

No. 677,018.

Patented June 25, 1901.

W. L. CHURCHILL.

METHOD OF AND MEANS FOR SECURING TWO OR MORE SOLID BODIES TO EACH OTHER.

(Application filed Feb. 7, 1899.)

(No Model.)

Fig. 1.

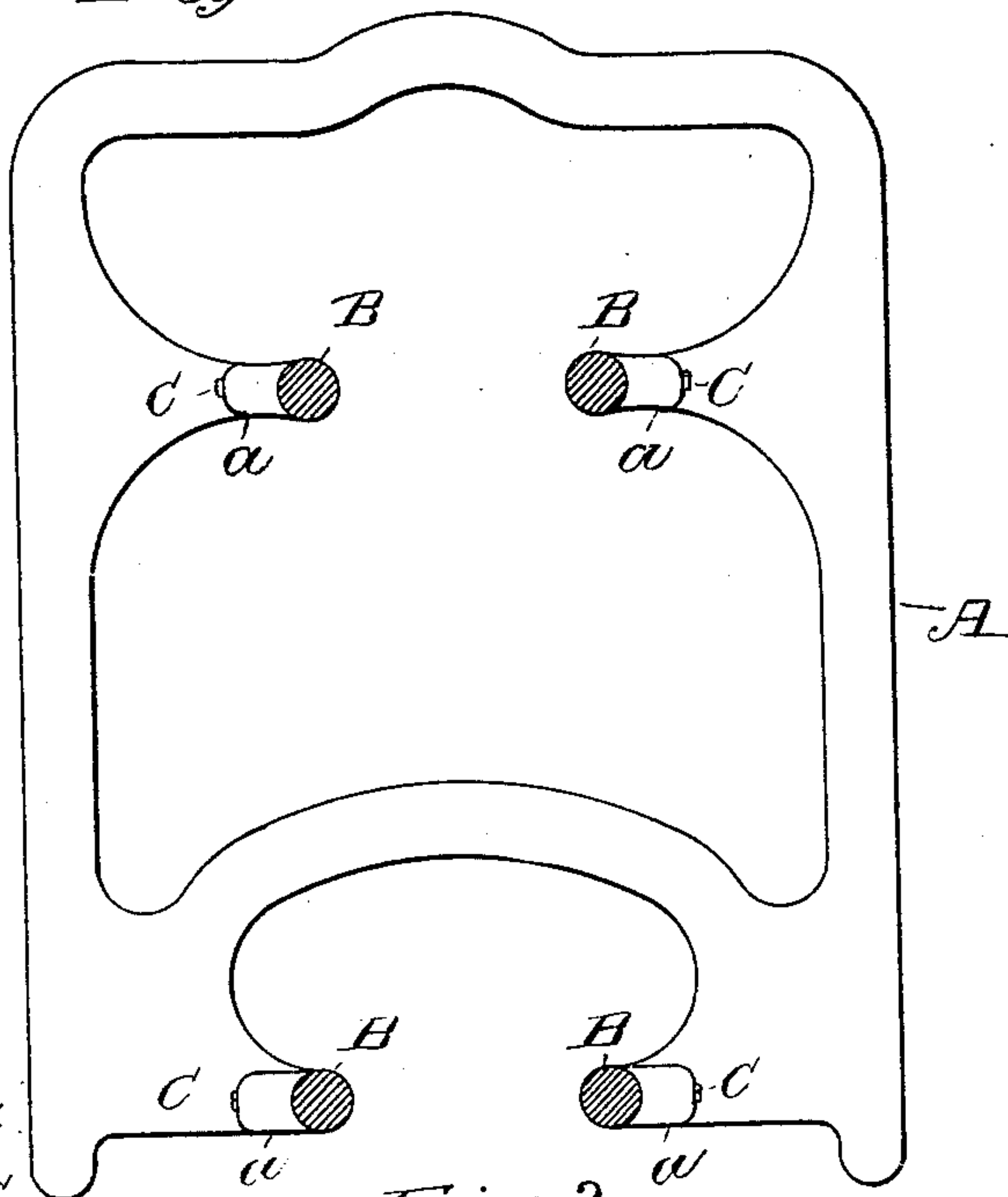


Fig. 7.

