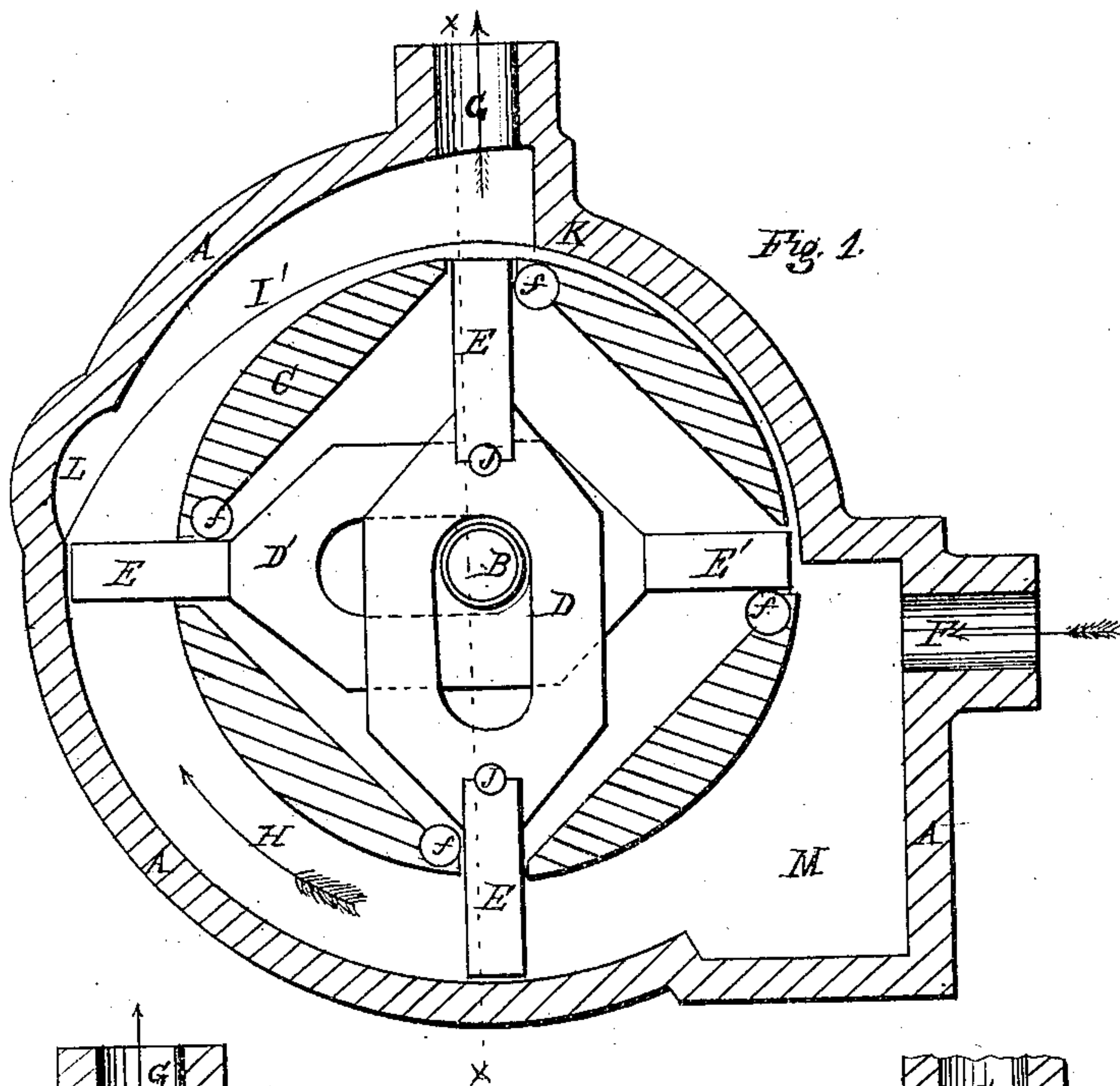


*H. W. Mather,*

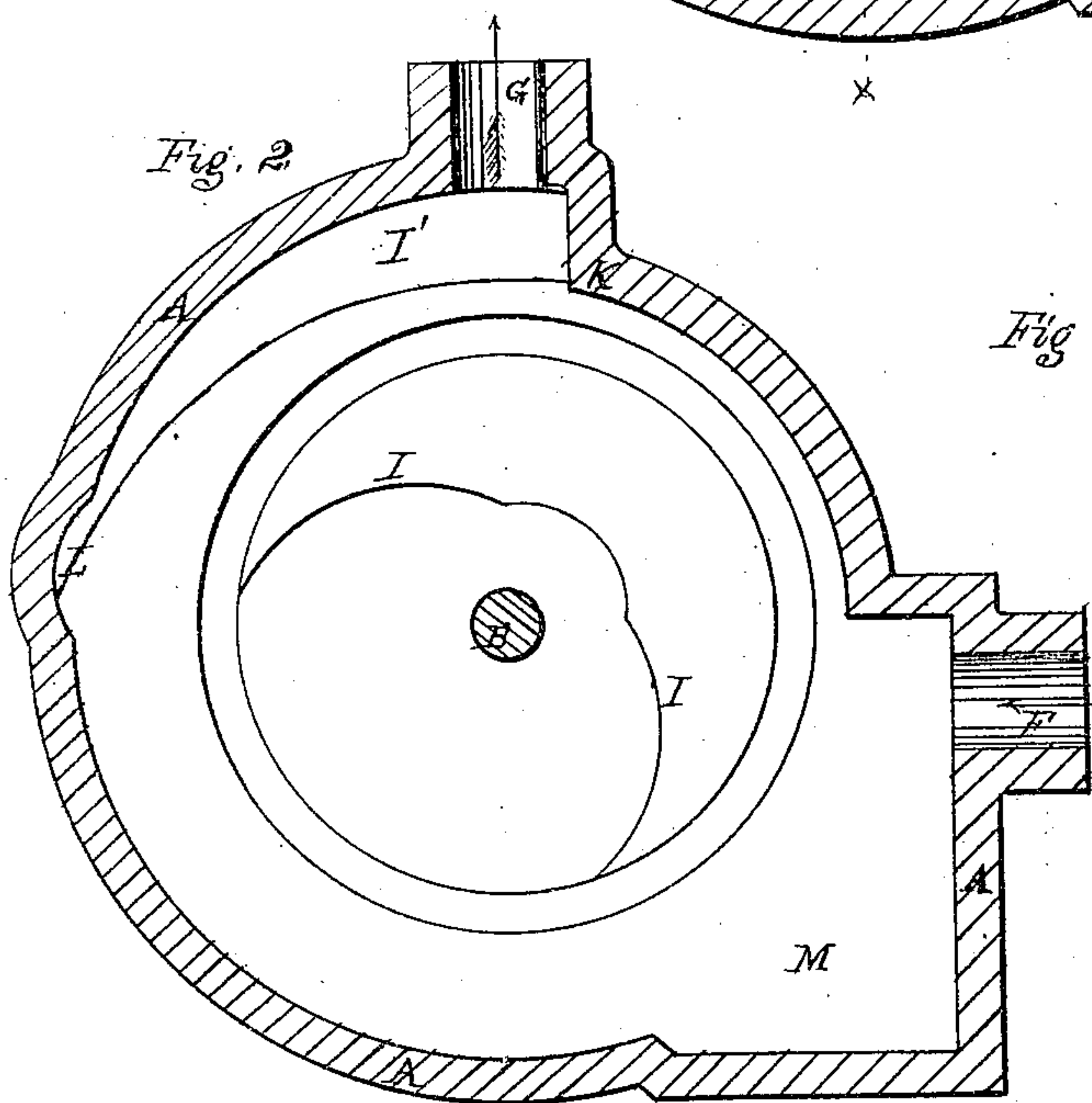
*Rotary Pump.*

*No. 102140.*

