

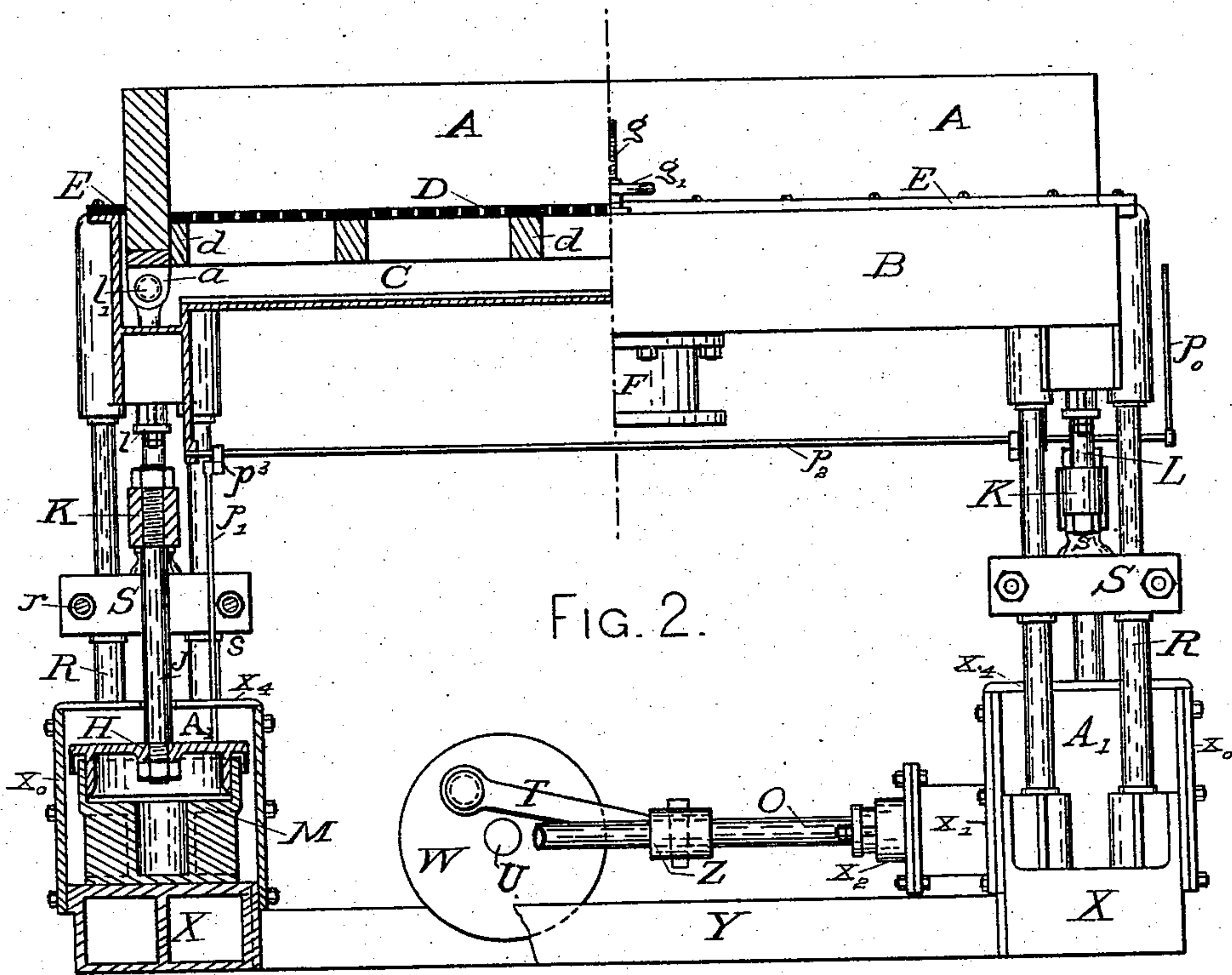
