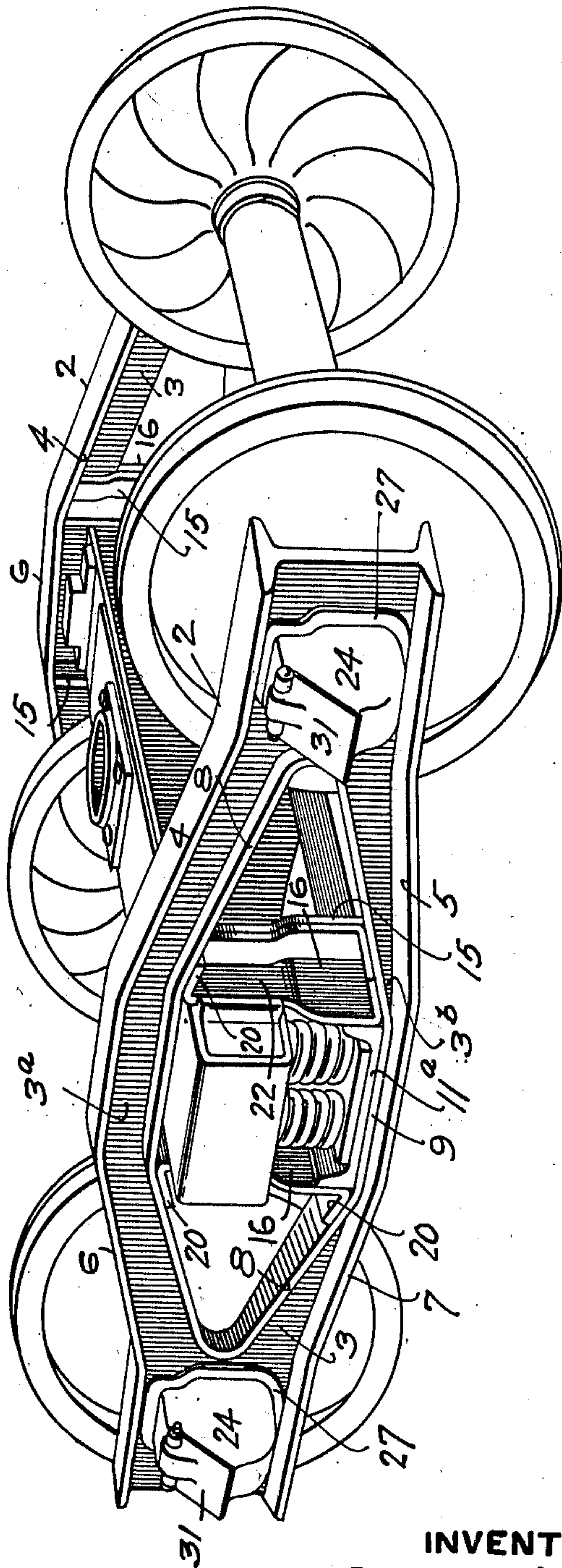


993,577

E. C. COVERT.  
TRUCK SIDE FRAME.  
APPLICATION FILED DEC. 20, 1910.

Patented May 30, 1911.  
4 SHEETS—SHEET 1.