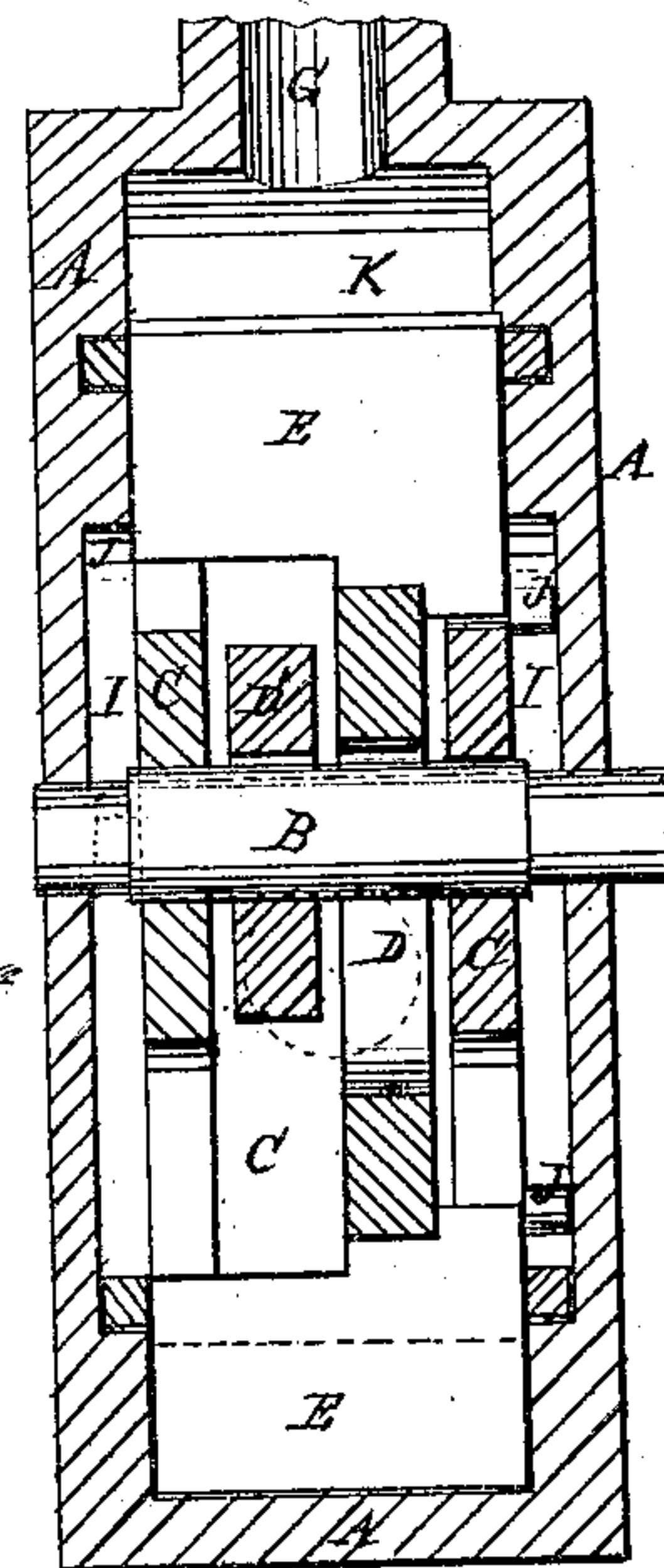
*Patented Apr. 19. 1870.*



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

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# United States Patent Office.

HENRY W. MATHER, OF NEW YORK, N. Y.

Letters Patent No. 102,140, dated April 19, 1870.

