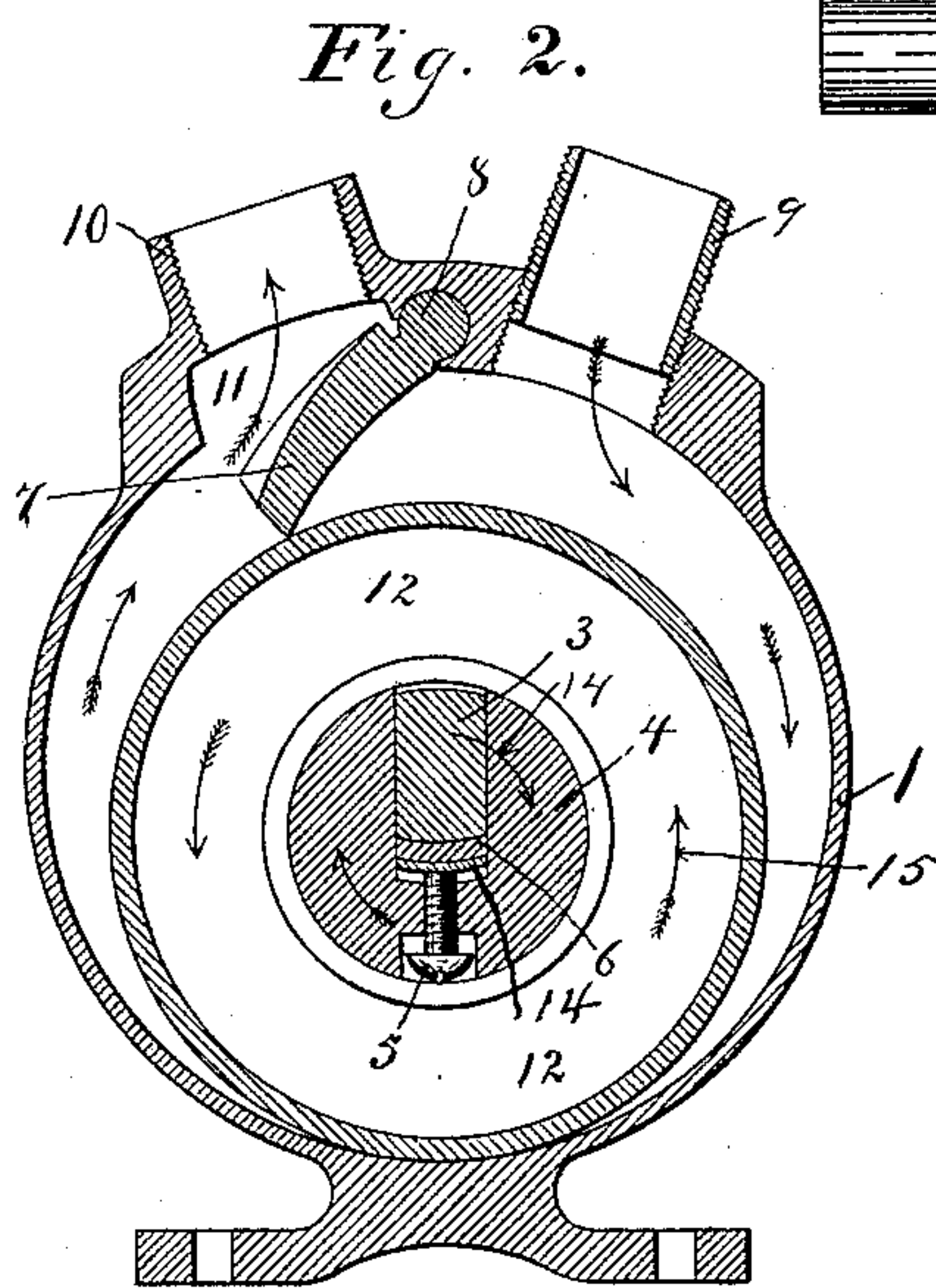