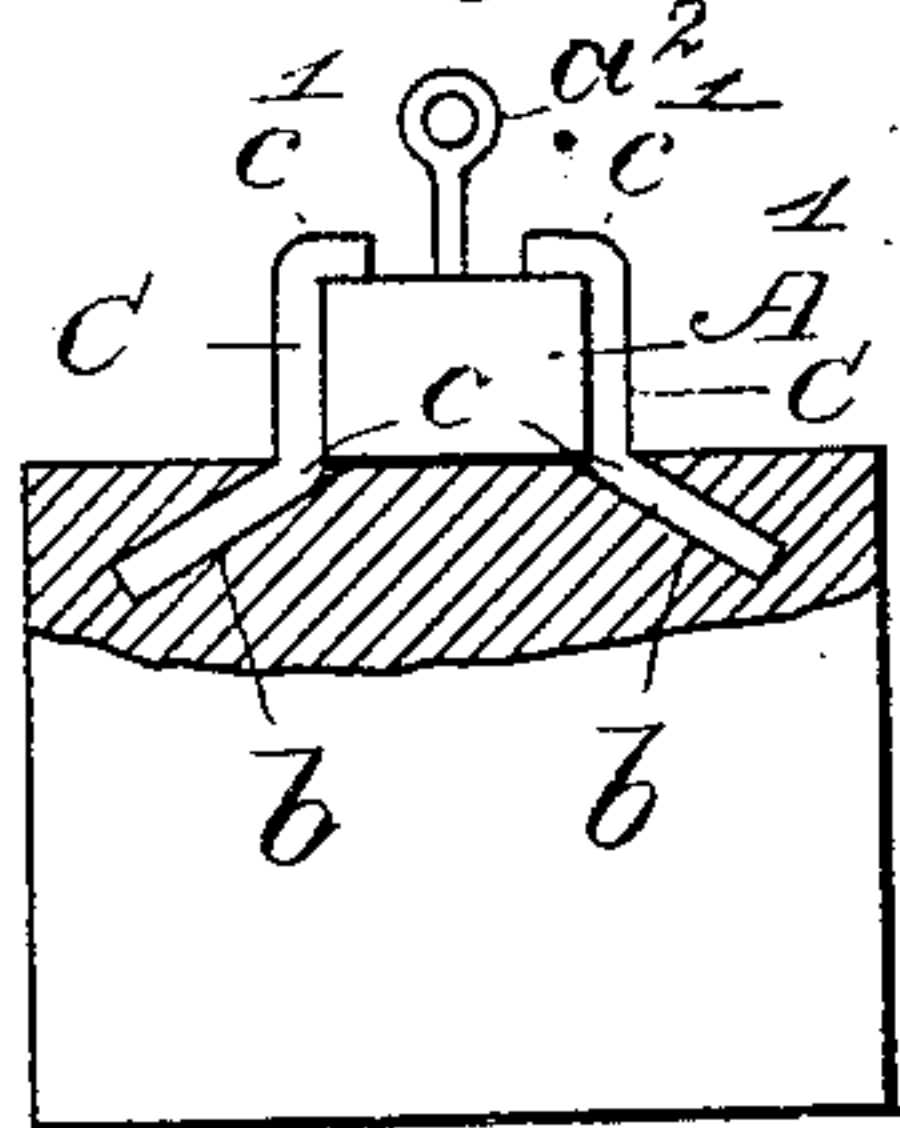


Fig. 2.

