

Sept. 2, 1958

K. F. NYSTROM ET AL
ROTARY COUPLER ARRANGEMENT

2,850,179

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3 Sheets-Sheet 1

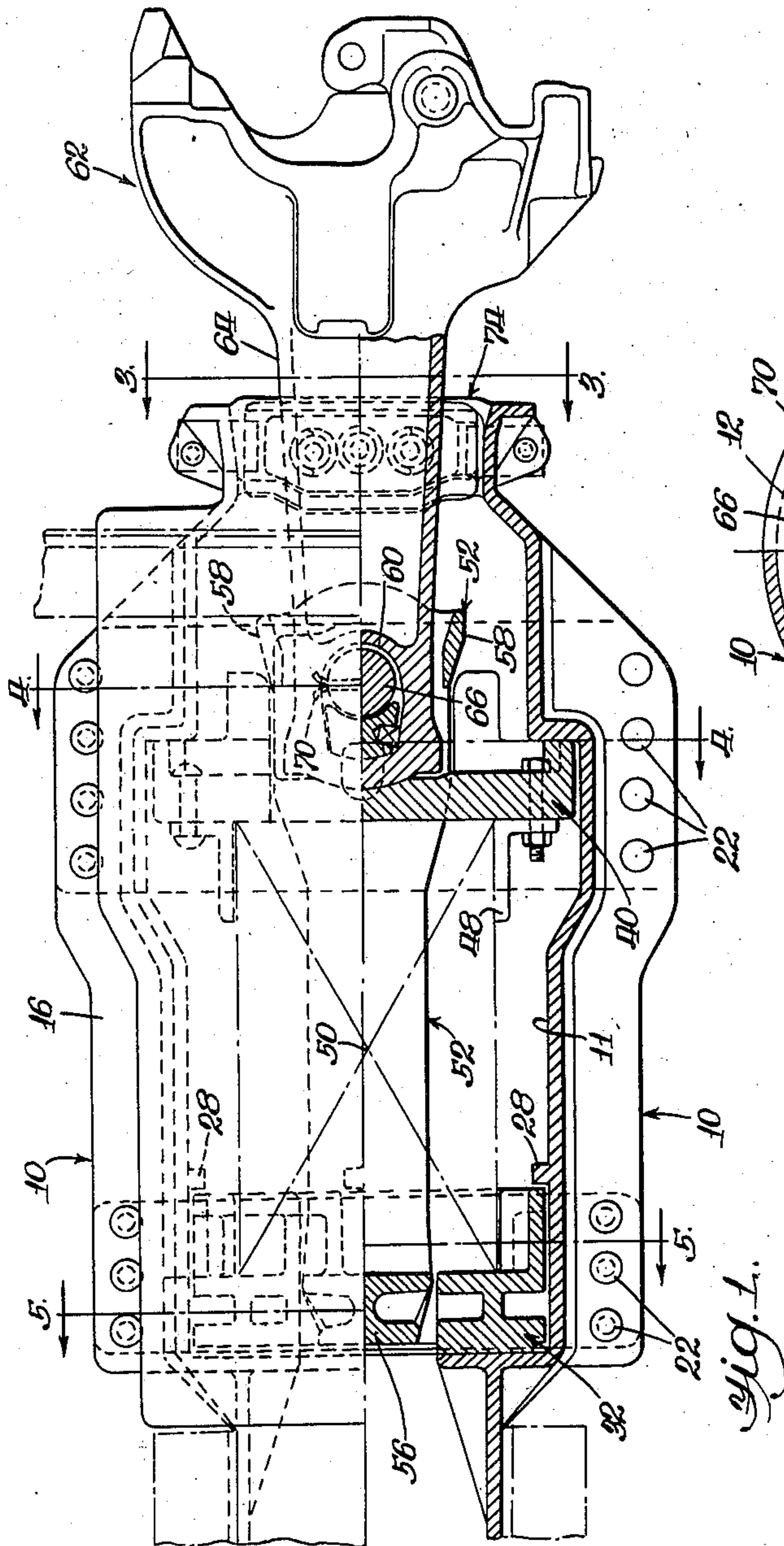


Fig. 1.

