

Sept. 2, 1958

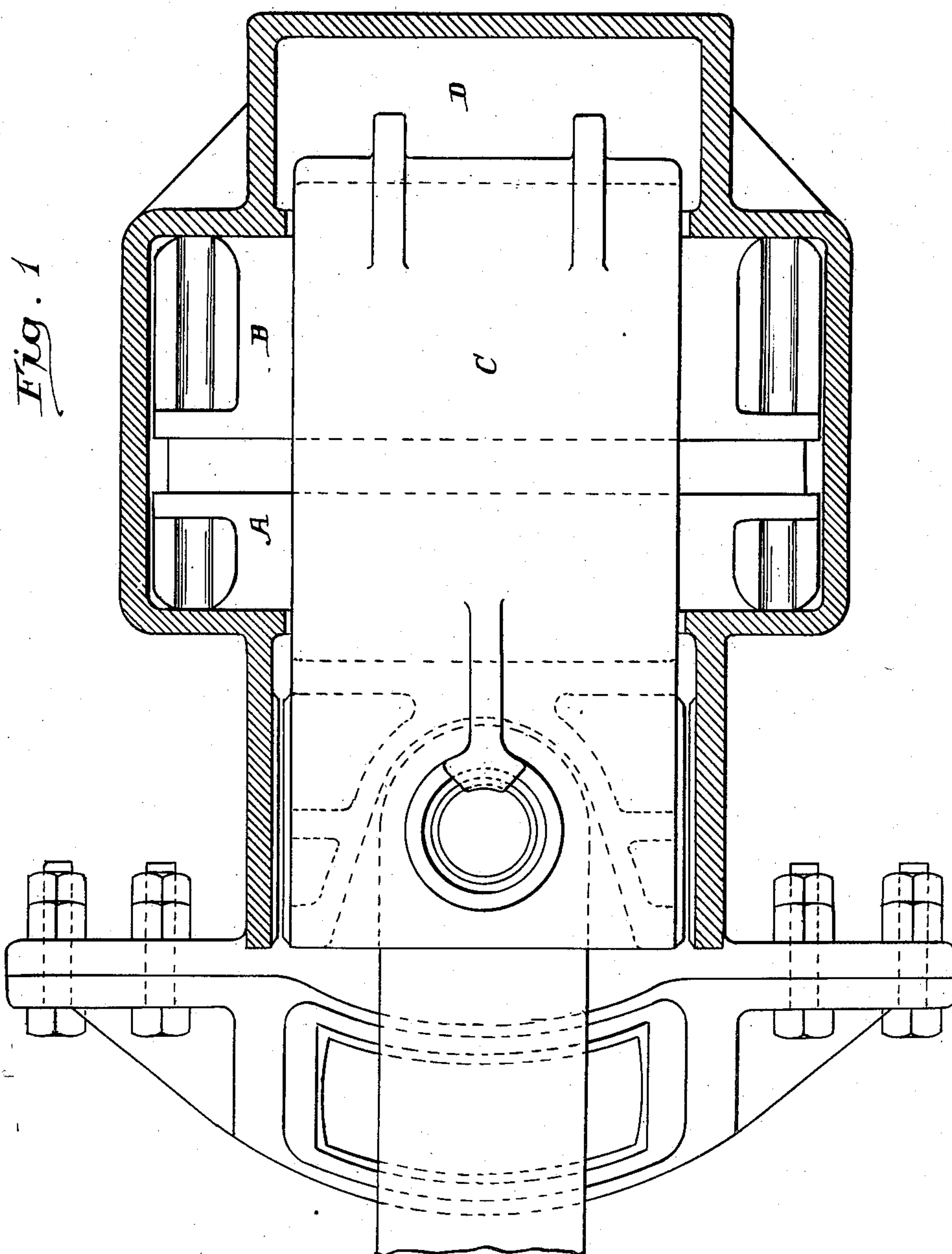
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RUBBER DRAFT GEAR FOR DRAFT RIGGINGS OF LOCOMOTIVES

