

No. 824,501.

PATENTED JUNE 26, 1906.

E. MOLLOY.
TUBULAR METAL STRUCTURE.
APPLICATION FILED JULY 3, 1902.

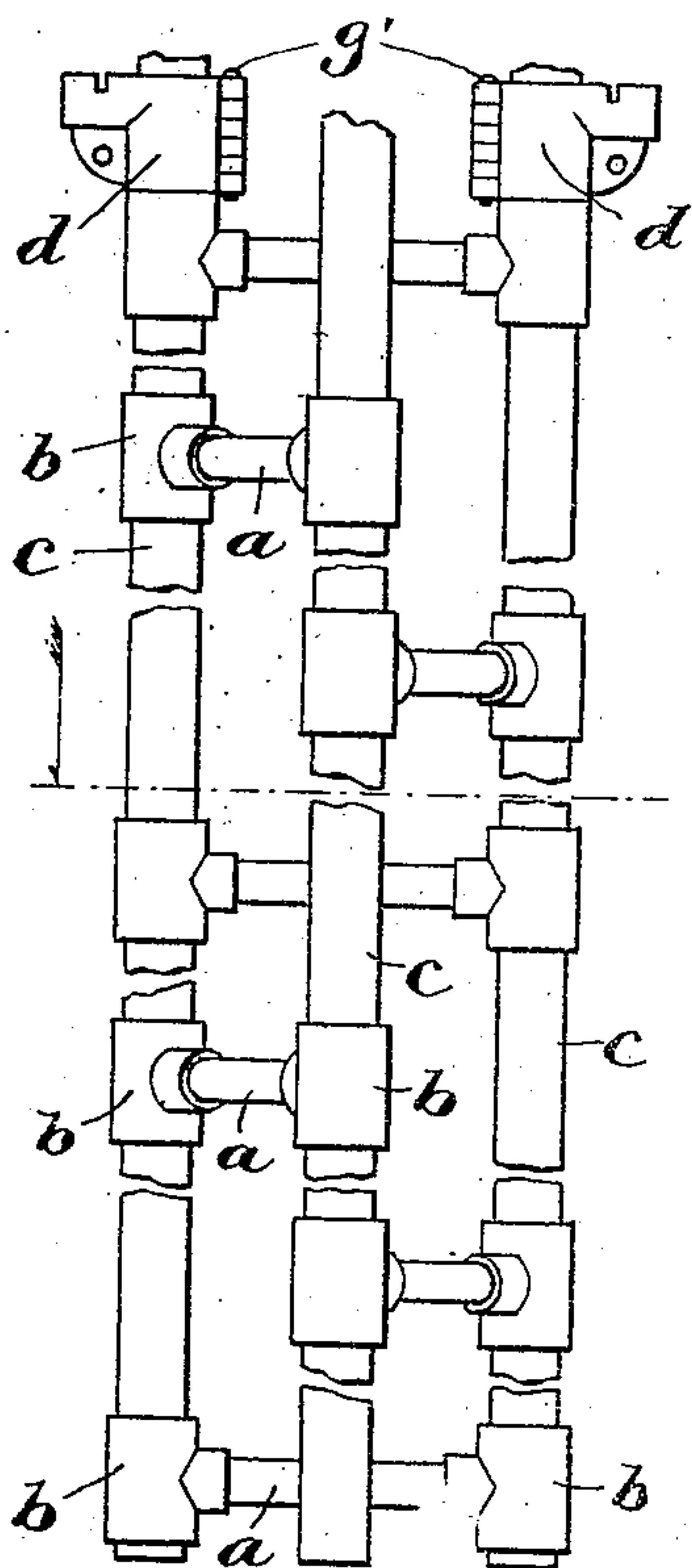


Fig. 3.