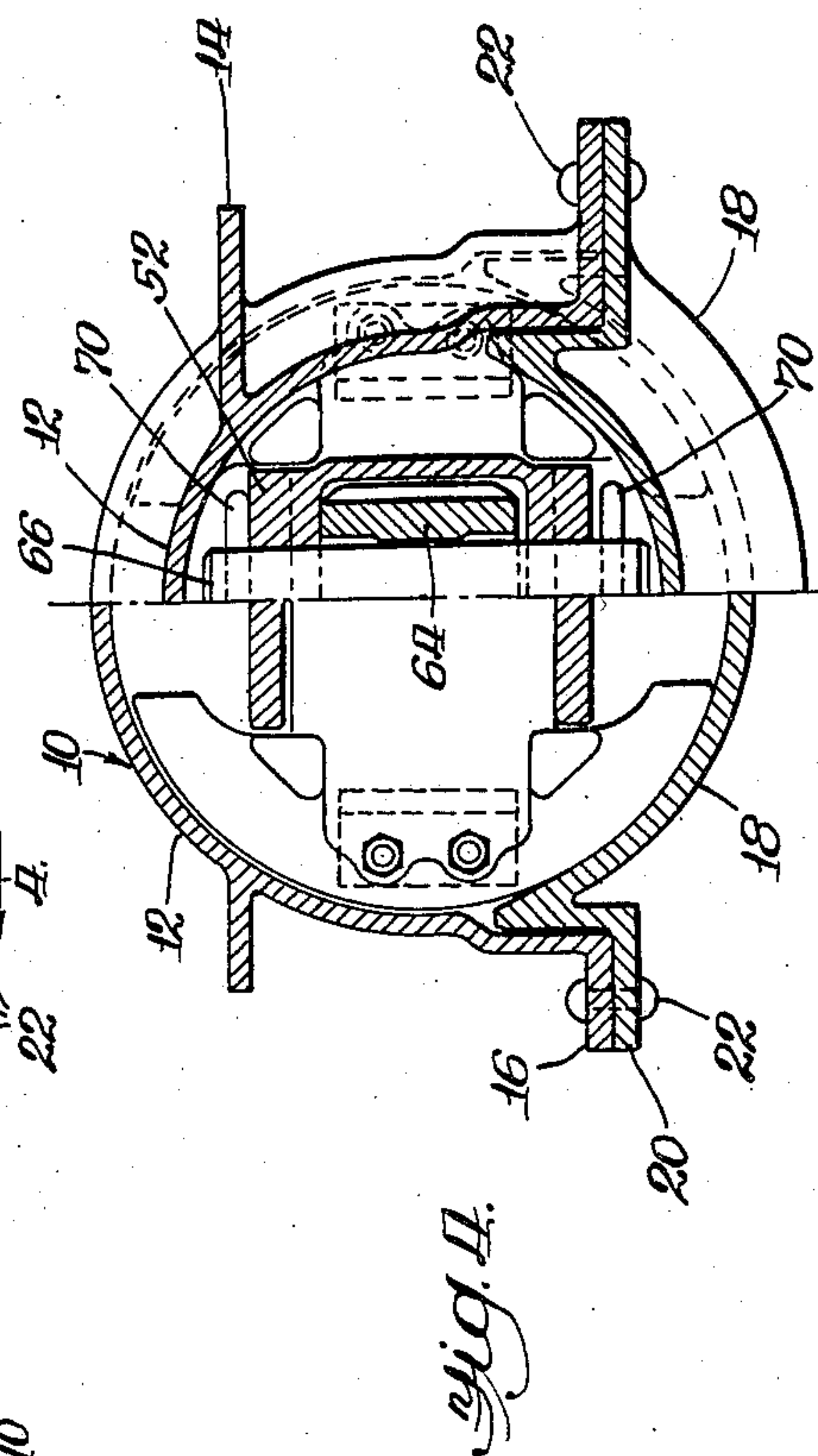


Fig. 2.

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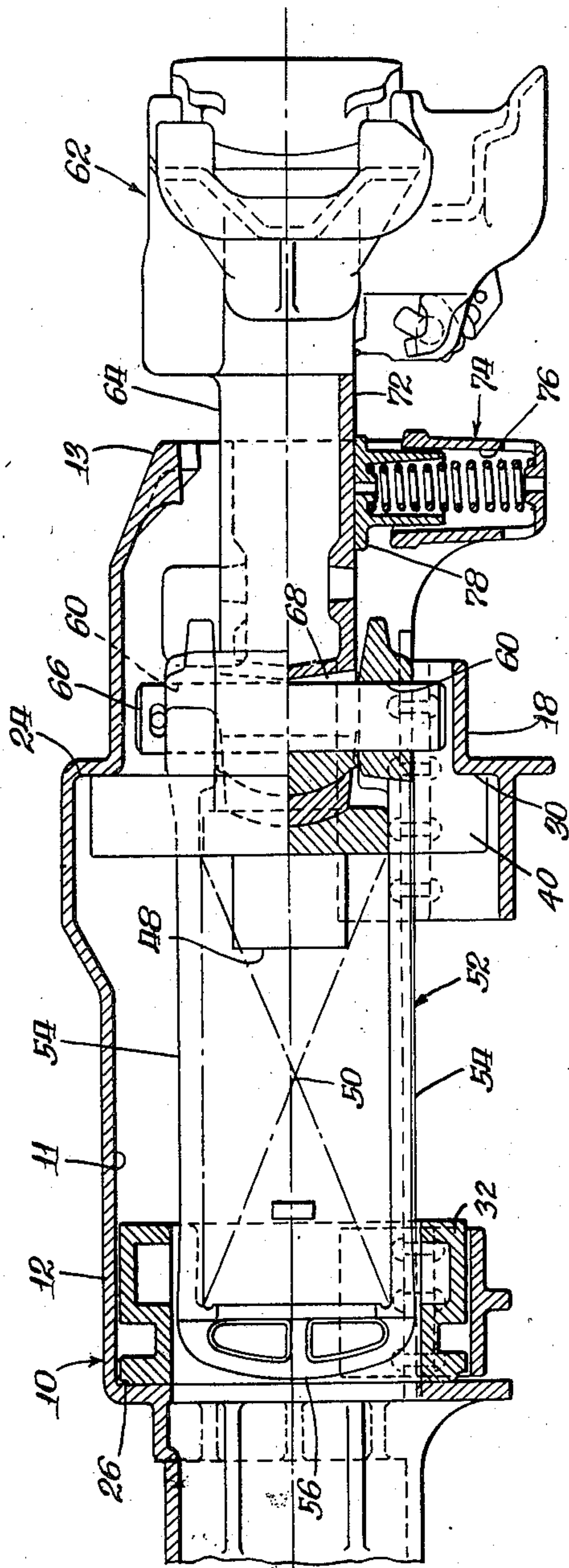


Fig. 2.