FIG. 1



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4 SHEETS-SHEET 2.

FIG. 2

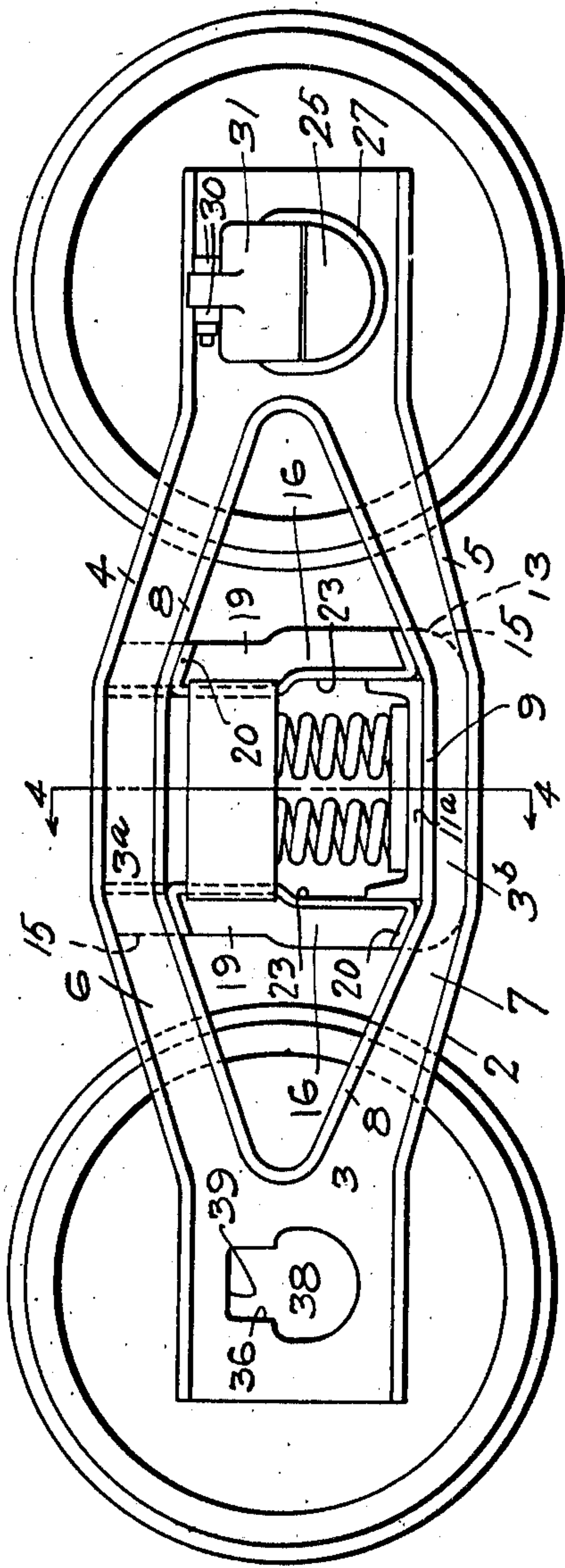
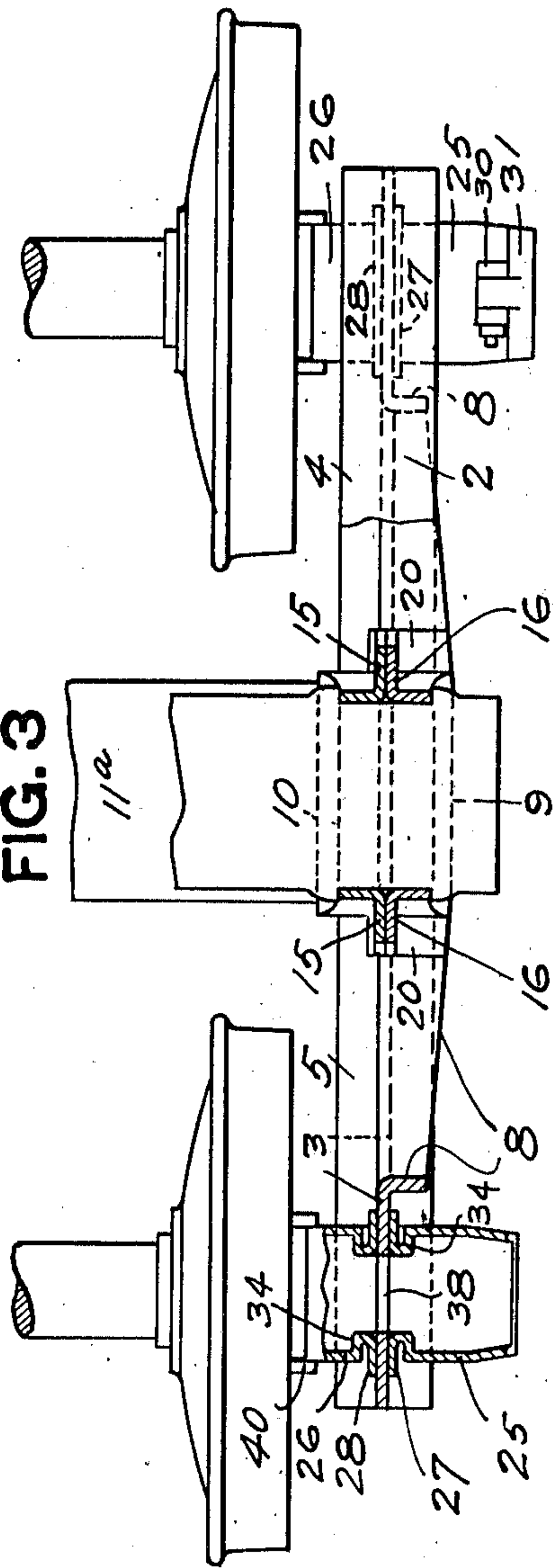


