

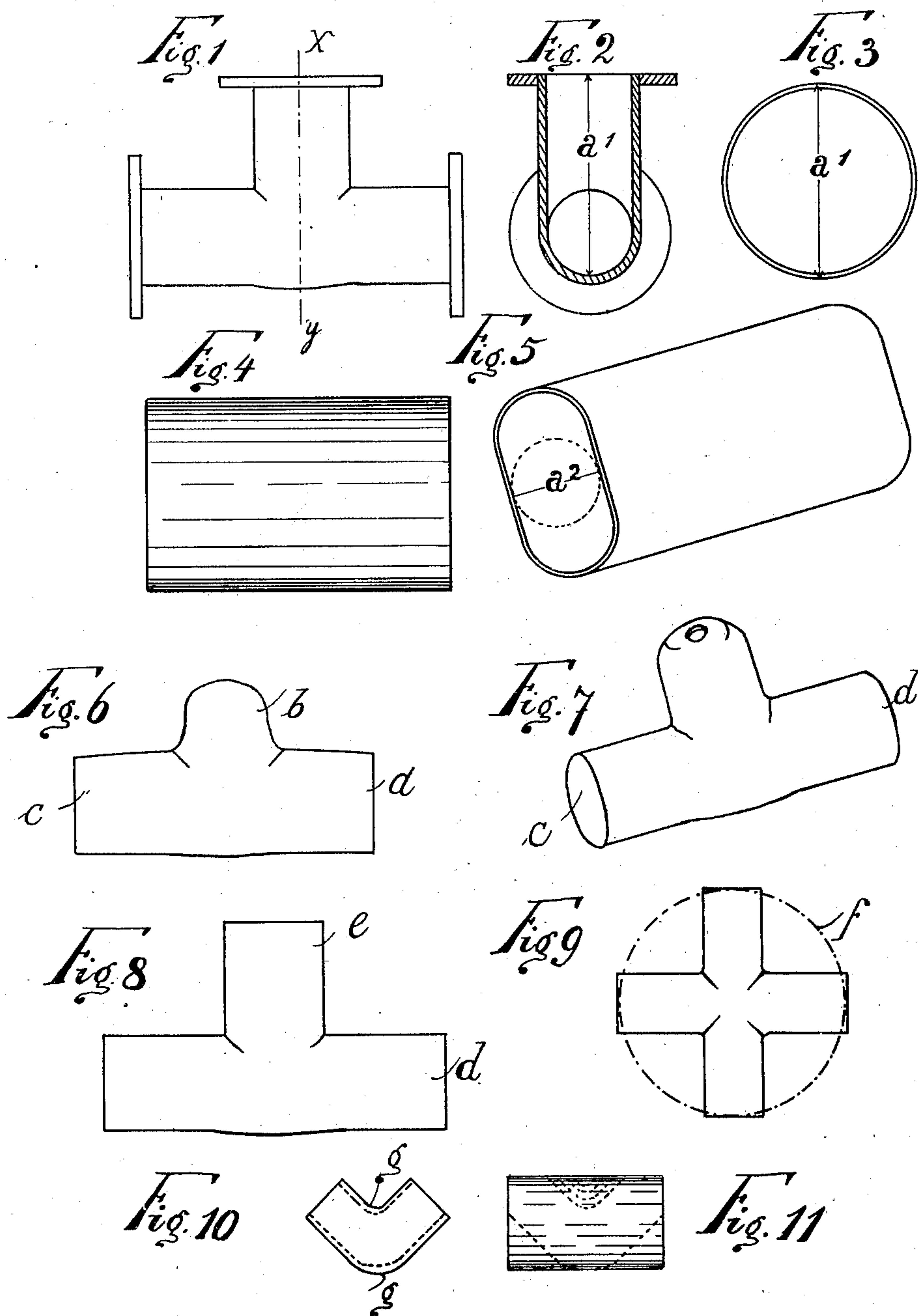
No. 653,279.

Patented July 10, 1900.

F. W. BARTHELS.
PIPE FITTING AND METHOD OF MAKING SAME.

(Application filed Jan. 18, 1900.)

(No Model.)



Witnesses:

J. D. McMahon.

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UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM BARTHELS, OF HAMBURG, GERMANY.

PIPE-FITTING AND METHOD OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 653,279, dated July 10, 1900.