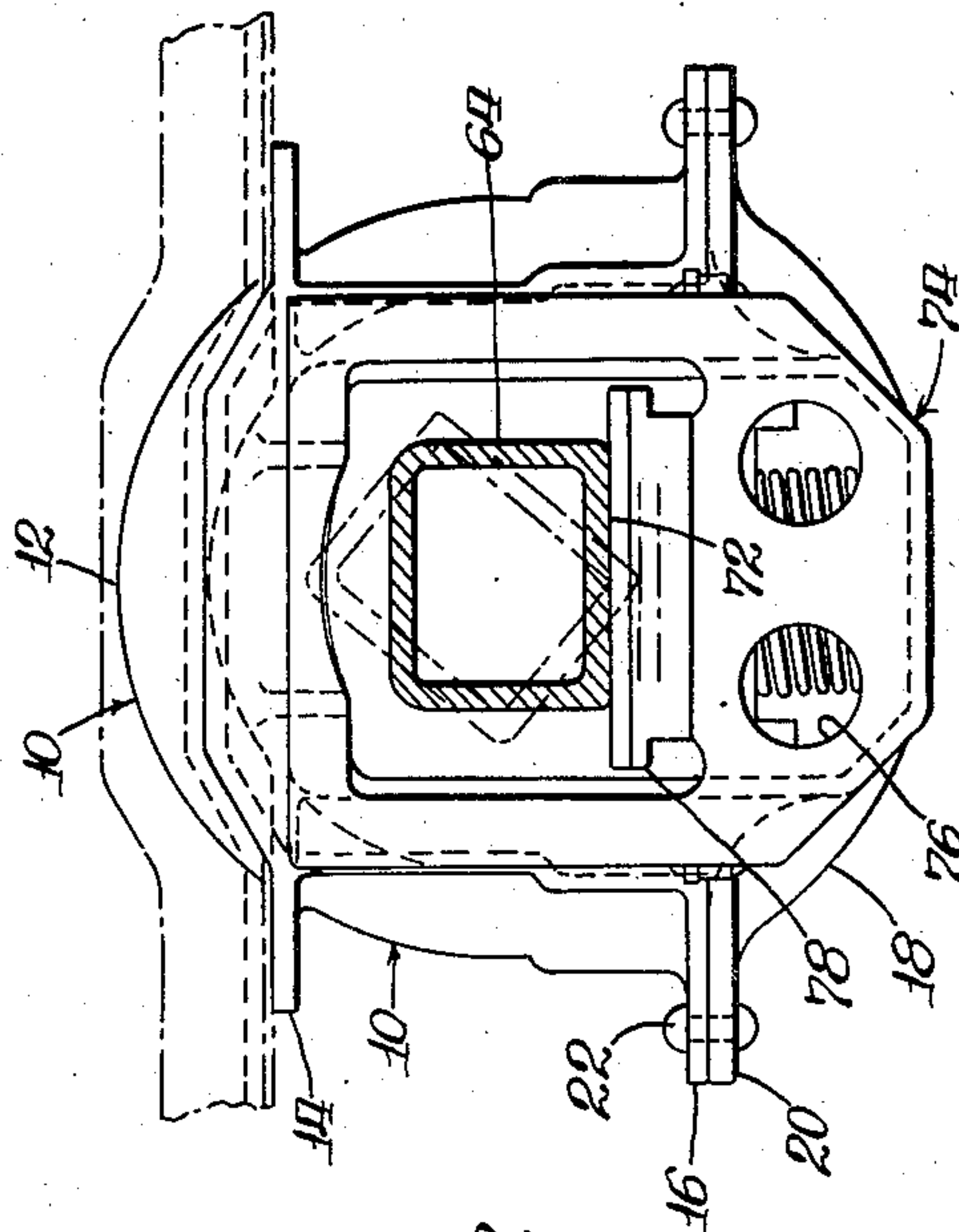


Fig. 3.

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Fig. 6.

