

J. E. & W. E. GILMORE.

PUMP.

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951,908.

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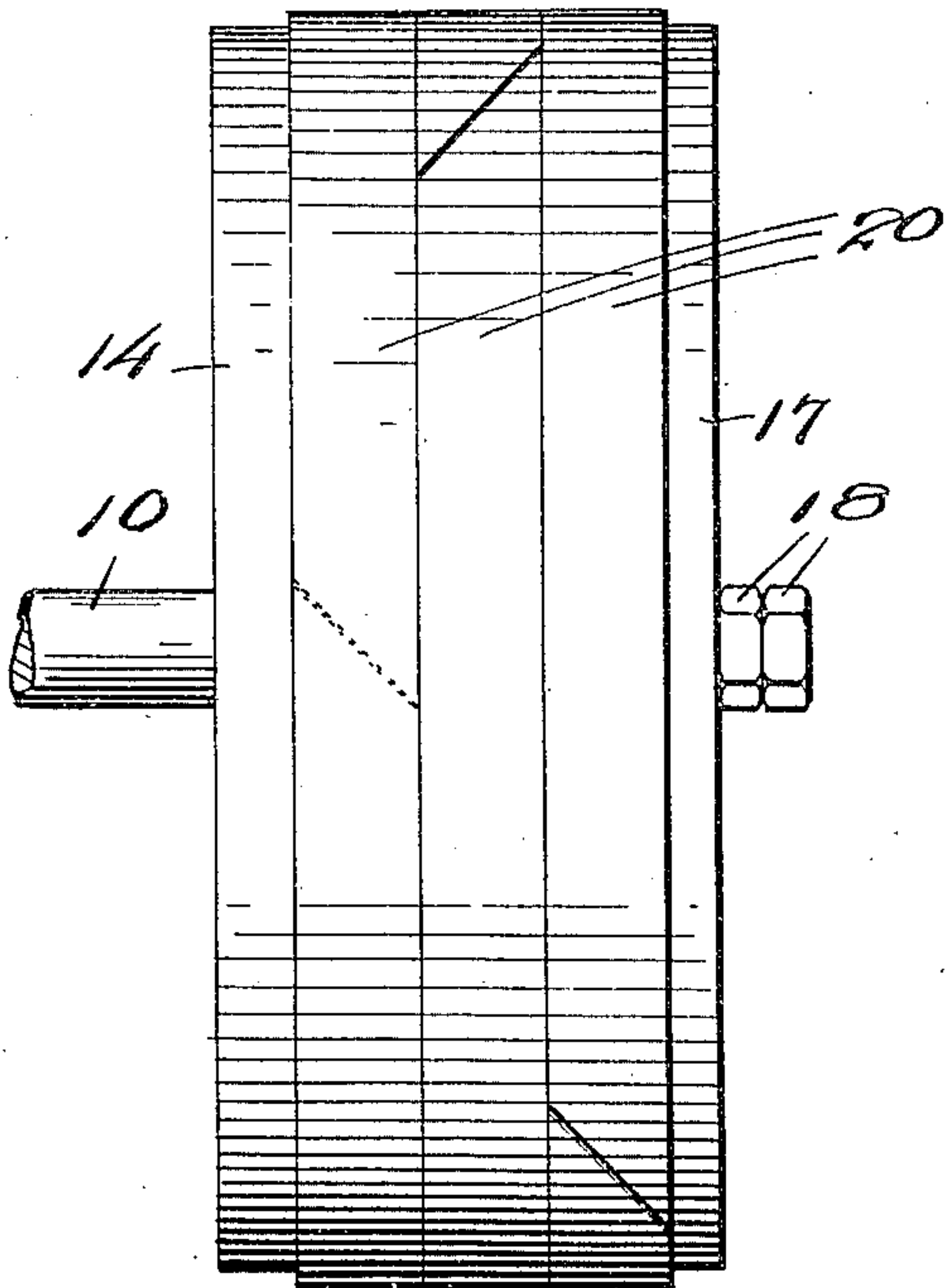


Fig. 1.