Filed Oct. 22, 1954

4 Sheets-Sheet 1



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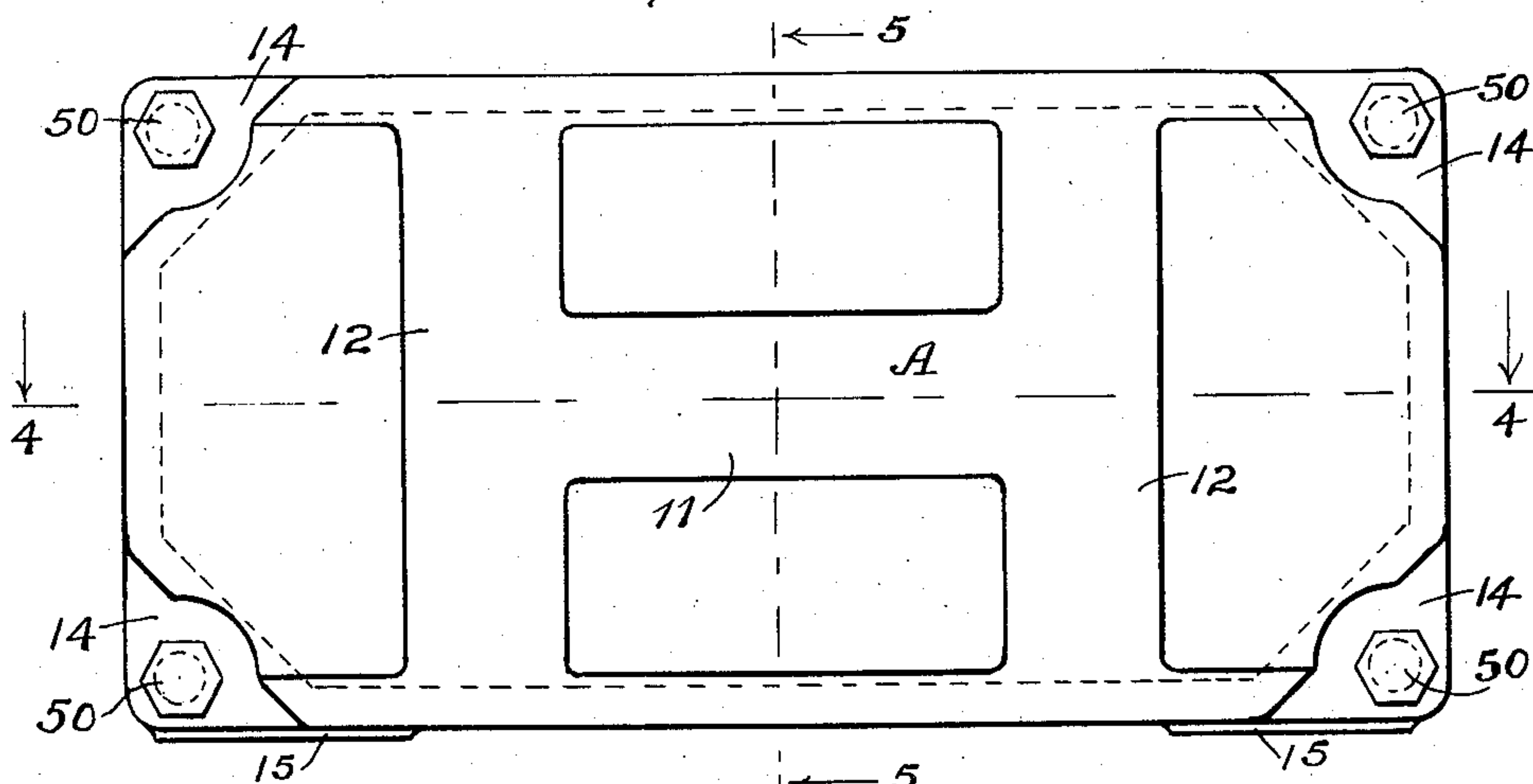
