

July 6, 1948.

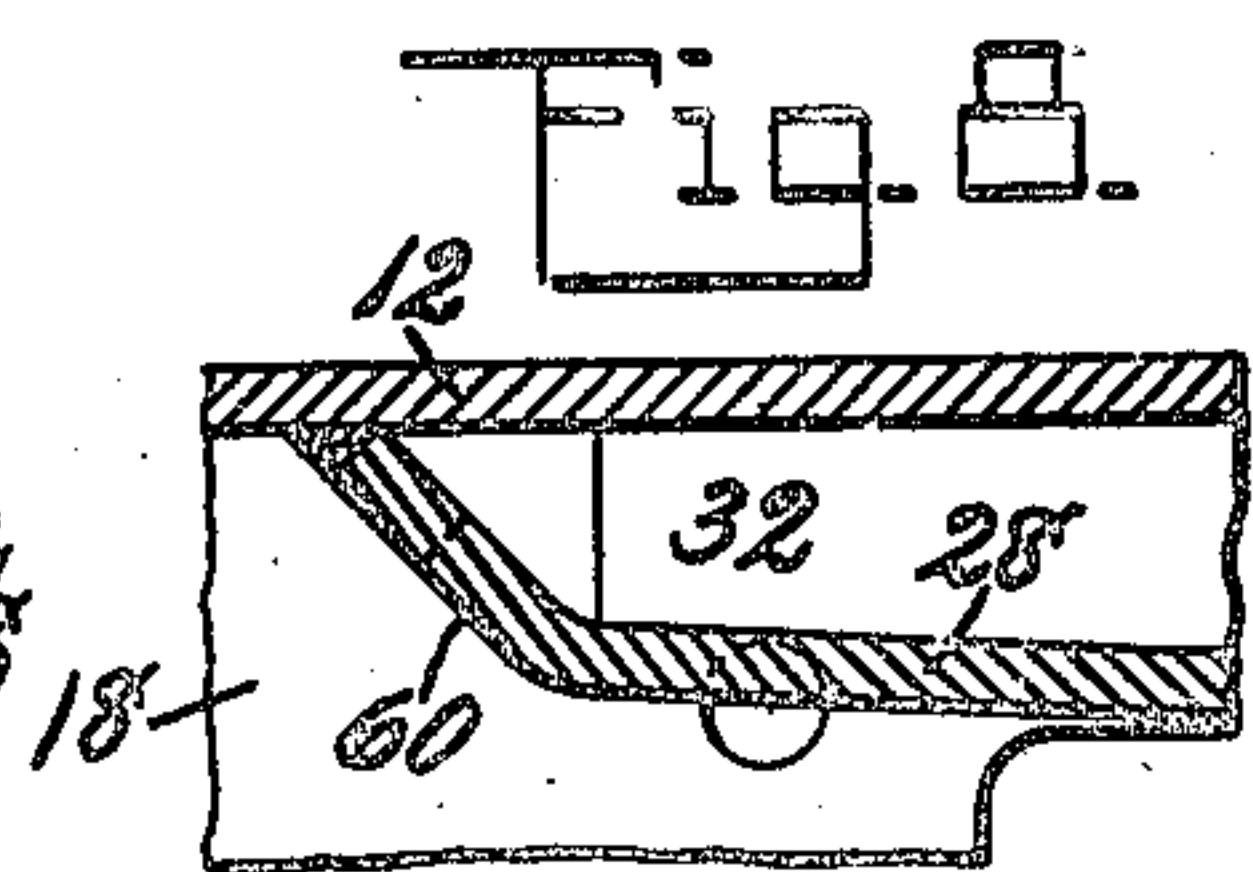
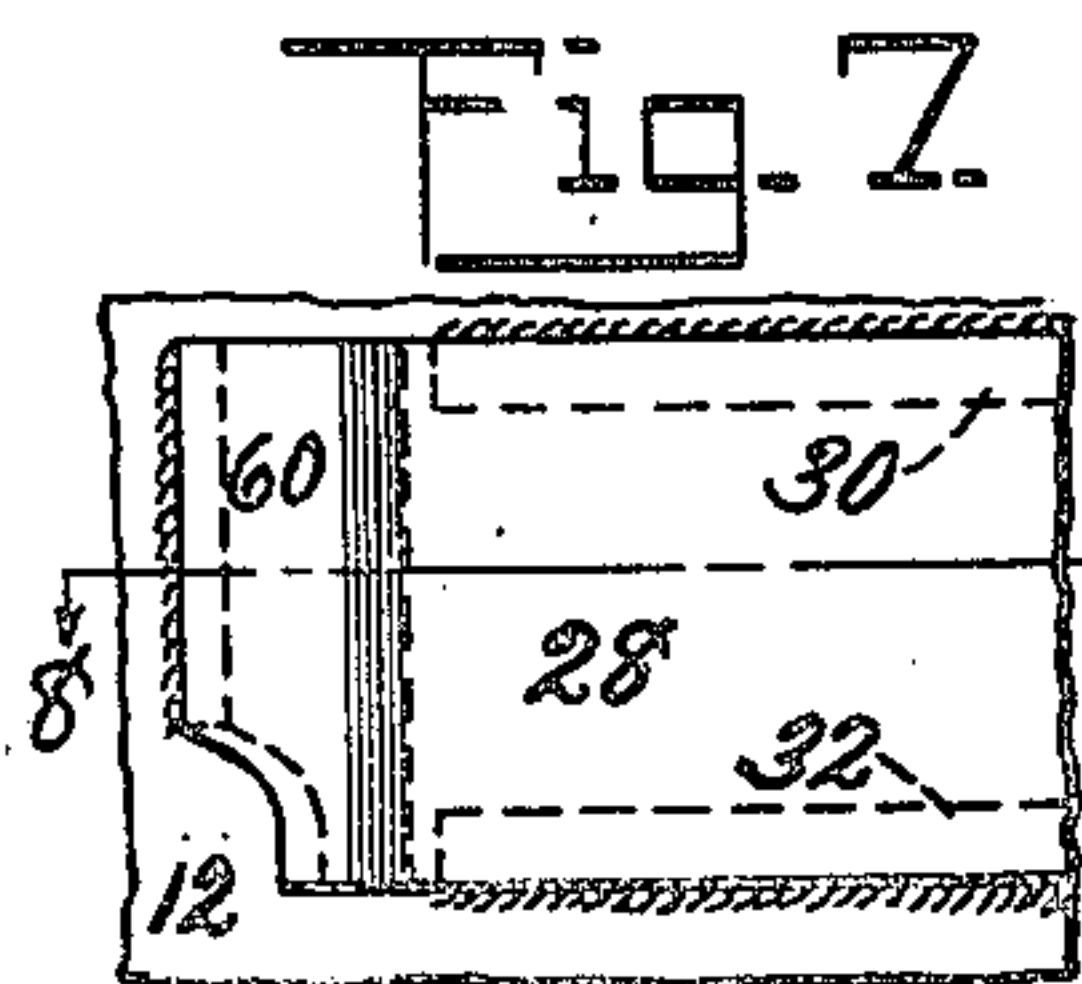