Application filed January 13, 1900. Serial No. 1,373. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH WILHELM BARTHELS, manufacturer, a subject of the German Emperor, residing at 1 Neumannstrasse 4, Hamburg, in the German Empire, have invented new and useful improvements in the manufacture of forged tubular connections for steam-conduits and like purposes, (for which I have made applications for patents in Germany, filed November 11, 1899; in Hungary, filed November 13, 1899; in Switzerland, filed November 13, 1899; in Belgium, filed November 16, 1899; in Austria, filed November 16, 1899; in Great Britain, filed November 17, 1899; in Denmark, filed November 18, 1899; in Norway, filed November 17, 1899; in Sweden, filed November 18, 1899; in Italy, filed November 22, 1899; in France, filed November 25, 1899, and in Russia, filed November 29, 1899,) of which the following is a specification.

This invention relates to the manufacture of forged tubular connections from a single piece of metal without seam or weld.

The said invention relates chiefly to articles of copper for use as connections in steam-conduits and other purposes; but obviously such articles may also be produced from any other metal alloy capable of being forged, drawn, or otherwise worked into shape.

In the accompanying drawings I have shown how my said invention may be conveniently and advantageously carried into practice.

Figure 1 shows a finished tubular T connection provided with flanges. Fig. 2 is a transverse section on the line xy of Fig. 1. Figs. 3 and 4, show the tubular blank as it appears previous to the forging operation. Figs. 5 to 8 show the connection as it appears in the various stages of the operations of forging up to its completion, and Figs. 9 to 11 illustrate the manufacture of other forms of connections.

In order to produce a connection of the desired form I take a seamless tubular body or blank of a diameter corresponding approximately to the largest diameter of the finished article, as shown, for example, at a' in Figs. 2 and 3. The tubular piece or blank is first somewhat flattened, as indicated in Fig. 5, so that the transverse dimension thereof is about equal to that of the arm a^2 of the T-shaped

connection it is desired to produce. This flattened tube is then repeatedly hammered upon mandrels and reheated at both ends, so as to contract them in such a manner as to leave a swelling or boss b , Fig. 6, at the place where the angular branch of the T-shaped connection is to be formed. After the two ends of the T-shaped connections have been formed the swelling or boss is provided with a small hole, Fig. 7, which is then widened out by hammering upon mandrels until it has the required diameter, whereupon the three portions cde , Fig. 8, are again hammered upon suitable mandrels to give them the proper thickness and diameter.

Owing to the accumulation of the material at the swelling or boss b in forming the ends cd there is sufficient thickness to work upon to form the vertical branch e and also to form sharp corners at the base of this branch, while having strengthened the corners to insure the greatest safety at these usually-weakest parts.

After providing the ends with suitable flanges, as shown in Fig. 1, the article is finished.

In order to produce a cross connection, as shown in Fig. 9, a tube-blank is used having a size relative to the article to be produced, as shown by the dotted line f .

An angular or elbow connection, Fig. 10, is produced from a tube-blank having a diameter corresponding to the largest cross-section of the finished article, and Fig. 11 shows in dotted lines where the contractions have to be effected.

By thus hammering and working the parts into shape the material thereof can be easily driven toward and accumulated at the weakest places, such as the corners in T-shaped connections and the outer bends in elbow connections and the like, so that no weak parts exist in the finished connections. In Fig. 10 the strengthened parts are indicated at g in dotted lines.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a T or other shaped tubular connection having angular portions, the material being driven toward and accumulated at the angles, substantially in the manner set forth.

2. In the manufacture of T and other

shaped connections from seamless tubes, swaging or reducing portions of the sides of the tubes to form the branches of the connection, and compressing the material at the
5 angles between said branches, as set forth.

3. In the manufacture of T and other shaped connections from seamless tubes, reducing portions of the tube to form the several parts of the connection, compressing the
10 material at the angles or bends, and perforating the ends of the closed parts to open same, substantially as set forth.

4. In the manufacture of tubular connections having parts at an angle to each other, reducing and compressing a seamless tube of
15 a diameter equal to the greatest cross-diameter of the finished article, to form the said parts, substantially in the manner set forth.

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

FRIEDRICH WILHELM BARTHELS.

Witnesses:

E. H. L. MUMMENHOFF,

OTTO W. HELMRICH.