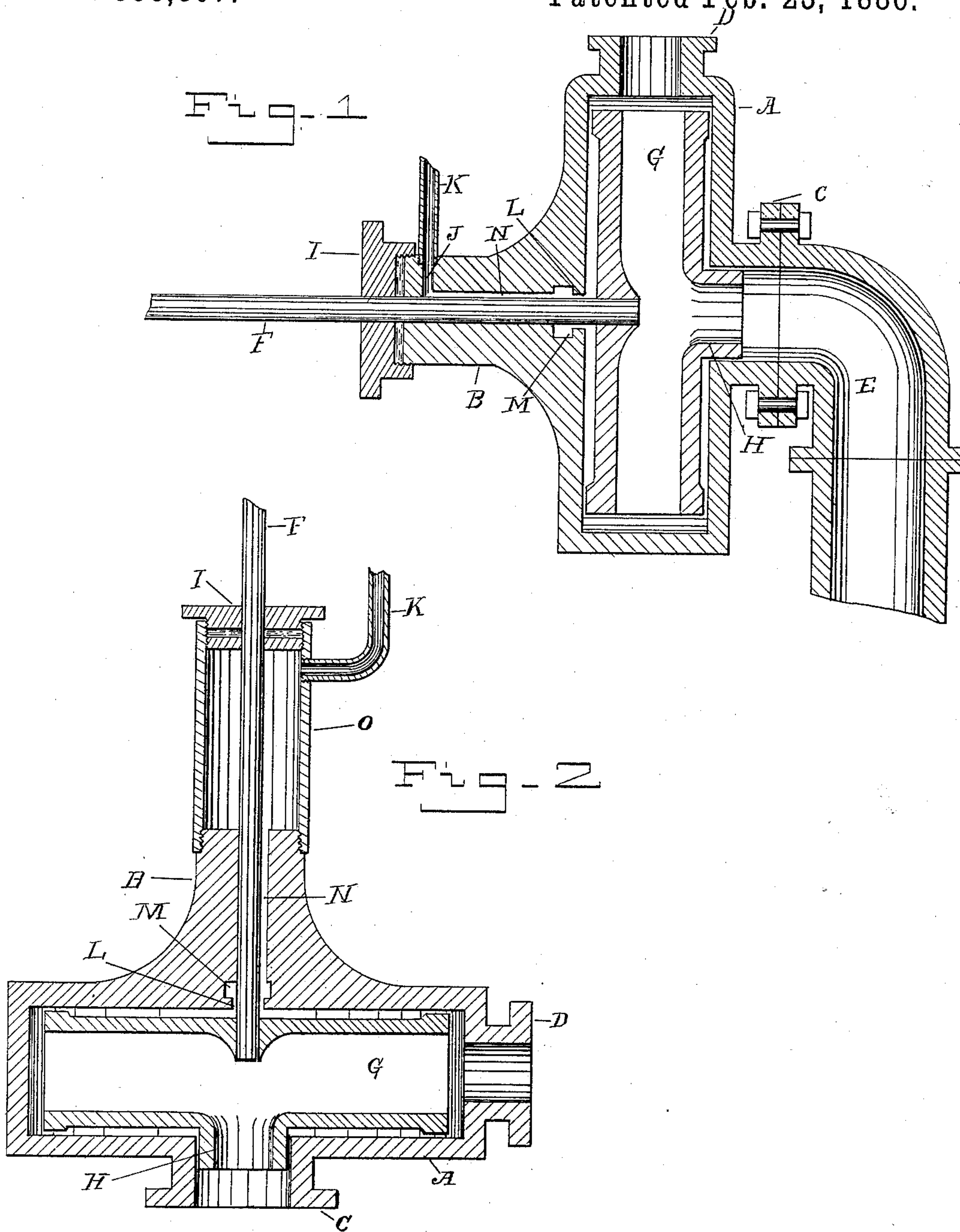


(No Model.)

E. J. HAWLEY.  
CENTRIFUGAL PUMP.

No. 336,807.

Patented Feb. 23, 1886.



Witnesses

M. C. Massie.

Geo. Burgess

Inventor.

Eli J. Hawley

By his Attorney

Wm. Hunter Myers



# UNITED STATES PATENT OFFICE.

ELI J. HAWLEY, OF MANCHESTER, VERMONT.

## CENTRIFUGAL PUMP.

SPECIFICATION forming part of Letters Patent No. 336,807, dated February 23, 1886.

Application filed July 20, 1885. Serial No. 172,041. (No model.)

