2 Sheets—Sheet 1.

H. A. & T. BARBER.

Rotary-Pumps.

No. 206,698. Patented Aug. 6, 1878.

Fig. 1.

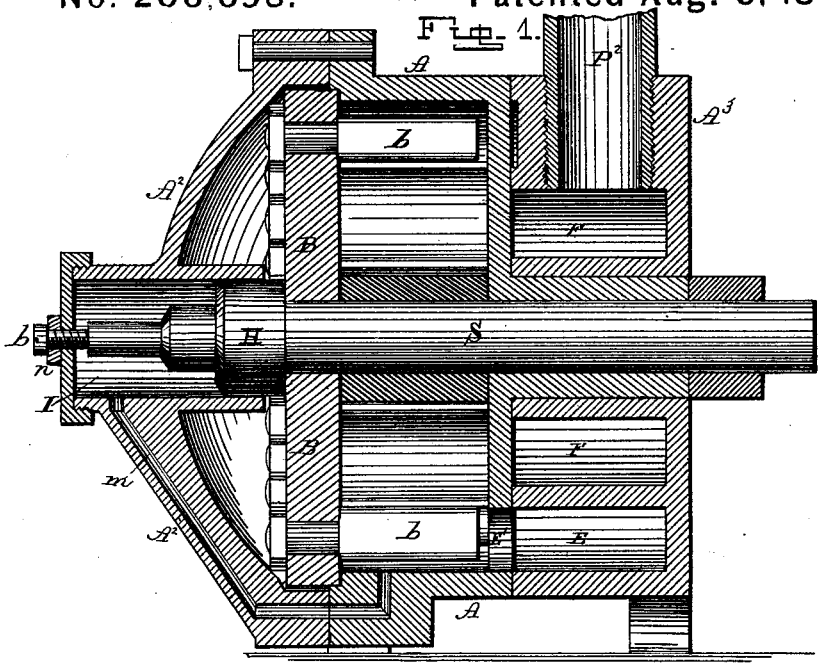
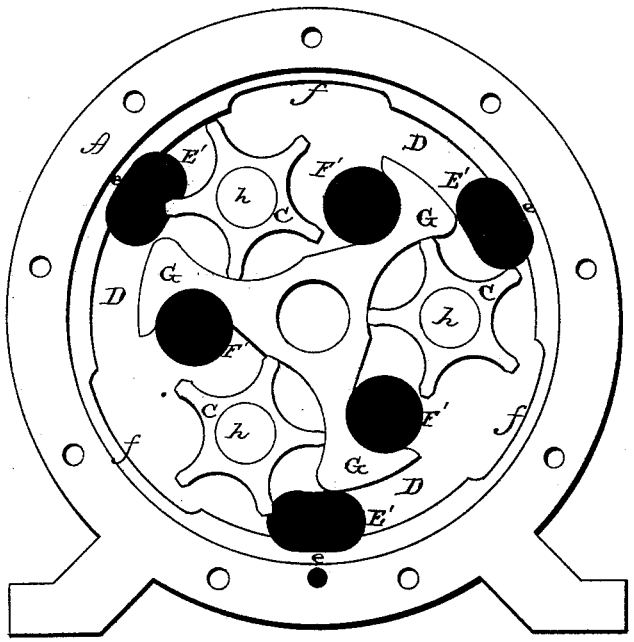


Fig. 2.



Witnesses:

J. W. Garner

W. S. D. Haines

Inventors

H. A. Barber,

Thos. Barber.

per

A. Lehmann,

Atty.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

H. A. & T. BARBER.

Rotary-Pumps.

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Fig. 2.

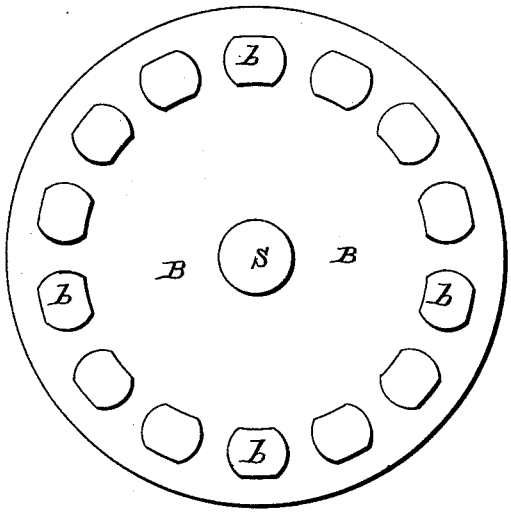


Fig. 4.

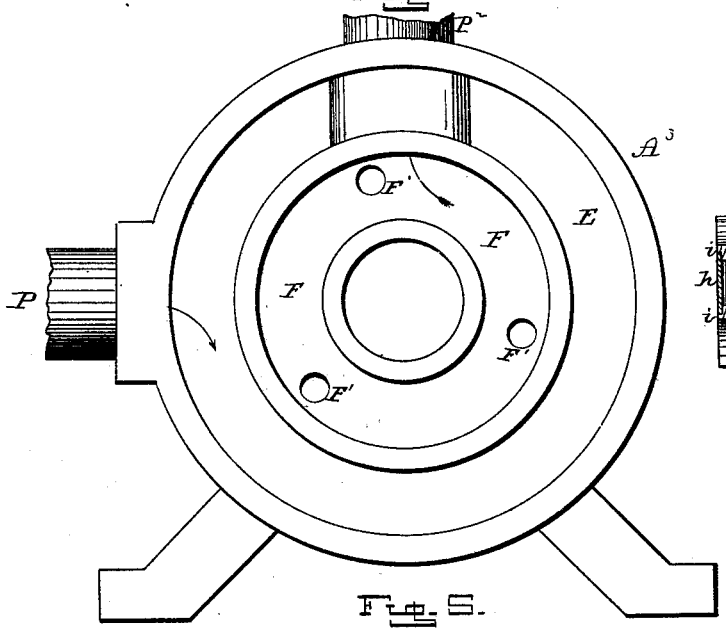


Fig. 6.

