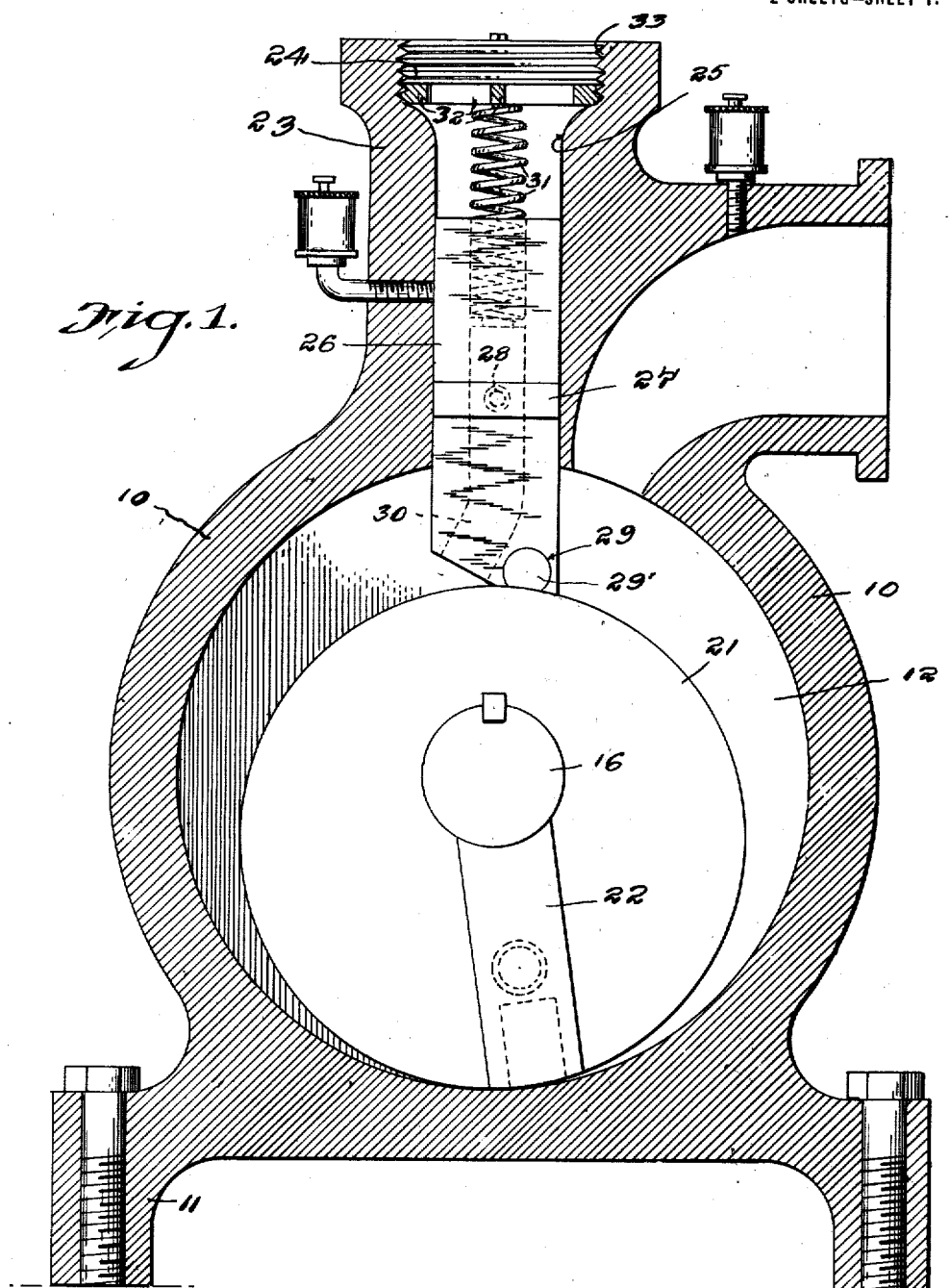


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ROTARY PUMP.
APPLICATION FILED JUNE 4, 1919.

Patented Dec. 7, 1920.
2 SHEETS—SHEET 1.