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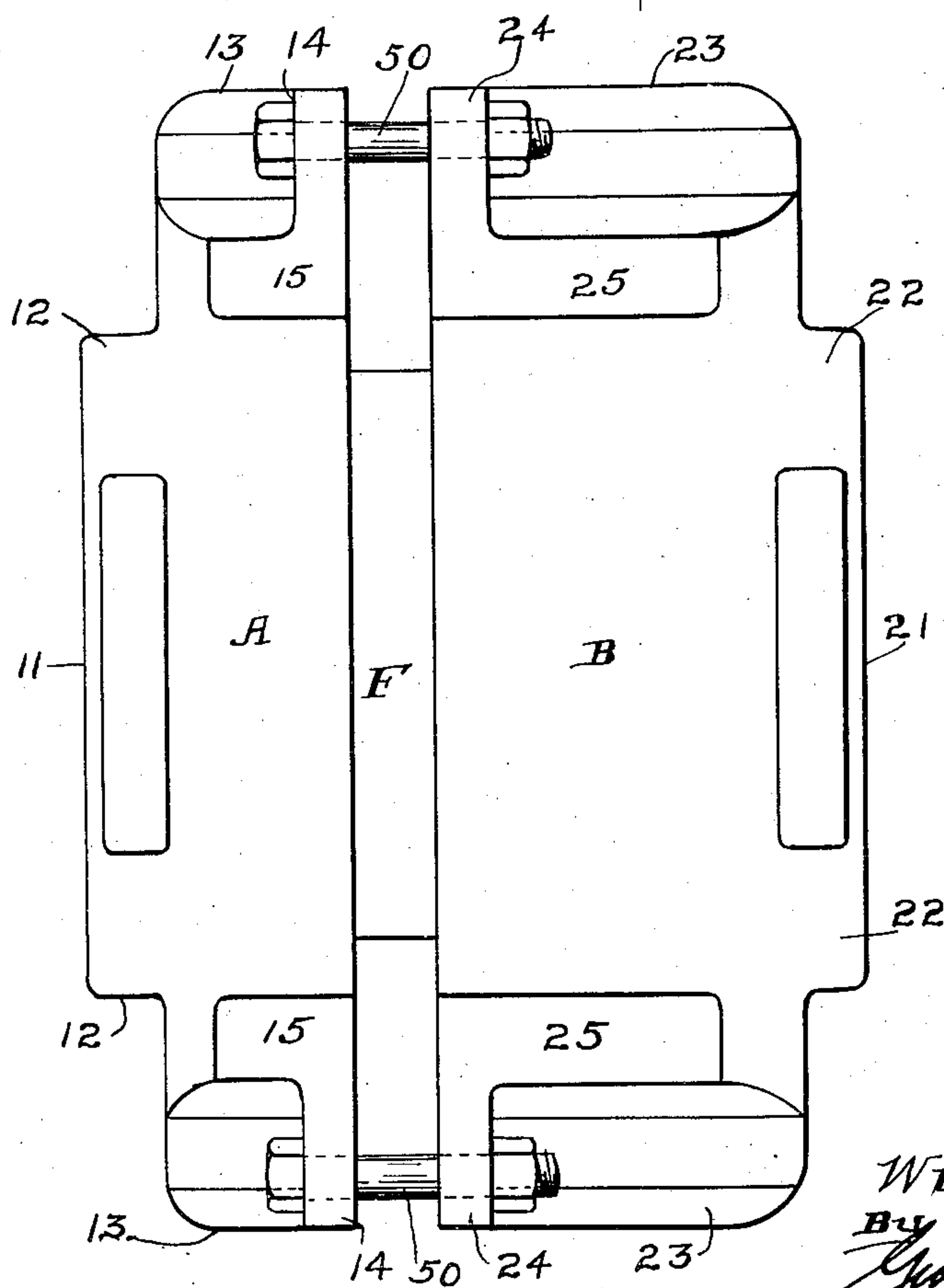
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*Fig. 2*