FIG. 3



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4 SHEETS—SHEET 3.

FIG. 5

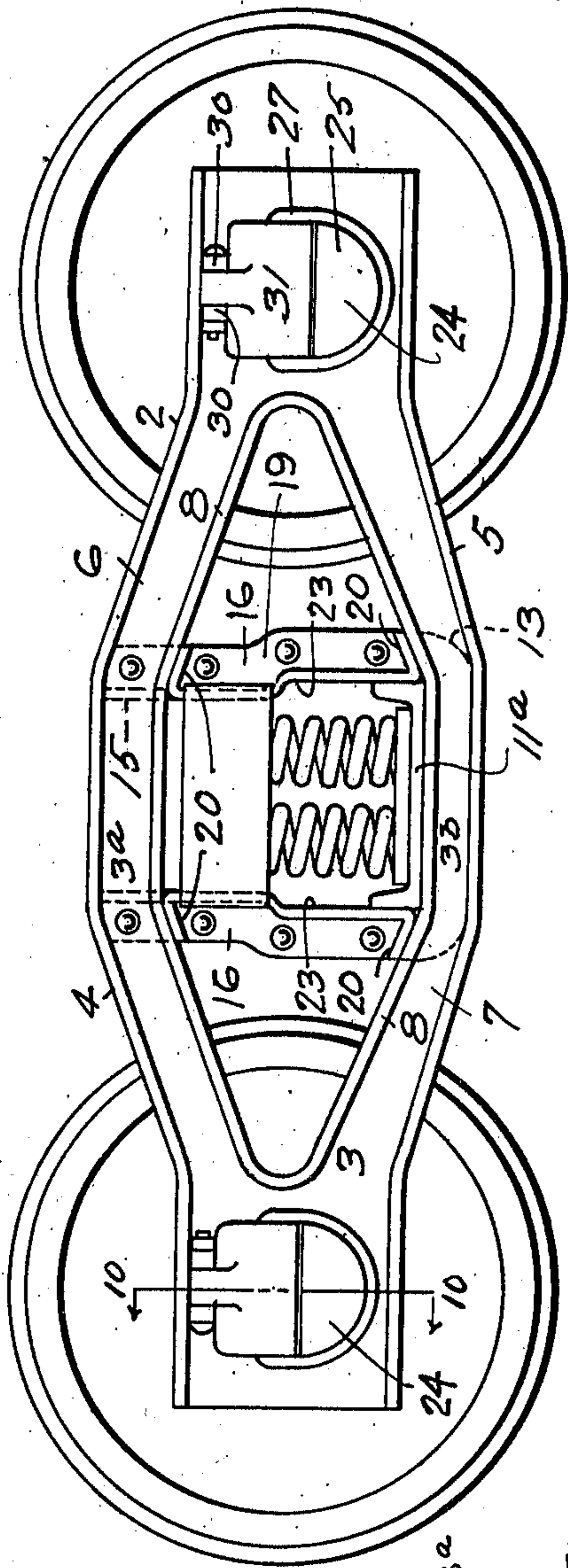


FIG. 8