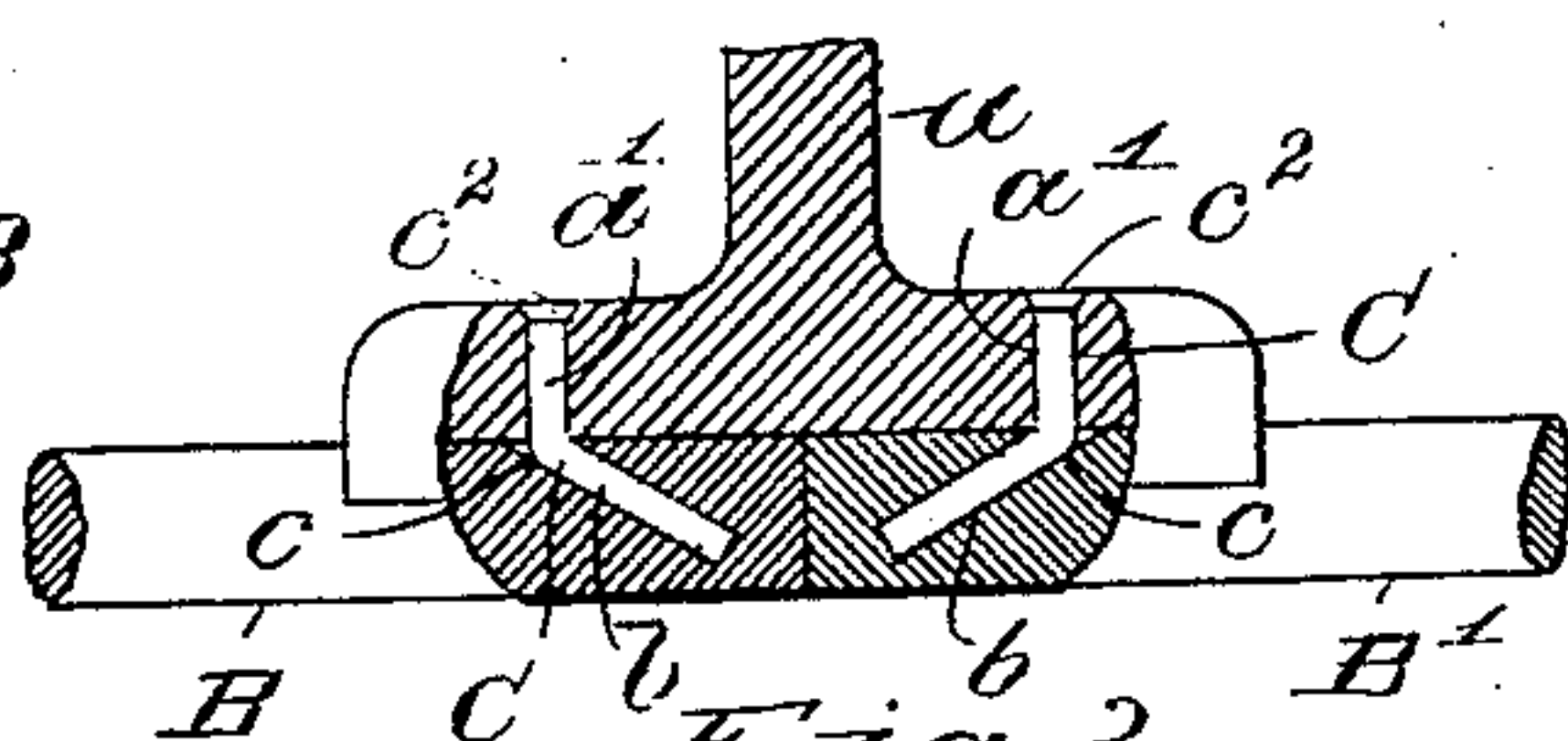


Fig. 5.

