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# HEAD FOR GATE OPERATING MECHANISM FOR HOPPER CARS

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2 SHEETS—SHEET 1

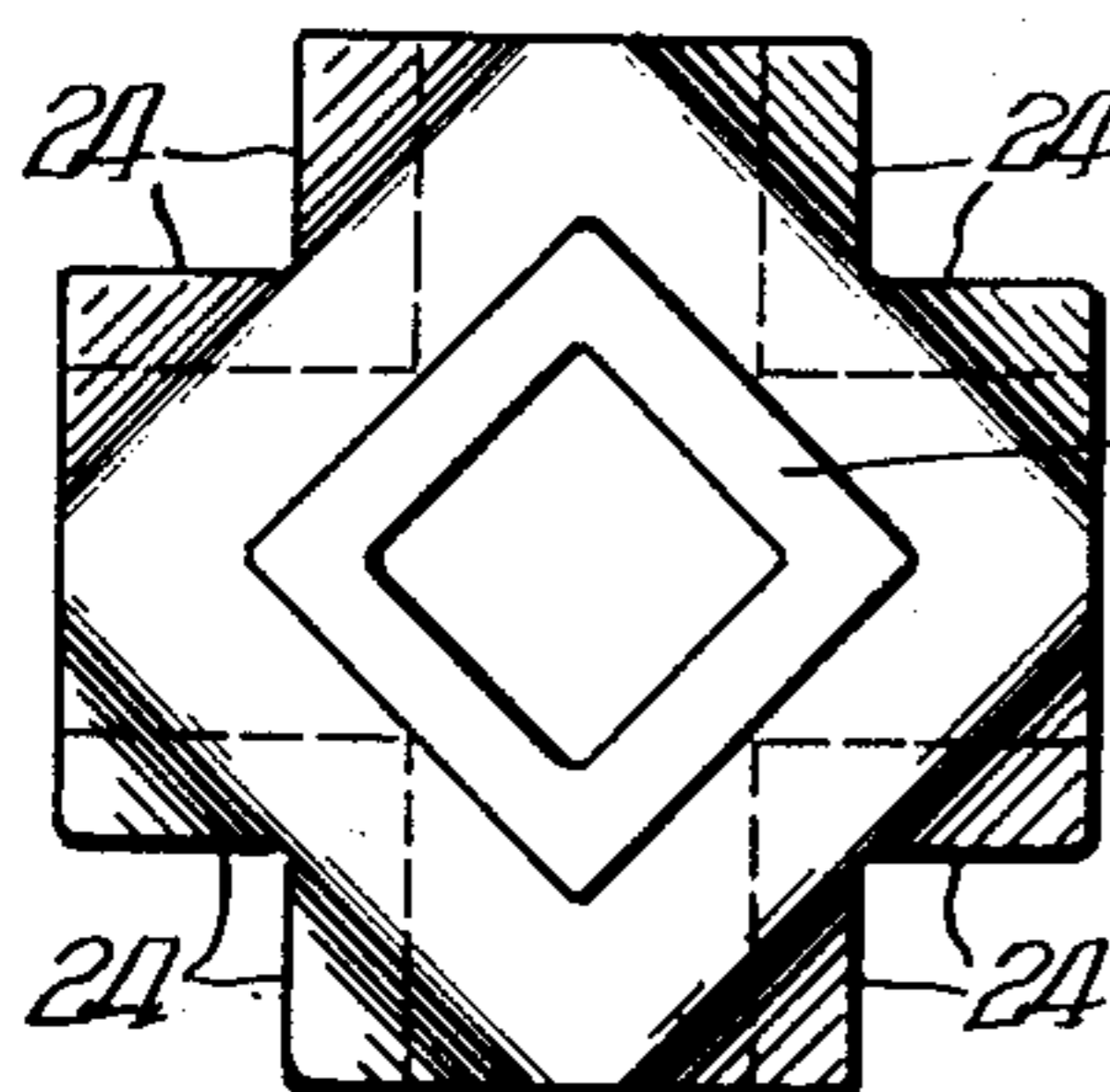
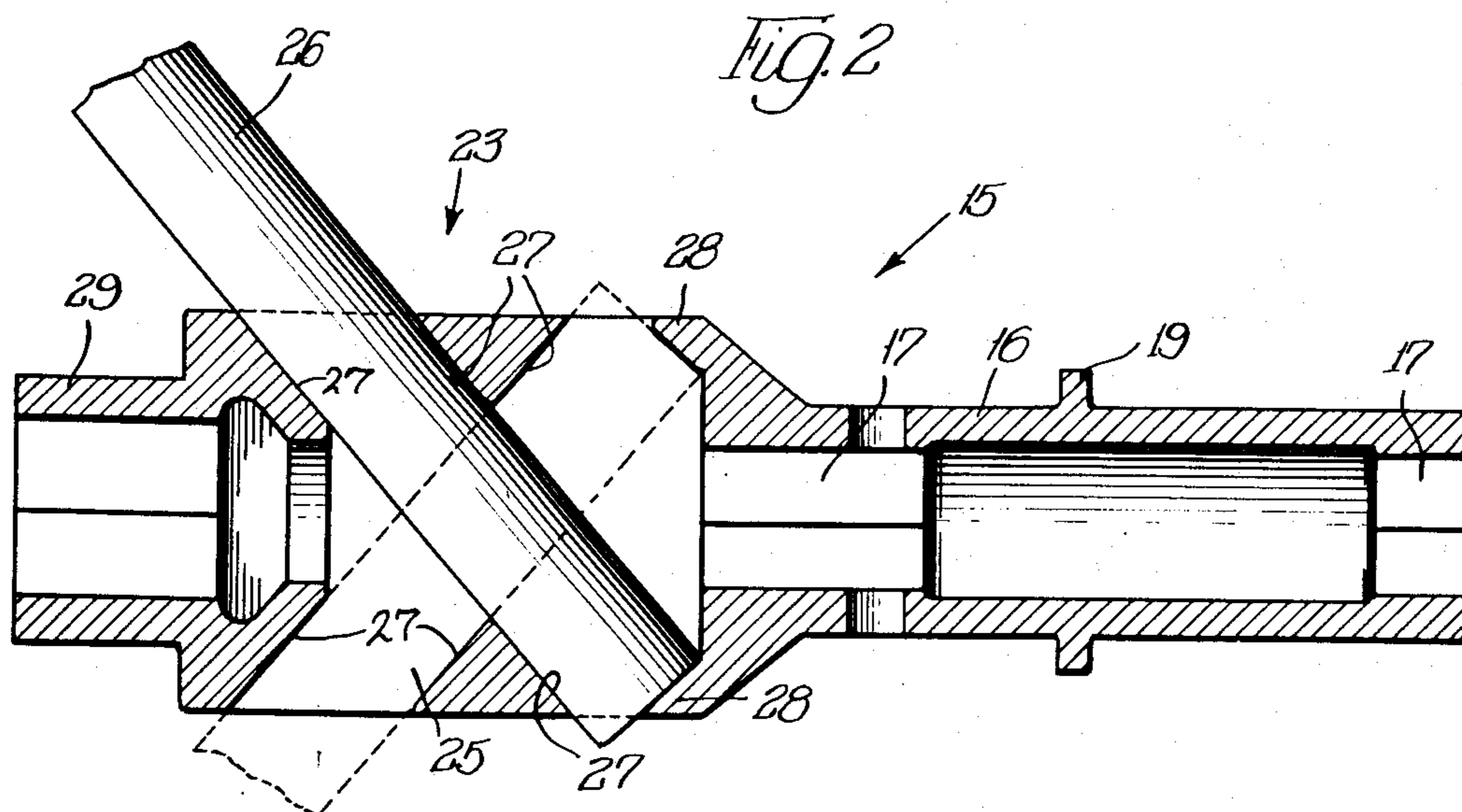
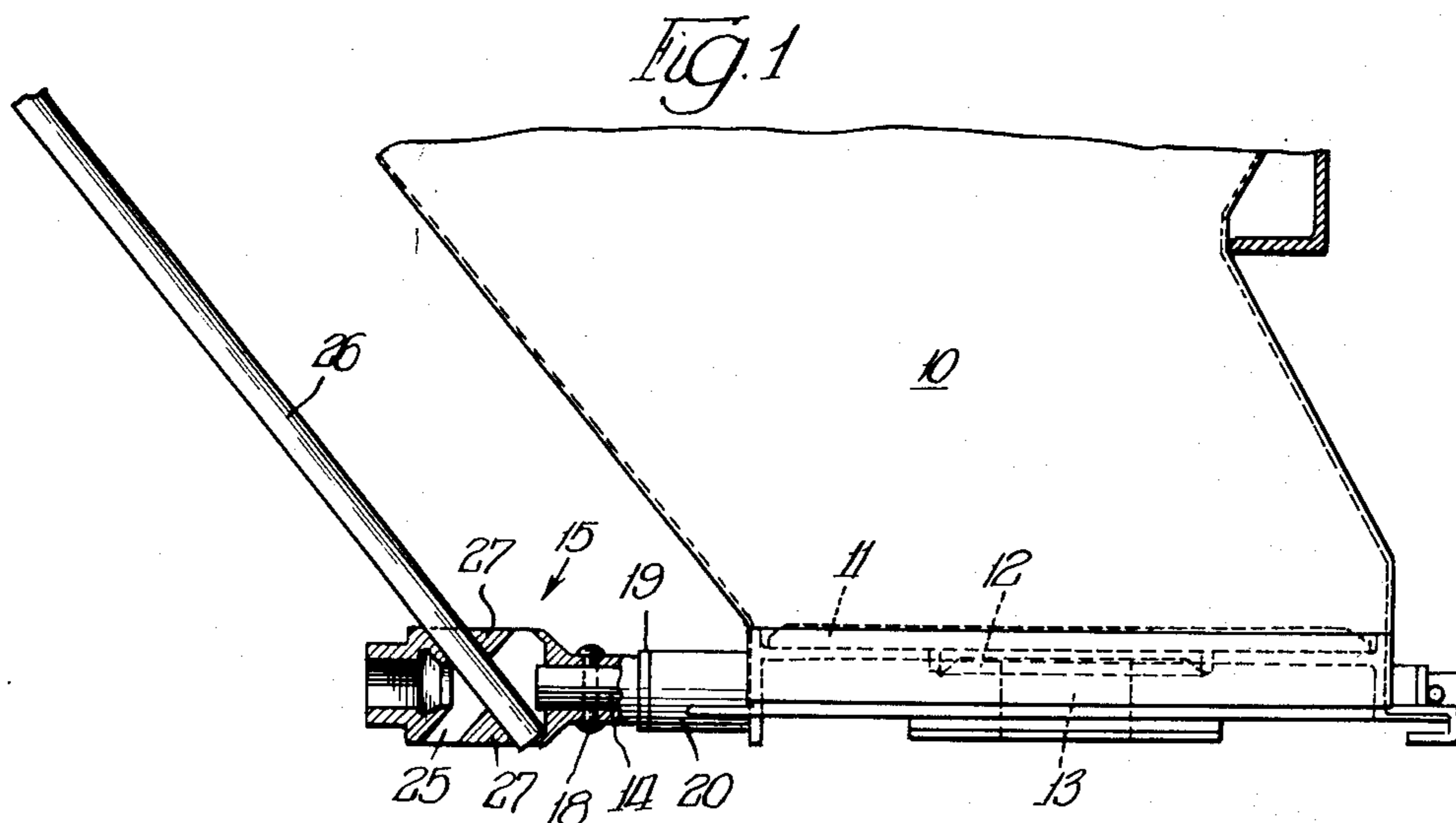


