

No. 656,623.

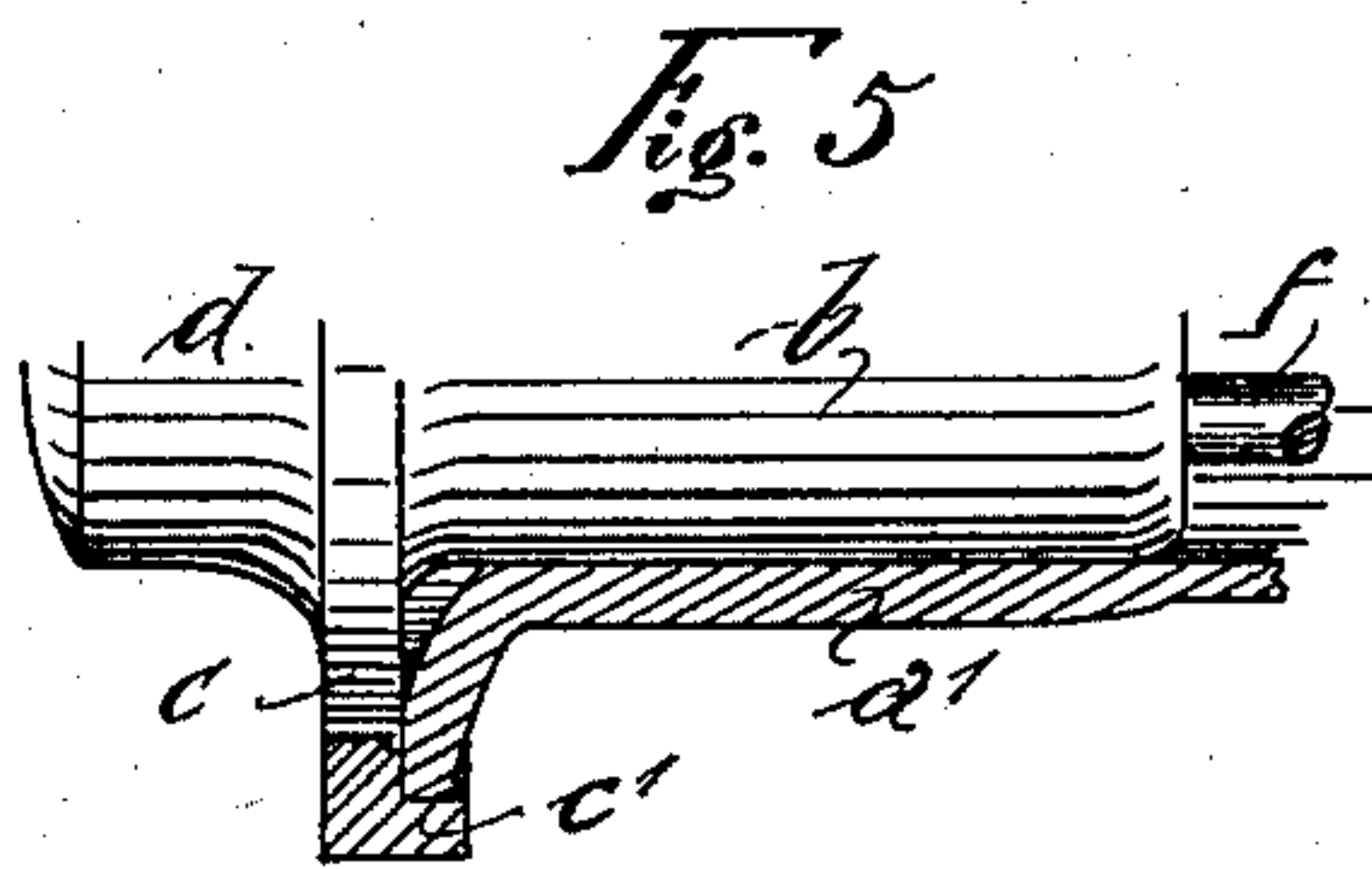