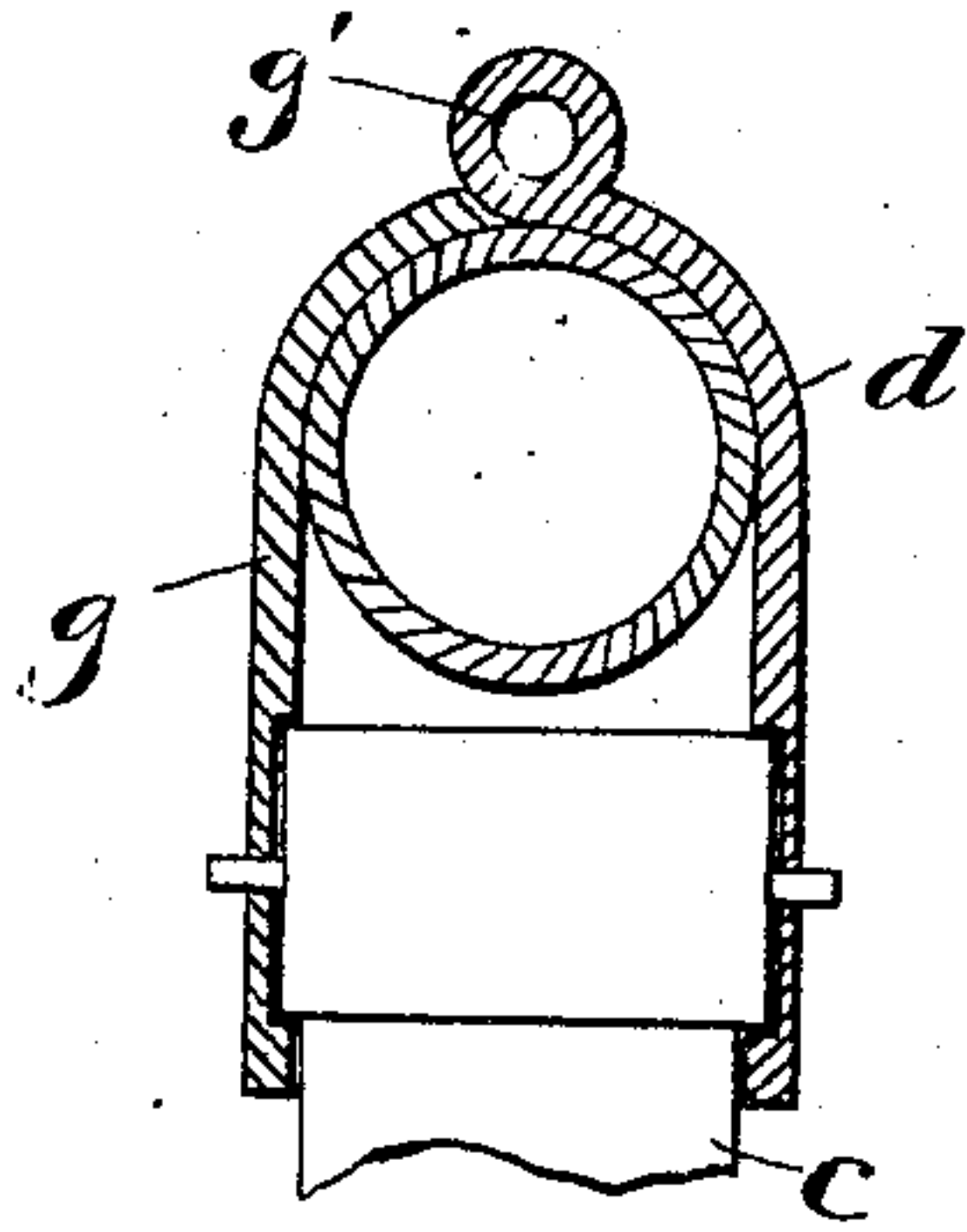


Fig. 7.