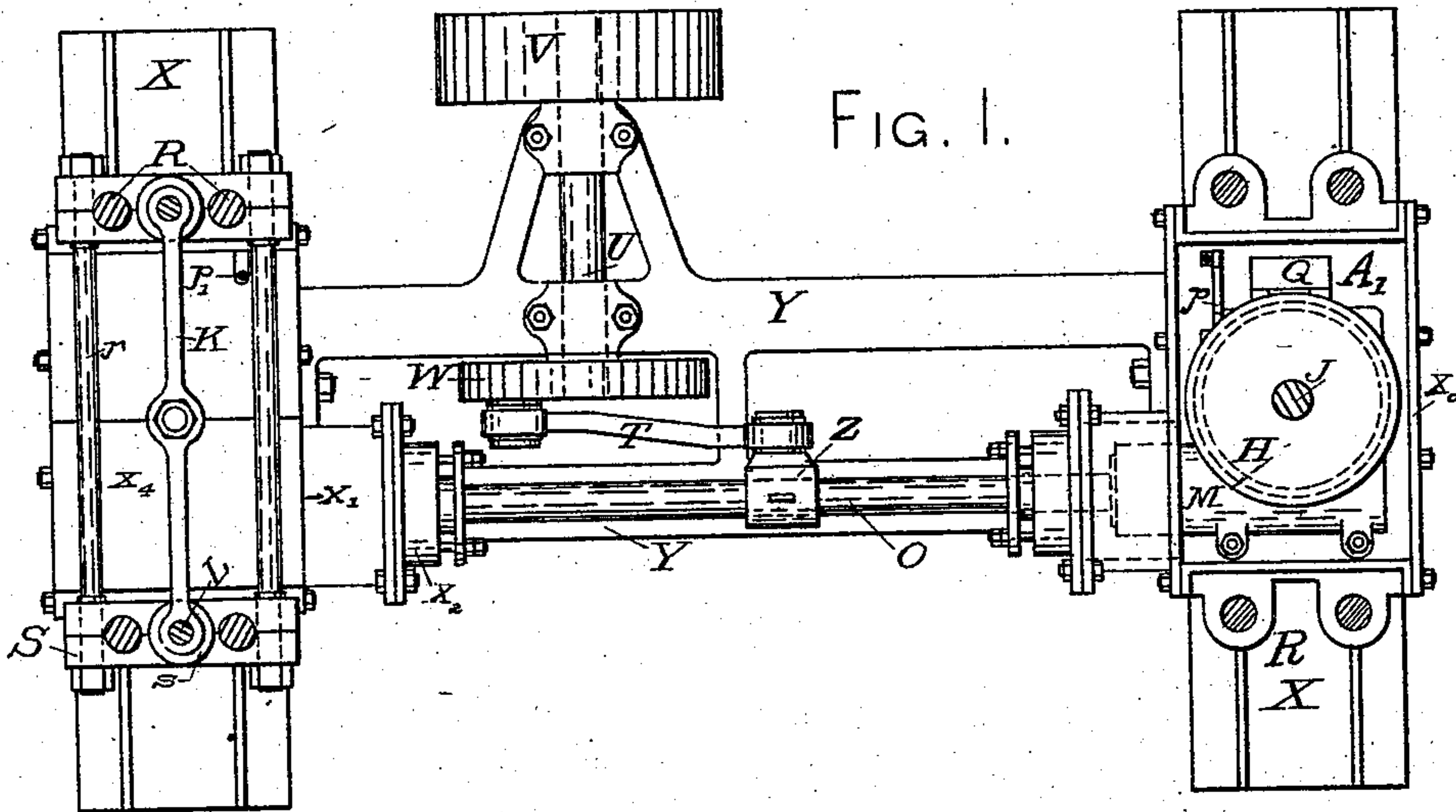
(No Model.)