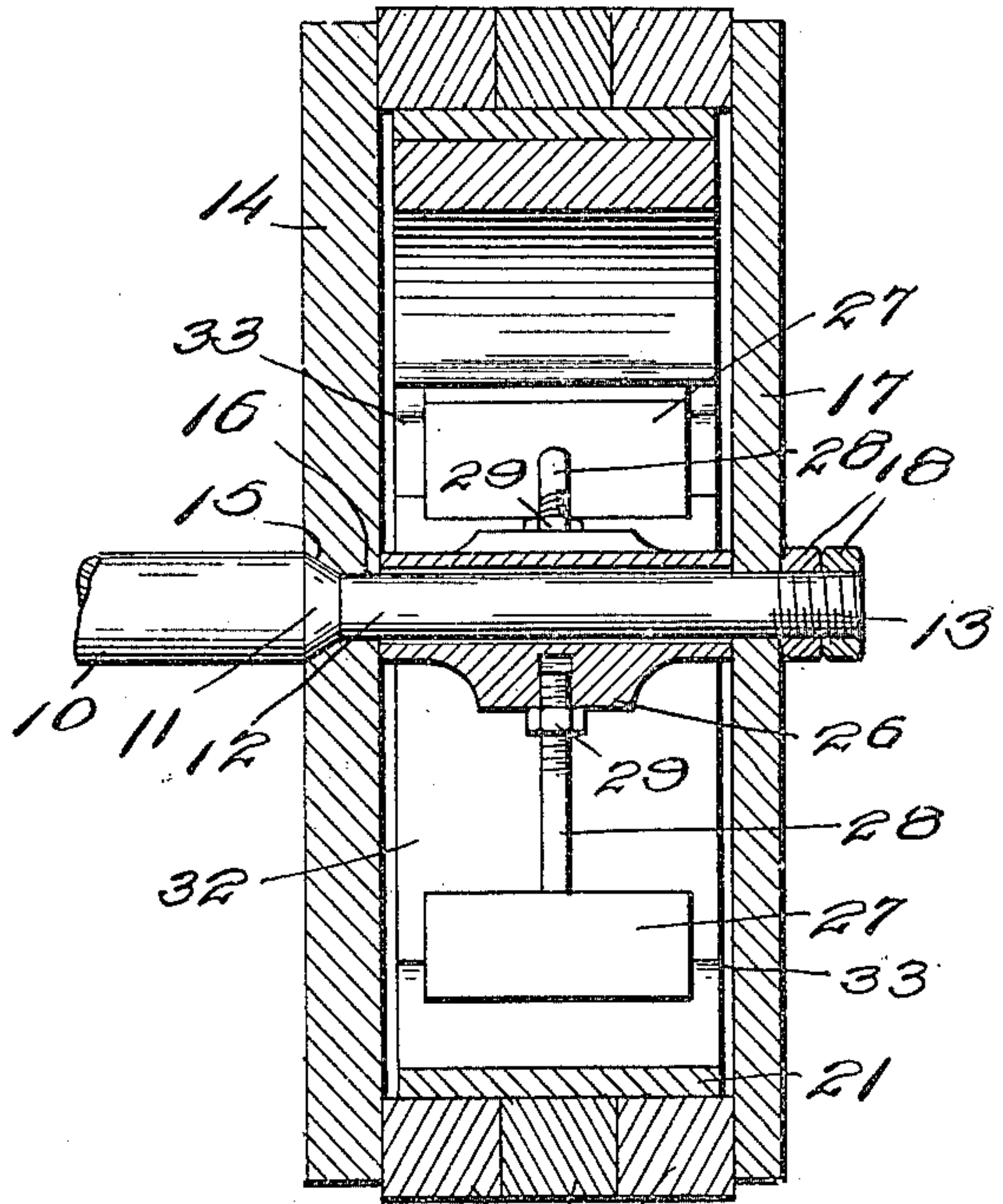


Fig. 2.