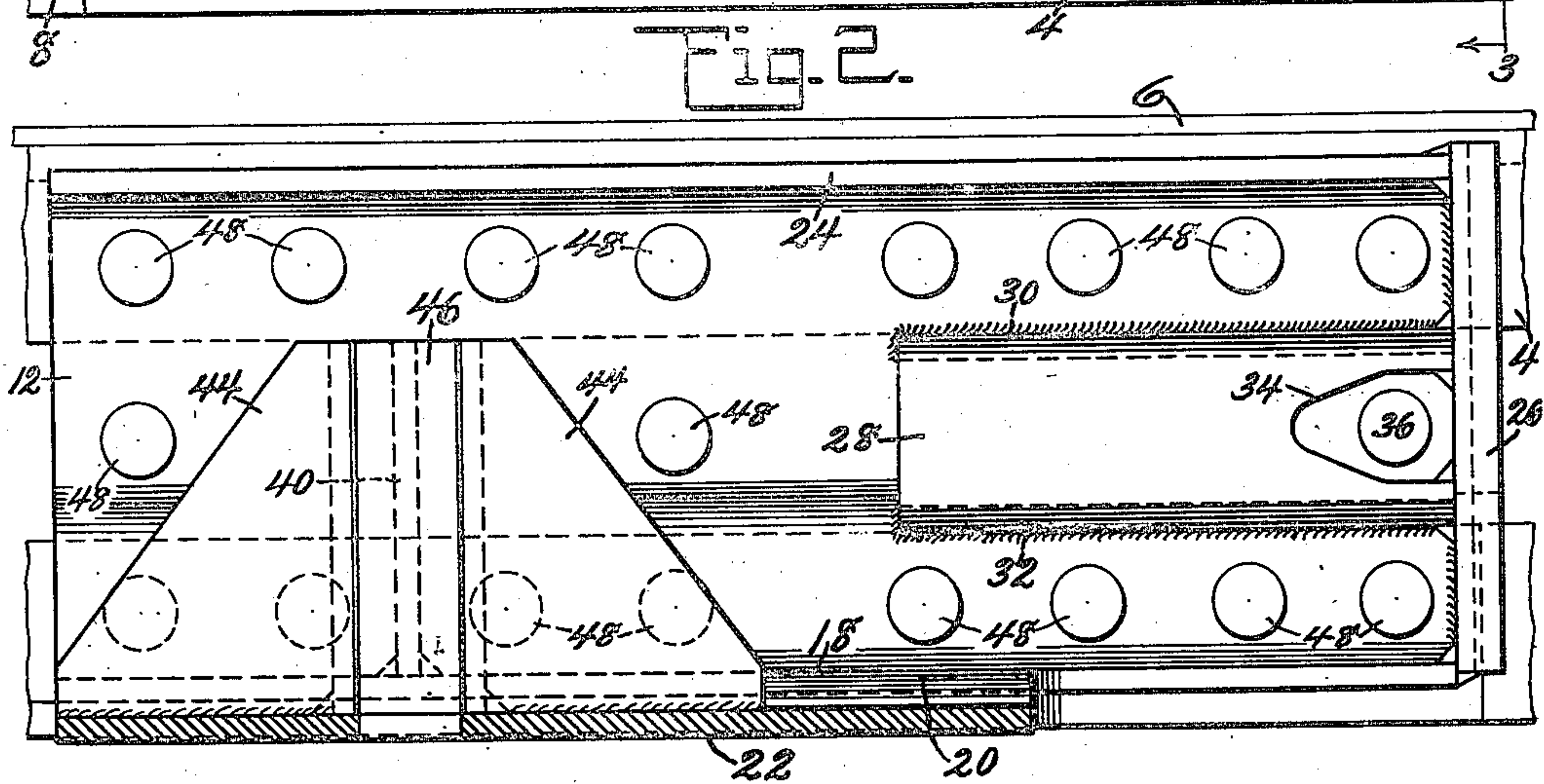
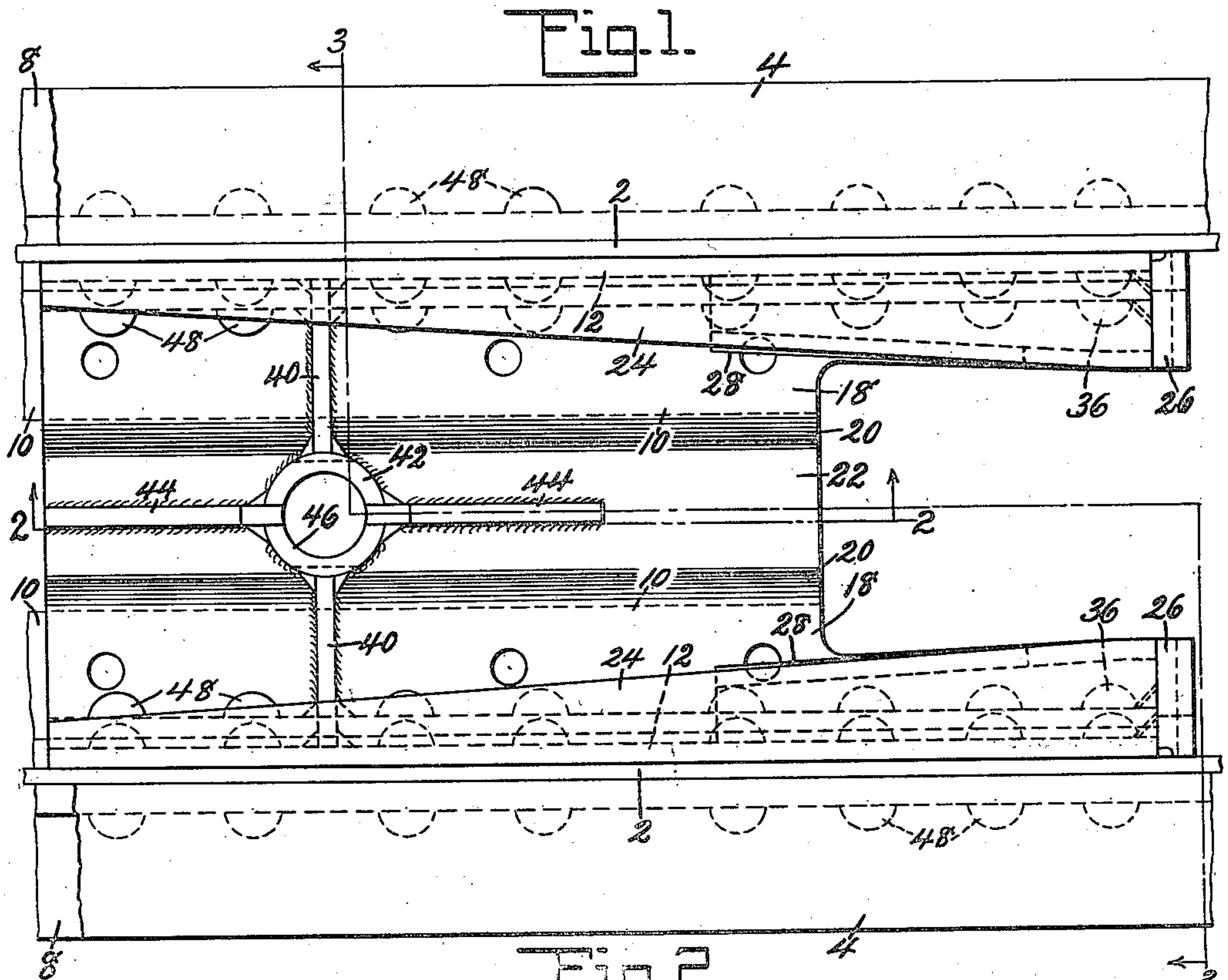
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2,444,637