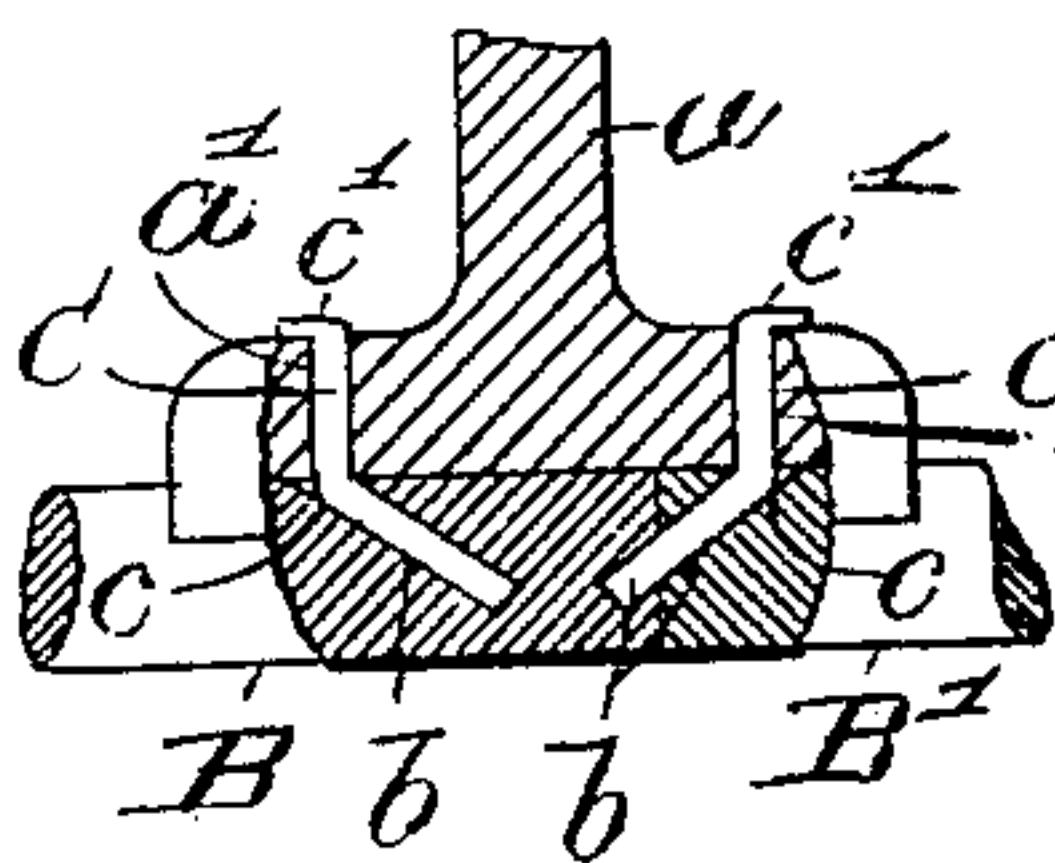


Fig. 3.