3 Sheets—Sheet 1.

J. J. FLANDERS.
PULP SCREEN.

No. 522,463.

Patented July 3, 1894.



Witnesses
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Elizabeth F. Knowles.

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(No Model.)

3 Sheets—Sheet 2.

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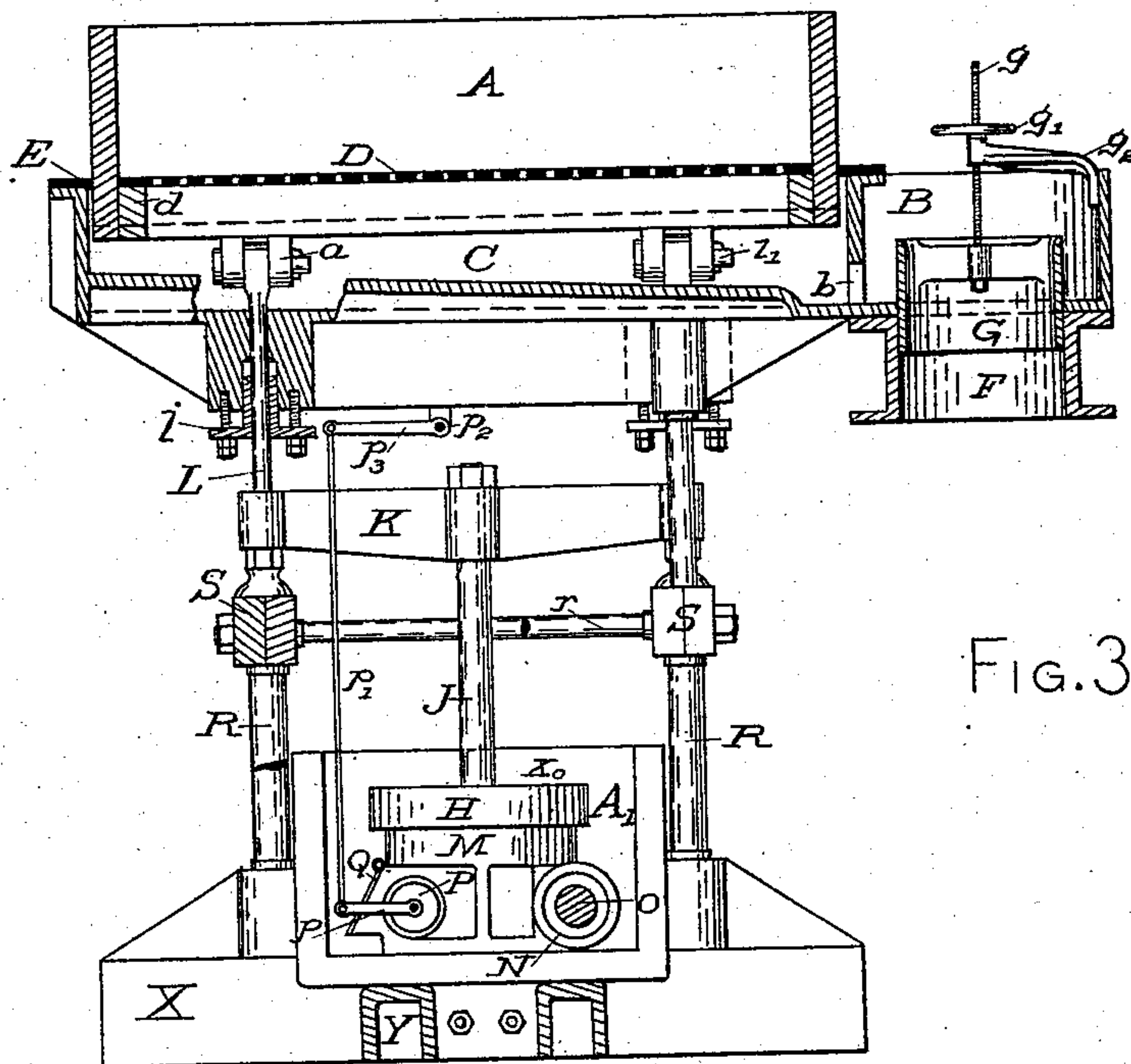


FIG. 3.