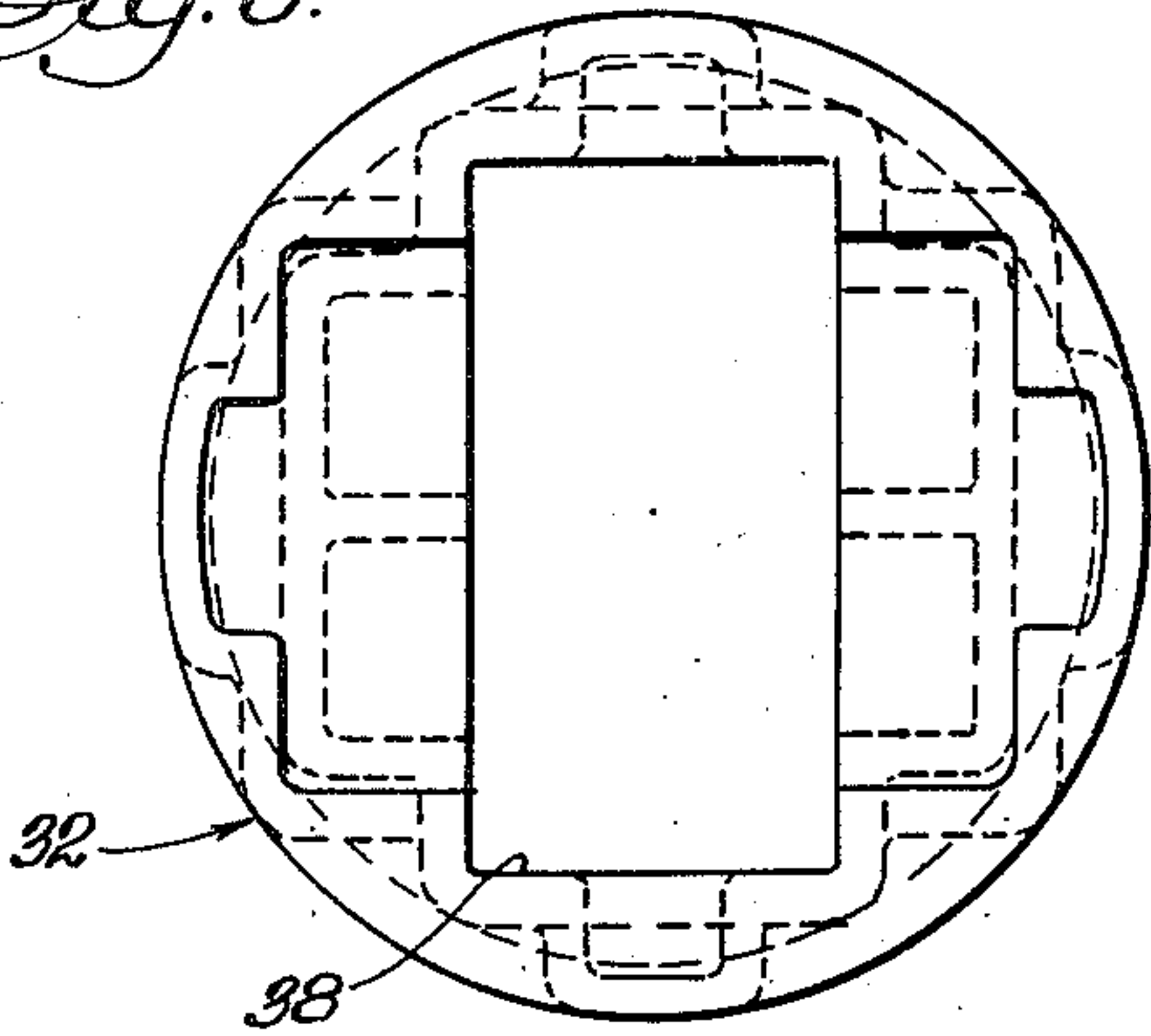


Fig. 7.