*Fig. 3*



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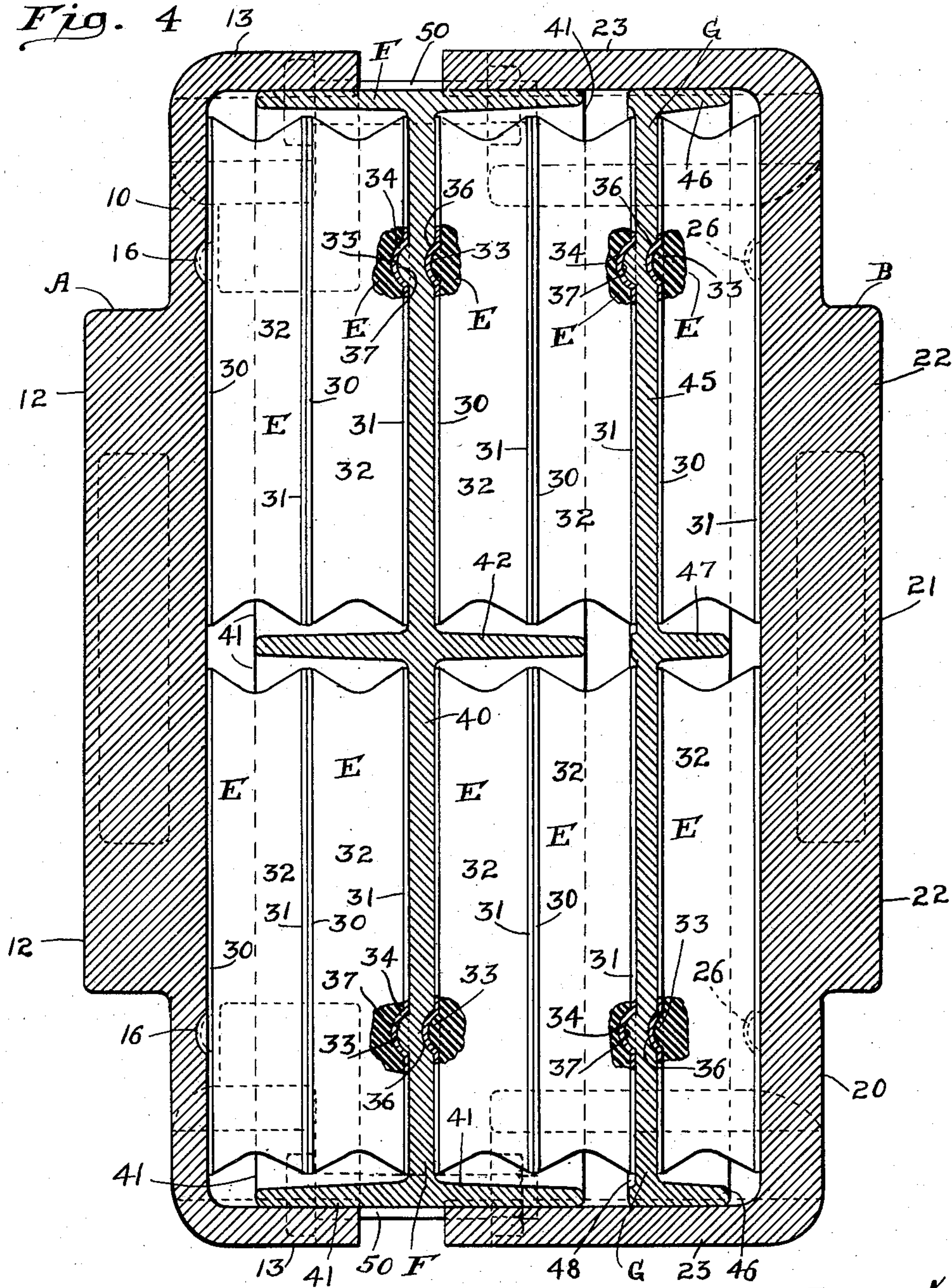
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Fig. 4