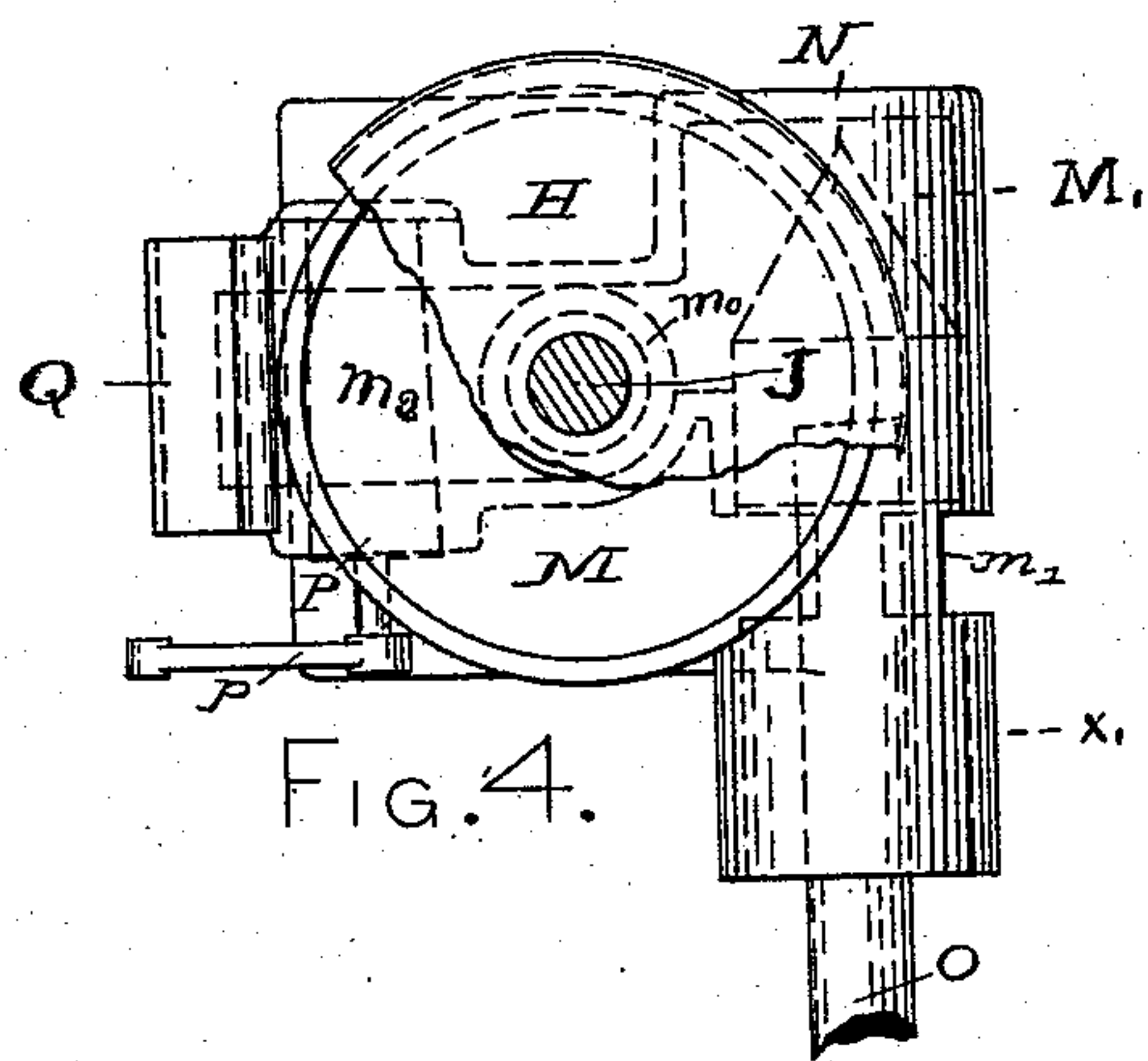


FIG. 4.