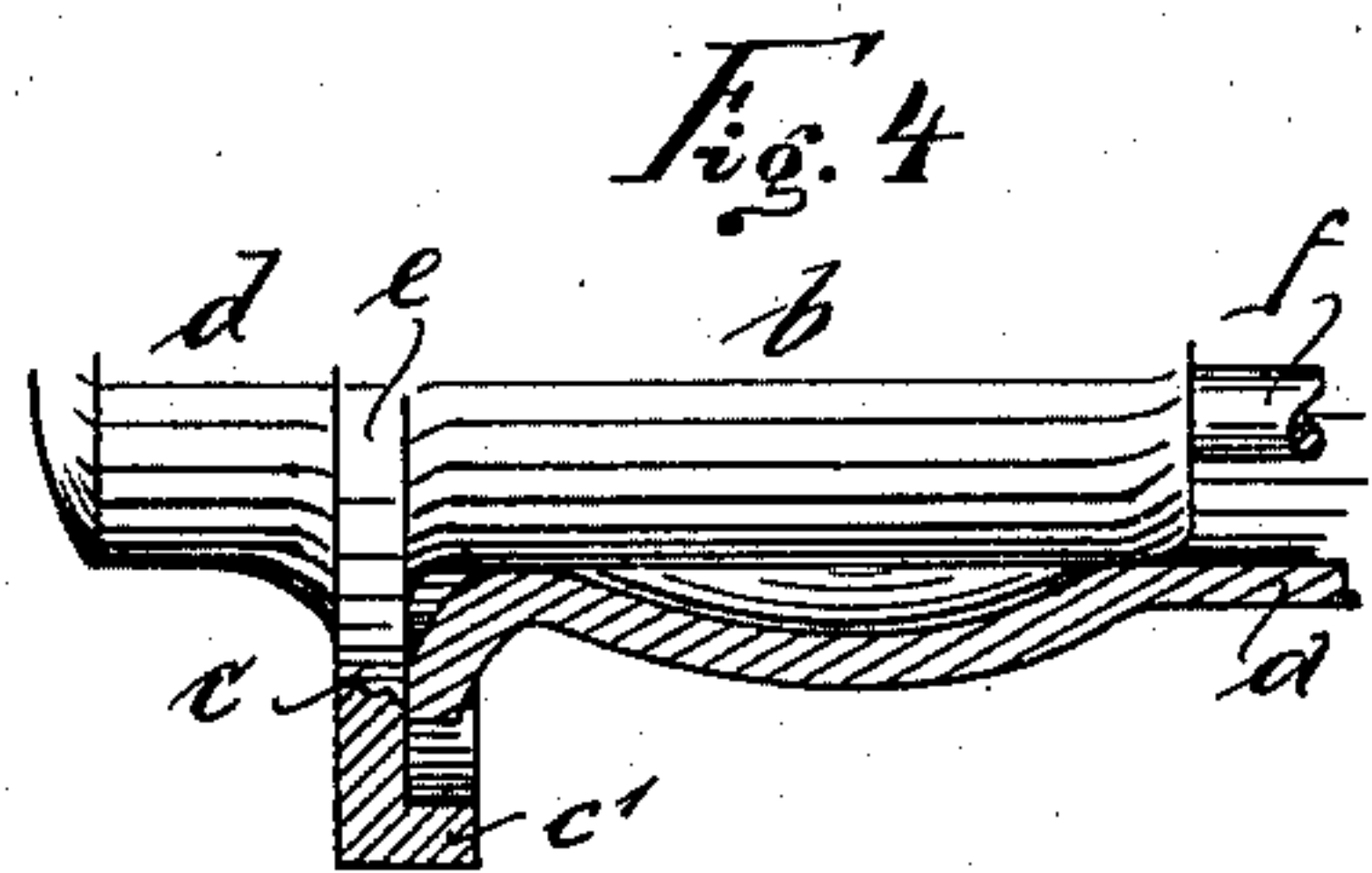