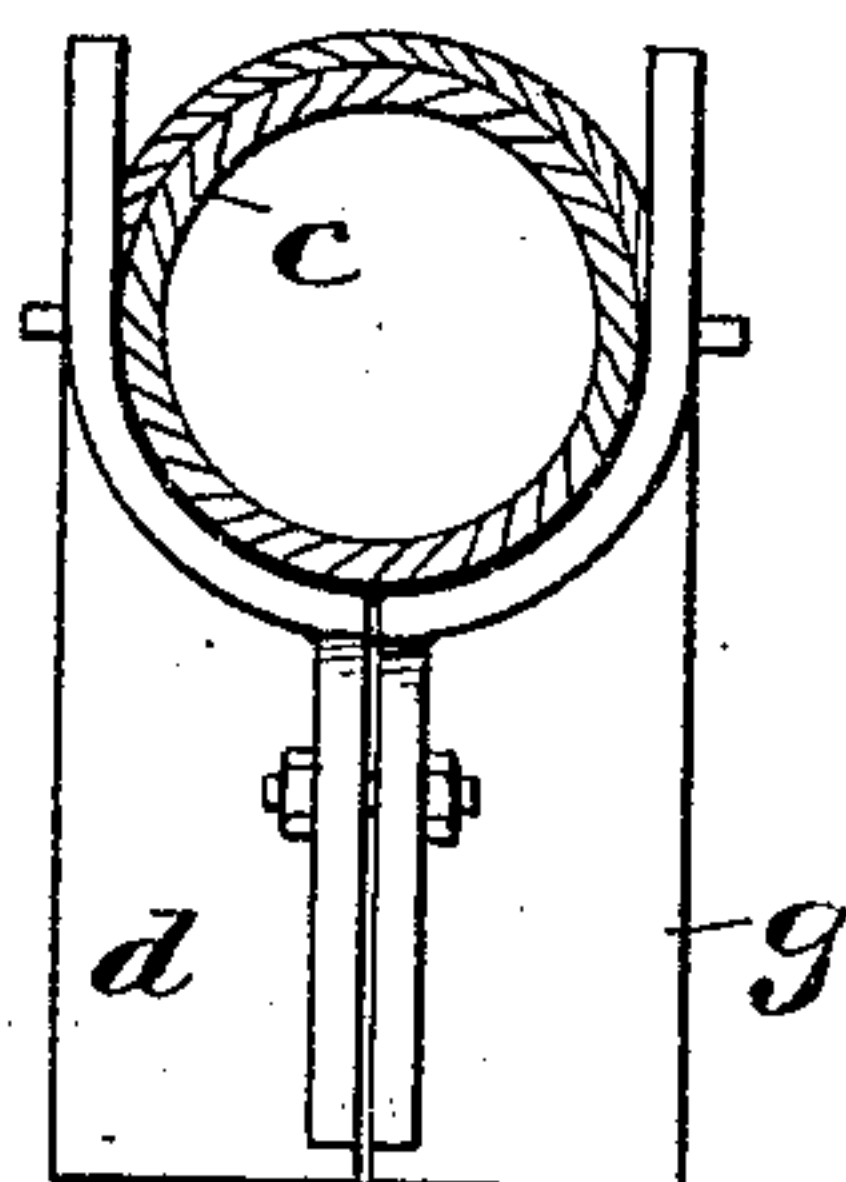


Fig. 6.

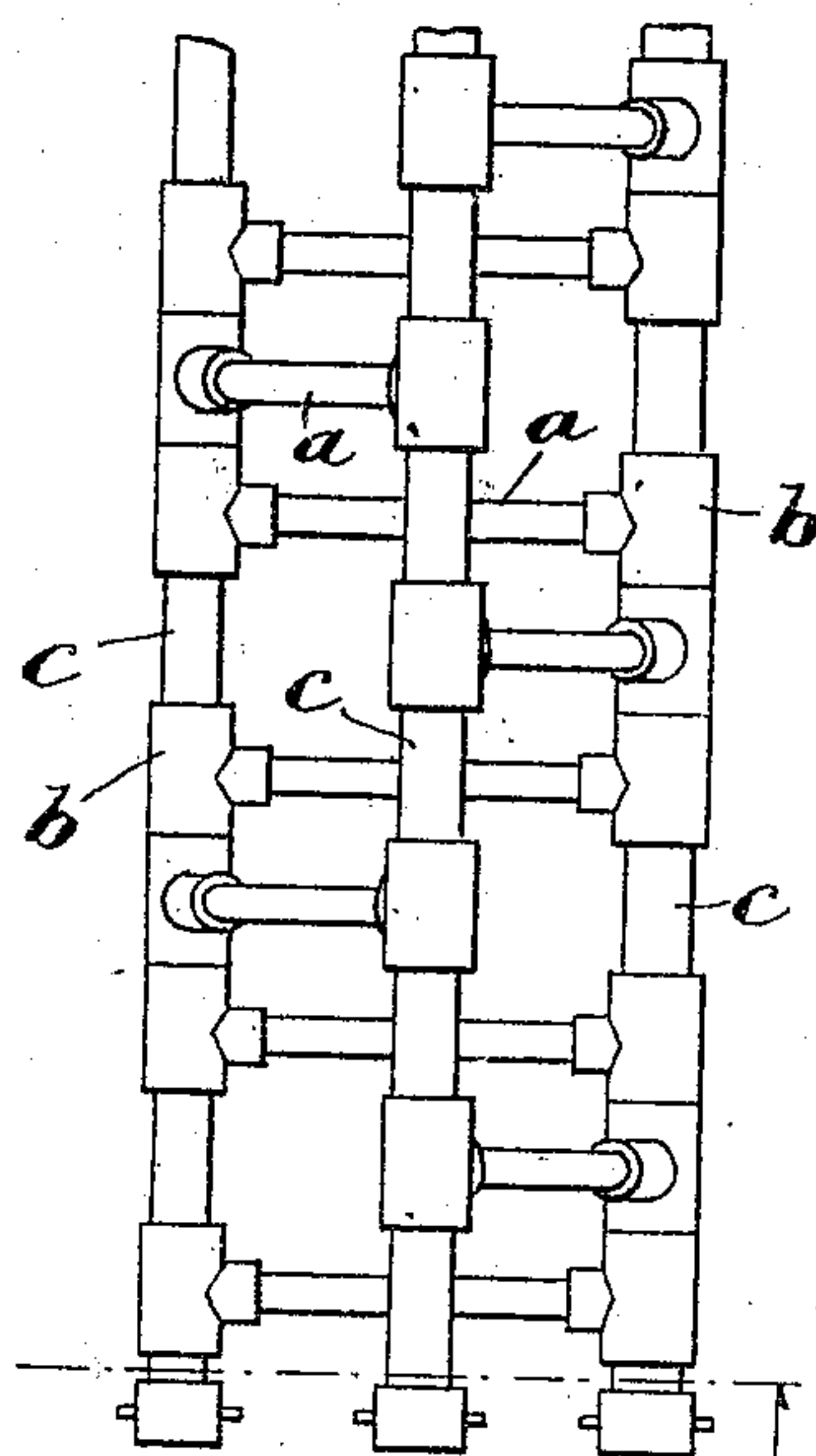


Fig. 5.

