

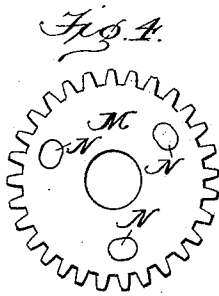
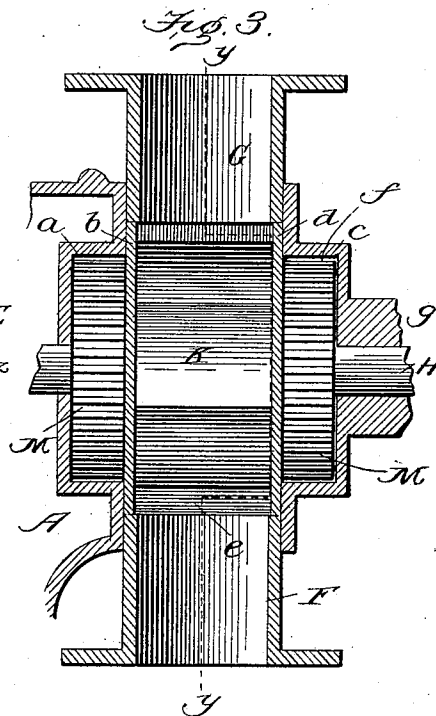
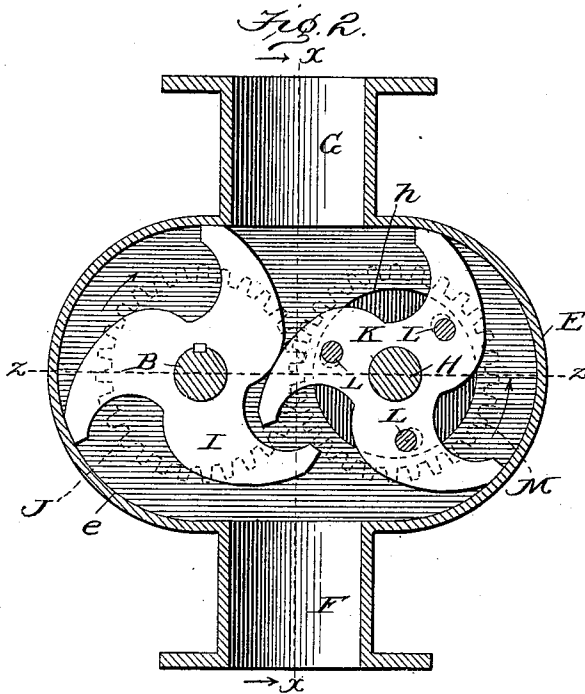
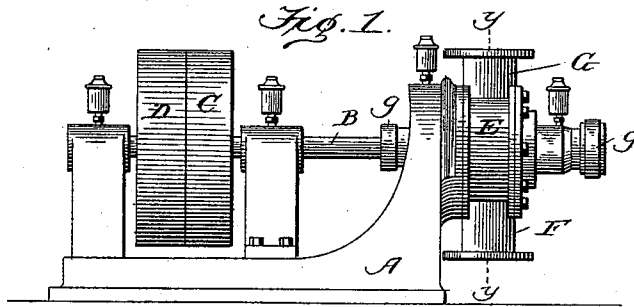
(No Model.)

2 Sheets—Sheet 1.

J. B. GARBER.
ROTARY PUMP.

No. 567,089.

Patented Sept. 1, 1896.



WITNESSES:

Edwin L. Bradford
Wm. J. Stearns Jr

INVENTOR

Jesse B. Garber
BY *M. O. Byrne*
ATTORNEY

(No Model.)

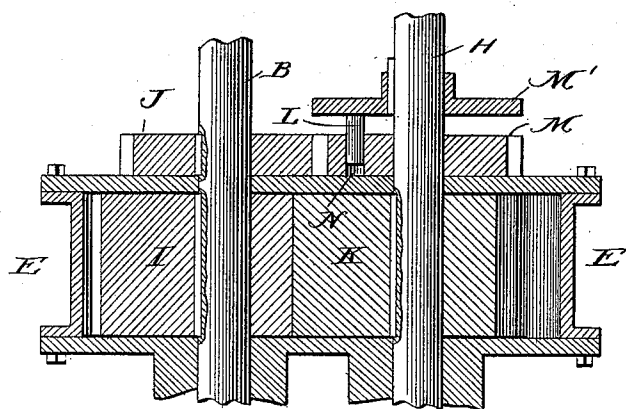
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Fig. 5.