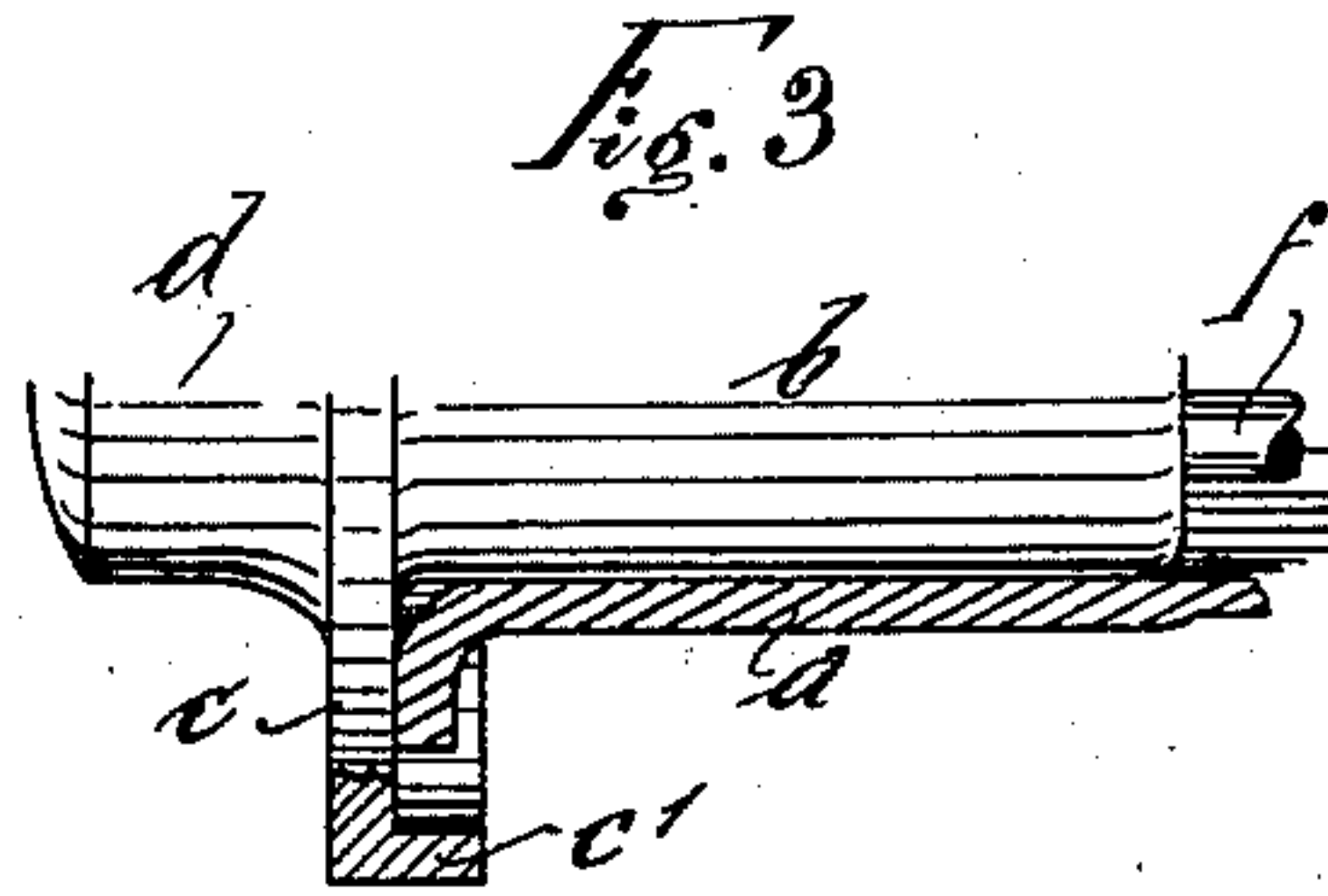