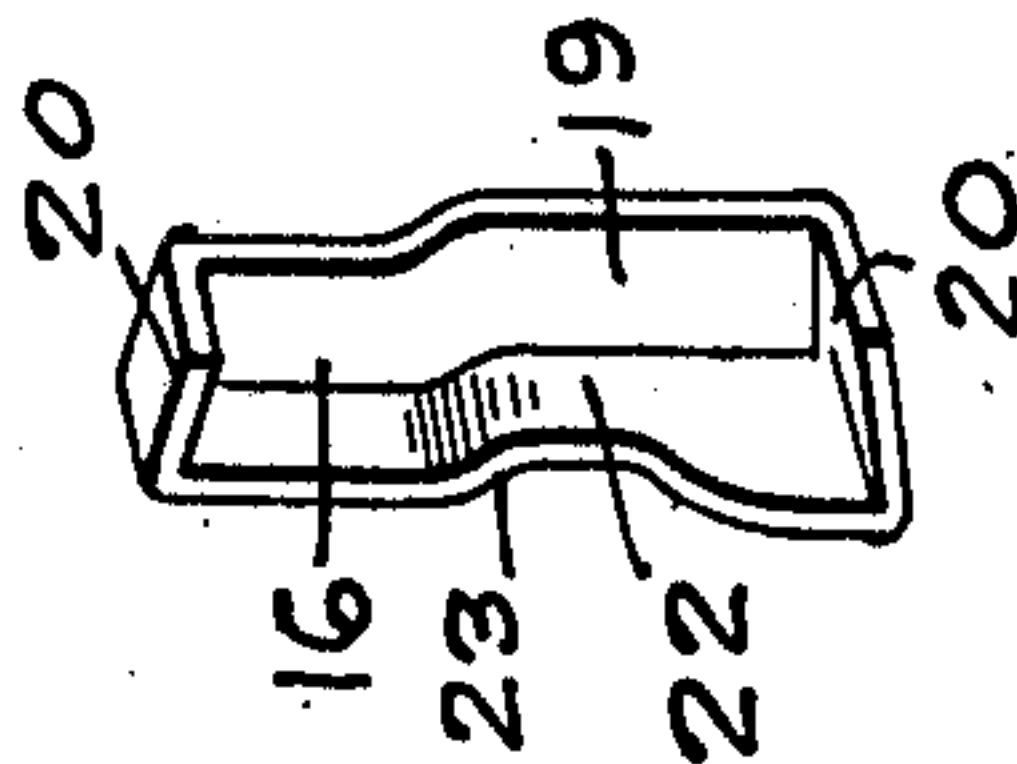


FIG. 7

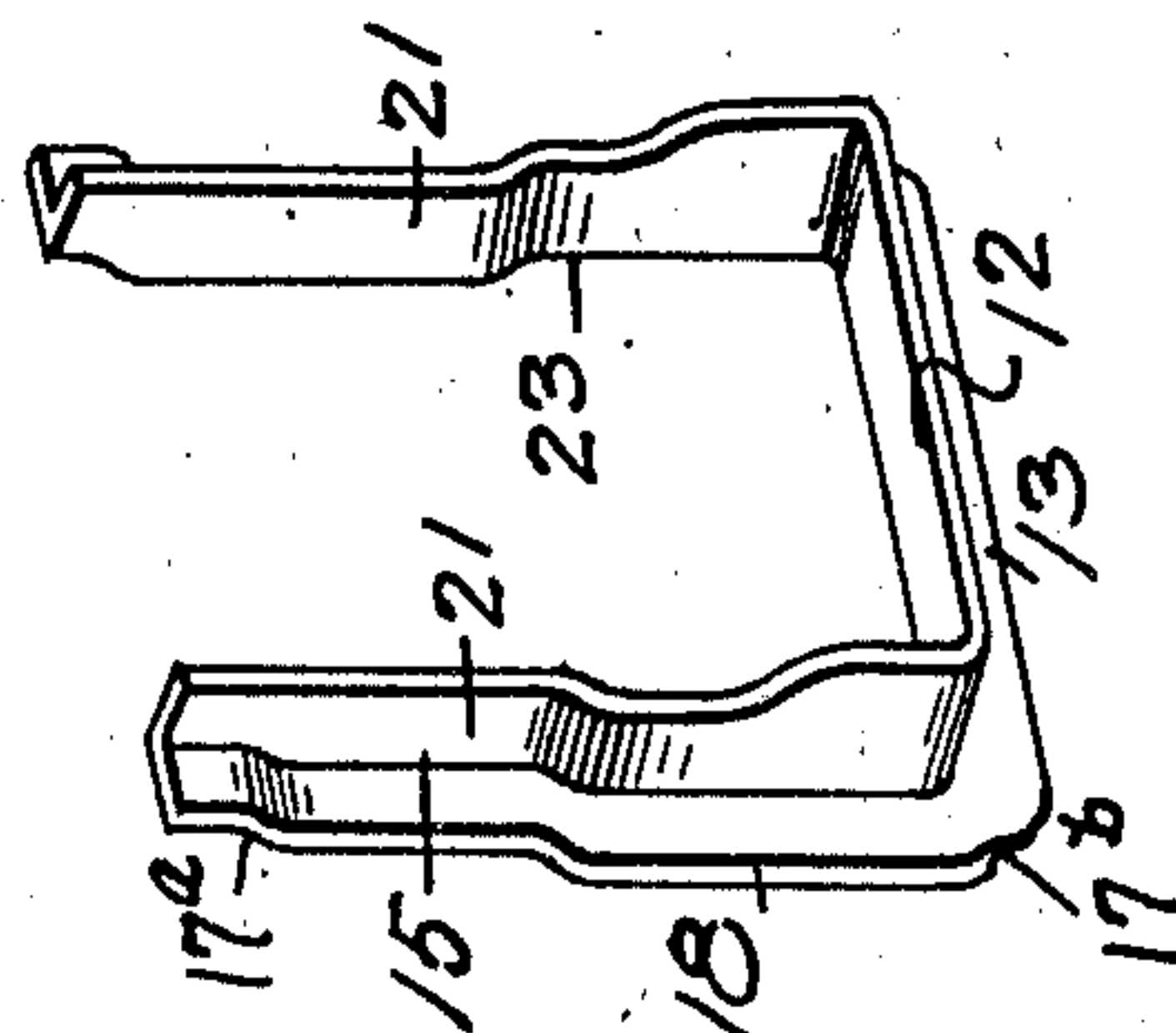


FIG. 6

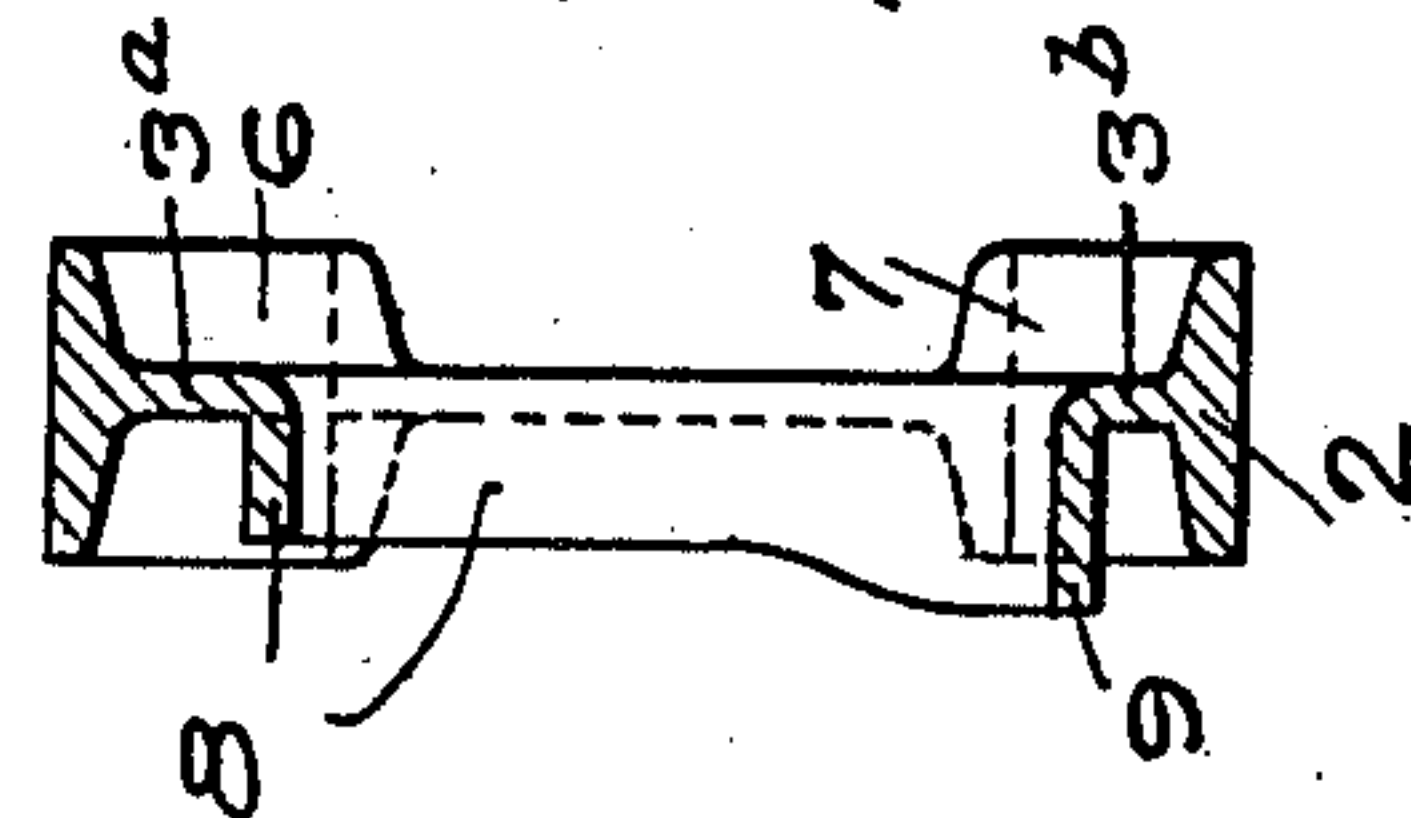


FIG. 4