## IMPROVEMENT IN ROTARY PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

I, HENRY W. MATHER, of New York, in the county and State of New York, have invented a new and improved Rotary Pump, of which the following is a specification.

My invention belongs to that class in which a series of floats or buckets, carried by a revolving hub within a cylindrical case, are adjusted to occupy the water-passage during the greater portion of their revolution, and withdrawn therefrom to pass the butment; and

It consists in the enlargement of the inner circumference of the cylindrical case at that point, in the revolution of the floats at which their retraction commences, and in combination therewith of a central cam for moving the floats into the water-way and retracting them at the proper time, together with a supplementary cam to be used in case of the first becoming inoperative, and in the combination and arrangement of the other operating parts with these features, and also in the pocket or chamber for the reception of sticks, stones, &c., when the pump is used as a motor.

Figure 1 represents the pump with one side of the case, and also of the revolving hub removed.

Figure 2 shows the interior of the case with the working parts of the pump removed.

Figure 3 is a vertical section of the whole, on the line *xx* of fig. 1.

In the drawings—

A is the case;

B, the spindle; and

C, the hub which revolves therewith.

This hub is a hollow chamber, within which the link-connections D D' of the floats E E E' E' operate.

The floats project transversely through slots in the sides of the hub, and are of a width sufficient to fill the water-space between the two sides of the case, as seen in fig. 3, but the links are of less thickness so as to occupy the chamber within the hub and slide freely without friction.

F is the induction, and G the eduction-openings, and H the water-passage of the cylindrical case, in which the body of water is forced along in the direction of the arrows by the floats, which act as pistons.

Projecting from the inner sides of the case, or otherwise suitably situated to accomplish the purpose, are cams I I, against the edge of which travel pins or friction-rollers, attached to the floats, imparting thereto such an eccentric motion as to cause the floats to project from the hub so as to traverse the water-passage H during about half the revolution, and then, aided by their gravity, as will presently be explained, retract them successively at the butment K so as to pass it without friction.

A recess is formed in the case at L, at that point

in the revolution at which the float begins its retractive movement, which serves to relieve in part from the pressure of the column of water the float acted on by the cam, and allow it to move more freely, the pressure being thereby made to fall on the float next following, or divided between the two.

The retractive movement begins as the float approaches an inclination of forty-five degrees, so that the operation of the cam is aided by gravity to produce that movement, thereby economizing the power employed.

Friction-rollers *ff* are placed at those points of the hub most subject to friction from the sliding floats, which also reduces the resistance.

An auxiliary cam, I', is provided on the sides of the case A, outside of the circuit traversed by the extremity of the floats, which acts as a guide and bearing for them in the ordinary operation of the pump, and also serves the purpose of a substitute device for actuating the floats in case of their failure to advance and retract in the water-passage H through the breakage or ultimate wear of the pins and friction-rollers J J, in which case the raised shoulder I' performs the office of the cams I I in an efficient and reliable manner.

The pump may be constructed to operate by this means alone, and the use of the cams I I' wholly dispensed with if desired.

This pump is adapted to be used as a motor as well as for forcing water, and for such use a pocket, M, is provided in the case to receive any stick, stones, or other obstructions which might enter the induction with the water.

The construction and arrangement are such as to form an effective, durable, and easy-working pump.

I claim as my invention—

1. The recess L in the inner circumference of the case A, for relieving the floats from the pressure of water while being retracted by the cams I I.

2. The cam I', as an auxiliary means of retracting the floats E E', in combination with the case A, recess L, and butment K, as set forth.

3. The pocket M, below the water-passage H and continuous thereof, forming a chamber near the induction-pipe, as and for the purpose set forth.

4. A rotary pump, consisting of the cylindrical case A, with eccentric periphery L, cams I I, and supplementary cam I', with concentric revolving cylinder C and floats E E', combined, arranged, and operating substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY W. MATHER.

Witnesses:

JONA. AUSTIN,  
KATE N. JONES.