Fig. 3.

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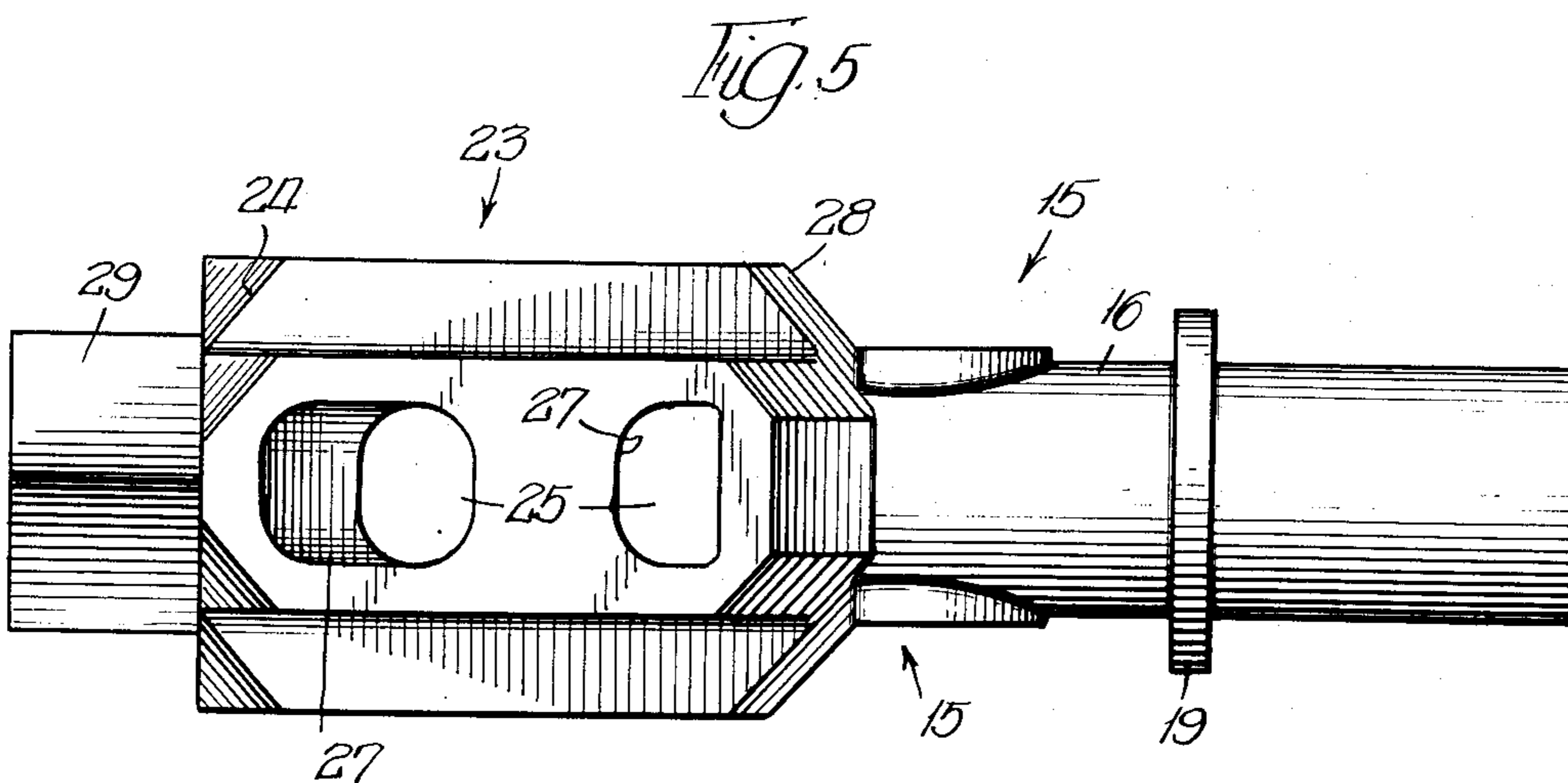
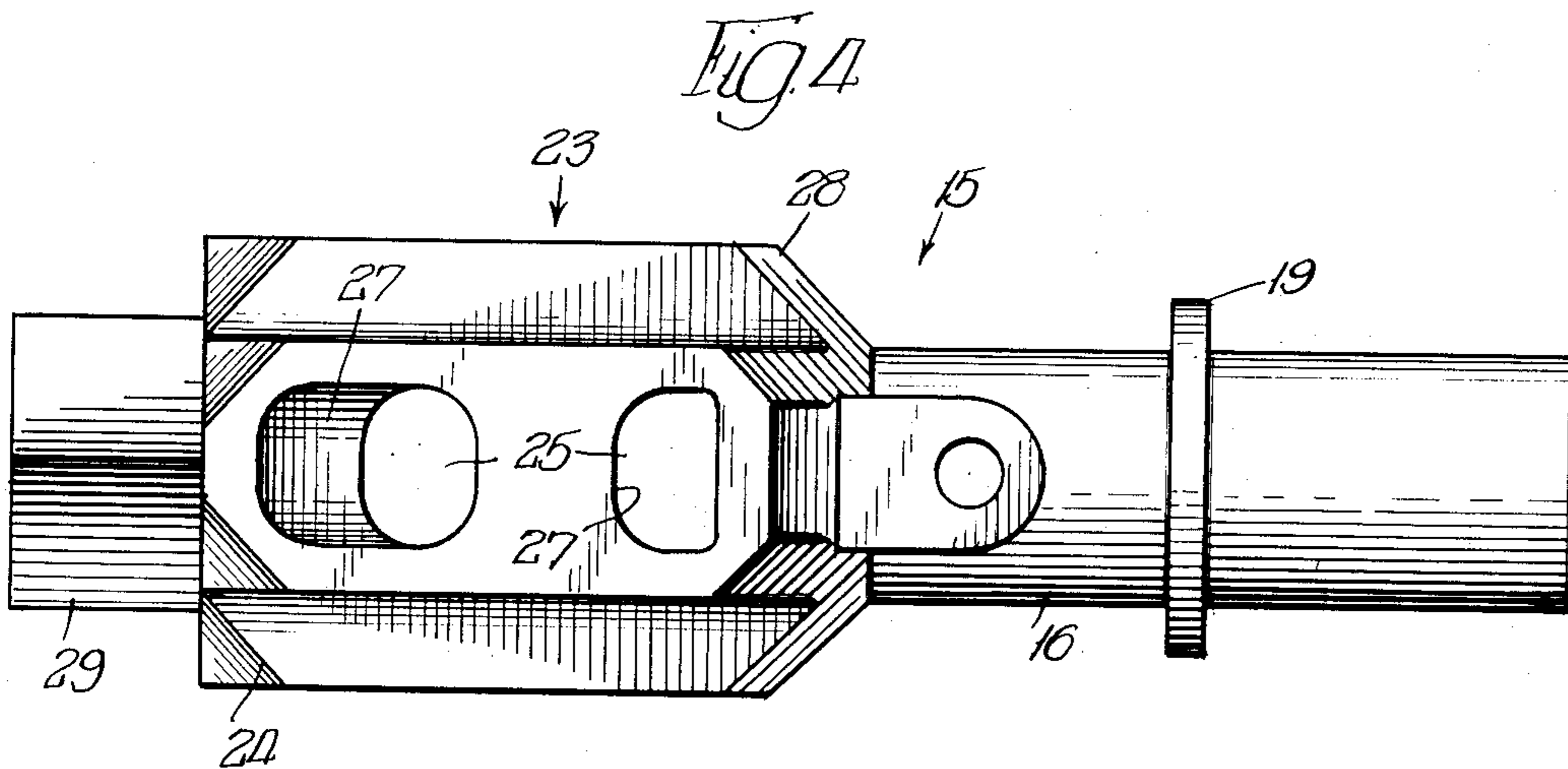
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HEAD FOR GATE OPERATING MECHANISM FOR HOPPER CARS