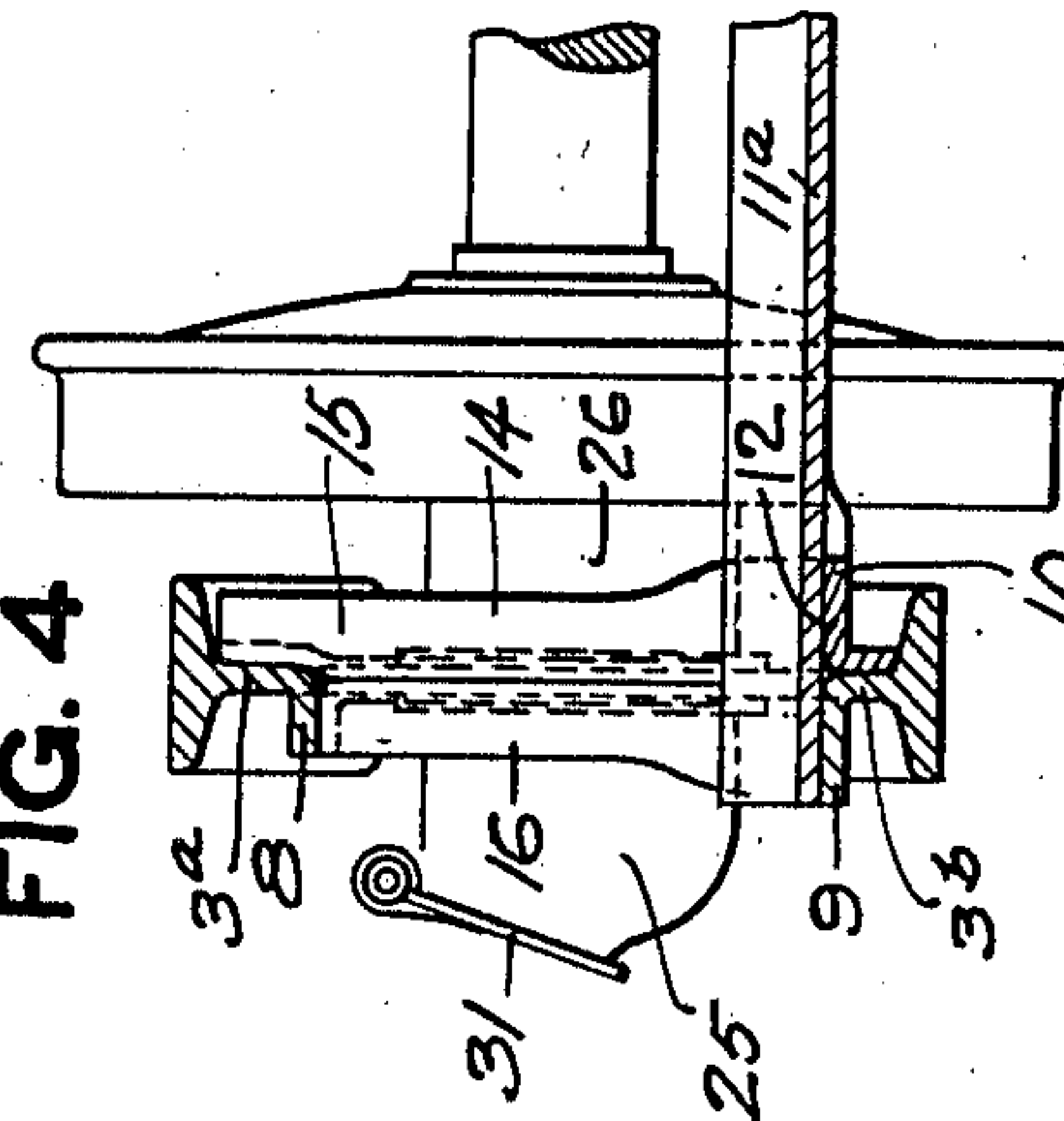
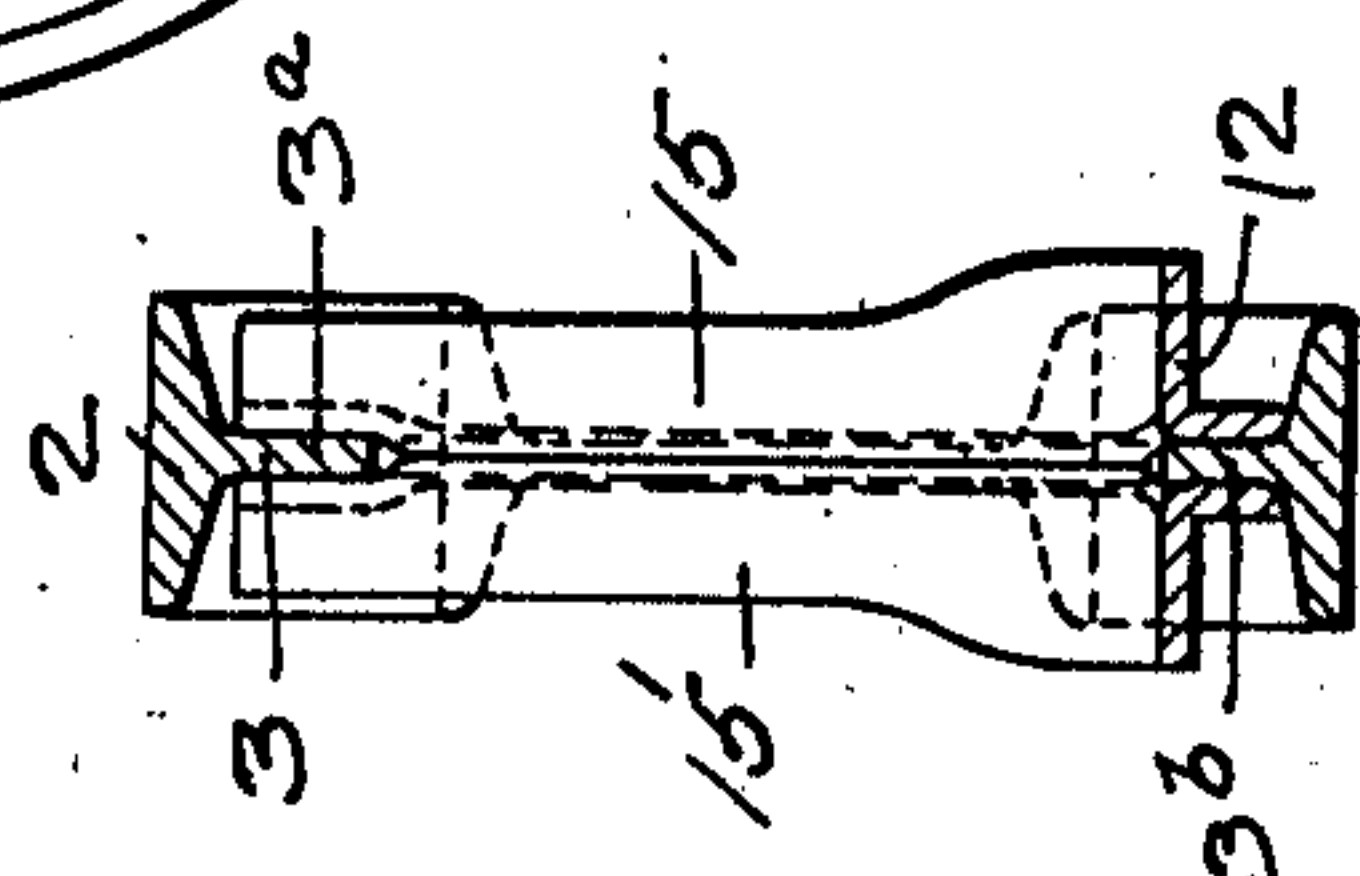


FIG. 9



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4 SHEETS-SHEET 4.