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BY
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UNITED STATES PATENT OFFICE.

JESSE B. GARBER, OF SALEM, OHIO, ASSIGNOR TO THE DEMING COMPANY,
OF SAME PLACE.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 567,089, dated September 1, 1896.

Application filed November 6, 1895. Serial No. 568,129. (No model.)

To all whom it may concern:

Be it known that I, JESSE B. GARBER, a citizen of the United States, residing at Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Rotary Pumps; 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 pumps, and has particular reference to rotary power-pumps of the double-piston order, though equally well adapted for hand use. Pumps of this class have heretofore been seriously hampered and obstructed by the accumulation of dirt and foreign matter between the pistons or cams, frequently resulting in the locking of said pistons or cams against further rotation, necessitating the removal of all working parts of the pump to render it again operative, and this, perhaps, at a most inconvenient time during use of the pump. To overcome such difficulty, I have invented the present pump, embodying as a primary feature of the invention means whereby it will automatically clear itself of dirt and foreign matter at all times, as will be hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which form part of this specification, and in which similar letters indicate similar parts wherever employed, Figure 1 represents a side elevation of my improved pump, which to all outward appearance presents no unusual outlines. Fig. 2 is an enlarged vertical section showing working cams or pistons, taken on the line *y y*, Fig. 1. Fig. 3 is also a vertical section at right angles to Fig. 2, being taken on the line *x x* of said figure. Fig. 4 represents a gear for operating upon the cams or pistons of the pump, being one of the driven gears as distinguished from the driving; and Fig. 5 is a horizontal central section on the line *z z*, Fig. 2, illustrating a modification of the invention.

Reference being had to the accompanying drawings and letters thereon, A indicates the main frame or bed of the pump, having jour-

naled thereon a drive-shaft B, bearing fast and loose pulleys C D, respectively, by means of which power is transmitted to the pump.

E is an elliptical case for inclosing the working parts of pump, having inlet and outlet ports F G, respectively, communicating with its interior. Case E is securely bolted to the end of frame A in position to register with a depression or pocket *a*, formed in the frame, while between said pocket and the flanges of case E may be interposed an elliptical sheet-metal partition *b*. At its opposite or outer side case A is closed by a flanged cap *c*, bolted to the case and corresponding in size, location, and configuration with the pocket *a*, while between this cap and the flange of case E may be interposed a second elliptical sheet-metal partition *d*, resembling that marked *b*, thus practically dividing the case E into three compartments consisting of a central cam or piston chamber *e* and side gear-pockets *a f*. Frame A and cap *c* are bored at suitable points and fitted with stuffing-boxes *g g*, forming bearings for the main drive-shaft B, extending therethrough, and a short auxiliary shaft H, penetrating the case E only.

Upon the main or drive shaft B and within the chamber *e* of case E is keyed a cam I, having by preference curved wings or blades, substantially as shown, adapted to revolve, having their ends in comparatively close contact with the end wall of case E, while on both sides of cam I are rigidly secured in like manner to shaft B corresponding gear-wheels J J, the latter being located in the gear-pockets *a f* and separated from the cam by interposed partitions *b d*. Upon auxiliary or driven shaft H is loosely mounted a coacting cam K, corresponding in size and shape with cam I and bearing upon its ends a series of studs or pins L L L, permanently secured in the wings or blades of said cam near their roots. On both sides of this cam K are corresponding gears M M, also mounted loosely upon shaft H and occupying positions in the gear-pockets *a f*, where they mesh with gears J J, fixed upon the shaft B. The gears M M are each perforated at predetermined points by slightly-elongated openings N, through which project the studs or pins L, thus loosely con-

