joints which have been united by the brazing process.

The oval shape of the tube 1, I deem to be important for several reasons. In the first place, since this is the duct through which the electric wires will be drawn, it is important that its interior should be smooth and without acute corners, such as those seen in the larger duct, which latter is designed to carry the gas and whose shape is therefore immaterial. It will also be observed that the edges of the tube 2 meet the minor curves of the oval tube 1 in perfectly-square abutting joints, thereby imparting to said tube a certain support, which adds strength to the structure as a whole.

Another seemingly slight feature of this construction, but one which is of considerable importance, is that the inner side of the tube 1 which forms the partition in the complete tube does not extend straight across said tube from side to side and does not divide the tube into two equal ducts. By reason of this construction the tube may be bent to form the various curves incident to the manufacture of gas-fixtures with much less risk of rupture of the brazed joints than if the tube were divided into two semi-cylindric passages by a



straight partition, which manifestly would offer great resistance if attempted to be bent in the direction of its width. The joint *a* need not be brazed at all, and in that case  
 5 said joint may be left slightly open for the laying in of wires, if required, instead of threading them through the tube longitudinally, after which the joint may be closed, or it may be left open to afford access to the  
 10 wires for purposes of repair. This construction I have shown at *c*, Fig. 9.

I am aware that duplex tubes are not broadly new, and that a tube composed of two semi-cylindric ducts with a straight dividing-partition has heretofore been made.  
 15 I do not, therefore, desire to be understood as laying claim to either of these as my invention.

What I claim is—

20 1. A duplex tube consisting of an oval tube having its joint extending longitudinally of one of its major curves, in combination with a U-shaped complementary portion whose edges abut against the minor curves of the  
 25 oval tube, whereby the completed article is divided by a curved partition into two ducts of unequal size, substantially as described.

2. A duplex tube, the same consisting of

the oval tube 1, having the joint *a*, and the U-shaped part 2, whose curve is of the same  
 30 radius as each of the major curves of the tube 1 and meet the ends of one of said curves to form the joints *b*, whereby a cylindric but unequally-divided tube is produced, substantially as described. 35

3. The duplex tube adapted to carry gas and electric wires, the same provided with the tight duct 2 and the parallel duct 1, the interior of the latter being accessible through the open joint *c*, substantially as described. 40

4. The method of making duplex tubing, which consists in first drawing a strip of sheet metal into a tube of oval section, then drawing a U-shaped tube whose curve is the same  
 45 as each of the major curves of the oval tube and whose edges are adapted to abut from without against the minor curves of said oval tube, and then brazing or otherwise securing the joints.

In testimony whereof I affix my signature in  
 50 presence of two witnesses.

ELISHA J. STEELE.

Witnesses:

CHAS. F. BROOKE,  
 E. T. COE.