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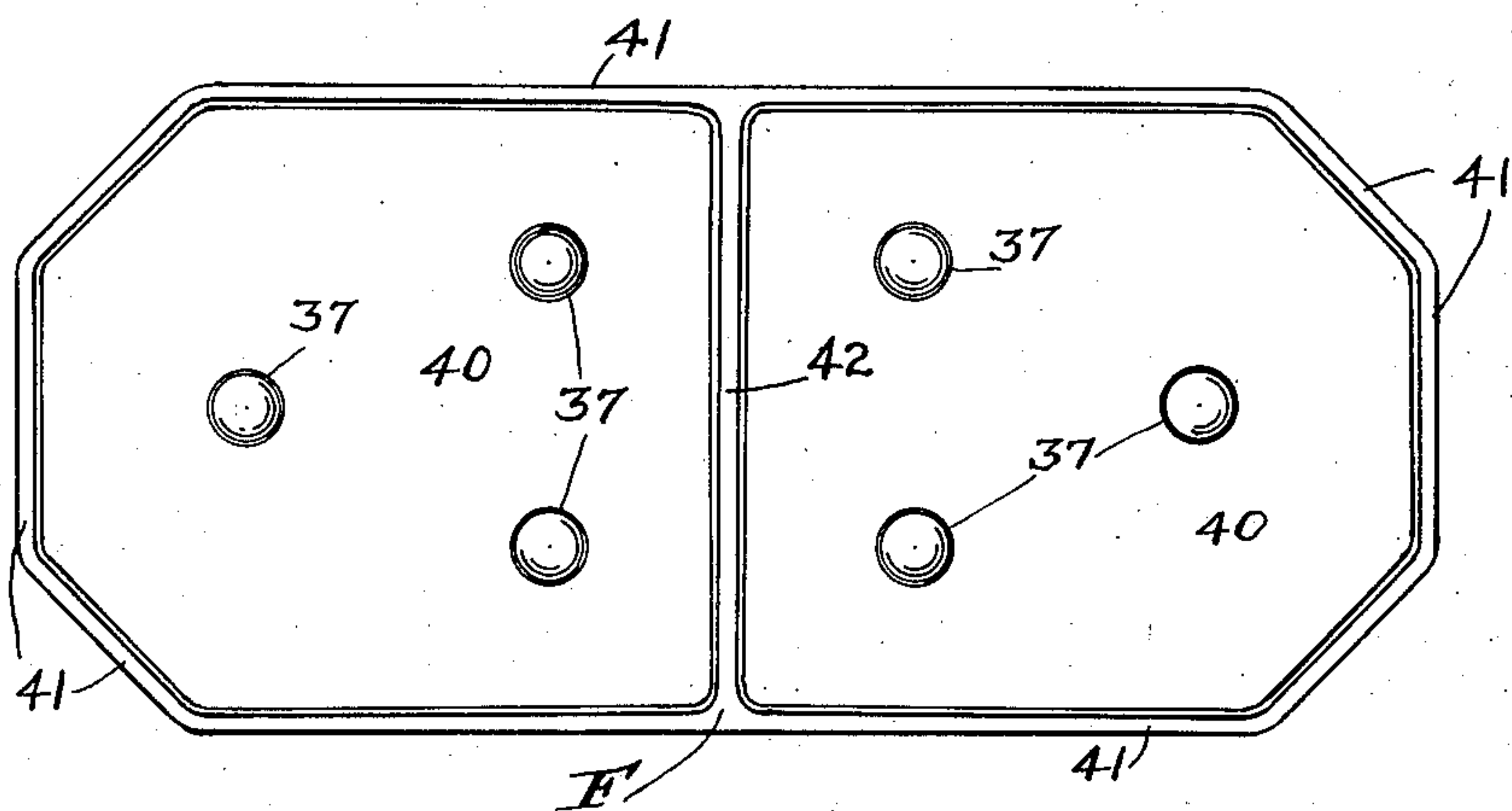
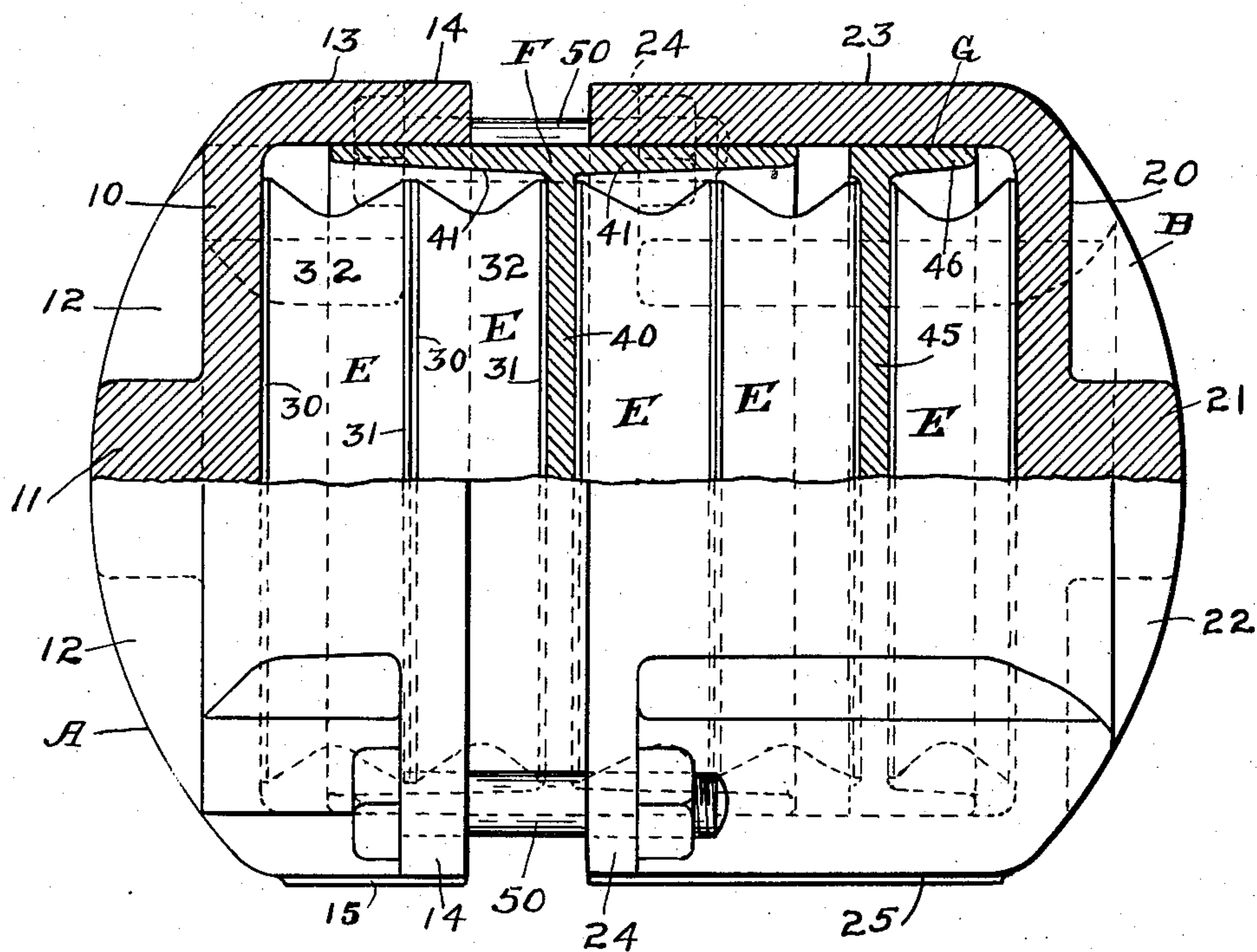
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RUBBER DRAFT GEAR FOR DRAFT RIGGINGS OF LOCOMOTIVES

