No. 762,619. PATENTED JUNE 14, 1904.

F. J. DONOUGHE.

ACTUATING VALVE.

APPLICATION FILED MAY 9, 1903.

NO MODEL.

Fig. 1

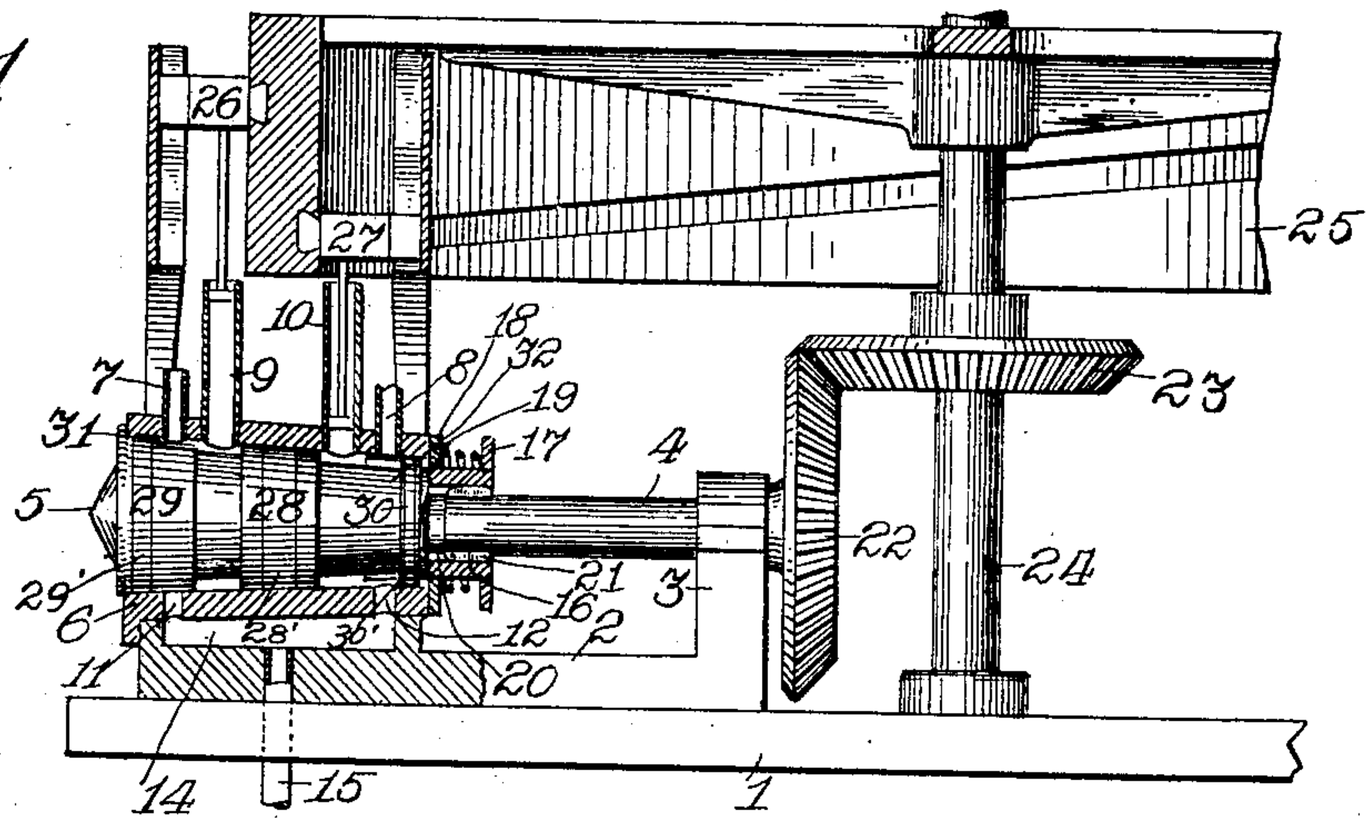


Fig. 2

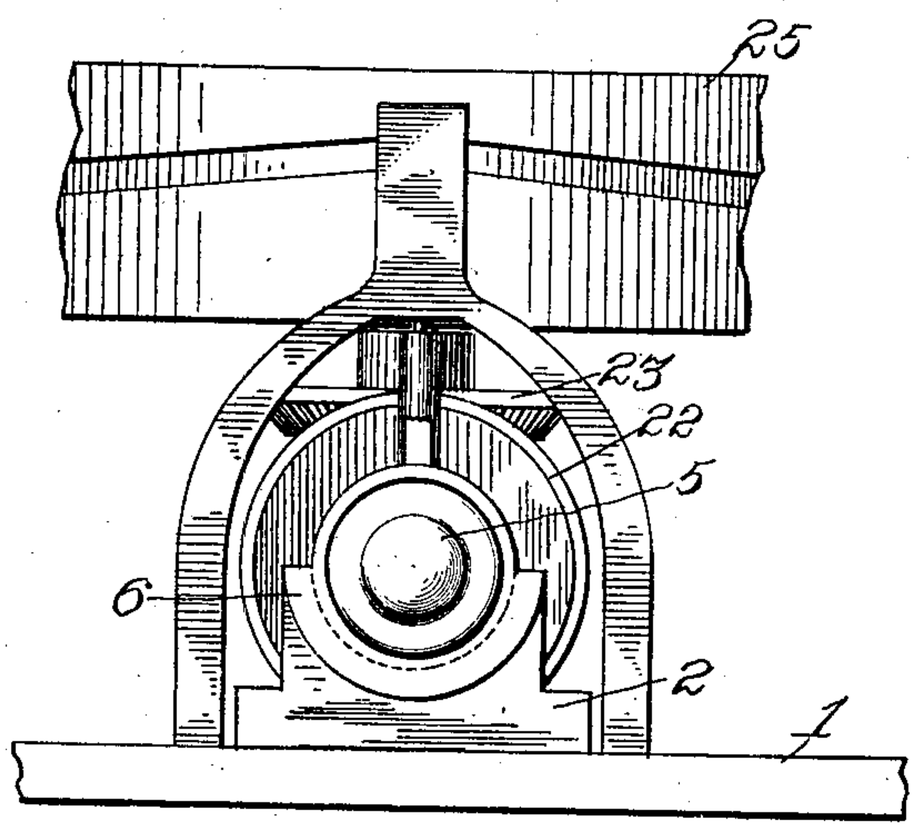


Fig. 3

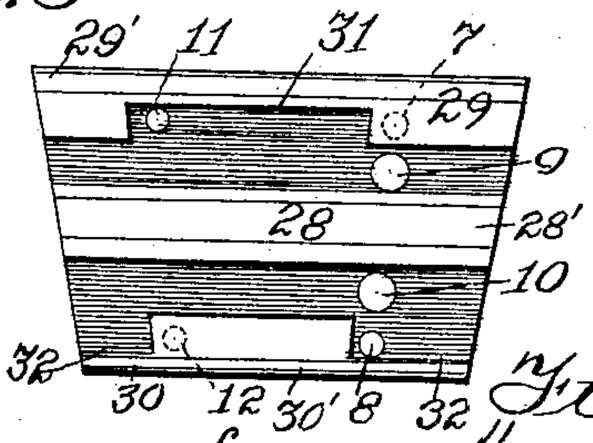


Fig. 4

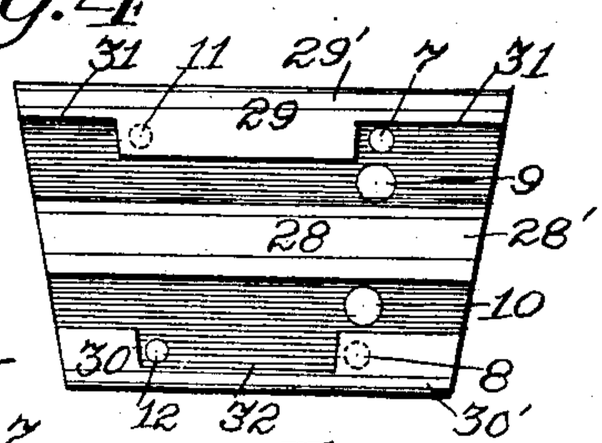
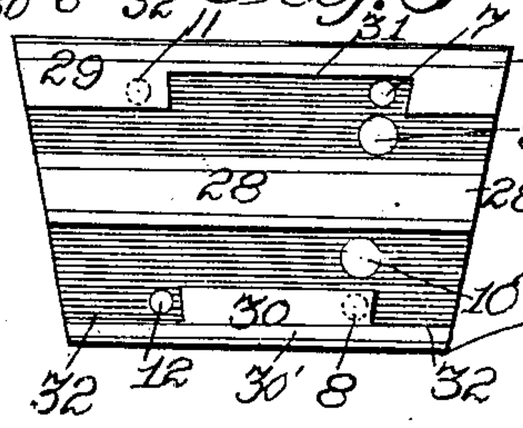


Fig. 5



Witnesses:
Geo. B. Rowley,
E. C. Potter.

Inventor;
F. J. Donoughe.
By N. L. Emerson & Co.
Attorneys.

No. 762,619. Patented June 14, 1904.

UNITED STATES PATENT OFFICE.

FRANCIS J. DONOUGHE, OF GALLITZIN, PENNSYLVANIA.

ACTUATING-VALVE.