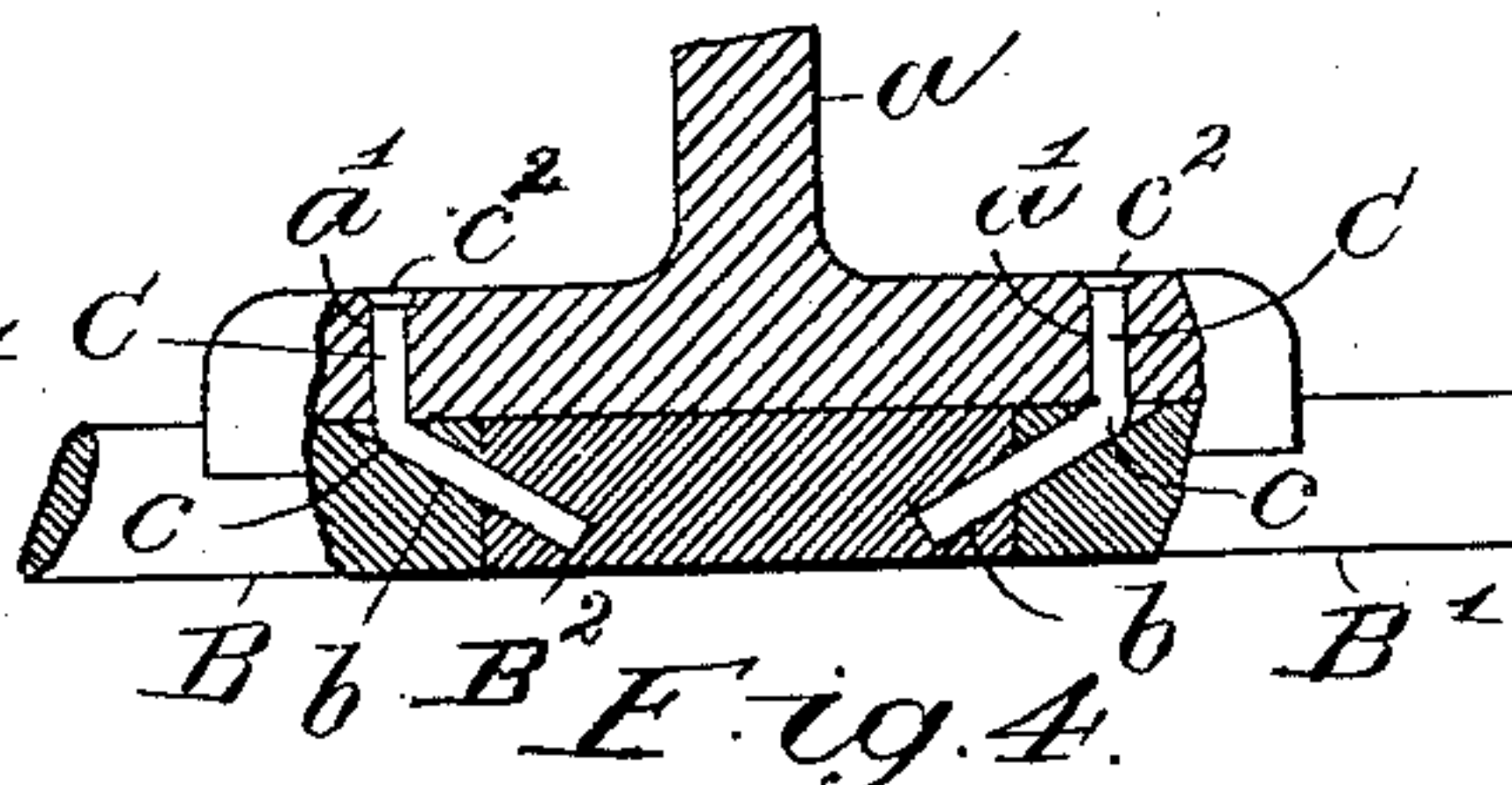


Fig. 6.