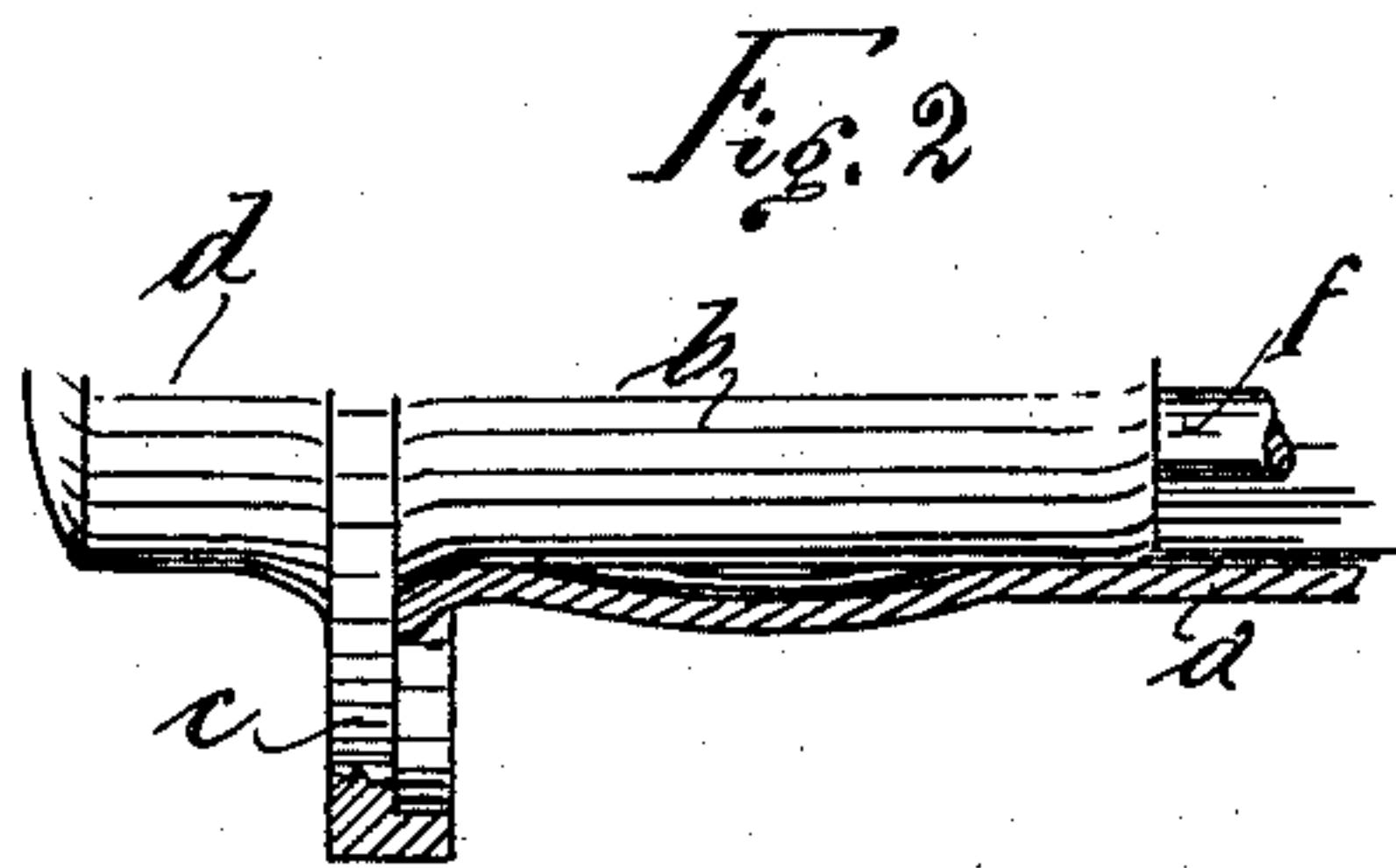