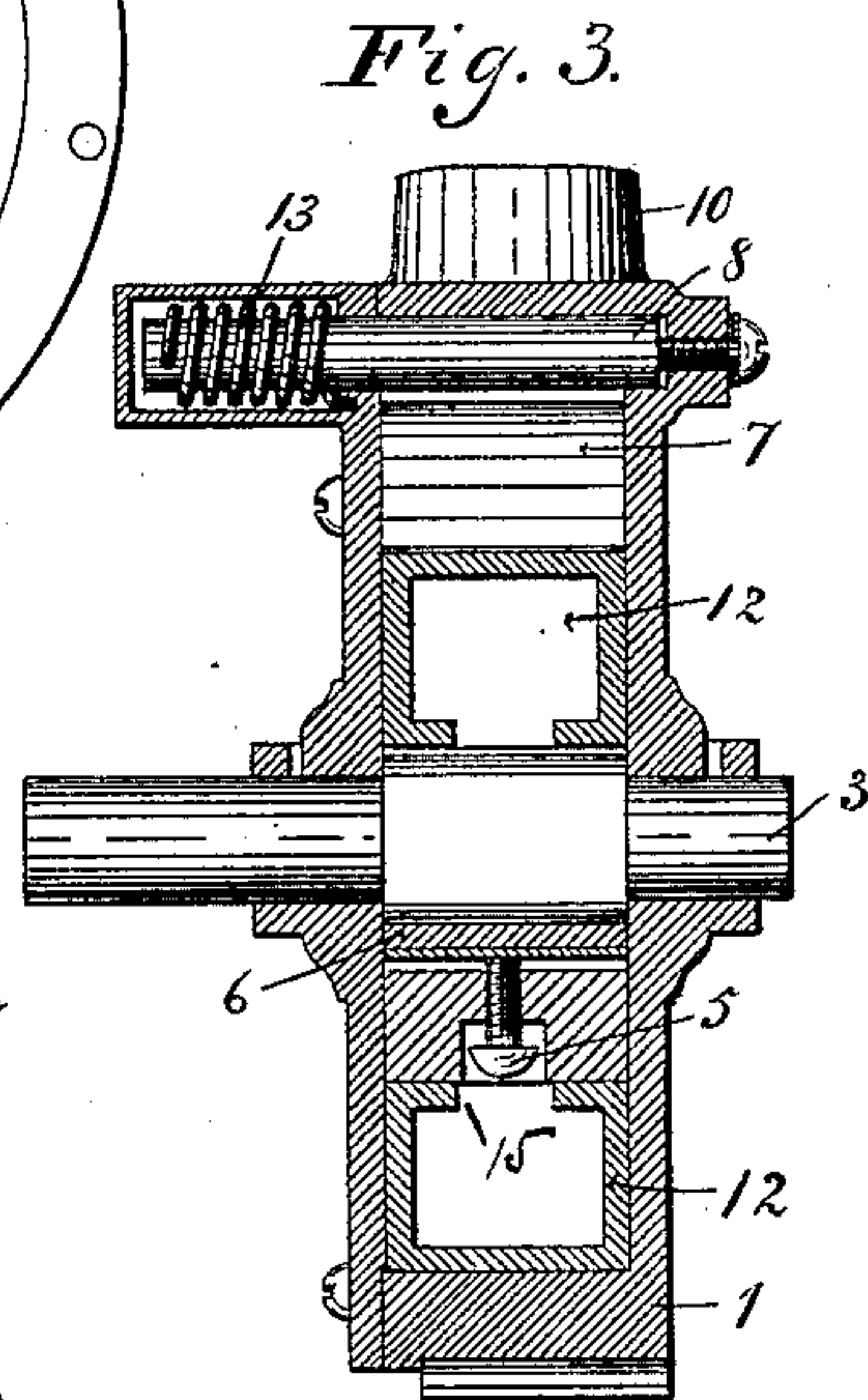