*To all whom it may concern:*

Be it known that I, ELI J. HAWLEY, a citizen of the United States, residing at Manchester, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Centrifugal 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  
10 which it appertains to make and use the same.

My invention relates to improvements in centrifugal pumps, its object being to provide improved means for cleansing and lubricating the shaft and journal, and also to prevent  
15 the admission to those parts, while the pump is in operation, of sand, grit, or other deleterious substance, whereby pumps of this class are rendered peculiarly applicable to stone sawing or rubbing machinery, (in delivering  
20 mixed sand and water to the gang-frame,) and to coffer-dams and the like.

The invention consists in forming a contracted annular opening in the inner or lower end of the journal, an annular chamber considerably larger in diameter than said opening above and in communication therewith, and a groove on the inside of the journal, said groove forming a connection between said chamber and an inlet-opening located just below the stuffing-box.  
30

Figure 1 of the drawings is a longitudinal vertical section of a horizontal centrifugal pump containing my improvements, the shaft being shown in elevation. Fig. 2 is a transverse vertical section of a vertical centrifugal pump containing my improvements, the shaft being shown in elevation.  
35

Similar letters of reference indicate like parts in both figures of the drawings.

Referring to the drawings, A represents the barrel or casing of the pump, with which is integrally formed the journal B. The casing is flanged at C for attachment thereto of a suction-pipe, E, and at D for attachment of an  
45 outlet-pipe. (Not shown.)

Mounted on the lower or inner end of shaft F, and working in the barrel or casing, are pistons G, (one only of which is represented,) whose inlet is at H, the shaft working in journal B and through a stuffing-box, I, at the  
50 outer end of the journal. In one side of journal B, at its outer or upper end, and just below

the stuffing-box, is an inlet, J, opening into the interior of the journal. This inlet is screw-threaded for a short distance from its  
55 outer end, in order that one end of a pipe, K, may be screwed therein. In the lower or inner end of the journal is formed a contracted annular opening, L, and above and in communication therewith is an annular chamber, M, which is considerably larger in diameter than said opening. On the inside of journal B is a groove, N, which forms a connection between chamber M and inlet J.  
60

The above description applies more particularly to the horizontal pump shown in Fig. 1; but in case it is desirable to use a vertical pump—for instance, in situations where it becomes necessary to submerge the pump—certain slight modifications will be necessary,  
70 which modifications will now be described, and which clearly appear in Fig. 2.

Onto the top of the journal I screw a pipe, O, of a length sufficient to reach a convenient distance above the surface of the water, into  
75 the top of which pipe I screw the stuffing-box I, and instead of forming the inlet in the journal and terminating groove N at the inlet, I locate the latter in pipe O, close up under the stuffing-box, and continue the groove clear  
80 through the upper end of the journal.

It is designed, when using these pumps with stone sawing or rubbing machinery, to connect pipe K with the clear-water tank of the machine. Then when water is admitted  
85 at inlet J it will pass through the groove and along the top or side of shaft F until it reaches chamber M, when it will surround the shaft, and, owing to the pressure of the water from above, will be forcibly ejected through the  
90 contracted annular opening L into the pump-barrel. Thus the water in its passage through the journal serves not only as a lubricant, but also to cleanse the shaft and journal of any grit or other injurious substance which may  
95 have reached those parts while the pump was standing idle, and to prevent the entrance to them of such substance while it is in operation.

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

1. A centrifugal pump in whose journal are formed a contracted annular opening at the lower or inner end, an annular chamber, larger

in diameter than said opening, above and in communication therewith, and a groove on the inner side, as a means for connecting said chamber with an inlet-opening located near to  
5 the stuffing-box, substantially as described, and for the purposes set forth.

2. A centrifugal pump in whose journal are formed a contracted annular opening at the lower or inner end, an annular chamber, larger  
10 in diameter than said opening, above and in communication therewith, an inlet-opening in one side near its outer end, and a groove on the inner side connecting the annular chamber and the inlet-opening, substantially as de-  
15 scribed, and for the purposes set forth.

3. A centrifugal pump in whose journal are formed a contracted annular opening in the

lower or inner end, an annular chamber, larger in diameter than said opening, above and in communication therewith, and a groove ex- 20  
tending the length of the journal above the chamber, the outer or upper end of the journal having a pipe screwed thereon, and said pipe having the stuffing-box fitted in its up-  
per end, and having an inlet-opening formed 25  
in one side, near to and below the stuffing-box, substantially as described, and for the purposes set forth.

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

ELI J. HAWLEY.

Witnesses:

C. H. HAWLEY,  
J. P. BLACK.