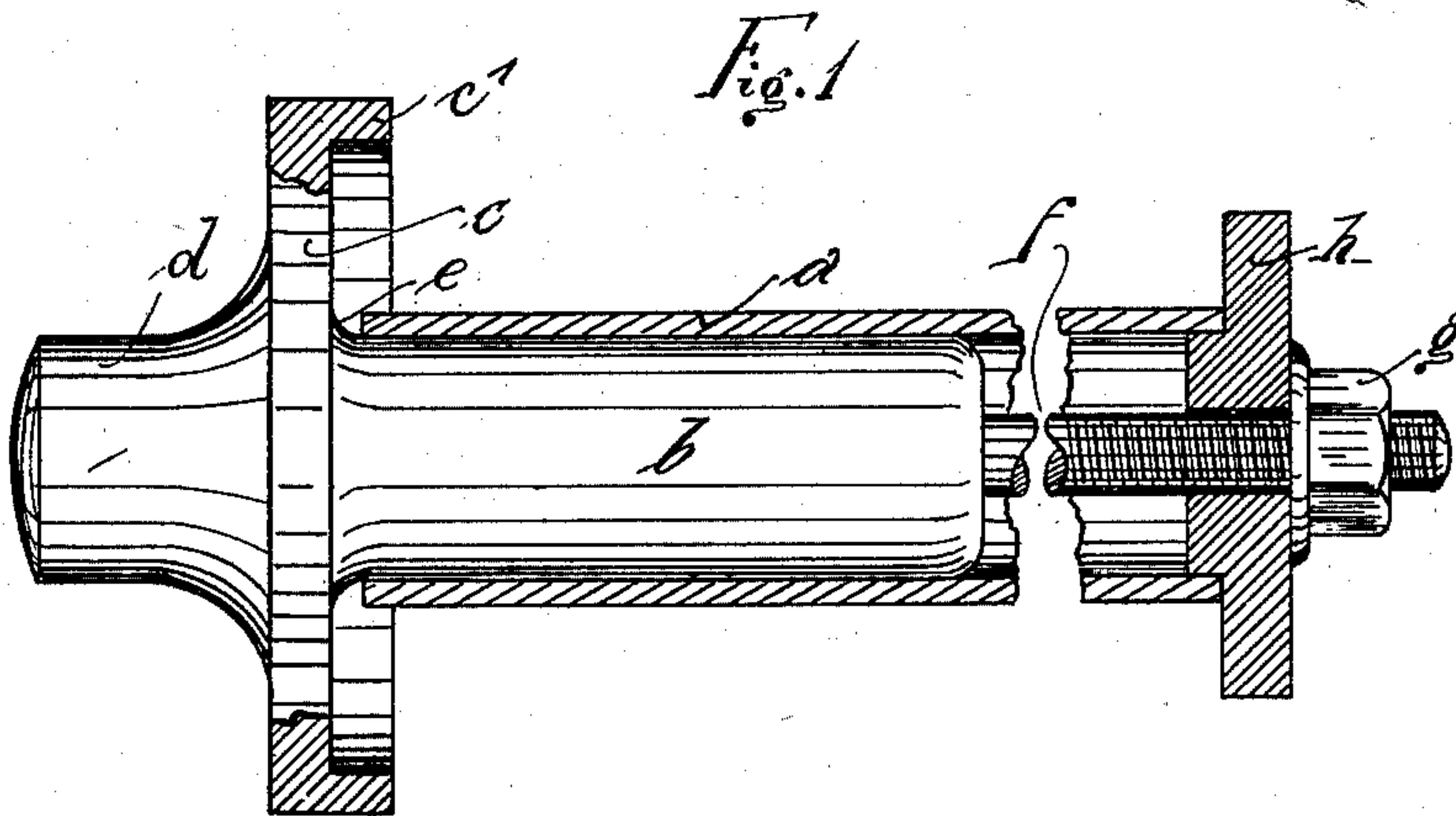
Patented Aug. 28, 1900.