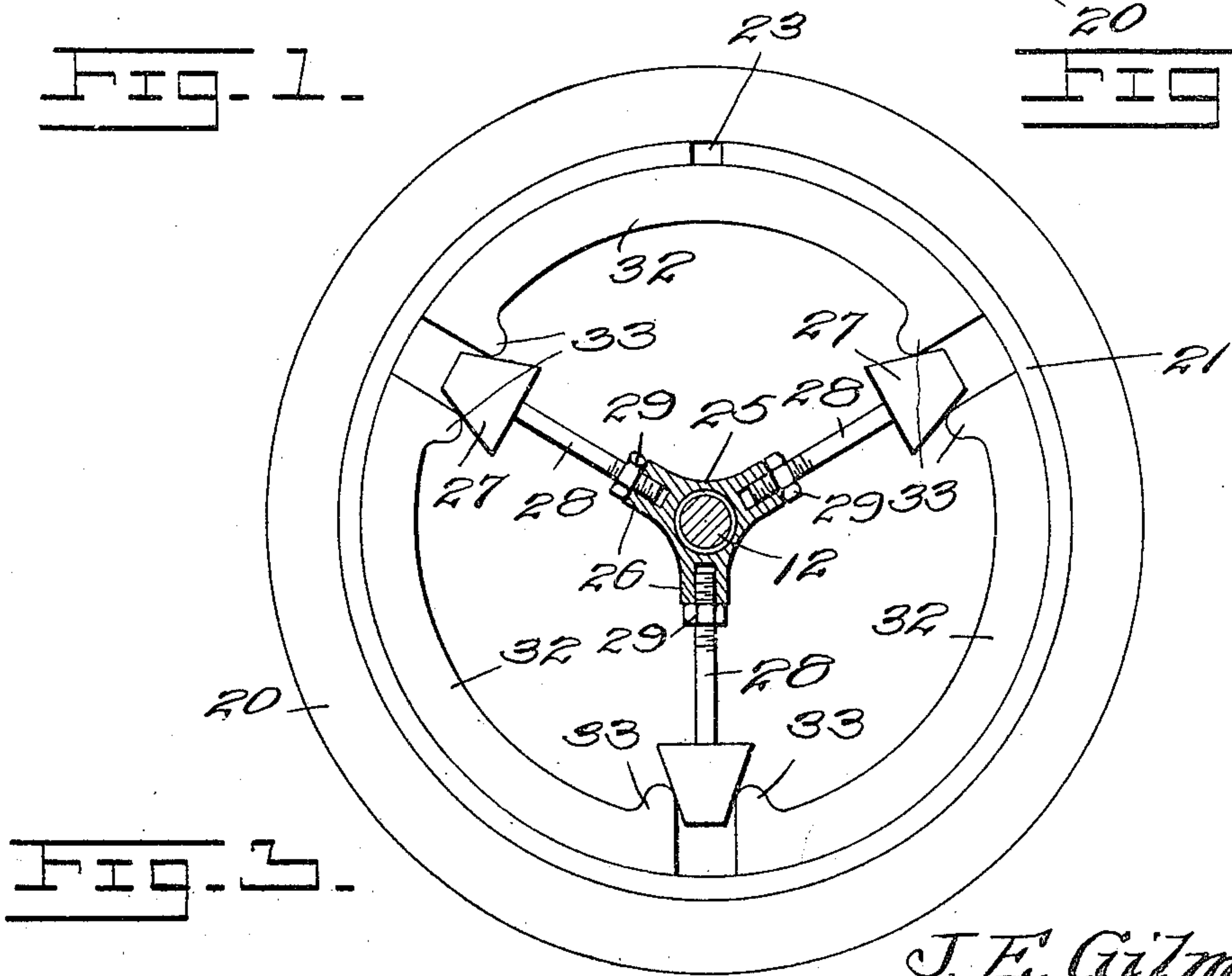


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN E. GILMORE, OF SULLIVAN, INDIANA, AND WILLIAM E. GILMORE, OF
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PUMP.

951,908.

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To all whom it may concern:

Be it known that we, JOHN E. GILMORE and WILLIAM E. GILMORE, citizens of the United States, JOHN E. GILMORE residing at Sullivan, in the county of Sullivan and State of Indiana, and WILLIAM E. GILMORE residing at Winterhaven, in the county of Polk and State of Florida, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to certain new and useful improvements in pumps, and it consists in the novel construction of a piston, so arranged that the packing rings of the piston may be expanded in such a manner, that the packing ring sections will be held under like tension.

A further object is, to provide a pump piston, so arranged that the packing ring sections will automatically adjust themselves insuring a full peripheral contact with the cylinder.

With these and other objects in view the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 shows an edge view of a piston constructed according to our invention, Fig. 2 is a longitudinal sectional view, Fig. 3 is a transverse sectional view.

In piston construction, it is quite essential that the packing ring sections are all held under like tension so that the sections will expand to insure a full contact with the cylinder. This object we accomplish in constructing a piston in which the ring sections are yieldingly held insuring the piston expanding to meet any unequal wear of the cylinder lining or ring sections.

In the drawings, the numeral 10 designates the piston rod which near one end is provided with the cone bearing 11 from which extends the reduced stem portion 12 which at its end is threaded as shown at 13.

Held against this cone bearing 11, is the stop plate 14 having the conical bearing 15 and the stem opening 16 to snugly accommodate this end of the piston rod. Upon the reduced end 12 of the piston is held the follow plate 17 which is secured by means of the set nuts 18 as shown.

In connection with our piston, we use a plurality of interlocking packing ring sections 20 as is usual in piston construction, and these packing ring sections 20 are held upon an open seam annulus, shown in Fig. 4, which we term a bull ring marked 21 which is preferably made of flat spring brass. This bull ring has a portion removed to form an opening within which is held a projecting tongue portion of the end opposite. The packing ring sections are held upon this expanding bull ring as shown.