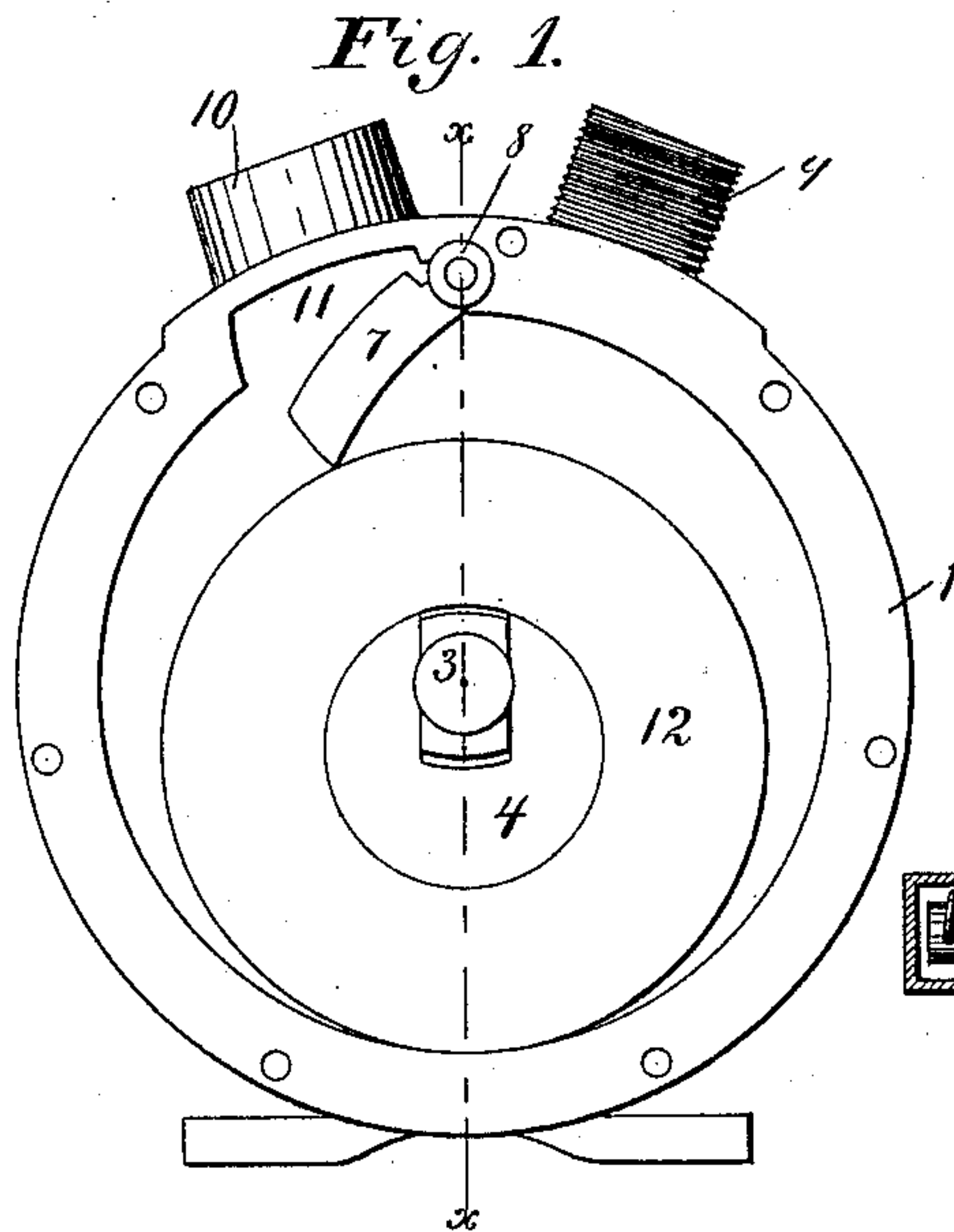