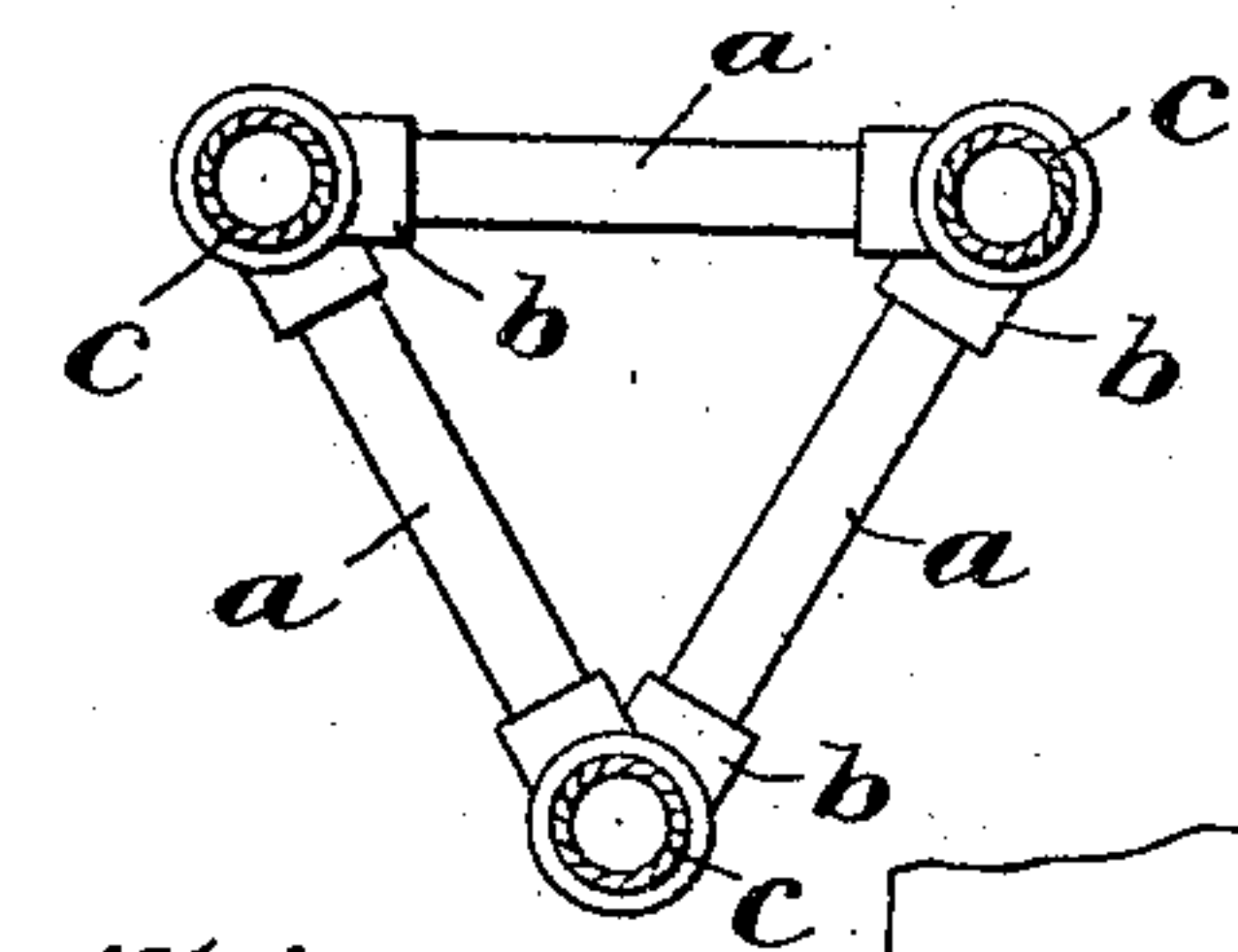


Fig. 2.