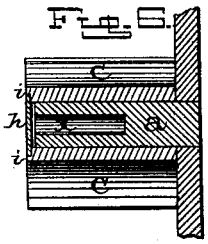
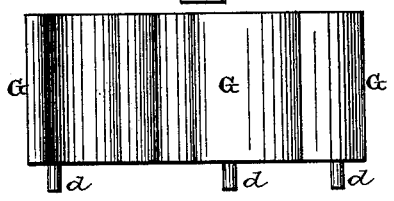


Fig. 5.



Witnesses:

J. W. Garner

W. S. D. Haines.

Inventors:

H. A. Barber. &

Thos. Barber,

per

F. A. Lehmann,

Atty

N. PETERS. PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY A. BARBER AND THOMAS BARBER, OF WATERTOWN, NEW YORK.

IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. **206,698**, dated August 6, 1878; application filed June 29, 1878.

To all whom it may concern:

Be it known that we, HENRY ANSEL BARBER and THOS. BARBER, of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Rotary Pumps; and we 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention is intended as an improvement upon the rotary pump for which Letters Patent No. 165,528 were granted to Henry A. Barber, July 13, 1875; and it consists in the construction and arrangement of certain parts of the pump, as will be hereinafter more fully set forth, and pointed out in the claims.

The annexed drawings, to which reference is made, fully illustrate our invention.

Figure 1 is a vertical longitudinal section. Fig. 2 is an interior view, showing the rotary valves and the ports. Figs. 3, 4, 5, and 6 are detail views.

A represents the cylindrical case, with cap-plate A^2 and chambered section A^3. S is the driving-shaft, with piston-disk B, provided with the projecting arms or pins *b*, which work within the circular channel D. C C are the rotary wing-valves, mounted upon studs or pins *a a*. G G are the abutments. P is the inlet leading into the circular passage E in the chambered section A^3, said passage communicating by equidistant or nearly equidistant ports E′ with the channel D. F′ F′ are equidistant eduction-ports, leading into a circular passage, F, also in the chambered section A^3, and from this passage the water is discharged through an outlet, P^2, as shown.

In the former patent above referred to the abutments G G were made segmental and entirely separated from each other. We form these abutments solid, of a single piece, with the shaft S passing through the center, whereby we obtain a longer and firmer bearing for said shaft, which is of great importance in the practical and successful operation of the pump. The united abutments are held stationary in the case by means of dowel-pins *d* and screws with heads even with or below the surface of abutment, or other suitable or convenient means.

The water-inlet ports E′ are enlarged by cutting away the case at *e*, which allows the water to enter between the pins or cogs at the ends and sides, thereby causing the water to enter and fill the spaces when the pump is run at a high rate of speed. In the former case the water could only enter at the ends of the pins, and hence, when running at a high rate of speed, the water would not enter fast enough. This is entirely obviated by cutting away the case at *e* to enlarge the inlet-ports, so that the water will have free entrance to fill the spaces.

Between the inlet-ports E′ the case is further cut away, as shown at *f*, to admit of the water having a more free escape from between the pins and the cogs of the valves. This also answers the purpose of admitting the water back of the disk B, to equalize the pressure thereon, and thus dispense with the passage or port through said disk, as used in the former case.

For the purpose of lubricating the valves the end of each stud or pin *a* is bored out to form a recess or chamber, *x*, for receiving a suitable lubricant. The end of the valve projects slightly beyond the end of the stud or pin, and is formed with a concentric depression, *i*, in which is soldered or otherwise tightly fastened a cap, *h*, to close or cover the chamber *x* and confine the lubricant. The lubricant will easily pass in between the stud and the valve; but, if desired, we may make one or more small perforations from the chamber *x* through the lower side of the stud for that purpose.

The shaft S is enlarged at H, where it passes into the inner end of the chamber I, so as to form an air-tight joint at this point. If preferred, however, a stuffing-box may be formed in the inner end of the chamber I, or the stuffing may be applied directly to the shaft, the object being to seal the inner end of the chamber. This chamber is, by means of a passage, *m*, connected with the chamber E, or one of the suction-inlets E′, so as to admit of forming a vacuum in the chamber I, and thereby equalize or balance the end-pressure on the piston-disk.

A set-screw, *p*, is passed through the head

of the chamber I against the end of the shaft, and said set-screw provided with a jam-nut, *n*.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In the rotary pump herein described, the abutments made solid in one piece, held stationary to the case, and having the shaft S passing through the center, for the purposes herein set forth.

2. The cut-outs *f*, formed in the case A between the inlet-ports E′, for the purposes herein set forth.

3. In the rotary pump herein described, the combination of the stud or pin *a*, formed with the chamber *x*, the rotary valve C, with concentric depression *i*, and the cap *h*, substantially as and for the purposes herein set forth.

4. The pump-case A, provided with cap-plate A^2, having the chamber I and the passage *m*′, in combination with the shaft S and disk B, the inner end of the chamber being closed by the shaft, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 22d day of June, 1878.

HENRY ANSEL BARBER.
THOMAS BARBER.

Witnesses:
N. WHITING,
THOMAS J. BARBER.