Filed Oct. 22, 1954

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*Fig. 5*



*Fig. 6*

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## RUBBER DRAFT GEAR FOR DRAFT RIGGINGS OF LOCOMOTIVES

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Application October 22, 1954, Serial No. 463,919

3 Claims. (Cl. 213-45)

This invention relates to rubber draft gear for draft riggings of locomotives.

It is a main object of the invention to provide a rubber draft gear for diesel locomotives that will render satisfactory service over a long period of time.

Another object of the invention is to provide in a draft gear for diesel locomotives in which columns of rubber pads are arranged side by side, separators common to the columns and equipped to maintain the columns properly positioned with respect to the casing and with respect to each other.

Another object of the invention is to provide a casing for housing parallel columns of rubber pads, which casing is composed of two cuplike units aligned together with their open ends adjacent and spaced apart, together with a separator common to the columns for separating the pads therein into groups, which separator is equipped with flanges that span the space between the casing units, and further equipped with flanges disposed between the columns.

Further objects of the invention not specifically mentioned here will be apparent from the detailed description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown by way of example and in which:

Figure 1 is a plan view partly in section, showing the draft gear installed in the draft rigging of a diesel locomotive;

Figure 2 is an end elevational view of the draft gear;

Figure 3 is a bottom side plan view of the gear;

Figure 4 is a cross sectional view taken along the line 4-4 of Figure 2, looking in the direction of the arrows;

Figure 5 is a side elevational view, partially broken away, along the line 5-5 of Figure 2, looking in the direction of the arrows; and

Figure 6 is a plan view of the separator.

Diesel locomotives are equipped with draft gear pockets which are generally cross shape having a portion extending longitudinally of the locomotive, in which the yoke of the draft rigging is disposed, and a transverse portion intersecting the longitudinal portion and in which the draft gear must fit. The present invention provides an all rubber draft gear shaped to fit in such a pocket.