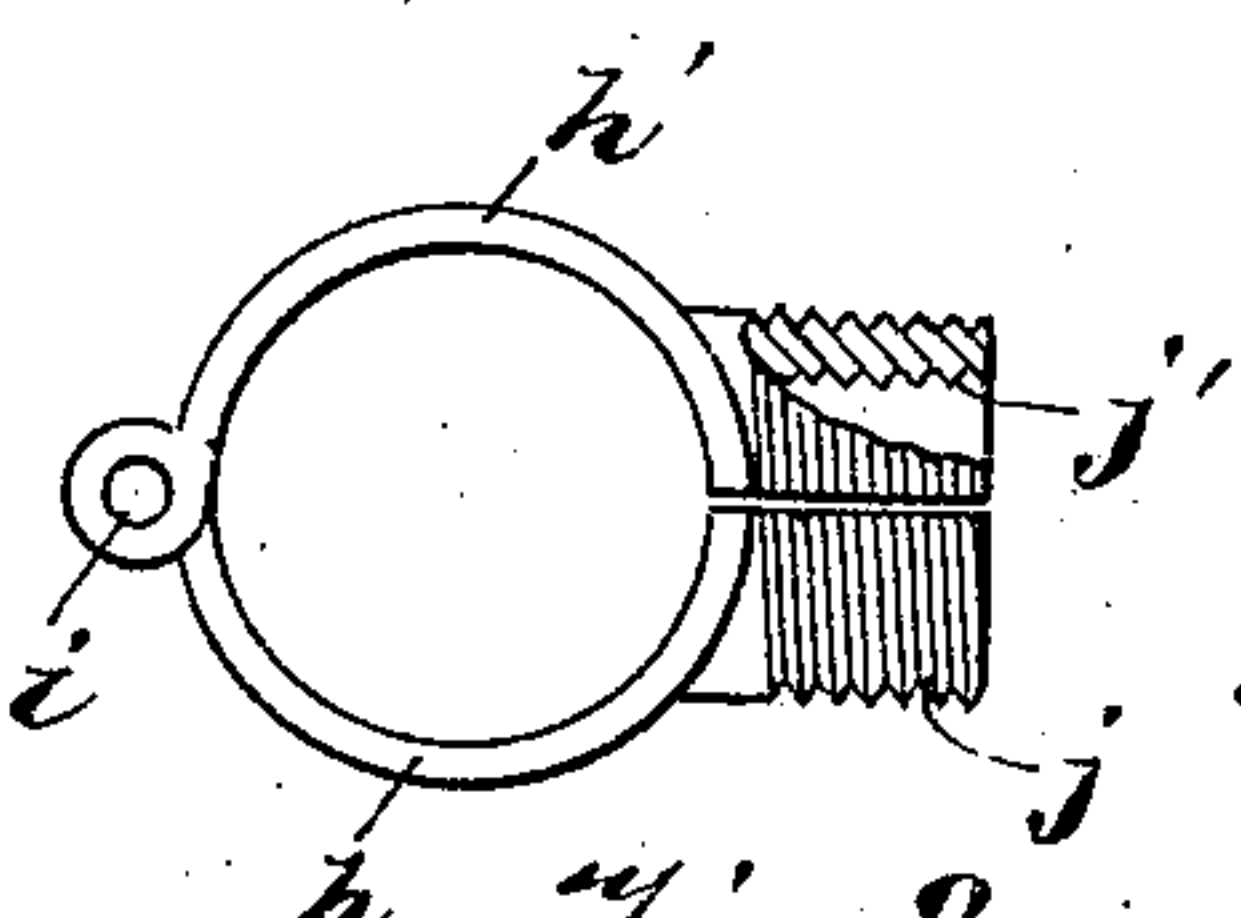


Fig. 8.