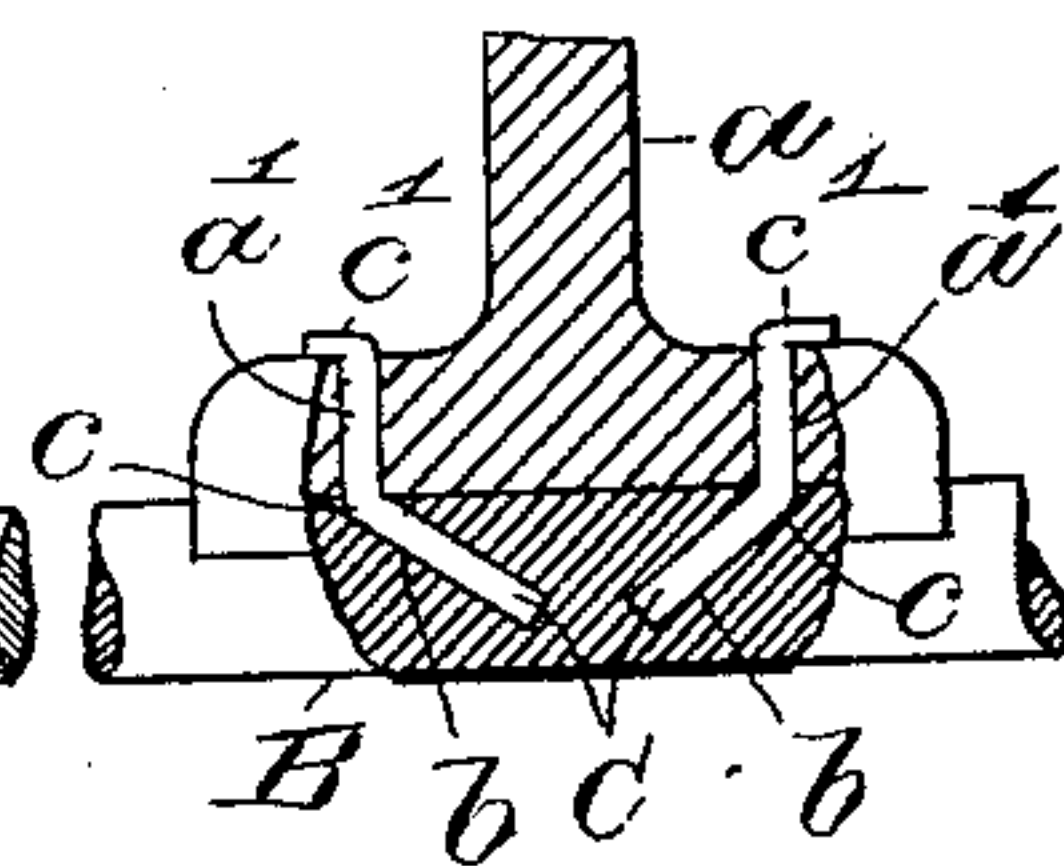
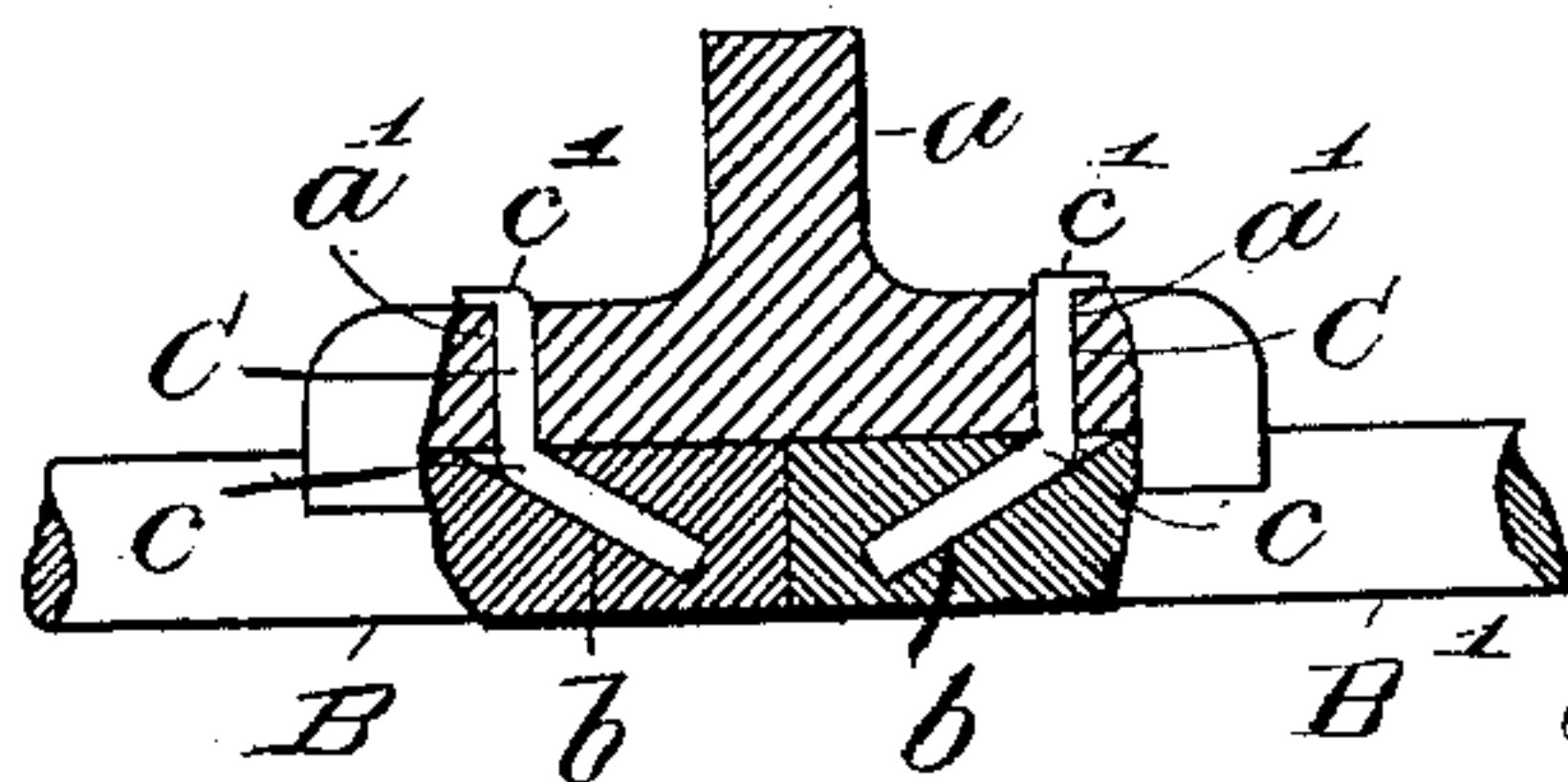


Fig. 4.



WITNESSES.

Kirkley Hyde.  
Grace E. Hibbert

INVENTOR

William L. Churchill

By Albert M. Moore,  
His ATTORNEY.



# UNITED STATES PATENT OFFICE.

WILLIAM LUCIUS CHURCHILL, OF LOWELL, MASSACHUSETTS, ASSIGNOR OF  
ONE-HALF TO ARNOLD A. INGRAHAM, OF SAME PLACE.

METHOD OF AND MEANS FOR SECURING TWO OR MORE SOLID BODIES TO EACH OTHER.

SPECIFICATION forming part of Letters Patent No. 677,018, dated June 25, 1901.