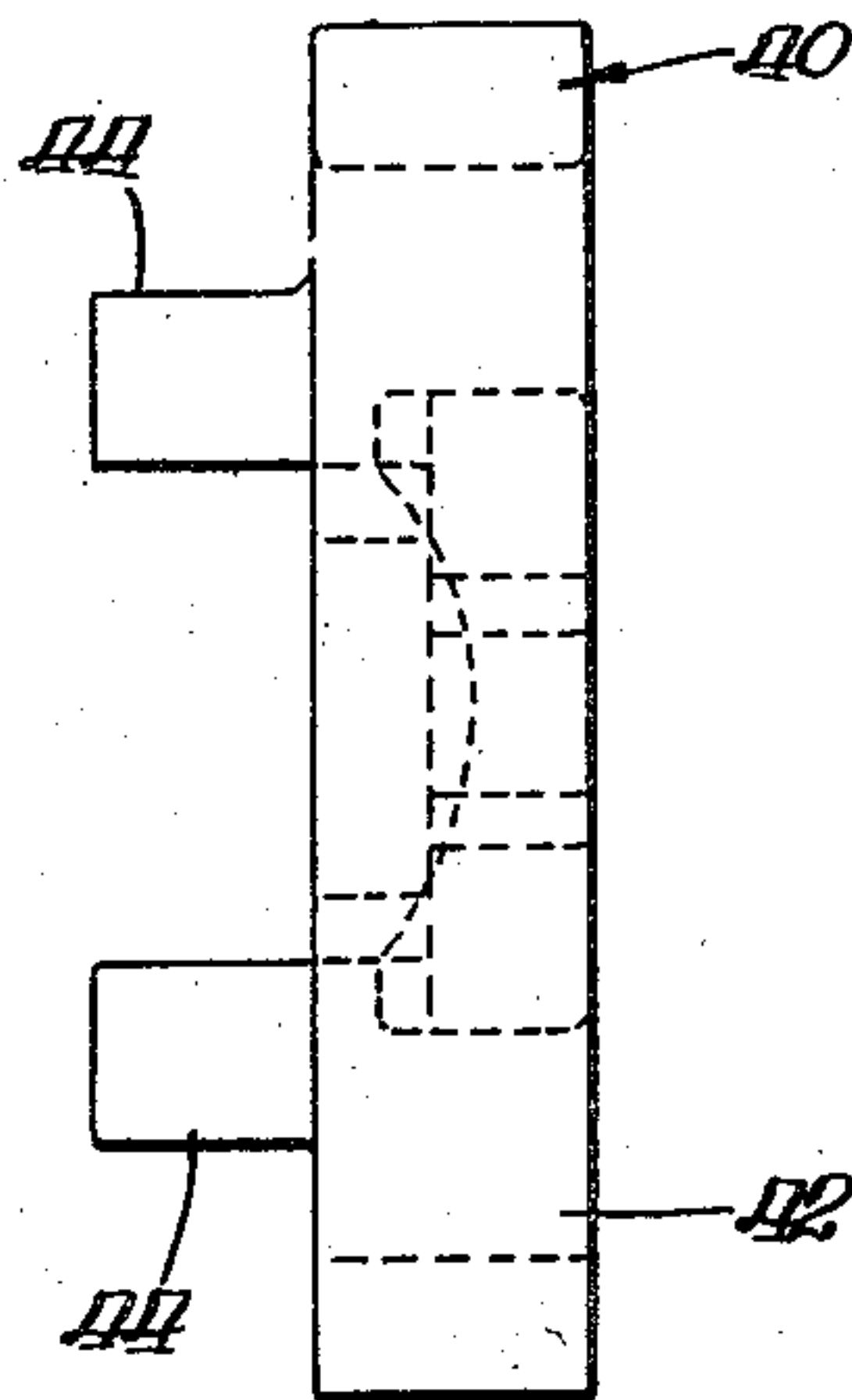
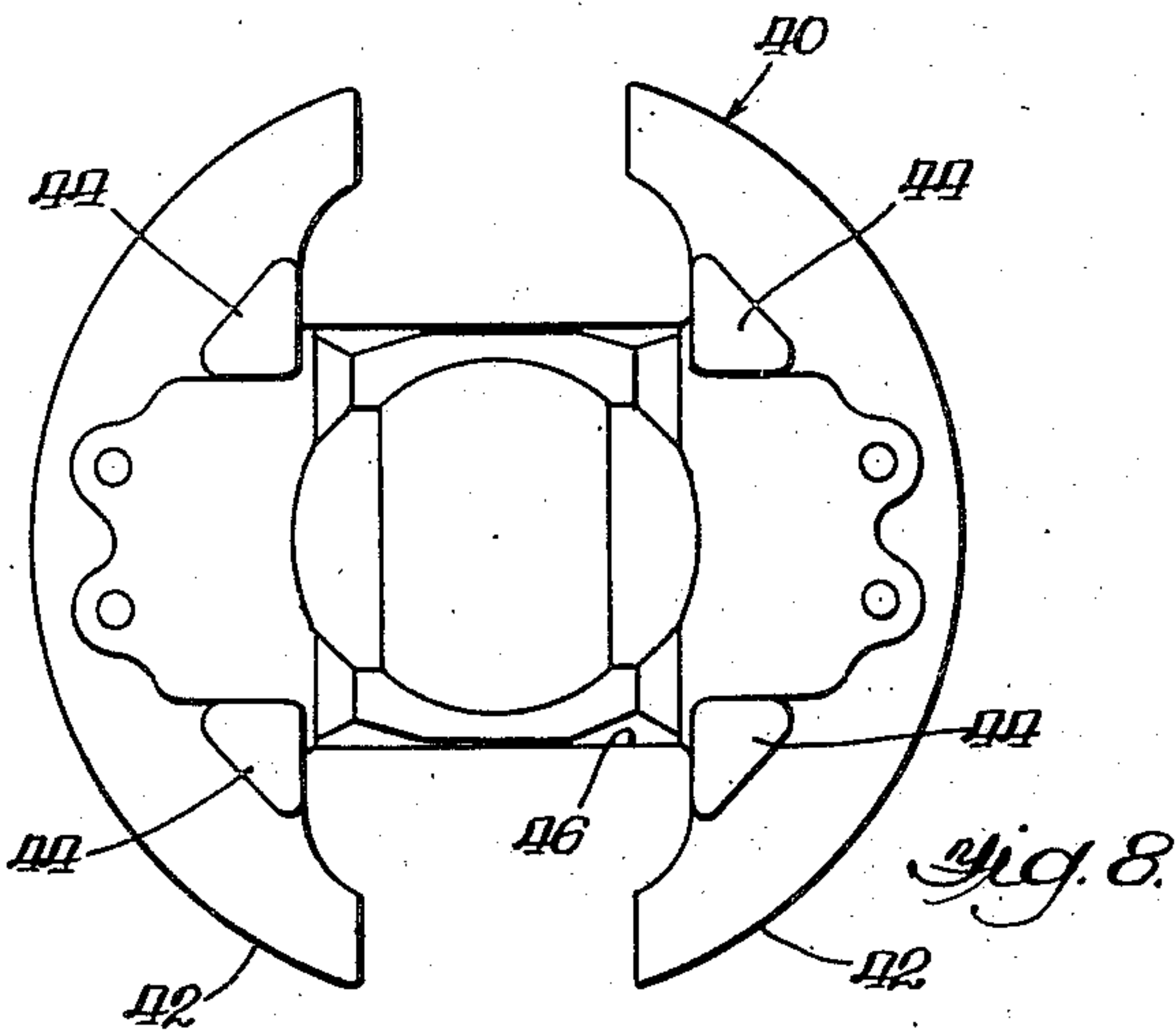