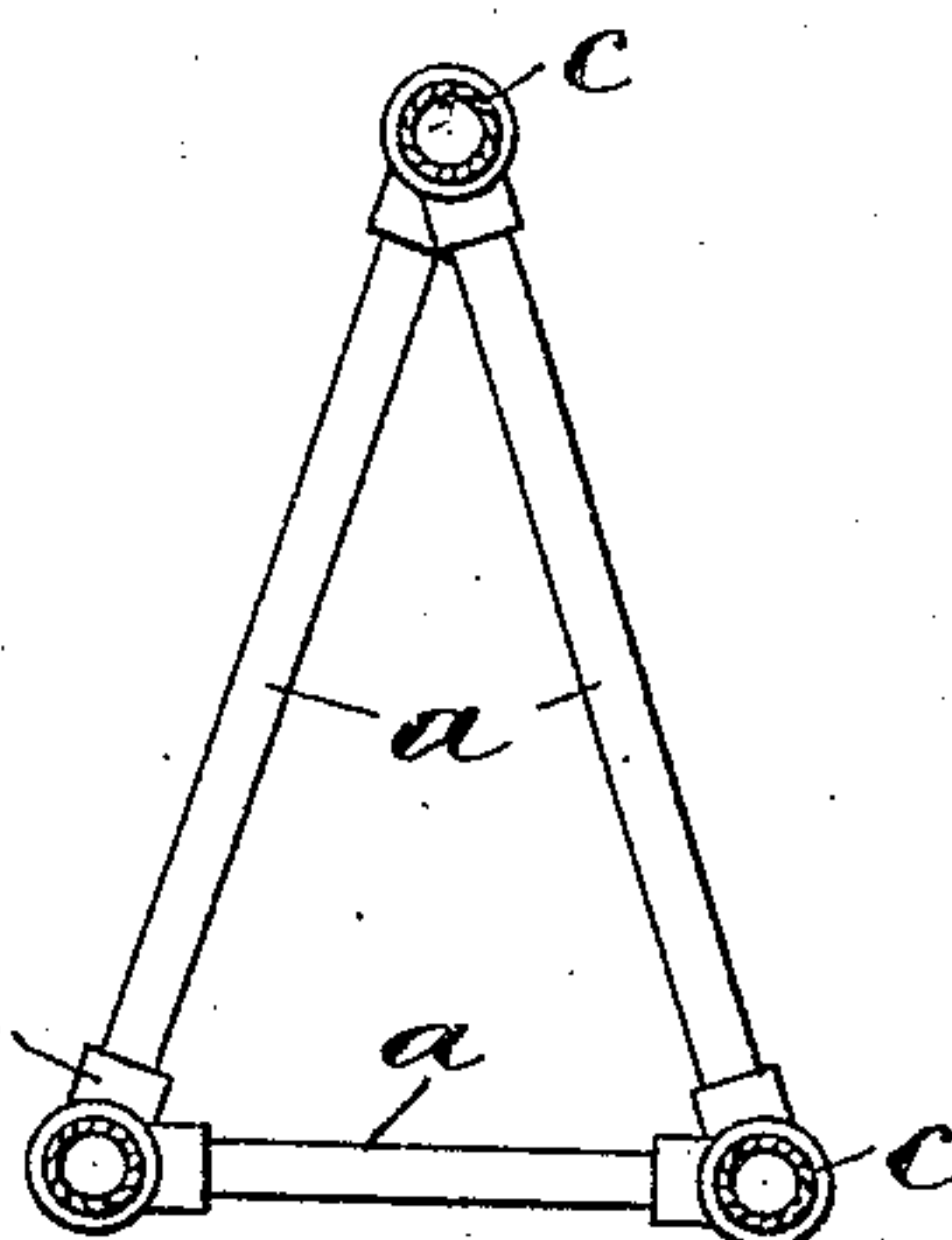


Fig. 4.