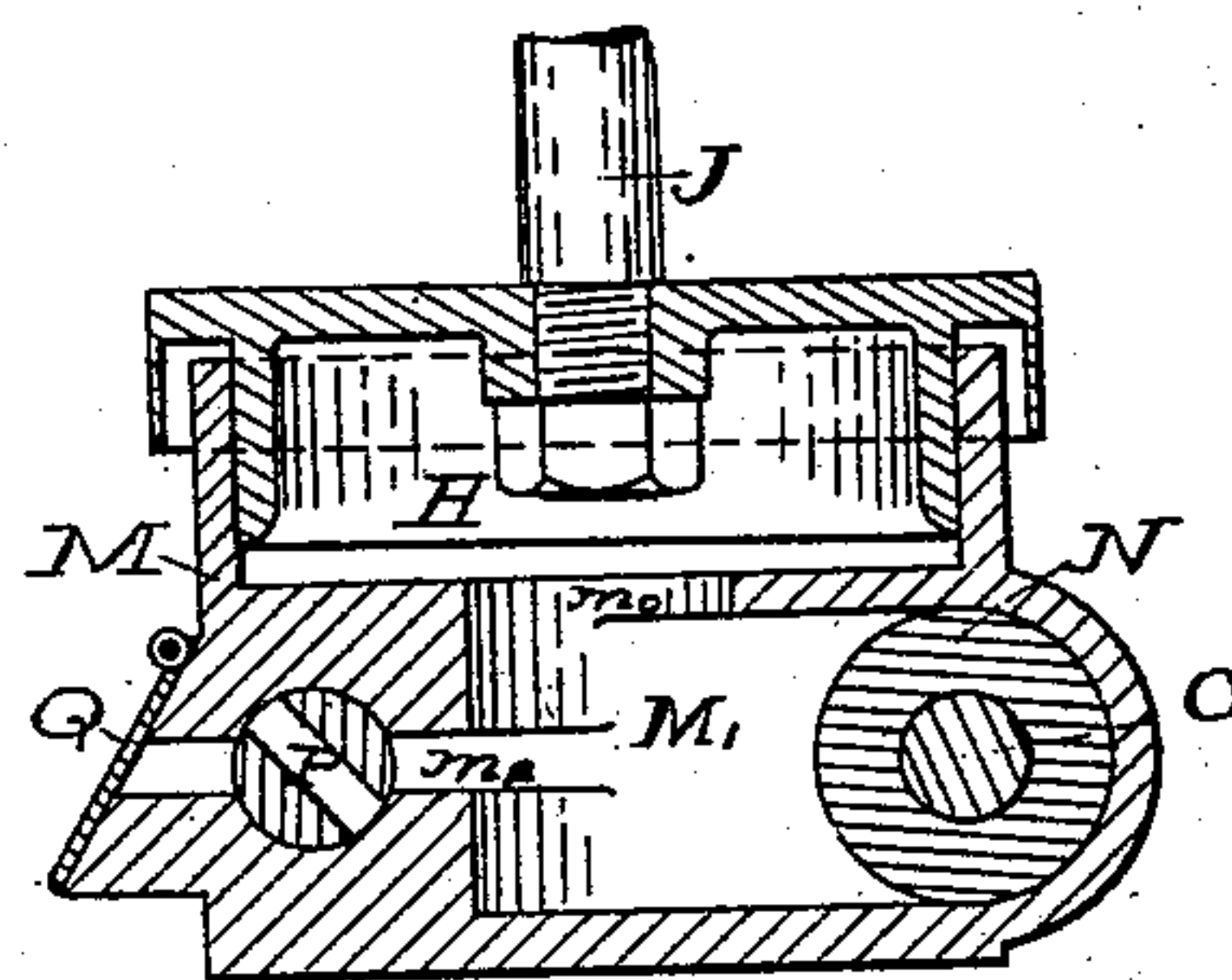


Fig. 5.