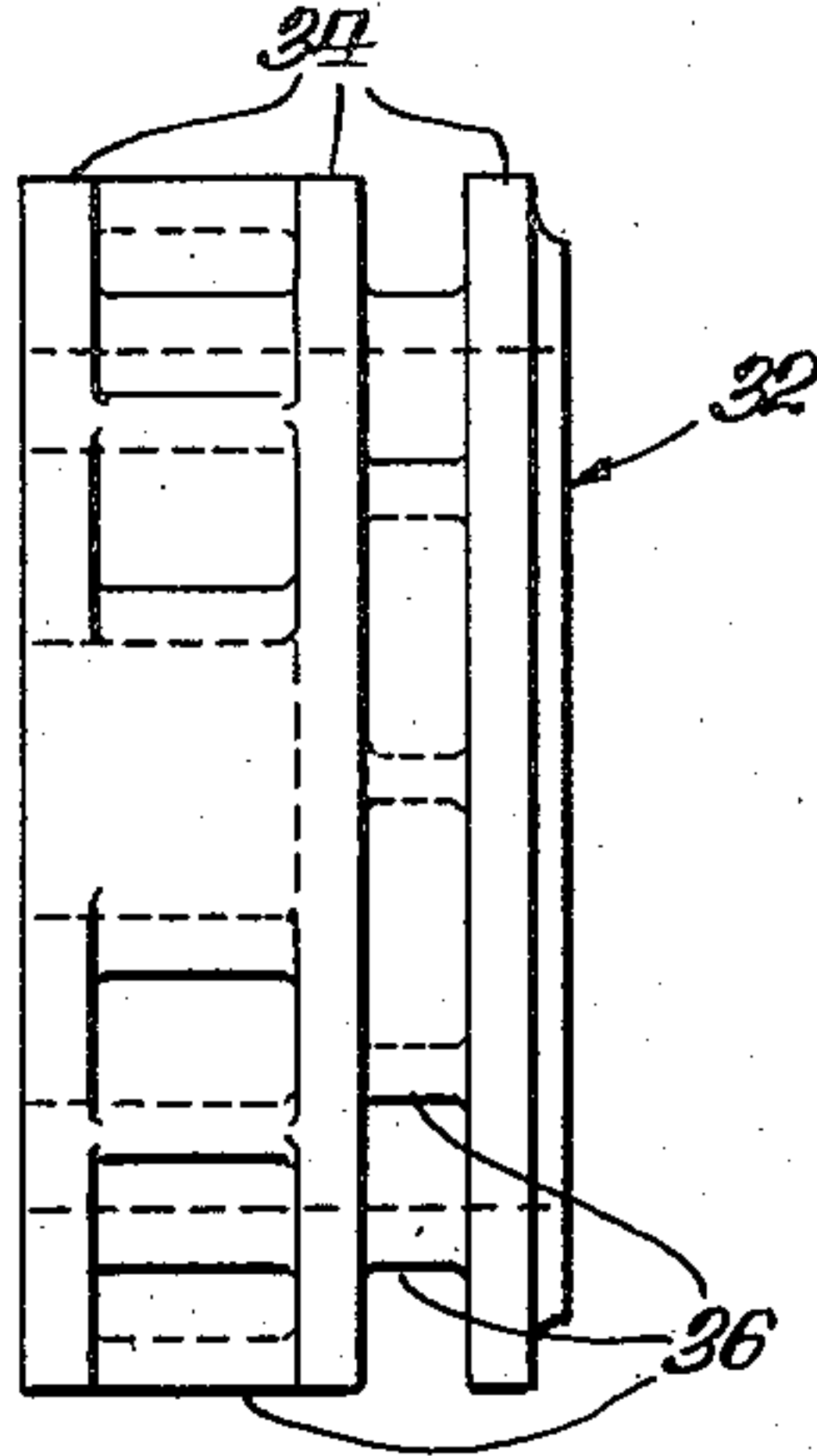