F. W. BARTHELS.
DEVICE FOR FLANGING TUBES.

(Application filed Feb. 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
J. W. McMahon
J. S. Noble

Inventor
Friedrich Wilhelm Barthels
by V. J. Surger
Att'y.

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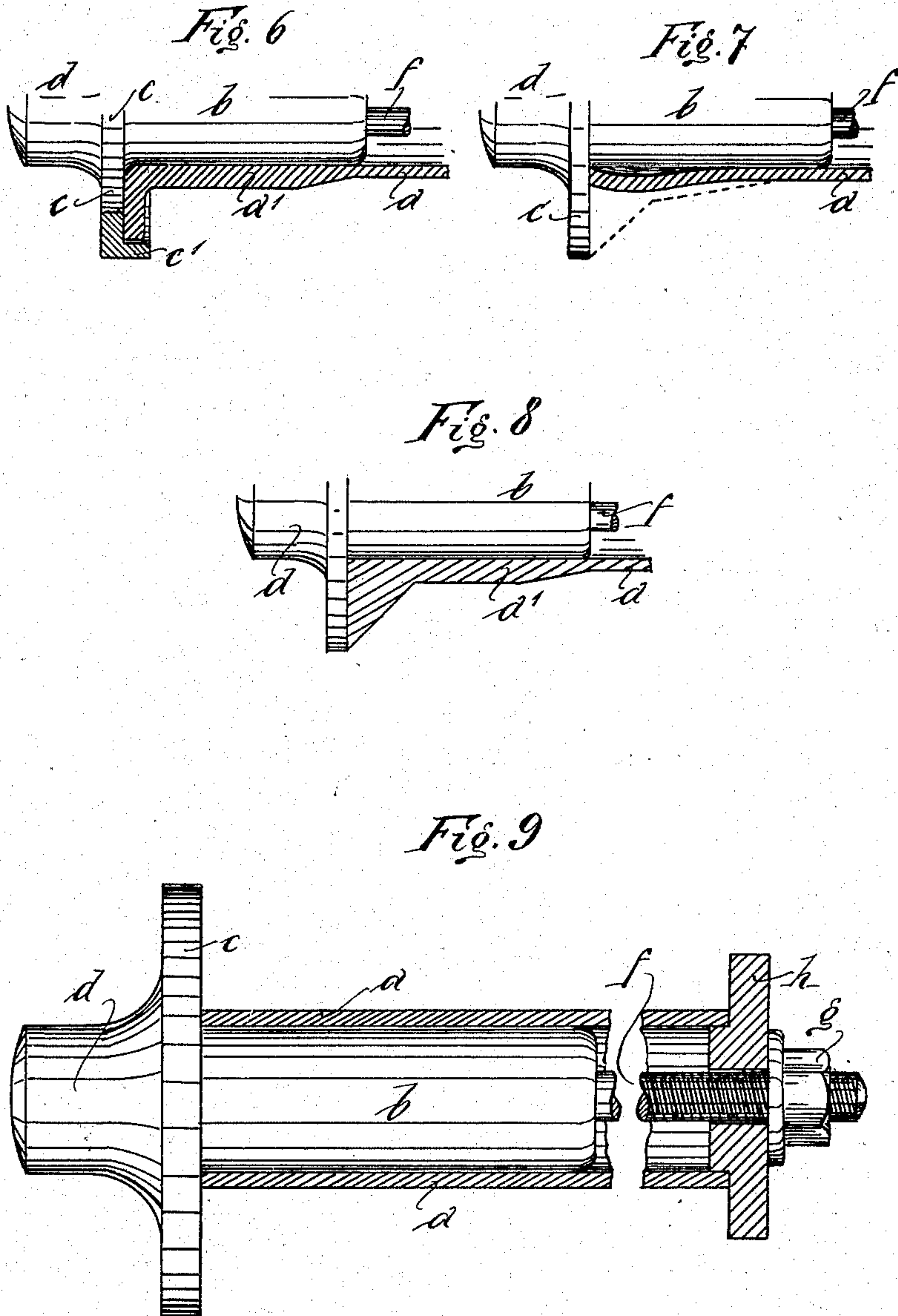
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2 Sheets—Sheet 2.