SPECIFICATION forming part of Letters Patent No. 762,619, dated June 14, 1904.

Application filed May 9, 1903. Serial No. 156,435. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS J. DONOUGHE, a citizen of the United States of America, residing at Gallitzin, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Actuating-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in valves for pumping and other apparatus; and it consists more particularly in the valve which controls the same, and is an improvement over Letters Patent of the United States No. 717,977, granted me January 6, 1903.

The object of this invention is to provide a valve which is of cheap construction and will be easily operated and efficient in operation.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate like parts throughout the several views, in which—

Figure 1 is an elevation, partly in section, of my improved valve and a portion of the operating means for the same. Fig. 2 is an end elevation of said valve. Fig. 3 is a developed plan view of the valve in one of its positions. Fig. 4 is a like development showing the same when revolved one hundred and eighty degrees, as would occur in rotating the valve. Fig. 5 is a development showing the same moved but a short distance, as would occur when the valve is reciprocated in operation.

Mounted on the table 1 is a valve-support 2, which at one end is provided with a bearing 3, in which is mounted a stem 4 of the valve-plug 5. The valve-plug 5 is tapered and ground within the valve-casing 6, which is provided with suitable suction-ports 7 8 on its upper side, and located adjacent to said suction-ports are the pump-cylinders 9 10. Diametrically opposite from the pump-cylinders the outlet-ports 11 and 12 are provided, the said outlet-ports communicating with the chamber 14, provided in the valve-support 2, said chamber having an outlet or discharge pipe 15. The valve-plug 5 is provided on its smaller end with an extension 16, on which a collar 17 is secured, and a washer 18 fits over said extension and abutting the smaller end of the valve-casing forms a bearing against which the spring 19, which is confined between said washer and collar 17, forms a means for keeping the valve in proper seated relation to the casing. This extension 16 is hollow and is provided with grooves 20, in which the projections 21 of the valve-stem 4 are adapted to fit, thus providing a sliding connection between the valve-stem and the valve-plug 5. The valve-stem is provided on its inner end with a miter-gear 22, which meshes with a miter-gear 23, secured to the vertical operating-shaft 24, on the top of which the pump-cam 25 is secured, said cam being provided on its inner and outer surfaces with oppositely-inclined grooves, in which the blocks 26 and 27 operate for the purpose of actuating the pistons of the pump. This vertical shaft 24 is driven by any suitable means, and the rotation of the same will operate the pump and also rotate the plug 5 of the valve, thereby maintaining a constant relation between the rotation of said valves and the reciprocation of the pump-pistons.

Referring to Fig. 3, the valve is provided at its center with an enlarged portion 28, which encircles its entire periphery, and its enlarged portions 29 30, which encircle its periphery at their ends, have cut-away portions 31 32, respectively. Packing-rings 28′, 29′, and 30′ are inlaid in the portions 28, 29, and 30 for the purpose of forming tight joints between the different parts of the valve. As shown in Fig. 3, the port 9 is connected with opening 11 and port 10 is connected with port 8, while port 9 is connected with port 11 and port 7 will be cut off, as indicated, and while port 10 is connected with port 8 the port 12 will be cut off, as indicated. The valve in rotating will when it is moved one hundred and eighty degrees be in position as shown in Fig. 1, when the port 9 will be connected with port 7 and the port 11 will be cut off from communication therewith, and the port 10 will be in communication with port 12, and the port 8 may be disconnected therefrom. The cut-away portions 31 32 encircle the valve one-half its circumference. Thereby

in rotating said valve said ports will be cut off or connected for one-half its revolution, as hereinbefore indicated.

While I have herein shown and described the invention in connection with a pumping apparatus, it is obvious that the same could be used for any other apparatus and that various slight changes may be made in the details of construction without departing from the general spirit of the invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a valve of the character described, the combination with a casing having two inlet-ports and two outlet-ports and two pump-cylinder ports, of a valve rotatably mounted in said casing and having a central ring adapted to separate one pump-cylinder and its inlet and outlet ports from the other pump-cylinder and its inlet and outlet ports and two rings located adjacent to said central ring and formed and adapted to alternately put each pump-cylinder port into communication successively with its inlet and outlet port, substantially as described.

2. In a valve, the combination with a casing having two inlet-ports on one side, two pump-cylinder ports on the same side and two outlet-ports on the opposite side and a discharge-port communicating with both said outlet-ports, of a rotary valve located in said casing and provided with two peripheral passages extending entirely around the valve so formed as to successively connect each pump-cylinder port with its inlet-port and outlet-port, and one pump-cylinder port with its inlet-port while the other is connected with its outlet-port, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANCIS J. DONOUGHE.

Witnesses:
JAMES WATTS,
R. E. DIGNAN.