necting the cam and gears upon opposite sides of partitions *b d*, the latter being provided with a central opening *h* of sufficient size to allow rotation of the pins *L* without interference. By this arrangement and relation of the driven gears to the driven cam it will be observed that power is applied to the latter through the agency of elongated openings *N* in the former, which engage and move with them the pins *L*, rigidly affixed in the driven cam, said openings and their engaging pins being the only source of communication between these parts, which in practical operation coact as follows: Gears *J J*, being revolved rapidly in one direction through the medium of power applied to pulley *C* and its shaft *B*, cause the gears *M M*, in mesh therewith, to revolve with equal speed in the opposite direction. Elongated slots *N* in said driven gears *M M* then acting upon pins or studs *L*, which they engage, serve to carry said studs and their rigidly-affixed cam *K* in like direction and with equal speed. The blades of cams *I* and *K* thus being revolved in opposite directions serve to displace the water or other liquid above them, which is consequently forced through port *G*, its only source of outlet, and simultaneously with this action an equal quantity of liquid is drawn through port *F* from the supply by similar action of the blades.

So far as described the philosophical action of cams *I K* does not differ from that of rotary pumps of more ordinary construction; but in the event that dirt or other foreign matter obtains an entrance through inlet-port *F*, passes around one end of case *E* with the blades of cam *K*, and finds lodgment between the meeting blades of the cams, then the superiority of my construction demonstrates itself at once. Automatically and instantly the speed relations of the driven gears *M M* and the driven cam *K* are varied, the gears continuing at normal speed, but the cam being forced ahead at an accelerated speed by the foreign matter between the meeting blades of the cams just in proportion to the quantity of such matter. During this movement the studs *L* on the quickened cam *K* travel through the elongated openings *N* in the gears *M* until they reach its opposite side, by which time the meeting blades of the cams have cleared themselves, whereupon the cam with its fixed studs then lags until engaged by the opposite or pulling side of openings *N* in the driven gears *M*, and the operation of pumping continues unobstructed.

The foregoing is a description of my invention in its preferred form and manner of operation, but, at the same time, it should be understood that various changes of construction and arrangement of parts may be made

and substituted for those herein shown and described without in the least departing from the spirit of the invention. For instance, the relative arrangement of parts may be that illustrated by Fig. 5 of the drawings, wherein the driving mechanism of the structure is located outside of the case *E*, piston-chamber *e* being devoted exclusively to the pistons or cams *I K*, contained therein. In this modification of the invention it will be seen, upon reference to the drawings, that cams *I K* are each fast upon their respective shafts *B H*. The driving-gears *J J* are also keyed to the shaft *B*, while the driven gears *M* upon shaft *H* are loose, as before described. To one side of driven gears *M* is located a disk *M'*, keyed to and moving with a shaft *H* and bearing in its surface the projecting pins *L* in engagement with openings *N* of the gear *M*, the operation of this construction being substantially the same as that heretofore described, to wit: Main shaft *B* transmits power directly to gears *J* and cam *I*, gears *J* to the loose gears *M*, and the latter to fixed disks *M'*, which in turn operate through shaft *H* upon the driven cam *K*, which, owing to its particular connection with the driving mechanism, permits the accelerated movement heretofore described. By way of further change within the spirit of the invention opening *h* in the elliptical partition *d* may be closed by a disk secured to and revolving with shaft *H* inside of the circle described by pins *L* on the driven cam, or the elliptical partitions *b* and *d* may be dispensed with, if desired, without materially affecting the efficiency of the pump.

Having thus described my invention, what I claim is—

1. In a double-piston rotary pump the combination with a driving and a driven gear, of coacting pistons rotated by the gears, and means for permitting in one of said pistons an accelerated speed, substantially as described.

2. In a double-piston rotary pump the combination with a driving-gear and its piston, of a driven gear with its piston, and a yielding connection interposed between the last-named piston and gear, substantially as described.

3. In a double-piston rotary pump the combination with a driving-gear and its piston, of a driven gear provided with an elongated opening, and a driven piston bearing a pin for engaging said opening, substantially as described.

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

JESSE B. GARBER.

Witnesses:

WILLIAM H. MOULTON,
W. W. HOLE.