PLATE METAL SILL BRACE AND DRAFT GEAR STOP

Filed Feb. 5, 1944

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

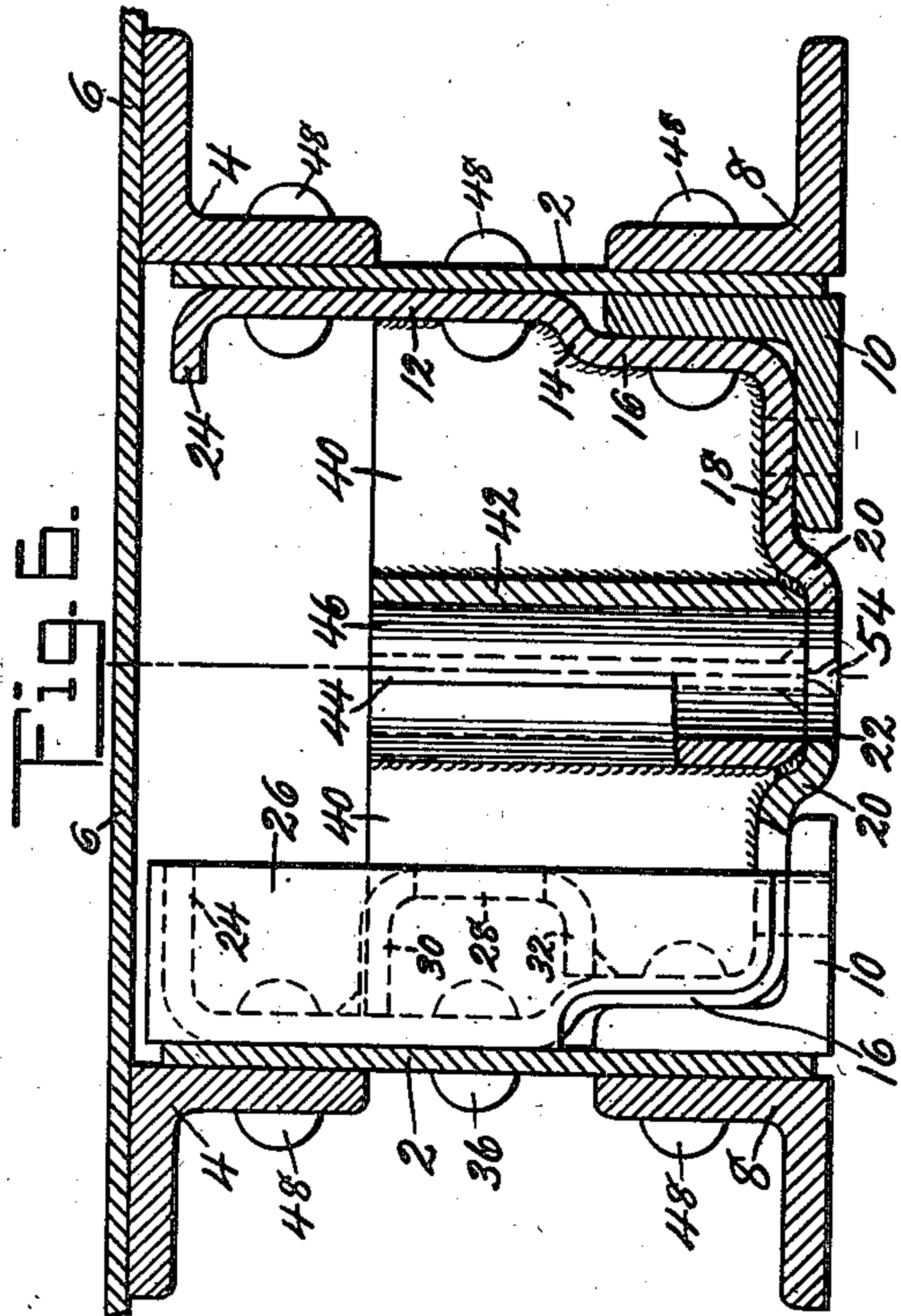


Fig. 3.