Application filed February 7, 1899. Serial No. 704,854. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LUCIUS CHURCHILL, a citizen of the United States, and a resident of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Methods of and Means for Securing Two or More Solid Bodies to Each Other, of which the following is a specification.

My invention relates to metallic structures, and more particularly to improved means for securing two or more solid bodies together in such a manner as to leave the outer surface of one of the bodies smooth and unobstructed.

The invention is illustrated in the accompanying drawings in connection with store-service apparatus for securing the rods or wires forming the carrier-tracks to their supporting-brackets.

Ordinarily the rods or wires serving as tracks for the traveling carriers in store-service systems are secured to supporting-brackets by means of pins or rivets passing through the rods and brackets, thus leaving the ends of the pins or rivets exposed and interrupting the continuity of the track-surfaces. My invention avoids this objection and presents a smooth continuous surface for the carriers to travel upon.

The construction of the improvement will be fully described in connection with the drawings, and its novel features will be defined in the appended claims.

In the drawings, Figure 1 is an elevation of a bracket commonly used for supporting the track rods or wires of store-service apparatus with the rods secured thereto. Fig. 2 is a transverse horizontal section showing the fastening devices, and Figs. 3, 4, 5, 6, and 7 are horizontal sections showing different forms of the improvement.

The reference-letter A designates the bracket or supporting-frame, formed with arms *a*, to which the wires or rods B and B' are secured. The arms *a* are provided with blocks A', formed with rounded grooves to receive the rods or wires B and B' and with parallel openings *a'*. The wires B and B' are each formed with an inclined opening *c*, the outer ends of which register with the inner ends of the openings *a'*, the inclination of the

opening *c* in one of said rods or wires being opposite to that of the opening in the other wire.

C designates pins for securing the wires to the brackets. These pins are first inserted in the oppositely-inclined openings *c* and then bent at the point and inserted into the holes *a'* of the bracket, leaving the inclined portions *b* within the openings *c*. The exposed ends *c'* are then headed to retain them in position, as shown in Fig. 2.

In Fig. 4 the exposed ends *c'* of the pins are bent over upon the block A', instead of being headed.

In Fig. 5 the relative arrangement of the two rods B and B' is different from that shown in Figs. 2 and 4, the opening *c* of the rod B' being continued into the end of the rod B.

In Fig. 6 only one rod is shown, formed with two oppositely-inclined holes *c*.

In Fig. 3 three independent sections B, B', and B<sup>2</sup> of rod are shown, the holes *c* in the sections B and B' being continued into the ends of the intermediate section B<sup>2</sup>.

In Fig. 7 the support A' is not perforated, the ends *c'* of the pins being bent to embrace the top edge thereof. In this form of the improvement the holes in the supported piece B diverge instead of converging, as shown in the other figures of the drawings.

It will be obvious that the improved fastening devices leave the outer surfaces of the rod smooth and unobstructed and at the same time insure a firm support for the rods.

While the invention is well adapted for use with store-service apparatus, it is designed for general use as a connecting means for metal or other solid bodies.

I claim—

1. The combination with abutting bodies one of which is formed with oppositely-inclined non-intersecting openings extending only partly through the body; pins fitting said openings disconnected from each other and bent at an angle at the outer ends of said openings and having their exposed ends secured to or engaging the other body.

2. The combination with a frame or bracket formed with parallel openings; of a rod or like solid body comprising independent sections



formed with inclined openings extending only partly through the rod and registering with said parallel openings; pins fitted into said inclined openings and bent to enter the parallel openings, said pins serving to secure the sections of the rod together and to the frame or bracket.

3. The combination with a solid body formed with openings; of another body comprising a plurality of sections each formed with an inclined opening extending only partly through the section and registering with the openings in the first-named body; and pins bent to fit said openings and serving to connect said sections together longitudinally and also to secure them to the other body.

4. The combination with a solid body formed with openings; of another body comprising a plurality of sections formed with op-

positely-inclined openings, and joined end to end, said openings extending only partly through the body and registering with the openings in the first-named body and pins bent to fit said openings.

5. The combination with abutting bodies one of which has oppositely-inclined non-intersecting openings extending only partly through the body, pins fitting said openings disconnected from each other and bent at an angle at the outer ends of said openings to enter the openings in the other body and serving to secure or fasten the said bodies together.

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

WILLIAM LUCIUS CHURCHILL.

Witnesses:

ALBERT M. MOORE,  
GRACE E. HIBBERT.