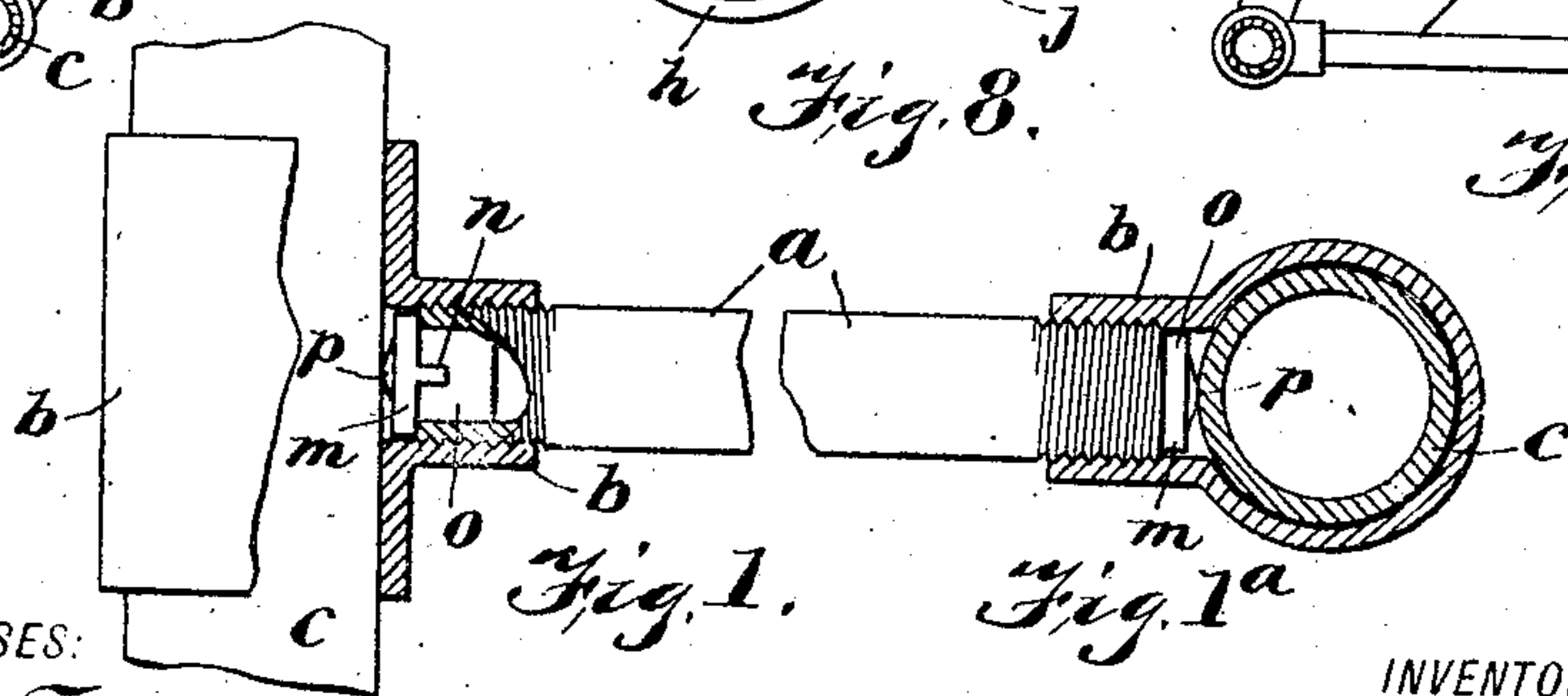


Fig. 1.

Fig. 1a.

WITNESSES:

Robert Head

V. E. Nichols

INVENTOR

Edmond Molloy

BY

Griffin Bernhard

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDMOND MOLLOY, OF PHILADELPHIA, PENNSYLVANIA.

TUBULAR-METAL STRUCTURE.

No. 824,501.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed July 3, 1902. Serial No. 114,262.

To all whom it may concern:

Be it known that I, EDMOND MOLLOY, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented new and useful Improvements in Tubular-Metal Structures, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a metal structure which is made or built up of tubular or pipe metal.

The object in view is to produce a skeleton structure of pipe metal which shall have its members or parts united so firmly together as to possess great strength and rigidity.

The metallic structure is adapted for a variety of uses and may be made in various forms, such as a post or column, a girder, &c. It is to be understood that I do not restrict myself to any particular form or use of the new structure made in accordance with my invention.

The invention will be fully described in connection with the annexed drawings, wherein—

Figure 1 is a sectional view, partly in elevation, of a portion of a metallic structure representing a part of my staff used in connection with a member or runner of the tubular structure. Fig. 1^a is a sectional plan view of the parts shown by Fig. 1. Fig. 2 is a plan view, partly in section, of a post or column made in accordance with this invention. Fig. 3 is an elevation, partly broken away, of the post or column shown by Fig. 2. Fig. 4 is an end elevation, partly in section, of a girder or beam made in accordance with this invention. Fig. 5 is a plan view of the girder or beam shown by Fig. 4. Fig. 6 is an end view, and Fig. 7 is a plan view, partly in section, representing one form of hinged coupling which may be used to connect a girder or beam with a post or column as contemplated by this invention. Fig. 8 is a plan view, partly in section, of a divided T-coupling.

Similar letters refer to similar parts throughout the several views, and the letters in the specification correspond to those on drawings.

In Fig. 1 I have shown a staff *a* with two plugs *o*. These plugs, which are preferably made solid and from hardened metal, are provided with shoulders *m* and lugs *n* and are receivable stationary in the ends of the pipe.

The outer end of each plug is made tapering, as shown at *p*, so as to perform substantially the functions of a drill or countersink. The ends of the staff *a* have screw-threaded thereon the T's *b*, and concentric with parts of the T's *b* are the pipe-irons *c*. The T's are connected with the staff *a* by means of right and left hand screw-threads, so that when the staff *a* is turned by suitable means (as with a wrench) the plugs *o*, being stationary in the staff, will turn with it and drill into the pipe-irons *c* sufficiently to make a rigid structure.

The combination of the staff *a*, the T's *b*, and the plugs *o* constitutes what I have termed a "stem," and the use of the stem will be apparent in the description to follow. Figs. 2 and 3 show a way of combining these stems with pipe-irons as sustaining members to form a triangular upright. It is obvious, of course, that various other geometrical forms may be constructed in a similar manner. Such an upright is adapted for use in a support or post for the girders or beams. (Shown in Figs. 4 and 5.)

In Figs. 4 and 5 I have shown the stems combined with sustaining members in such a manner as is suitable to form a girder or beam, the shortest side or lower part being the bottom or weight-carrying part of the girder or beam. In all cases the pipe-irons *c* are the sustaining members and are invariably the members running in the longest direction in the object to be framed. As seen in Fig. 5, I have placed the stems alternately or in staggered position on the pipe-irons, and such stems may be as close together as desired, thus enabling the constructor to make a girder of sufficient strength to suit the purpose in hand.

In Figs. 6 and 7 I have shown what I term a "hinge-coupling" *d g*. Two of these couplings are shown in the upper part of Fig. 3. These couplings form an efficient means of securing the girder or beam to a post where it is desired to support girders or beams by posts only. These couplings, as stated, are hinge-joined and can be placed at any desired height and closed on the pipes over a stem on the post, as shown. It will be apparent, of course, that the girder shown in Figs. 4 and 5 might be used in any form of structure and could be supported by a wall or other suitable means just as well as by the particular form of post which I have illustrated. In other words, the girder can be

used independently of the particular post shown in Figs. 2 and 3. It will be apparent that the hinge-couplings, as shown in Fig. 3, may be turned to receive the pipe-irons, (shown in Fig. 5,) thereby connecting the post and girder.