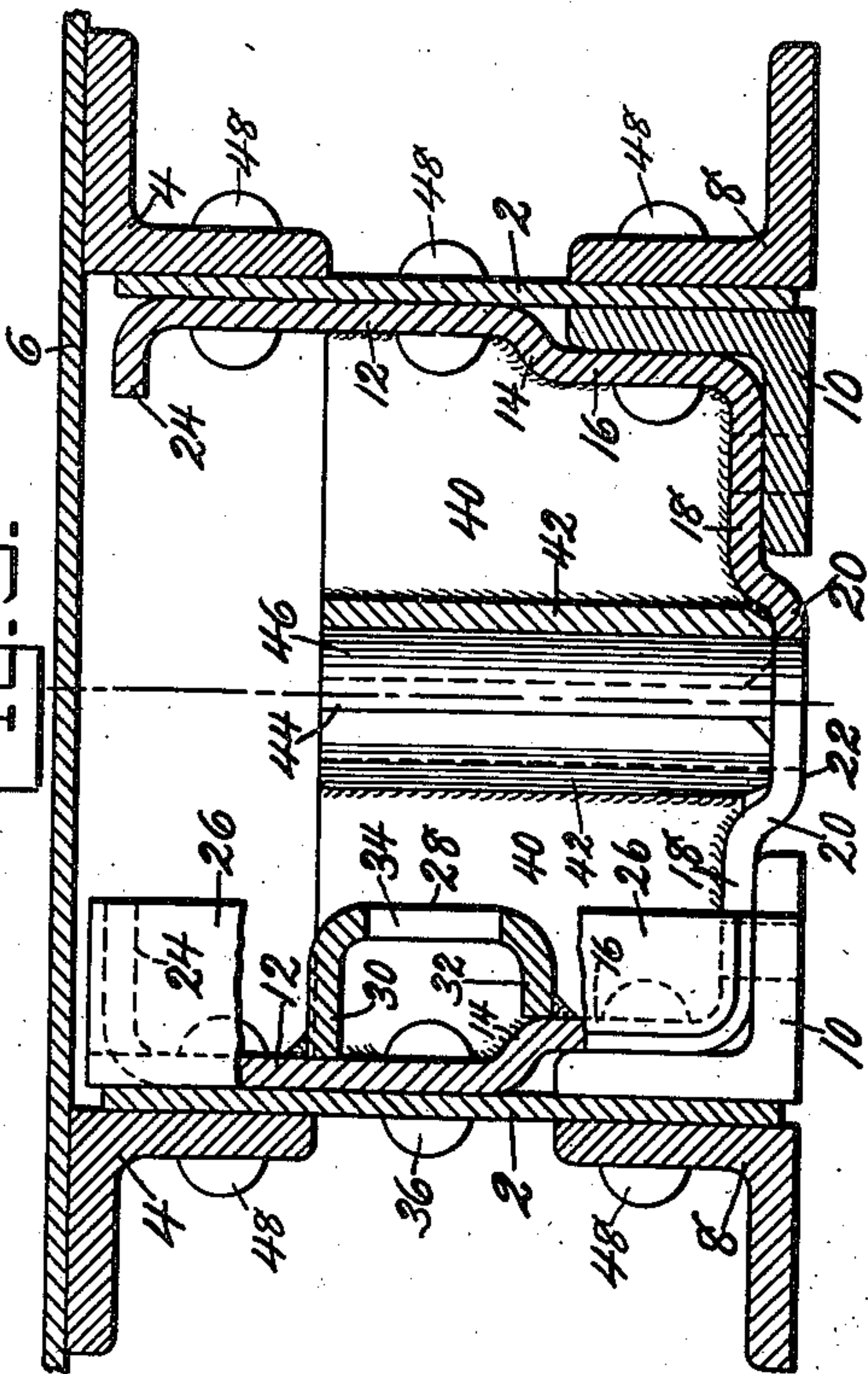


Fig. 4.