In its preferred form, the gear of the present invention consists of a metallic housing composed of two sections, each of which is generally cup-shape and is positioned in the pocket with its open end adjacent to, but spaced from, the open end of the other section. Disposed within the casing so formed are a plurality of rubber pads of known design, arranged in two columns which are disposed side by side transversely of the locomotive, there being a plurality of pads in each column. Separators common to the two columns are interposed to divide the pads into groups, the separators being equipped with flanges which stiffen them and facilitate maintaining the columns properly positioned with respect to the

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casing and to each other. The flange of one of the separators bridges the gap between the two sections of the casing, thereby serving also to completely encase the rubber columns to protect the rubber therein from the elements. The casing sections are provided with ears through which bolts may be extended to hold the gear together as a unit during shipment and installation in the yoke of the locomotive draft rigging.

From the drawing it will be seen that the gear consists of a front casing A and a rear casing B, both of which are fitted within the yoke C of the locomotive draft rigging, and the yoke and draft gear are in turn fitted in the pocket D of the locomotive. Within the casing so formed are rubber pads E which, in the example shown, are ten in number and are arranged in two columns of five pads each, which columns are disposed side by side in the casing. A front separator F and a rear separator G are provided to divide the pads in the columns into groups, these separators being common to the two columns. The separators F and G are flanged to stiffen them and to maintain the columns in proper position relative to the casing and to each other during assembly of the gear.

The front casing A consists of a front wall 10 from the forward face of which a transversely disposed projection 11 extends, the front wall 10 being reinforced by arcuate bosses 12 that extend vertically from the top and bottom edges of the projection 11 to the edges of the wall.

Extending rearwardly from the front wall 10 is a flange 13 from the corners of which ears 14 project, these ears 14 each containing a perforation.

Projecting downwardly from the flange 13 and adjacent the ears 14 are mounting feet 15, which serve to support the casing member in the pocket of the draft rigging.

The rear main portion B of the casing is of similar construction, having a rear wall 20 from the rear face of which a projection 21 extends transversely, the wall being reinforced by bosses 22 extending from the top and bottom faces of the projection 21 to the top and bottom edges of the back wall. Flanges 23 project forwardly from the back wall 20, and ears 24 project outwardly at the corners of these flanges 23 adjacent the forward end thereof. It will be noted that the flanges 23 of the rear housing member are substantially longer than the flange 13 of the front member A. Depending below the flanges 23 and adjacent the ears 24 are mounting feet 25 by which the member B is supported in the pocket.

The rubber pads E are of known design, each consisting of metallic plates 30 and 31, between which a body of rubber 32 is disposed and chemically bonded to the plates. The body of rubber is solid, engaging the entire surface of the plate from edge to edge, and the edges of the rubber are formed concavely or indented to provide flow space into which the rubber may flow when displaced by forces compressing the unit. Preferably the front wall 10 contains sockets 16, the back wall 20 contains bosses 26, plates 30 contain bosses 33, and plates 31 contain sockets 34, which bosses and sockets are interengaged in the usual manner to maintain the pads E aligned with each other and with the front and back walls of the casing.

In the embodiment shown, the front separator F contains a web portion 40, which is disposed between the second and third pads E in each of the columns. Projecting in both directions from the edge of the plate-like web 40 is a flange 41, which extends completely around the web. Projecting in both directions from the web 40 is a flange 42 located at the middle of the web and extending from top to bottom thereof and at



its ends joined to the flange 41 at the edges of the separator. The flanges 41 and 42 stiffen the web 40, imparting to it sufficient strength to withstand the forces that will be brought to bear upon it in the operation of the gear.

The rear separator G contains a similar web 45 disposed between the fourth and fifth pads E in each of the columns. A flange 46 projects rearwardly from the web 45. A center flange 47 also projects rearwardly from the web portion 45 and extends transversely between the top and bottom portions of the edge flange 46, the flange 47 being disposed between the fifth pads in each of the columns. A riblike flange 48 projects forwardly from the web 45.

As will be seen best in Figures 4 and 6, the separators F and G contain bosses and sockets with which the sockets 34 and bosses 33 of the pads E register. These bosses and sockets are six in number, arranged two on the longitudinal median lines of the separators F and G, and four spaced equidistant above and below that line. Each pad E contains three bosses 33 on one of its faces and three sockets 34 on its other face, which bosses and sockets are arranged in a pattern to register with the sockets 36 and bosses 37 of the separators F and G.