In Fig. 8 of the drawings I have shown a hinged T-coupling which is especially adapted for use in connection with an emergency-stem. Said coupling consists of complementary members h h' , jointed together at i and provided with an outside thread j on its drop branch, said branch being shown as broken away to represent an inside thread j' . This T is adapted to close over a staff and is fastened with a socket screwed upon the outside thread of the drop branch, which enables the regular staff to perform its customary function.

Pipe-irons may be lengthened by short close nipples on the inside or on the outside by sockets or by butting them and breaking the butt-joints at intervals between the stems.

The stems in many cases may be useful without the plugs; but in no case are they as serviceable.

Other pipe-shaped forms, without regard to size, may be connected and reinforced by stems and made useful, as well as ornamental. It is obvious also that a staff wholly of solid metal would answer the same purpose and the end thereof might be plain or tapered.

It may be remarked that a frame having three sides, the runners of which are parallel, cannot be other than accurate, since the stems on each side are all of an equal length. Other accurate useful forms with parallel runners, though sides of unequal area, having stems of an equal length are as easily produced.

Having shown and described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a staff provided with oppositely-threaded ends, and plugs connected with said staff for rotation therewith.

2. As a new article of manufacture, a staff provided with plugs, the ends of the staff being provided exteriorly with right and left screw-threads, adapted to be screwed into T's, substantially as described.

3. As a new article of manufacture, a staff provided with plugs having tapering ends, the ends of the staff being provided exteriorly with right and left screw-threads, adapted to be screwed into T's, substantially as described.

4. As a new article of manufacture, a staff provided with plugs having tapering ends, the ends of the staff being provided exteriorly with right and left screw-threads; T's screwed onto the ends of the staff, extending through the long arms of the T's, whereby when the

staff is turned, the plugs will be forced into the pipe-irons, c , making all the parts practically integral, substantially as described.

5. The combination of a staff having its ends threaded respectively with right and left hand screw-threads, T's on the ends thereof and members extending through the long arms of the T's, concentric therewith, whereby when the staff is turned, the ends thereof are forced into contact with the said members, thus forming a rigid integral structure.

6. A skeleton frame consisting of substantially parallel pipes connected to each other by stems between each pair of pipes, the ends of each stem binding against said pipes.

7. A skeleton frame having three sides consisting of three substantially parallel pipes held stayed and secured to each other by stems between each pair of pipes; those between one pair on one side alternating with those of another pair on the second side, and those between the pair on the second side alternating with those of another pair on the third side, substantially as described.

8. A skeleton frame having three or more sides, consisting of substantially parallel pipes, held stayed and secured to each other by stems between each pair of pipes, those between one pair on one side alternating in position with those of a pair on the second side, those between the pair on the second side alternating with those of a pair on the third side, and those between the pair on each additional side alternating with those of a pair on the next side, substantially as described.

9. A skeleton frame consisting of three substantially parallel pipes, a series of the herein-described stems in succession alternately staying and securing one pipe to a second pipe, the second pipe to a third pipe, the third pipe to the first pipe, substantially as described.

10. A metal structure, triangular in cross-section, comprising three members lengthwise of the structure, each of said members being provided at suitable points in its length with T-pieces, transverse members connecting the T-pieces and adapted to extend therein and form contact with the lengthwise members in such manner as to form said integral structure.

11. A coupling, substantially of T shape, for securing a beam to a post, consisting of two members pivoted at their rear ends, the drop portion extending from said members on the opposite side from the hinge, the upper portion of said extension being cut away; suitable slots in said extension for the purpose specified, and means for clamping the said members together, substantially opposite their hinged portion.

12. A coupling substantially of T shape, for securing a beam to a post, consisting of

two members pivoted at their rear ends, the drop portion extending from said members on the opposite side from the hinge, the upper portion of said extension being cut away, and means for clamping the said members together substantially opposite their hinged portion.

13. A coupling, substantially of T shape, composed of two members pivoted together, the drop portion of each being threaded both interiorly and exteriorly.

14. As a new article of manufacture, a staff provided with oppositely-threaded ends, and plugs having interlocking engagement with said staff.

15. The combination of two runners, sleeves thereon, and a single member cooperating with said sleeves and said runners and exerting thrust on the runners.

16. The combination of two runners, sleeves thereon, and a single member screwed into said sleeves and gripping each runner between one sleeve and the said member.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDMOND MOLLOY. [L. s.]

Witnesses:

CHAS. H. DOUGHERTY,
PHILIP DONOHUE.