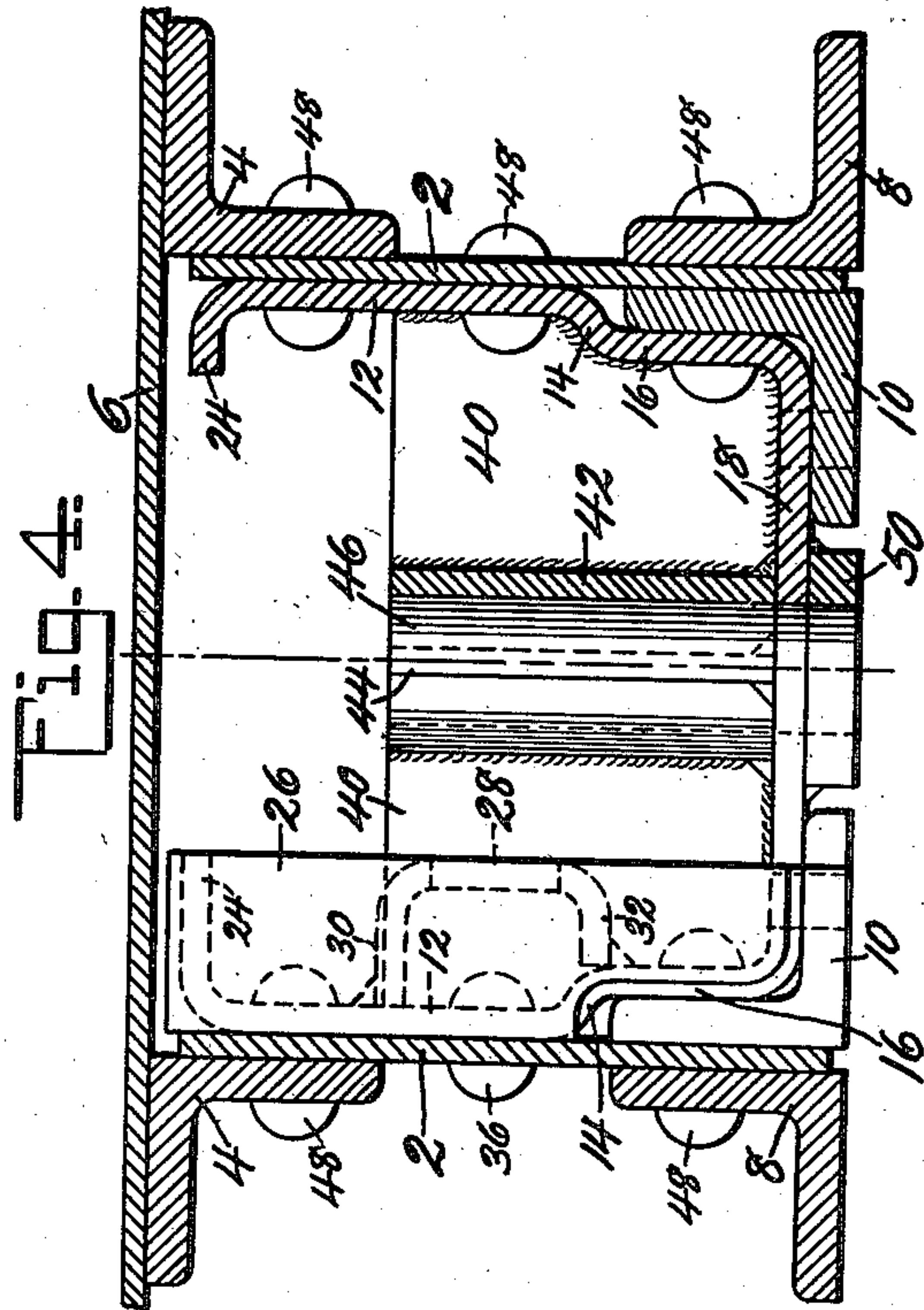
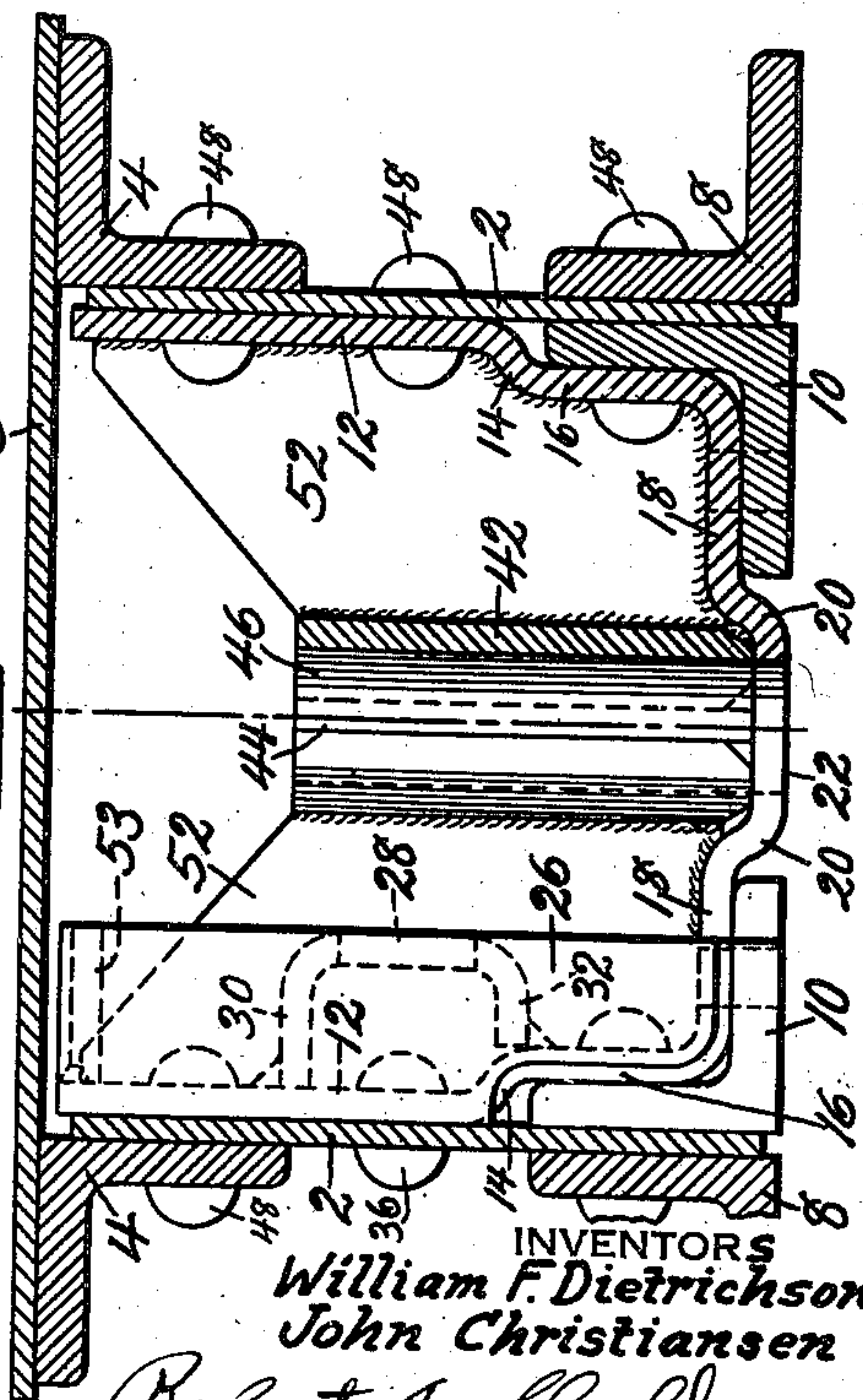