Witnesses:
J. W. McMahon.
G. S. Noble

Inventor
Friedrich Wilhelm Barthels
by P. J. Singer
Att'y.

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM BARTHELS, OF HAMBURG, GERMANY.

DEVICE FOR FLANGING TUBES.

SPECIFICATION forming part of Letters Patent No. 656,623, dated August 28, 1900.

Application filed February 8, 1900. Serial No. 4,580. (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 a new and useful Improvement in Devices for Forming Flanges on Tubes, (for which I have made applications for patents in Germany, filed December 16, 1899; in Great Britain, filed December 23, 1899; in Italy, filed January 5, 1900, and design patent in Germany, filed December 27, 1899,) of which the following is a specification.

This invention relates to apparatus for forming flanges on tubes, as will be more clearly understood by reference to the accompanying drawings, in which—

Figure 1 shows the apparatus with a tube mounted therein. Figs. 2 to 6 show the successive steps in the formation of the flange. Figs. 7 and 8 show the formation of conical or tapering flanges. Fig. 9 shows a modified flange-forming apparatus to that shown in Fig. 1.

This invention is mainly applicable to copper tubes for steam connections.

In the tube *a* is mounted a flange-forming apparatus constructed of steel. This apparatus comprises a core *b* of the same diameter as the interior of the tube and of a length to suit the tube. The core *b* is at its front end provided with a collar *c* and a head *d*. Where the core *b* joins the collar *c*, it is formed with a slightly-rounded portion *e*, as shown. Attached to the core *b* is a rod *f*, with a screw-threaded portion fitted with a screw-nut *g* at its outer end and with a cap *h*, which closes the end of the tube *a*, the arrangement being such that by tightening the nut *g* upon the cap *h* the tube *a* will be forced against the collar *c*, while by striking the head *d* the end of the tube is forced over the widened base *e* of the core. As the core *b* is red-hot when introduced into the tube *a*, while the tube is heated on the exterior by means of a

blowpipe-frame, it will be evident that the tube must necessarily be compressed or become thickened and also bulge out at this end, as shown in Fig. 2. By now hammering this part of the tube back against the core the material is thickened, as shown at Fig. 3. The heating is repeated and the blows on the head *d*, while simultaneously tightening the screw-nut *g*, are continued, so as to further compress the material until the flange is completely formed in the matrix constituted by the collar and its flange *c'*, as shown in Fig. 6.

Figs. 7 to 9 show a modified flange-forming apparatus in which, with the object of forming conical or tapering flanges, the curvature *e* at the base of the core is omitted. The flange is then hammered into the sharp edge of the collar, so as to assume a form as shown in Fig. 8.

Fig. 8 shows a finished flange and the compression of material at that part, while at the same time showing how the thickness at *a'* gradually disappears into the original thickness of the tube. As the flange is subject to more stress in the bend, care must be taken to render this part sufficiently strong and safe, and this is provided for by the present invention.

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

In a device for forming flanges on tubes, the combination of a mandrel having a recessed collar or head formed thereon, a threaded rod or stem at the opposite end of the mandrel, a cap loosely fitted on said rod, and a threaded nut traveling on said rod whereby said collar may be forced toward the recessed collar, substantially in the manner and for the purpose set forth.

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

FRIEDRICH WILHELM BARTHELS.

Witnesses:

E. H. L. MUMMENHOFF,
OTTO W. HELLMRICH.