FIG. 11

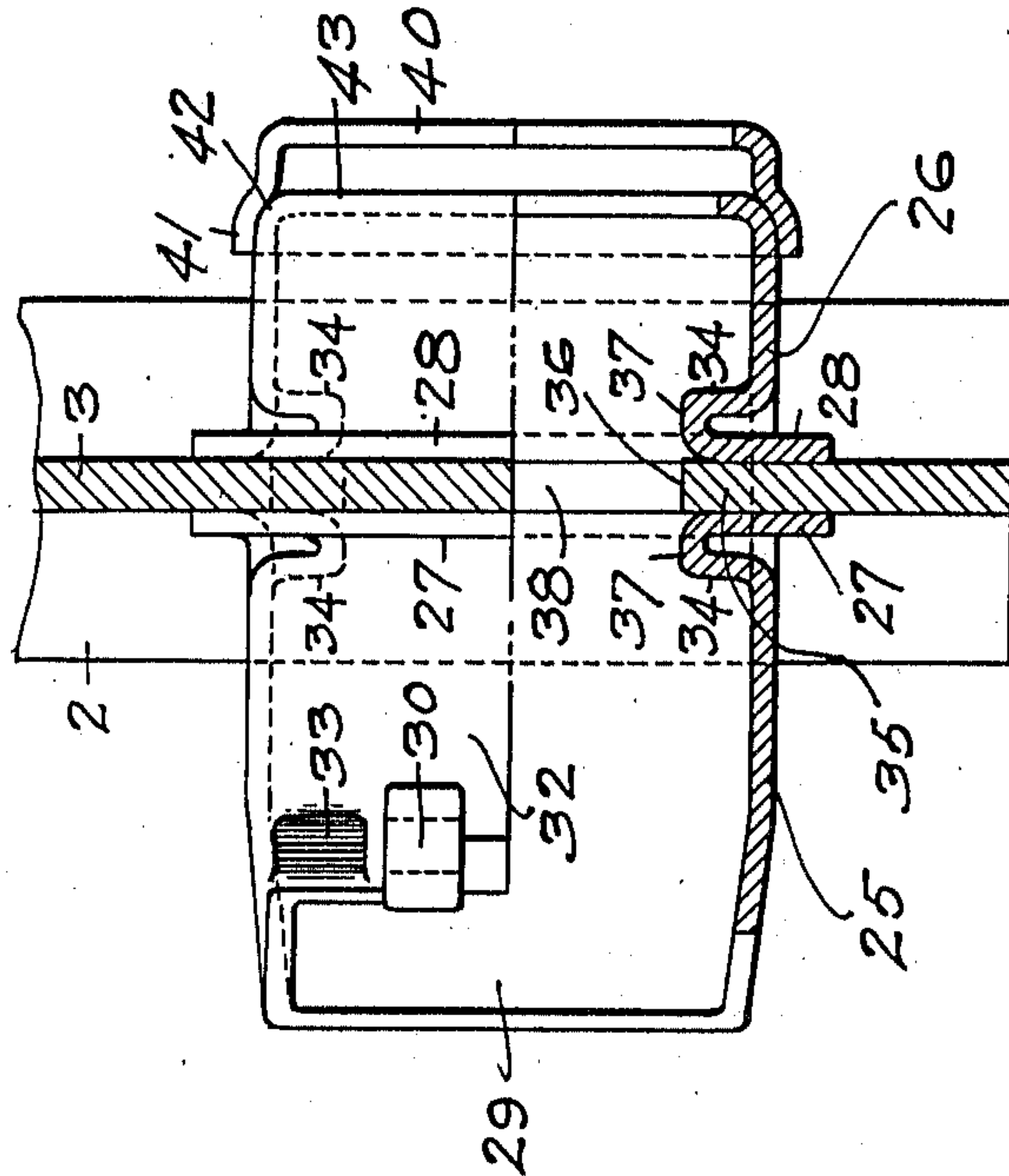
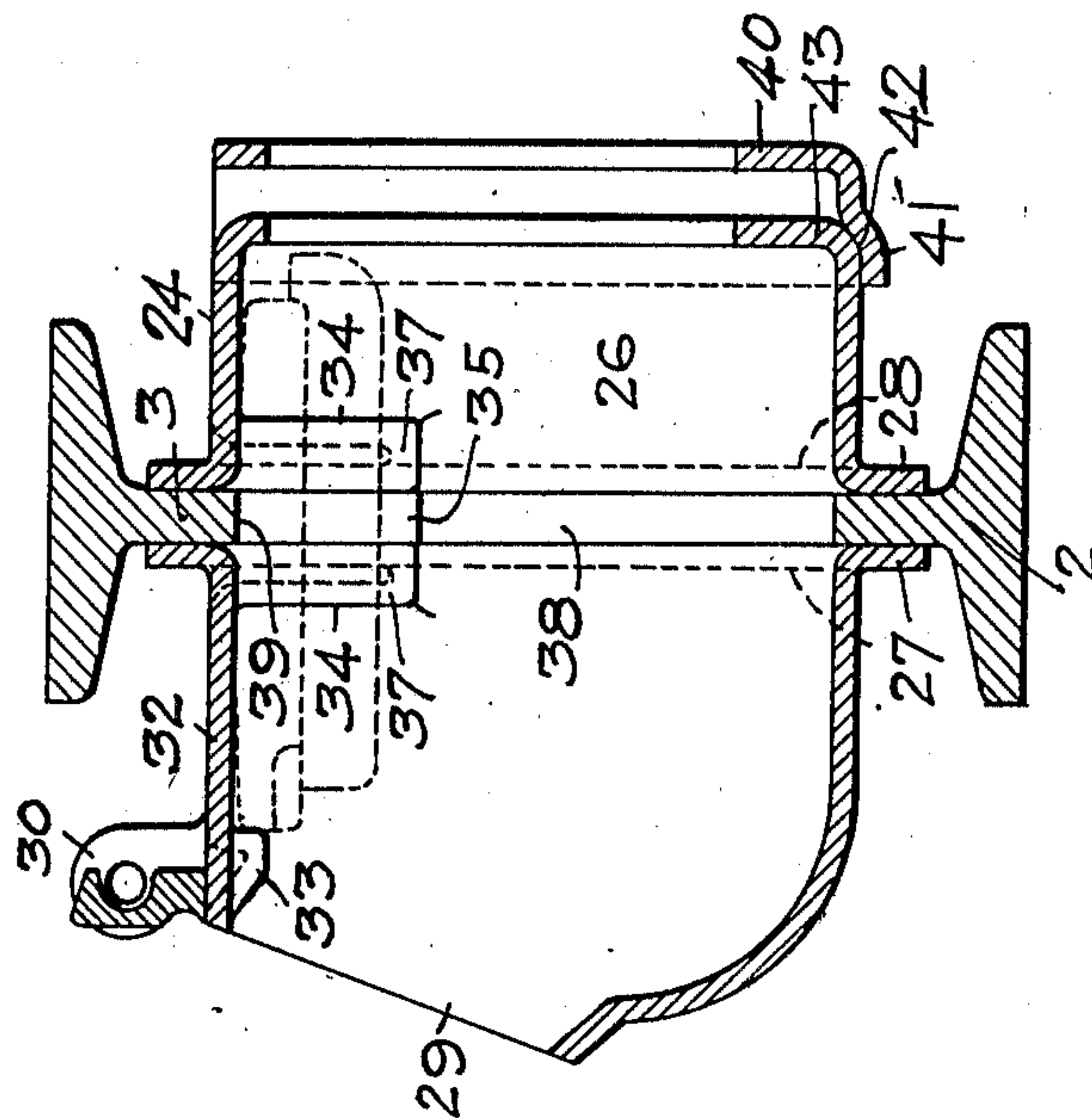


FIG. 10



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# UNITED STATES PATENT OFFICE.