Fig. 5.



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## UNITED STATES PATENT OFFICE

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PLATE METAL SILL BRACE AND  
DRAFT GEAR STOP

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1 Claim. (Cl. 213—57)

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This invention relates to center sill braces and draft gear stops in general and in particular to such braces and draft gear stops fabricated from plate metal and involving a minimum number of parts.

For a good many years center sill braces and draft gear stops have been made of cast steel but are excessively heavy due to the low strength value of the material and due to the fact that large radii must be used at all corners. In recent years, due to improved welding technique, center braces and back stops have been built up of welded members, involving, however, a large number of parts. Since the use of a large number of parts welded together necessarily involves application of a large amount of welding heat, distortion is bound to appear. Some distortion may be overcome by welding the parts to the massive center sills, but with such a construction it is practically impossible to repair in case of damage. It is an object, therefore, of the present invention to provide a complete plate metal center sill brace and draft gear stop fabricated from a minimum number of parts and which may be applied as a unit to the center sills.

A further object of the invention is the provision of a center sill brace and draft gear stop member made of plate metal pressed to suitable shape and reinforced by other plate metal members.

A still further object of the invention is the provision of a plate metal center sill brace and draft gear stop in which the draft gear stops are effectively braced by channel shaped buttressing members.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which

Fig. 1 is a plan view of the improved structure;

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 1 but with parts of the draft gear stop broken away to better disclose the bracing construction;

Fig. 4 is a sectional view similar to Fig. 3 but showing a slight modification thereof;

Fig. 5 is a sectional view similar to Fig. 3 but showing a still further modification;

Fig. 6 is a sectional view similar to Fig. 3 but showing another slight modification in that the brace may be built in halves;

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Fig. 7 is a detail elevational view of a slightly modified form of draft stop brace, and

Fig. 8 is a sectional view taken substantially on line 8—8 of Fig. 7.

Referring now to the drawings in detail, it will be seen that the combined center sill brace and draft gear stop member has been shown as applied to center sills of the fish belly type. These center sills, as clearly shown in the figures, are made with a web plate 2, top chord or flange members 4 turned outwardly from the web plates for attachment to the car floor or center sill cover plate 6, whichever is used. The bottom edge of the web plate is reinforced by out-turned bottom chord angles 8 and inturned chord angles 10. Chord members 4, 8 and 10 provide the stiffening flanges for the web plate 2 as is customary in either plain or fish belly sills of the built-up type.

The center sill brace and draft gear stop member, as shown in Figs. 1, 2 and 3, is of general channel shape cross-section, having vertically extending flanges 12 offset as at 14 to provide inwardly offset flange portions 16 adapted to be attached to the upstanding leg of inturned chord angle 10. Thus the flanges of the channel shaped center sill brace are located in substantially parallel offset planes in order that they may be attached to the web plate 2 and bottom chord 10. The upstanding flanges are connected together by web 18. This web, as clearly shown in Figs. 1, 2 and 3, is provided with a central pan shaped depression 20 projecting downwardly between the adjacent edges of bottom chord angles 10. This pan shaped depression is of sufficient depth so as to bring the bottom 22 thereof substantially into the plane of the bottom edges of the center sill bottom chords 8 and 10, this for the purpose of receiving the bolster bottom cover or center sill bowl, whichever is used in direct contact with the sills. The upper edges of the flanges 12 of the center sill brace are re-flanged as at 24. These re-flanges are directed toward each other and, as clearly shown in Fig. 1, are of gradually decreasing depth from the outer to the inner end of the center sill brace. Draft gear stops 26 of heavy plate metal bear against and are securely welded to the web 18, flange portions 12 and 16 and re-flange portions 24 of the center sill brace. In order to buttress the draft gear stops, channel shaped stiffeners are provided having webs 28, upper flanges 30 and lower flanges 32. The upper and lower flanges of these channel shaped stiffeners are of decreasing depth from adjacent the draft gear stop to a point rearwardly thereof and are securely welded to the flange portions 12