Inventor
Frank Marion,
By *H. Woodward* Attorney

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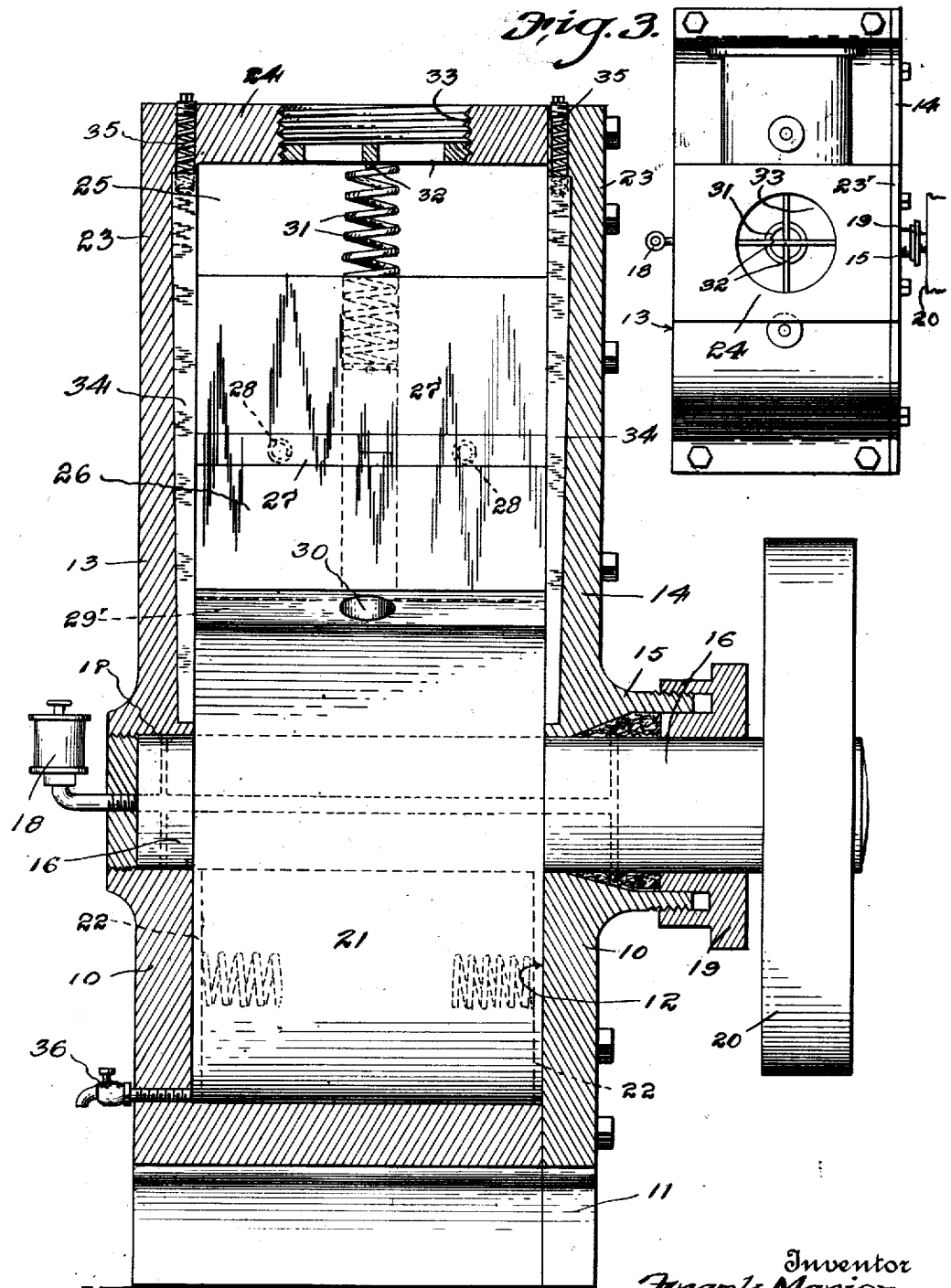


Fig. 2.

Fig. 3.

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Inventor
 Frank Marion,
 H. L. Woodward
 Attorney

UNITED STATES PATENT OFFICE.

FRANK MARION, OF HARDWICK, VERMONT, ASSIGNOR TO MARION ROTARY MOTORS COMPANY, INC., OF HARDWICK, VERMONT, A CORPORATION OF VERMONT.

ROTARY PUMP.

1,361,343.

Specification of Letters Patent.

Patented Dec. 7, 1920.

Application filed June 4, 1919. Serial No. 301,667.

To all whom it may concern:

Be it known that I, FRANK MARION, a citizen of the United States, residing at Hardwick, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

The invention has for an object to effect improvements in devices used as rotary pumps or rotary internal combustion engines, and has for an object to simplify the casing construction of such devices and minimize the number of parts, and machine operations required in the production of such device, without impairing the efficiency of engines of this type. It is a specific aim of the invention to improve the construction of sliding abutment for engines of this character.

Additional objects, advantages and features of invention may appear from the construction, arrangement, and combination of parts hereinafter set forth and shown in the drawings, representing one of the possible embodiments of the invention, wherein,

Figure 1 is a vertical sectional view of an engine constructed in accordance with my invention, taken through the major medial plane thereof,

Fig. 2 is a sectional view at right angles to Fig. 1.