EDSON C. COVERT, OF NEW KENSINGTON, PENNSYLVANIA.

## TRUCK SIDE FRAME.

993,577.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed December 20, 1910. Serial No. 598,418.

### *To all whom it may concern:*

Be it known that I, EDSON C. COVERT, a citizen of the United States of America, residing at New Kensington, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Truck Side Frames, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to side frames for car trucks, and it aims to provide a cheap and simple improved construction therefor.

My invention contemplates, among other objects, the provision of a truck side frame having the maximum strength for the minimum amount of metal; a wrought metal, as distinguished from a cast metal frame, of the general diamond shape, having integrally formed top and bottom chords; having integral bolster guide columns; an integrally formed frame which may be readily formed wholly or partially from wrought metal conventional or commercial shapes, such as the commercial rolled steel shapes; and novel construction and connection of the journal boxes.

As a wrought metal integral side frame, my invention will be found to present a construction particularly advantageous over the cast frame type mentioned above. Cast frames have been found highly objectionable by reason of the fact that the variations in the shrinkage of the metal alter or vary the distance between the centers of the journal boxes which are usually cast integrally with the frame, or if not cast therewith, are carried by a frame mounting to alter which, to meet these variations, would weaken the frame and reduce its efficiency. Furthermore, as is well known, great strength in cast structures is combined only with enormous weight, and coupled with these objectionable features are the liability of the cast metal to warp, and the necessity for discarding the whole frame should only a part thereof become injured.

My invention overcomes these difficulties by the provision, as stated above, of a simple, light and strong construction, embodiments of which are illustrated in the accompanying drawings, in connection with

which I will now describe my invention so that others skilled in the art to which it appertains may understand and construct the same, it being understood, however, that certain features of my invention, as herein set forth, are applicable to truck side frames other than those formed of wrought metal and that therefore no limitations in this respect are to be placed thereupon.

Figure 1 is a perspective view of a truck showing side frames embodying my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a top plan view partly in section; Fig. 4 is a transverse section on the line 4-4 of Fig. 2; Fig. 5 is a side elevation showing modified manner of securing the bolster guide bars or columns to the frame proper; Fig. 6 is a transverse sectional view of the frame proper, being taken on a line substantially central of the frame; Fig. 7 is a detail perspective view of one of the members of the bolster guide columns; Fig. 8 is a similar view of the other member forming a portion of the guide columns; Fig. 9 is a transverse sectional view through the frame showing modified manner of forming the bolster guide columns and the spring plank seat; Fig. 10 is a vertical transverse section through a journal box on the line 10-10 of Fig. 9; and Fig. 11 is a top plan view partly in section, the frame being partly broken away and the box sections being horizontally sectioned.

In describing my invention, the reference numeral 2 indicates the frame proper which preferably comprises a conventional rolled steel flanged shape, the vertical portion or web 3 of which is intermediately split or slotted and the flanged edges 4 and 5 and adjoining portions 3<sup>a</sup> and 3<sup>b</sup> of the web spread in the plane of the web 3 to form the upper and lower chords 6 and 7 respectively of the frame. To strengthen the frame generally and the chords 6 and 7 particularly, I preferably provide the web 3 with the laterally projecting marginal flange 8. In carrying out the above forming operations, the beam is preferably first heated. However, it will be understood that this is merely one of many ways of forming the diamond shaped frame shown. For instance, it may be formed from cast steel where a cast frame is desirable. The flange 8 of this frame, as



shown, is somewhat wider or more extended, preferably, at the central portion of the lower chord 7, as indicated by the numeral 9, so as to form, in complement with the member 10 secured in opposite disposition thereto, a broad seat for the spring plank 11<sup>a</sup> of the car truck. The member 10 preferably comprises a section of commercial angle bar, which, as shown, is disposed so as to bring a flange or leg portion 12 in alining coöperative association with the flanged portion 9, for the formation of the spring plank seat, as above stated, with the other flange 13 depending and in facial abutment with and secured, preferably by welding or brazing, to the web 3<sup>b</sup> of the lower chord.

While the union between the web 3<sup>b</sup> and member 10 is preferably through welding, and in this respect operates toward integral formation of the frame, an advantageous feature spoken of above, I do not desire to limit myself in this respect, as it will be apparent that rivets, as described below, or other suitable fastening means may be employed for this purpose.

The numeral 14 indicates the bolster guide bars or columns which are secured to the chords 6 and 7, and comprise preferably the angle plates or sections 15 and 16. The section 15 may be a continuation of the horizontal angle section 10, being offset as at 17<sup>a</sup> and 17<sup>b</sup> so as to cause its flange portion or leg 11 to lie substantially within the plane of the web 3 in preferably welded union with the similarly disposed flange 19 of the member 16 which lies between the flange portions 8 of the chords 6 and 7; the terminal portions of the member 15 being secured, preferably by welding, to the inner face of the webs 3<sup>a</sup> and 3<sup>b</sup> of the chords, while the member 16 carries the terminal flanges which are secured preferably in a like manner to the flange portion 8. The other flanges 21 and 22 of the angle pieces 15 and 16 oppositely disposed, coöperate to form the guide faces for the reception of the usual similarly faced end of the bolster of the car truck.