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2 SHEETS—SHEET 2



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## UNITED STATES PATENT OFFICE

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HEAD FOR GATE OPERATING MECHANISM  
FOR HOPPER CARSGeorge B. Dorey, Westmount, Quebec, Canada,  
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This invention relates, generally, to gate operating mechanisms for hopper type railway cars, and it has particular relation to the head attached to the shaft for receiving an operating bar to rotate the same for opening and closing the gate.

Among the objects of this invention are: To provide for receiving the operating bar on both sides of the axis of rotation of the shaft in order to provide a more certain operative connection therebetween; to receive the operating bar in any one of a plurality of sockets or pockets which extend at an angle across said axis of rotation; and to limit the extent that the operating bar can be inserted into any of the sockets or pockets.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawing and it comprises the features of construction, combination of elements and arrangements of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention reference can be had to the following detailed description, taken together with the accompanying drawing, in which:

Figure 1 is a view, partly in side elevation and partly in section, showing a conventional hopper of a hopper type railway car having a gate operating mechanism in which the head for receiving the operating bar is constructed in accordance with this invention;

Figure 2 is a longitudinal sectional view, at an enlarged scale, of the operating head shown in Figure 1;

Figure 3 is a view, in end elevation, of the operating head shown in Figure 2; and

Figures 4 and 5 are views in top plan and side elevation, respectively, of the operating head.

Referring now to the drawing it will be observed that the reference character 10 designates a hopper of a railway car which has a flat gate 11 at the bottom for controlling the degree of opening therethrough. On the underside of the flat gate 11 there is formed a rack 12 with which a pinion 13 engages for moving the gate from and to the closed position. The pinion 13 is fast on a shaft 14 which, as shown in Figure 1, has a square shank at its left hand end for receiving an operating head, shown generally at 15, 55

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which is constructed in accordance with this invention.