and 16 of the center sill brace. Parts of the web 28 of the stiffeners are removed as at 34 in order that a rivet 36 may be driven immediately back of the draft gear stop 26. The draft gear stops are not only welded to the various parts of the center sill brace, as previously referred to, but are also securely welded to the flanges 30 and 32 of the small channel shaped stiffeners. In order to tie the flanges of the channel shaped center sill brace firmly together, tie plates 40 are welded to flange portions 12 and 16 and web 18 as well as to a semi-circular member 42, which is in turn welded to the depressed pan portion 20 formed in the web 18. The semi-circular members 42 are joined together by longitudinally extending brace plates 44 which in turn are welded to the depressed pan portion 20. The semi-circular portions 42 are, as stated, joined together by plates 44 and mutually serve to provide a king pin receiving opening 46.

It will be seen from the preceding description that the center sill brace and draft gear stop is formed by a main channel shaped pressing, two small channel shaped stiffeners and two draft gear stops, securely welded together and braced by the tie plates 40 and buttressing plates 44 which, together with the semi-circular members 42, form the king pin guide. It will be seen that all of these parts may be prefabricated and securely attached together in a jig, after which the assembly may be applied to the center sills and held in place by the rivets 36 and 48.

In some shops it may be desirable to eliminate the pan shaped depression 20 and this may be done, as shown in Fig. 4, by leaving the web 18 flat and securely welding in a filler plate 50 of a thickness substantially equal to the thickness of the flanges of the bottom chord 10. Otherwise, the structure disclosed in Fig. 4 is identical with that previously described and similar reference characters are accordingly applied.

In some cases, particularly where certain alloy steels are used, it may be found advantageous to eliminate the refflages 24 shown and described in Figs. 1 to 3. In such a case the center sill brace will be as shown in Fig. 5. With the refflages eliminated it is advisable that the tie plates 52 corresponding to tie plates 40 be extended substantially to the top of the flanges of the main channel shaped pressing and short buttressing plates 53 welded in to take the place of the refflages. The remainder of the structure is the same as described in Figs. 1 to 3 and accordingly the same reference numerals have been applied.

Certain small shops may find it impossible to make the main pressing shown and described in Figs. 1 to 3, but in such cases the parts may be made in two halves and securely welded together as at 54 in Fig. 6. In other words, the pressing of Figs. 1 to 3 may be split substantially at the center of the depressed pan portion 20 and the parts welded together. In this manner the dies will be simplified and smaller capacity presses may be used.

In exceptionally heavy service it may be advisable to shape the channel shaped stiffeners as shown in Figs. 7 and 8 and it is understood that these stiffeners can be substituted for the form shown in Figs. 3, 4, 5 and 6. As clearly shown, the web portion 28 is extended beyond the flanges 30 and 32 and inclined inwardly as at 60 for direct weld attachment to flange 12. In this manner the web portion 28 is buttressed to flange 12 and assists flanges 30 and 32 in bracing the central portion of the draft gear stops 26.

While the improved construction has been described more or less in detail and with specific reference to certain modifications, it will be obvious that other modifications and rearrangements of parts may be made and all such modifications and rearrangements of parts are contemplated as fall within the scope of the appended claim defining our invention.

What is claimed is:

As an article of manufacture, a plate metal center sill brace and draft gear stop comprising, a pair of angle shaped pressings having vertical and horizontal flanges each laterally offset to accommodate the bottom chord angles of a center sill, back stops overlapping and welded to one end of the flanges of said angle shaped pressings, buttressing means secured to said back stops and vertical flanges rearwardly of the back stops, spaced semi-cylindrical vertical members fixed at their lower ends to the horizontal flanges of said pressing and arranged medially between the vertical flanges of same, transversely extending vertically arranged tie plates fixed at their outer and lower edges to the flanges of said pressings, and having their inner upright edges secured to the outer adjacent faces of said cylindrical members, and longitudinally extending braces extending medially between the vertical flanges of said pressings and secured to the horizontal flanges of same, one of the vertical edges of each of the longitudinal braces extending between and being attached to the spaced semi-cylindrical members and forming a connecting means therebetween.

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