Fig. 9.

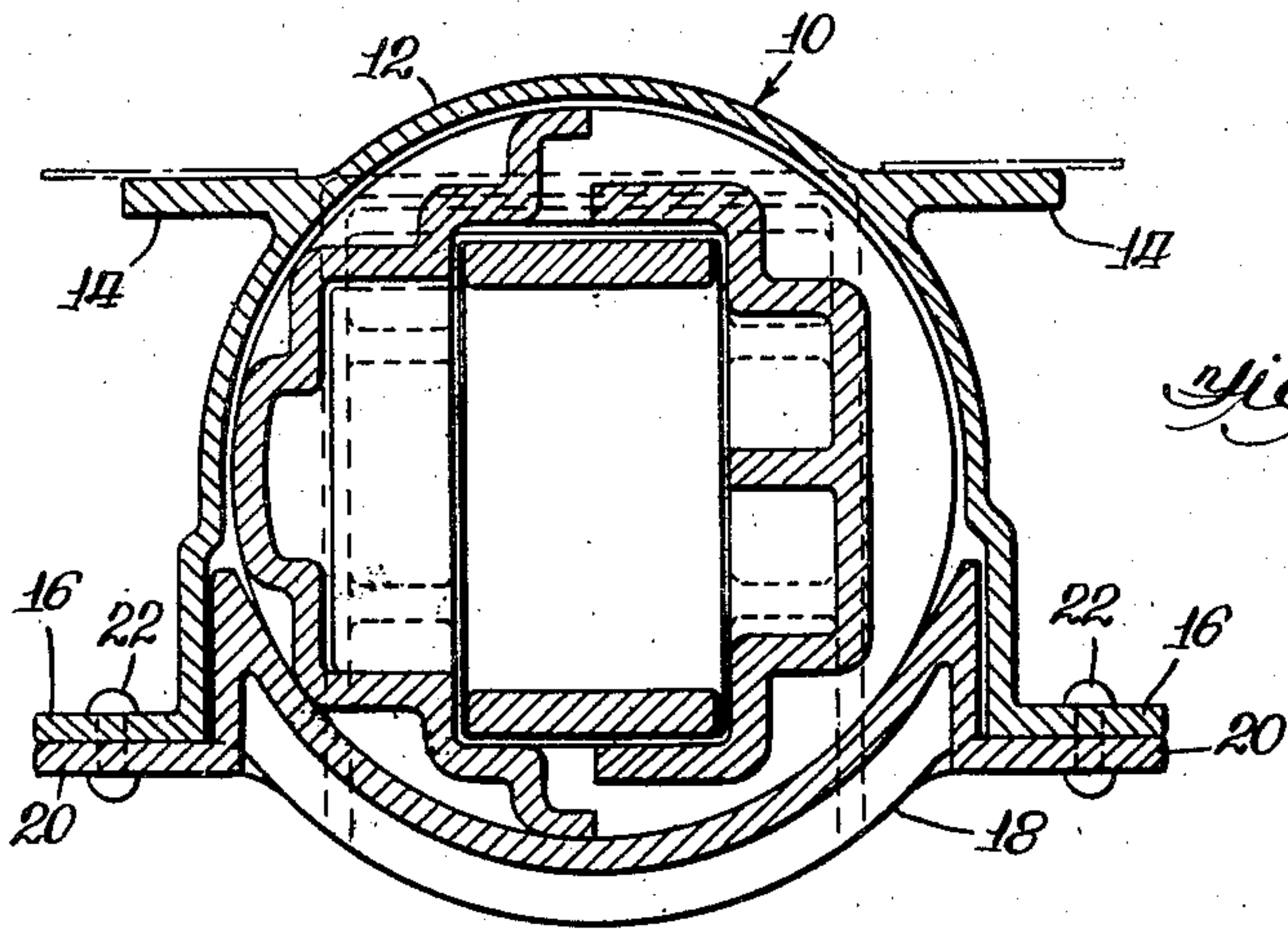


Fig. 5.

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ROTARY COUPLER ARRANGEMENT

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11 Claims. (Cl. 213—62)

The invention relates to railway car couplers and more particularly to an arrangement whereby a coupler and draft gear mechanism are rotatable so as to permit the rotation of connected cars for dumping, such as is employed in mining operations.

The invention comprises the application of a type of coupler known in the railway art as the A. A. R. standard F type coupler to a novel draft coupler arrangement employed on mining cars. The novel draft gear arrangement comprehends the rotation of each car approximately 180 degrees to dump same while the rest of the cars remain in vertical arrangement. The novel arrangement utilizes all of the known advantages of the F type coupler in addition to offering the rotating features described above, whereby efficiency of mining car operation is appreciably increased.

Accordingly, it is a primary object of the invention to provide a novel draft gear arrangement wherein the standard F type coupler and F type yoke may be applied to a dumping mining car.

It is another object of the invention to provide an arrangement whereby couplers and yokes of the same type may be utilized at either end of the car, thus eliminating the need for users having to carry two different designs of couplers and yokes in stock for repair purposes.

Another object of the invention is the provision for an arrangement whereby the coupler, yoke and entire draft gear are assembled to rotate as a unit.

Still another object of the invention is the provision of an arrangement wherein the various parts can be readily assembled and disassembled.

A more specific object of the invention is an arrangement wherein the yoke, which is pivotally connected to the coupler shank, is nonrotatably connected to rotatable follower members disposed with the housing of the unit.

These and other objects of the invention will become apparent from an examination of the following description and related drawings, wherein:

Figure 1 is a top plan view, partially in section, of a coupler draft gear arrangement embodying the invention;

Figure 2 is a fragmentary side elevational view, partially in section, of the structure shown in Figure 1;

Figure 3 is a sectional view taken along the line 3—3 of Figure 1;

Figure 4 is a sectional view taken along the line 4—4 of Figure 1;

Figure 5 is a sectional view taken along the line 5—5 of Figure 1;

Figure 6 is a front detail view of the rear follower or spacer;

Figure 7 is a side view of the structure shown in Figure 6;

Figure 8 is a front detail view of the front follower; and

Figure 9 is a side view of the structure shown in Figure 8.

Describing the invention in detail and referring to the figures, it will be seen that the coupler draft gear arrangement comprises a housing, indicated generally at

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10, which is normally attached to the under side of the car in the conventional manner.

The housing 10 comprises upper and lower members, the upper member, or striker 12 is generally shaped in the form of an inverted U, as seen in transverse cross section (as best seen in Figure 5). The striker member 12 has horizontal flanges 14 extending from the upper portion thereof, serving to secure the housing to the railway car, and other horizontal flanges 16 extending from the lower portion thereof. Additionally, the striker has a heavy downwardly extending flange 13 at the forward end thereof, serving as a bumper for the coupler.

A section intermediate the ends of the striker has a radius greater than other sections of the striker, the forward end of this raised section having an inwardly extending wall 24, and the extreme rear of the striker having a wall 26. Intermediate rear wall 26 and wall 24 is disposed an inwardly extending stop lug 28.

The lower member or base 18 of the housing is U-shaped having spaced front and rear sections and horizontally extending flanges 20 that, when secured to flanges 16 of the striker 12 by bolts 22, form the generally cylindrical housing 10. The base 18 also has a vertical wall 30 extending inwardly opposite to and in alignment with wall 24 of the striker.

Disposed in the rear portion of the housing 10, in the recess 11 formed between the base and striker, is a rear follower or spacer member 32 (seen in detail in Figures 6 and 7). The spacer member comprises a plurality of annular plates 34 interconnected by a plurality of horizontal and vertical plates 36. Centrally of the spacer member is a rectangular opening 38 extending through the plates. The spacer is disposed in the recess 11 between the rear wall 26 and the stop lug 28, and its motion is limited to that of rotation about the longitudinal axis of the housing.

Spaced forwardly from the spacer 32 is a front follower member 40. The follower is generally annular in shape, comprising semi-circular flanges 42 and forwardly extending guide lugs 44, and having rectangular openings 46, 46 centrally thereof. The front follower is disposed in the recess 11 of the housing so that its forward side abuts the vertical wall or flange 34 of the striker and wall, or flange 30 of the base. The follower is rotatable about the longitudinal axis of the housing, and is capable of moving longitudinally in a direction rearwardly in the housing from the wall 24.