Slidably held between the stop plate 14 and the follow plate 17 is the hub 25 which is provided with three hollow lugs 26, these lugs being equi-distantly spaced about the outer surface of the hub as shown. The central opening 30 within this hub is of a size considerably larger than the piston rod 12 as shown. Adjustably held within each hollow lug 26 is the inner end of a stem 28 which at its outer end carries a wedge-shaped expanding head 27, these stems being adjustably held to the lugs by means of the set nuts 29. Held against the inner surface of the bull ring 21, are three similar arcuate header members 32, each member having an edge flange 33 at each end. These arcuate spreaders are of such a length that the wedge shaped spreader heads 27 will be partly held between these spreader members as shown in Fig. 3. As shown the spreader stems project radially outward through their supporting lugs and as each stem is threaded, each wedge head may be given an independent adjustment relative to the hub. As shown in Fig. 2, the arcuate headers 27 are of a width approximately that of the bull ring, while the bull ring is approximately of a width that of the combined packing rings 20. The combined packing ring sections are of a width slightly wider than the bull ring and the arcuate spreader so that these packing ring sections may be clasped between the plates 14 and the follow plates 17. The stems 28, freely

slide within the unthreaded openings of the lug 26.

The operation of adjusting our piston head within a cylinder is very simple.

5 The piston having been introduced, the follow plate 17 is removed to expose the expanding mechanism, the packing ring sections are then given proper adjustment in rotating the set nuts 29 in a proper direction to carry the stems 28 out of the lugs. 10 As the ends of these stems 28 freely work within the lugs, this can be readily accomplished. After the spreader head has been carried outward a suitable distance the stem 15 is locked by means of the set nut. As the hub 25 is permitted a free movement between the plates 14 and 17 as well as about the stem 12, it is necessary to adjust but one of these stems 28. The hub 25 is permitted a transverse movement relative to the piston rod though no longitudinal displacement is possible because of the plates 14 and 17. This construction insures the arcuate spreading members 27 traveling outward 20 until interrupted by the inner-peripheral surface of the cylinder. By this means, we provide a piston wherein the packing rings are held in yielding relation. It is, of course, understood that these pistons may 30 be made of various sizes, and that where necessary more than one set of spreading mechanisms could be used in connection with a single cylinder head. So, also are these pistons adapted to be used in connection with gas, steam or other cylinders. 35

Having thus described our said invention, what we claim as new and desire to secure by United States Letters Patent is:—

1. The combination with a piston rod, of 40 a stop plate secured to said rod, a follow plate carried by said rod, a hub loosely held between said plates, spreader heads adjustably carried by said hub, arcuate spreaders engaged by said heads, and packing rings 45 surrounding said arcuate spreaders.

2. The combination with a piston rod, of a stop plate secured to said rod, a follow plate carried by said rod, a hub loosely held between said plates, spreader heads adjustably carried by said hub, arcuate spreaders engaged by said hub, and a bull ring surrounding said arcuate spreaders. 50

3. The combination with a piston rod of a stop plate carried by said rod, a follow plate carried by said rod, a hub loosely held 55 between said plates, spreader heads adjustably carried by said hub, arcuate spreaders engaged by said head, a bull ring engaged by said arcuate spreaders.

4. The combination with a piston rod, of 60 a stop plate carried by said piston rod, a follow plate carried by said piston rod, an open seam bull ring held between said plate, arcuate spreaders engaging the under surface of said bull ring, a hub loosely held 65 about said piston rod, and spreader heads adjustably secured to said hub and engaging said arcuate spreaders.

5. The combination with a piston rod, of a stop plate carried by said rod, a follow 70 plate secured to said piston rod, packing rings adjustably held between said plates, an open seam bull ring held below said packing rings, arcuate spreaders held against said bull ring, a hub loosely surrounding said packing rod, and means adjustably carried by said hub to engage said arcuate spreaders. 75

6. The combination with a piston rod, of a stop plate carried by said piston rod, a 80 follow plate upon said piston rod, a hub loosely surrounding said piston rod and slidably held between said plates, a plurality of spreader heads, stems extending from said spreader heads and being adjustably 85 secured to said hub, a plurality of arcuate spreaders held between said spreader heads, a bull ring surrounding said arcuate spreaders, and a plurality of packing rings engaging said bull ring all arranged substantially 90 as and for the purpose set forth.

In testimony whereof we affix our signatures, in presence of two witnesses.

JOHN E. GILMORE.

WILLIAM E. GILMORE.

Witnesses to signature of John E. Gilmore:

W. PAUL STRATTON,

GEORGE W. BUFF.

Witnesses to signature of William E. Gilmore:

WILLIAM T. HOWARD,

E. H. WAGGONER.