(No Model.)

N. NILSON.  
ROTARY PUMP.

No. 452,726.

Patented May 19, 1891.



Witnesses

J. Jessen  
S. J. Beardslee.

Inventor

Nils Nilson.

By *his* Attorneys

Paul, Sanford & Merwin



# UNITED STATES PATENT OFFICE.

NILS NILSON, OF MINNEAPOLIS, MINNESOTA.

## ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 452,726, dated May 19, 1891.

Application filed December 19, 1887. Serial No. 258,279. (No model.)

*To all whom it may concern:*

Be it known that I, NILS NILSON, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

My invention relates to rotary pumps with usual inlet and outlet ports and a valve opening and closing the outlet-port acted upon by an eccentric cylindrical piston.

The object of my invention is to simplify the construction of such pumps, diminish the cost, diminish the friction and wear of parts, and thereby economize the power and increase the durability and efficiency of the pump.

My invention consists, generally, in the combination, in a rotary pump, of a rotating cylindrical piston mounted upon an eccentric core or axis, so as to roll upon the inner surface of the pump-barrel in one direction while being carried in an opposite direction by the turning of the shaft.

The invention also consists in a swinging valve attached to the pump-barrel, riding upon the piston and alternately opening and closing the outlet-port of the pump, the pump being adapted for use either as a suction or force pump by the addition of a proper valve in either the inlet or outlet to prevent a return-flow of the fluid without difference in construction, as clearly appears from the accompanying drawings and following description.

In the said drawings, forming a part of this specification, Figure 1 shows the interior and working parts of my improved pump exposed to view by the removal of the head of the pump-barrel. Fig. 2 represents a vertical cross-section, and Fig. 3 a longitudinal section, of the same.

In the drawings, 1 represents the pump-barrel with its inlet and outlet ports 9 and 10, and recessed at 11 to receive the swinging valve 7.

3 is the pump-shaft concentric with the pump-barrel, flattened to fit into a slot in the eccentric cylinder 4, the eccentricity of which is adjusted by the set-screw 5, passing through the cylinder into the slot, carrying upon its point a plate 14, covered with a strip of packing 6, and pressing this against the shaft.

12 is the rotary piston concentric with the cylinder 4 and turning upon it as its axis, and rolling upon the inner surface of the pump-barrel.

The action of the pump in operation is as follows: The set-screw 5 being adjusted so as to cause the piston to bear upon the barrel of the pump, the shaft 3, on being turned in the direction indicated by the arrow 14, carries with it the eccentric cylinder 4 and the piston 12, but the piston freely turning upon the eccentric, caused by its bearing upon the inner surface of the pump-barrel to roll upon the said barrel in the direction indicated by the arrow 15, the water being by the traveling of the piston drawn in at 9 and forced out at 10. The swinging valve 7, hinged at 8, always rides upon the surface of the piston, being held in such position by its own weight or by a spring 13 or other equivalent device. The valve is grooved on its upper surface, as shown, and fits loosely, so that all the fluid as forced toward it finds free vent through the space in said recess and through the groove out of the port while the valve is in the act of closing, thus avoiding increased friction from the resistance of confined fluid. As the piston rolls forward it lifts the valve into its recess, and in passing allows it to drop back and reopen the port. By the set-screw 5, as indicated, the eccentric can be nicely adjusted, so that the piston will fit in and roll upon the inner surface of the barrel and compensation be made for the gradual wear of parts. By the rolling instead of sliding of the piston friction between it and the pump-barrel is almost wholly eliminated, while the direction of the turn of the piston makes the friction against the valve slight, and the wear of the valve in no way affects its working efficiency.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a rotary pump, the combination, with the pump-barrel fitted with ports and valve, of an eccentric cylinder 4, formed with one slot to receive a flattened shaft and another slot to receive the head of a screw below the periphery of the cylinder, a shaft 3, lying in the slot therefor in said cylinder, a plate 14, packing 6 between said plate and cylinder, set-screw

5, having its head lying within the recess therefor in said cylinder and its end bearing against said plate, and the ring-piston 12, mounted upon said cylinder to roll upon the  
5 inner surface of the pump-barrel in an opposite direction from the revolution of the shaft, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand this 14th day of December, 1887.

NILS NILSON.

In presence of—  
R. H. SANFORD,  
A. M. GASKELL.