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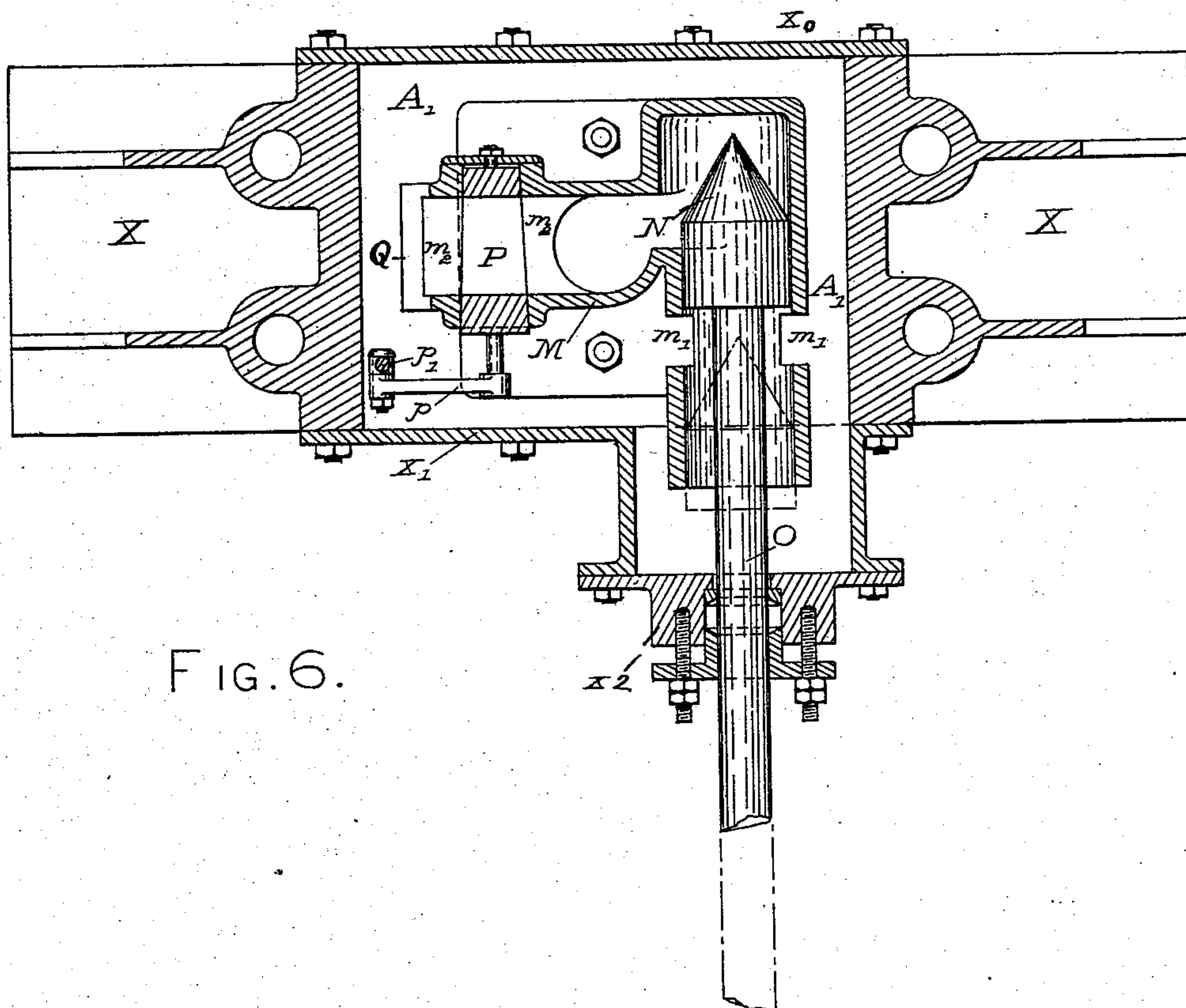


FIG. 6.

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UNITED STATES PATENT OFFICE.

JOHN J. FLANDERS, OF PORTLAND, MAINE.

PULP-SCREEN.

SPECIFICATION forming part of Letters Patent No. 522,463, dated July 3, 1894.

Application filed November 26, 1892. Serial No. 453,256. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. FLANDERS, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Pulp-Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pulp screens and consists in new and improved means for hanging or supporting the screen frame, new and improved means for operating said frame, and in certain other details of construction, which will be hereinafter particularly described.

In the drawings herewith accompanying and making a part of this application, Figure 1 is a horizontal sectional view taken on one side above and on the other side below the cross heads K, the top of the oil box in the latter being removed. Fig. 2 is a side elevation of my improved screen partly in section. Fig. 3 is a central vertical cross section of same, with parts broken away to show packing for lifter rod. Fig. 4 is a detail plan view of the hydraulic mechanism removed from the oil box and having parts broken away to show interior. Fig. 5 is a central vertical cross section of same, and Fig. 6 is a horizontal section of the hydraulic mechanism for imparting vibratory motion to the screen frame.

Same letters refer to like parts.

In said drawings X represents the base castings and Y a girder connecting the same.

At each end of the machine is a box A, containing a suitable liquid medium, said box comprising an outer head X^0 , an inner head X^1 , a stuffing-box X^2 and a cover X^4 . In said liquid box are a cylinder M, piston head H and piston rod J, which extends upwardly through the top of said box. Beneath said cylinder is a chamber M' opening into said cylinder by way of port m^0 as seen in Fig. 5. Opening from the liquid box into chamber M' is an inlet port m^1 , as seen in Fig. 6. Adapted to penetrate chamber M' and alternately to open and close port m^1 is a reciprocating plunger O. Leading from chamber M' into the oil box is a port m^2 having in its path a plug cock P and a check valve Q. Said plug