Extending from the rear side of the follower are lugs 48 which retain the resilient member 50 which is disposed within the yoke intermediate the front and rear followers with the forward end of the resilient member abutting the rearward side of the follower and the rear end of the resilient member abutting the rear wall of the yoke.

The yoke 52 may be of a conventional type having generally flat top and bottom walls 54, preferably connected at the rear end by a double rear wall 56, and having flanges 58 extending forwardly from the yoke, the flanges 58 having coaxially aligned openings 60. The rear end of the yoke is received in the opening 38 of the spacer so as to be nonrotatable relative to the spacer, and the forward end of the yoke is received in the openings 46, 46 of the follower so as to be nonrotatable relative to the follower.

A conventional coupler 62, having a shank 64 extending rearwardly therefrom, is pivotally connected to the yoke preferably by means of a vertical pin 66, received in openings 60 of the yoke and 68 of the shank. Cotter pins 70 may be used to retain the pin in position.

The flat bottom wall or base 72 of the shank is resiliently supported by a coupler carrier 74, which is formed integrally with housing 10. Carrier 74 defines a hollow

recess 76, which serves as a mounting and carrier unit for spring loaded carrier 78.

In describing the operation of the draft gear arrangement, it will be noted that the spacer 32 is rotatably retained in the recess, or pocket, 11 of the housing and prohibited from forward or rearward motion by wall 26 and stop lug 28. The follower is also rotatable and while its forward motion is prohibited by wall or flange 24, its rearward motion is limited only by the resilient member 50.

When the railway car equipped with the novel coupler arrangement is rotated 180° about the longitudinal axis of the coupler arrangement, the entire draft gear including yoke and followers, coupler and shank remain in position. Conversely, if the car connected to the car embodying the invention is rotated, the entire draft gear arrangement of the latter car can rotate with the yoke riding in the followers, which are free to rotate in the housing about the longitudinal axis thereof.

Also if couplers of both cars be equipped with the novel arrangement either car may be rotated while the other remains stationary. Of course, reverse rotation, after contents of the car are emptied, returns the coupler to upright position.

We claim:

1. In a rotary coupler arrangement, a housing, a draft gear assembly, said assembly comprising followers spaced from each other and rotatable within the said housing, a yoke supported by said followers, resilient means disposed in said yoke between said followers a coupler having a shank, and a pivotal connection between said shank and said yoke accommodating angular movement therebetween.

2. In a rotary coupler arrangement, a housing, a coupler having a shank, draft means within said housing, said means comprising a rotatable yoke pivotally connected to said shank to permit angular movement therebetween, follower means rotatably disposed within the housing and supporting said yoke, and resilient means within said yoke adjacent said follower means and operable to cushion the movements of said yoke.

3. In a rotary coupler arrangement a housing, said housing comprising a striker and a base, a draft gear assembly entirely rotatable within said housing, said assembly comprising a yoke, spaced followers supporting said yoke, and resilient means disposed in said yoke between said followers, and a coupler pivotally connected to said yoke.

4. In a rotary coupler arrangement, a housing, a coupler, a shank on said coupler, and draft gear means, said means comprising follower members spaced from each other and rotatably disposed within said housing, resilient means disposed intermediate said members, a yoke having flat sides disposed in rectangular openings in said members for rotation therewith, and a pivotal connection between said yoke and said shank.

5. In a rotary coupler arrangement, a housing, a coupler having a shank, rotatable spaced followers in said housing, a yoke pivotally connected to said shank, re-

silient means disposed in said yoke intermediate said followers, and means to support the yoke by said followers, said means comprising substantially rectangular openings in the said followers receiving the ends of said yoke.

6. In a rotary coupler arrangement, a housing, a coupler having a shank at one end thereof, rotatable draft gear means within said housing and pivotally connected to the shank of said coupler, said draft gear means comprising a yoke being substantially rectangular, as seen in the vertical cross section, said draft gear means being rotatable about its longitudinal axis through an arc of 360°, spaced arcuately shaped plates rotatably carried in said housing, said plates having rectangular openings in coaxial alignment with each other to receive the ends of said yoke, and resilient means disposed within said yoke.

7. In a rotary coupler arrangement, nonrotatable housing means, rotatable coupler means, draft gear means operable to yieldingly resist both tension and compression forces exerted between the coupler means and the housing means, said draft gear means being rotatably carried in said housing means and movably connected to said coupler means for rotative movement therewith.

8. A rotary coupler arrangement according to claim 7, wherein the draft car means includes a pair of arcuately shaped follower members disposed for rotative movement within the housing means and spaced axially thereof from each other, a yoke carried by the follower members and connected to the coupler means for rotation with said members and said means, and resilient means in the yoke engageable with the follower members.

9. In a rotary coupler arrangement, a housing, said housing comprising a striker and a base, a coupler having a shank, a rotatable spacer member disposed in said housing, a rotatable follower member disposed in said housing spaced from said spacer member, a resilient member in said yoke disposed intermediate said spacer and said follower member, a yoke nonrotatably connected to the spacer member and follower member, said yoke being pivotally connected to said coupler shank.

10. In a rotary coupler arrangement according to claim 9, wherein the spacer member comprises a plurality of rotatable spaced plates interconnected by webs and having coaxially aligned rectangular openings to receive said yoke.

11. A rotary coupler arrangement according to claim 9, wherein the follower member comprises a rotatable plate having flanges and lugs integral therewith, and an opening therein to receive said yoke.

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