The columns 14 may flare or diverge at the base, as at 23, to permit of the endwise removal of the bolster, in the usual manner, and as the vertical travel of the bolster under service is, by reason of the usual under mounted springs, spring seat, and plank, limited in a sense to the upper part of the columns, I preferably make the flanges 21 and 22, at the base of the columns, a width uniform with that of the wide spring seat; the flanges narrowing to standard guide width at the top of the columns, as is clearly shown. This construction not only conduces to symmetry but provides great reinforcement for the outer edges of the flanges 9 and 12 which form the spring plank seat.

In addition to their service as guides for the bolster, the columns 14 also form struts for coöperative formation, with the upper or compression chord 6 and the lower or tension chord 7, of a truss construction. The strut or struts so formed are, by reason of their flanged construction, peculiarly adapted to maintain proper lateral stiffness under operative stresses. Furthermore, in the particular arrangement shown, there is absent all leverage or buckling strains between the chords and struts, by reason of the fact that the united flanges 11 and 19 lie in a plane substantially in registration with that of the vertical member or web 3 of the frame and that consequently vertical operative stresses passing between the chords and struts are delivered in substantially coincidental lines.

In Figs. 5 and 6 I show the angle sections 15 and 16 as being riveted together and secured in a like manner to the frame chords 6 and 7, as distinguished from the construction shown in Figs. 1, 2, 3 and 4, which views are to be understood as showing the several parts of the frame secured to one another by welding.

In Fig. 9 I show a modified manner of forming the spring plank seat. In this view the web of the frame 2 is shown as being formed without the flange 9 at the center of the frame and as having an angle member 15' which is substantially a duplicate of the member 15 and is secured to the outer face of the frame or to the web or webs of the chords in opposite disposition to and in co-operative association with the member 15.

The journal boxes of my improved side frame are indicated by the numerals 24. They each comprise two sections 25 and 26 which have respectively flanges 27 and 28 which lie in facial abutment with and are secured, preferably by welding, to the member 3 as shown in Figs. 1, 3, 10 and 11. Each section 25 and 26 preferably comprises a single pressed sheet metal shell-like portion; the section 25 having the usual forward opening 29 and cover hinge lugs 30, a suitable journal box cover being indicated by the numeral 31 in the preceding views 1 and 2. These hinge lugs 12 may also be welded to the upper face 32 of the box as shown. It is, of course, apparent that the box may be cast instead of being formed from sheet metal, if such a box is desired. Stop lugs 33 for the wedge plate of the journal box are preferably integrally formed on the box section 25 by striking down the upper portion 32 of the box in the manner shown in Figs. 10 and 11. The side lugs for the bearing plate or brass of the journal may be formed by striking in the box in the manner indicated by the numeral 34, this depression or indentation being on opposite sides of the shoulder or projection 35 of the frame 2, which projection is preferably of such nature



as to provide the vertical face 36 which aligns in association with the faces 37 of the struck-in portions 34. The projections 35 are shown in elevation in Fig. 2 of the drawing, without the section 25 secured to the frame.

As shown in Fig. 10, the journal opening 38 in the member 3, and which is inclosed by the box sections 25 and 26, is of such nature as to cause the top horizontal face 39 thereof to lie preferably flush with the underface of the top of the box. By this arrangement the vertical stresses delivered to the usual bearing plate, indicated in dotted line, will in turn be transmitted substantially directly to the vertical member 3 of the frame and not indirectly through the box sections 25 and 26 in such manner as to place shearing stresses on these box sections. This is also true of the thrusts upon the side lugs of the box, in the construction shown in Figs. 3 and 11 the inwardly projecting shoulder or face 37 lying, as above stated, flush with the inner face 36 of the projection 31 of the side frame.

The numeral 40 indicates a suitable dust guard plate having the flange portion 41, which is shouldered as at 42 to receive in abutment the edge 43 of the section 26. This section 40 is, through the flange 41, preferably welded to the section 26.

It will be apparent that many changes may be made in the construction shown without departing from my invention. While I have spoken of the several parts as being secured together by welding, which may be done electrically, or otherwise as by brazing, it will be apparent that rivets or other fastening means may be employed for this purpose. For instance where welding is not feasible, such as in certain cast structures, such separate fastening means above described may be employed.

The frame construction shown is one of maximum strength employing a minimum of metal. It may be readily formed from commercial shapes and lends itself to such symmetrical design as to provide a side frame in which the metal is so disposed as to take the stresses or strains and deliver them to the several points of support in a manner avoiding all leverage strains as operate to impair the truss integrity of the frame.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A truck side frame of the general diamond shape having top and bottom truss chords, and journal boxes integrally carried by the frame and positioned intermediate the chords.

2. A truck side frame of the general diamond shape having top and bottom truss chords, and journal boxes integrally

carried by the frame and embraced by the chords.

3. A truck side frame of the general diamond shape having top and bottom truss chords and an intermediate web like portion connecting the chords, and journal boxes carried by the web portion and embraced by the chords.

4. A truck side frame of the general diamond shape having top and bottom truss chords and an intermediate vertical web portion connecting the chords, and journal boxes carried by the web portion and positioned intermediate the chords.

5. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, struts interposed between the chords, and journal boxes carried by the web portion and positioned intermediate the chords.

6. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, struts interposed between the chords and secured to the web portion, and journal boxes carried by the web portion and positioned intermediate the chords.

7. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, struts interposed between and integrally secured to the chords, and journal boxes carried by the web portion and positioned intermediate the chords.

8. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, struts interposed between the chords, and journal boxes integrally carried by the frame and positioned intermediate the chords.

9. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, struts interposed between the chords and integrally carried thereby, and journal boxes integrally carried by the frame and positioned intermediate the chords.

10. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, and journal boxes carried by the web portion and positioned intermediate the chords and comprising a plurality of sections mounted on opposite sides of the vertical portion.

11. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, struts interposed between the chords, and journal boxes carried by the web portion and positioned intermediate the chords.



4

diate the chords and comprising each a two part casing mounted on opposite sides of the vertical portion.

12. A truck side frame of the general diamond shape having top and bottom truss chords and a vertical web like portion connecting the chords, and journal boxes integrally carried by the frame and com-

prising a plurality of sections mounted on opposite sides of the vertical portion.

In testimony whereof, I have hereunto set my hand.

EDSON C. COVERT.

Witnesses:

M. A. KELLER,  
M. A. BARTH.