Fig. 3 is a top view of the motor.

There is illustrated an engine comprising a casing 10, which may be cast and fitted to be secured upon a support as at 11, the casing having a circular chamber 12 therein, having a cylindrical peripheral wall smoothly machined to an accurate form, the casing being closed on either side by head plates 13 and 14 respectively, the latter having a bearing 15 therein in which there is slidable a shaft 16 having one end set in a socket bearing 17, in the plate 13. An oil cup 18 is mounted on the plate 13 in a suitable manner, from which a duct extends to the bearing 17 as indicated in Fig. 2. A proper gland 19 is fitted upon the bearing 15, compressing a packing against the shaft 16. A fly or pulley wheel 20 is mounted upon the outer end of the shaft 16. The shaft 16 is concentric with the chamber 12, and has splined thereon a piston 21, circular in form but mounted eccentrically upon the shaft, so that it will bear against the inner wall of the chamber 12, at the line of bearing a wear

and packing plate 22 being provided on the piston to fit snugly against the peripheral wall of the chamber 12. The casing is provided with an upward extension 23, which includes an outlet water or steam connection 24 at one side. Through the extension and opening into the chamber 12, there is formed a rectangular passage 25, extending radially with respect to the axis of the casing and reciprocable in this passage there is an abutment element 26 snugly slidable in the passage, but having right angle packing bars 27 fitted in a circumscribing groove therearound, the mutually adjacent ends of the bars being overlapped and suitably mortised. Inwardly of the bars there are confined suitable springs 28 by which they are forced outwardly against the sides of the passage 25. At the inner end of the abutment, a suitable groove 29 is formed thereacross, having a partly circular form in cross section, and snugly revoluble therein, there is a wiper bar conforming to the shape of the groove, and having a flat side bearing against the piston. This bar and the groove are set closely adjacent one side of the abutment in the direction of rotation of the piston, when used as a pump and the end face of the abutment upon the opposite side is inclined outwardly and away from the piston, a passage 30 being formed through the abutment, which opens through this end face where it is sloped away from the piston. The passage mentioned is rectilinear in the outer part of the abutment, but is curved slightly toward the inclined end face of the abutment at its inner part. It should be noted that the inclined end face of the abutment extends from the middle part of the abutment giving ample room for an opening therethrough of the largest possible size. A shoulder is formed adjacent the inner part of said passage, upon which there is a spring 31, compressed by a suitable retaining pin or spider 32 mounted upon the outer part of the extension 23 in a proper manner. The extension 23 is formed with an enlarged interiorly threaded recess 33 around the outer end of the passage 25 with which pipe connections may be made. If desired, the passage 25 may be closed at each side by suitable extensions 23' formed on the cover plate before mentioned. In order to give a satisfactory means for preventing movement of gases past the abutment between the plates 13 and 14, radial grooves

are formed in the plates alined with the abutment, inclined toward their outer ends, and slidable in these grooves there are tapered packing plates 34 formed of brass or other suitable metal, and held in snug engagement between the abutment and the plates 13 and 14 by means of springs 35 inserted in the outer end of the grooves and bearing against the ends of the plates 34. If desired, a drain cock 36 may be mounted in one of the side plates, as illustrated. An oil cup may also be installed upon the intake.

It will be seen that without the use of special valve devices, rotation of the piston will cause the entrance of water through the inlet as the piston passes, and the forcing of the liquid outwardly through the abutment when the piston approaches the abutment, the device having been found to function in a very smooth manner free of excessive jar and vibration.

It will be appreciated that by reason of the fact that communication is formed through the abutment up to the moment that the wiping part of the piston passes the far side of the passage 25, it is permissible to restrict the sides of the casing so that there will be a much less difference between its diameter and the diameter of the piston should this be found advantageous. It will enable the construction of an engine with an abutment having a very limited range of re-

ciprocation, which might be desirable for high speed engines.

What is claimed is:

In an apparatus of the character described a casing having a circular chamber therein, and having a passage opening therefrom extending away from the perimeter of said chamber, a duct connection on the casing at the outer end of said passage, a cam piston revoluble in said chamber, an abutment slidable in said extension having a passage longitudinally therethrough with an oblique terminal inner part opening laterally toward one side of said chamber at the inner end of said abutment, said abutment having a bearing portion at the inner end on the side opposite the opening of said passage, formed with a channel transverse to the chamber and semi-cylindrical in cross section and a wear member revoluble therein engaging the piston, the inner end face of the abutment adjacent the passage outlet being inclined outwardly from the middle of the abutment and having the passage opening therethrough close to the said bearing portion.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK MARION.

Witnesses:

LOUIS B. TIMS.

L. C. UDALL.