The draft gear of the present invention is assembled by placing the rear casing member B open end uppermost upon a suitable support and placing two pads E side by side upon the rear wall 20 thereof. The separator G is then placed in the casing member followed by four pads E, two in each of the columns. The separator F is next placed in position, after which the remaining two pads in each of the columns and the front casing member are registered with the separator F. The pads E used in this gear are relatively thick in uncompressed condition, that is, plates 30 and 31 are spaced relatively far apart, and the assembly so formed is much thicker, front to back, than shown in the drawings. The wide flanges 41 on the separator F spans the space between the ends of flanges 13 and 23 of casings A and B, respectively.

The gear is then compressed to an overall length slightly less than the opening in the yoke and pocket and bolts 50 are projected through the perforations in the ears 14 and 24 and the nuts applied and tightened up to hold the gear together during shipment and insertion in the yoke C of the draft rigging. This compression of the gear places the pads E under a relatively high initial or residual compression. As soon as the draft gear is inserted in the yoke, temporary wedges, formed preferably of wood, are employed to hold the gear to a length forward and aft of the yoke slightly less than the forward and aft dimension of the pocket. The bolts are then removed and the yoke and draft gear inserted in the pocket and secured therein in the usual manner. The temporary wedges will fall out the first time the gear functions, thereby allowing the front casing A to engage the front wall of the pocket D and the back casing B to engage the back wall of that pocket. The initial or residual compression of the pads E remains relatively high, as required by the specifications for gears of this kind.

In operation, forces acting in draft upon the draft gear are transmitted through the drawbar and yoke to the rear casing member B, forcing that member forwardly towards the front casing member A. The front casing member abuts against the front wall of the pocket and cannot move forwardly; consequently the pads E are compressed. Forces acting on the gear in buff act in a reverse direction, being transmitted through the coupler and front end of the yoke to the front casing member A, moving that member rearwardly toward the casing member B which is engaging the rear wall of the pocket and the pads E are compressed by this movement.

Forces acting on the gear, both in draft and in buff, are imposed upon the two columns of pads E simultaneously; and since the flanges of the separators F and

G engage the walls of the casing, any tendency of the columns to move laterally or vertically during compression is resisted by the separator flanges. Since the separators are stiffened by their respective flanges, equal loading of the two columns is assured. As a result of the equal and parallel loading of the columns, high resistance is obtained with minimum travel of the coupler and yoke. The gear of the present invention provides a high capacity long life rubber gear, particularly adapted for use in diesel locomotives.

While I have chosen to show my invention by illustrating and describing a preferred embodiment of it, I have done so by way of example only, as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of the invention.

Having thus complied with the statutes and shown and described a preferred embodiment of the invention, what I consider new and desire to have protected by Letters Patent is pointed out in the appended claims.

What I claim is:

1. A rubber draft gear for locomotives comprising: front and rear cuplike casing members disposed in alignment with their open ends adjacent; a plurality of rubber pads within said casing disposed in two side by side columns; and separators dividing the pads in each column into groups, said separators comprising a platelike web disposed between the pads, a flange at the edges of the web engaging the casing walls to position the columns with respect thereto, and a flange located at the middle of the web and extending from edge to edge thereof, said flange being disposed between the columns to separate them.

2. A rubber draft gear for locomotives comprising: front and rear cuplike casing members disposed in alignment with their open ends adjacent; a plurality of rubber pads within said casing arranged in two equal columns disposed side by side; and a separator common to the two columns, said separator comprising a platelike web portion disposed between the pads, an integral flange extending completely around the edge of the web and projecting from the web equally in both directions, a second integral flange disposed on the transverse median line of the web projecting therefrom equally in both directions with its ends joined with said first flange, said flanges stiffening said web and functioning therewith to maintain said columns in desired position relatively to each other.

3. A rubber draft gear for locomotives comprising: front and rear cuplike metallic casing members disposed in alignment with their open ends adjacent; a plurality of rubber pads in said casing disposed in two side by side columns; and separators common to the two columns dividing the pads therein into groups, the first of said separators comprising a platelike web disposed between the pads, flanges at the edges of said web projecting therefrom in one direction and disposed between the edges of the pads and the walls of the casing, a transverse flange at the middle of the web extending between opposed ones of said edge flanges and between the columns, the second of said separators comprising a platelike web disposed between the pads, flanges at the edges of said web extending in both directions therefrom and disposed between the edges of the pads and the walls of the casing, and transverse flanges extending between opposed ones of the edge flanges on both sides of the web and disposed between said columns.

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