cock may be operated in any convenient manner as for example by the series of arms and levers p, p', p^3, p^2, p^0 . Mounted on the base are standards R. Resting on said standards are striking bars S, on the outer ends of which are strikers s and connecting said striking bars may be employed lateral supporting rods r. Mounted in suitable bearings is a shaft U having on one end a driving pulley V and on the other end a crank disk W. A connecting rod T connects the crank disk and the plunger O, or an adjustable sleeve Z adapted to slide on said plunger, whereby a reciprocating motion may be imparted to plunger O by the rotation of said disk. To lessen the shock caused by the plunger entering the confined liquid medium the plunger may have its end N conical.

In Fig. 6 the plunger is shown after it has penetrated chamber M' , and when in this position, port m^1 is closed. When the plunger is withdrawn to the position shown in dotted lines in Fig. 6, port m^1 is open and the liquid can flow freely therethrough and into the open liquid box A' , and the pressure being removed from beneath the piston the weight of the screen frame causes the piston to descend, aided during part of the descent, by atmospheric pressure due to the vacuum created by the withdrawal of the plunger from the chamber. This pressure continues until the plunger is withdrawn sufficiently to open port m^1 , and permit the liquid to flow out into box A. As the plunger again enters chamber M' , it closes port m^1 , this confining the liquid within chamber M' and consequently causes the piston and the screen supported thereby to rise. When it is desired to lessen the length of the stroke of the piston, the plug cock is turned so that a part of the liquid confined in chamber M' can escape through port m^2 .

Supported in the frame of the machine is a tank C to receive the pulp as it passes through the screen D which rests on bars d set in frame A. The screen frame A is mounted above said tank, its sides extending down some distance into the tank. Between the tank and the exterior walls of the screen frame A is a packing E. The screen frame is mounted on the ends of lifter rods L, there being two of said rods at each end of the ma-

chine as shown in the present drawings. The
 lifter rods may be pivotally attached to the
 bottom of the screen frame or to plates *a* at-
 tached thereto by means of pins *l'*, and they
 5 pass down through the bottom of the tank
 and through stuffing boxes *l*. The lifter rods
 are connected by a yoke *K* to which is at-
 tached the piston rod *J*. Outside of the
 tank is set a trough *B* and leading from the
 10 bottom of the tank into said trough is a port
b. The trough *B* has an outflow pipe *F* in
 which is set an adjustable sleeve *G* carried
 by a screw *g* running in a screw-threaded sup-
 port *g*² and having a lever wheel *g'* for oper-
 15 ating the same. The adjustable sleeve set
 in the outflow pipe in trough *B* may be raised
 or lowered and thus regulate the depth of
 pulp in the space between the tank and the
 screens, thereby increasing or diminishing
 20 the suction.

Having thus described my invention and
 its use, I claim—

1. In a pulp screen, a vibratory screen
 frame mounted on connecting rods, a piston
 25 operating in a confined liquid medium, a pis-
 ton rod attached to said connecting rods, and
 a plunger adapted to be forced into the cham-
 ber beneath said piston to force said piston
 upward by hydraulic pressure and to be with-
 30 drawn therefrom to allow the piston to be

forced down by gravity, atmospheric press-
 ure, &c., substantially as and for the purposes
 set forth.

2. In a pulp screen, a vibratory screen
 mounted in a suitable tank, connecting rods 35
 pivotally attached to said screen frame, a cyl-
 inder set in a liquid medium, a piston having
 a rod connected with said connecting rods and
 adapted to operate in said cylinder, a cham-
 ber beneath said cylinder, and a plunger hav- 40
 ing its entering end cone shaped and adapted
 to be forced into and withdrawn from said
 chamber to operate said piston, substantially
 as and for the purposes set forth.

3. In a pulp screen, a vibratory screen 45
 frame mounted on connecting rods, a piston
 operating in a confined liquid medium, a pis-
 ton rod attached to said connecting rods, a
 plunger adapted to penetrate the chamber
 beneath the piston cylinder, a plug cock and 50
 means for operating said cock to regulate the
 length of the piston stroke, as and for the
 purposes set forth.

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

JOHN J. FLANDERS.

Witnesses:

ELGIN C. VERRILL,
 NATHAN CLIFFORD.