The operating head 15 includes a sleeve portion 16 which telescopes over the shank of the shaft 14. The sleeve portion 16 has a square opening 17 therethrough for non-rotatably receiving the square shank of the shaft 14. In addition a pin or rivet 18 extends transversely through the sleeve 16 and the shaft 14 for holding them inseparable. A flange 19, formed integrally with the sleeve portion 16, is arranged to bear against a collar 20 extending sidewise from the lower portion of the hopper 10, as shown, to space the operating head 15 and act as a guide therefor.

The operating head 15 has an operating bar receiving portion that is indicated, generally, at 23 and shown more clearly in Figure 2. The operating bar receiving portion 23 includes four angled shaped sections 24, Figure 3, which extend lengthwise of the head 15 and shaft 14 in back to back relation and they are spaced apart so as to provide four sockets or pockets 25 for receiving an operating bar 26 at ninety degree intervals. Wall means 27 are provided on the respective sides of the axis of rotation of the operating head 15 and of the shaft 14 for interconnecting the respective angle shaped sections 24. It will be observed that these wall means or connecting sections are spaced lengthwise from each other so as to present axially spaced sections of the pockets 25 for receiving the operating bar 26 at an angle to the axis of rotation of the operating head 15 or the shaft 14. It will be observed that this construction and arrangement of the sockets or pockets 25 is such that the operating bar 26 extends a substantial distance across the axis of rotation of the operating head 15 or the shaft 14 so that it can engage the former on opposite sides of said axis and provide a more certain operative interconnection therebetween. This makes it unlikely that the operating bar 26 will slip out of the operating head 15 as might be the case if it were permitted to extend into the same only a limited extent such as to a position which does not go substantially beyond said axis of rotation. The angle of inclination of the four sockets or pockets 25 with respect to the axis of rotation of the operating head 15 is such that in any of them the operating bar 26 can be positioned substantially parallel to the adjacent side of the hopper 10 as illustrated in Figure 1.

In order to limit the extent that the operating bar 26 can be inserted in any of the four sockets or pockets 25, a transverse wall 28 is

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formed integrally with the operating bar receiving portion 23 at the bottom of each of the sockets or pockets 25. Thus, while the construction is such as to permit the operating bar 26 to extend well beyond the axis of rotation of the operating head 15, there is a definite limit as to how far it can be inserted therethrough.

For convenience a rectangular section 29 can be provided at the outermost end of the operating bar receiving portion 23 to permit the application thereto of a wrench or like tool if desired.

Since certain changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matter shown in the accompanying drawing and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. For combination with a shaft carrying pinion means cooperating with rack means on a gate used for controlling the opening through a hopper of a railway hopper type car, means for rotating said shaft including an operating head adapted to be non-rotatably mounted on one end of said shaft with its longitudinal axis coincident with the axis of rotation thereof and including an operating bar receiving portion formed by four sections spaced 90° apart around and constituting an integral part of and extending lengthwise of said head, each of said sections having an operating bar receiving pocket extending at an acute angle to the axis of rotation of said head and into and at least partly through the opposite section whereby two pairs of operating bar receiving pockets are provided in planes intersecting at right angles along said longitudinal axis and the exterior surface of each section containing two apertures, and wall means between the apertures in each section on one side defining a part of one of said operating bar receiving pockets of a pair and on the other side defining a part of the other bar receiving pocket of the same pair.

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2. For combination with a shaft carrying pinion means cooperating with rack means on a gate used for controlling the opening through a hopper of a railway hopper type car, means for rotating said shaft including an operating head adapted to be non-rotatably mounted on one end of said shaft with its longitudinal axis coincident with the axis of rotation thereof and including an operating bar receiving portion formed by four sections spaced 90° apart around and constituting an integral part of and extending lengthwise of said head, each of said sections having an operating bar receiving pocket extending at an acute angle to the axis of rotation of said head and into and at least partly through the opposite section whereby two pairs of operating bar receiving pockets are provided in planes intersecting at right angles along said longitudinal axis and the exterior surface of each section containing two apertures, wall means between the apertures in each section on one side defining a part of one of said operating bar receiving pockets of a pair and on the other side defining a part of the other bar receiving pocket of the same pair, and a transverse wall at the inner end of each pocket to limit the extent that the operating bar can be inserted therein.

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