No. 888,779. PATENTED MAY 26, 1908.

R. BERRENBERG.

ROTARY PUMP.

APPLICATION FILED FEB. 17, 1906.

2 SHEETS—SHEET 1.

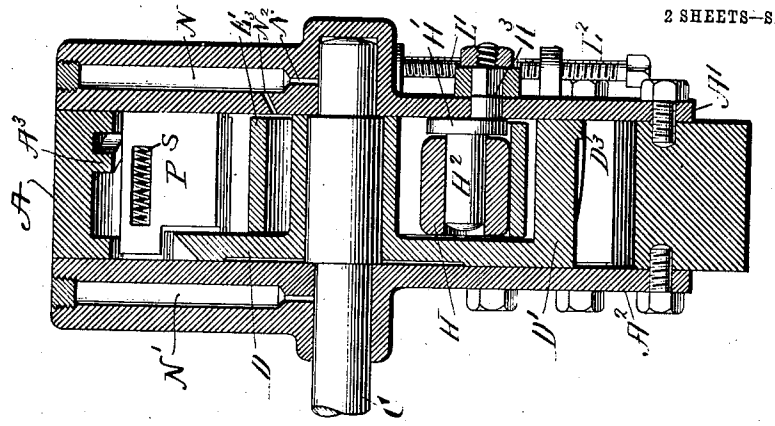


Fig. 2.

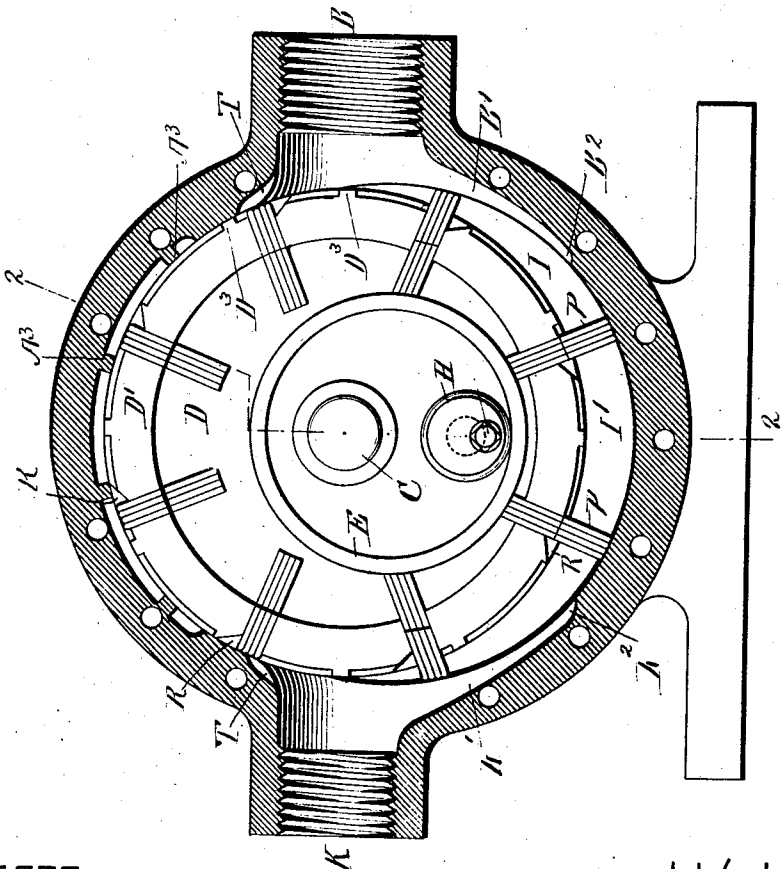


Fig. 1.

WITNESSES

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A. C. Kaiser

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2 SHEETS—SHEET 2.

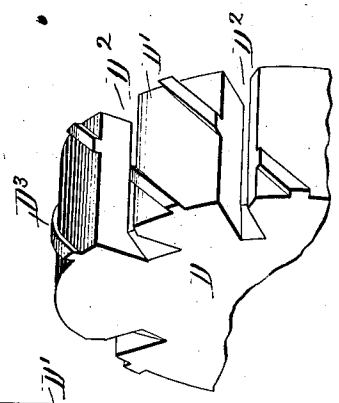


Fig. 5.

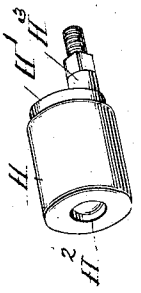


Fig. 6.

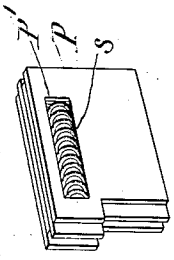


Fig. 7.

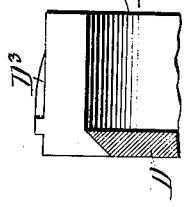


Fig. 4.

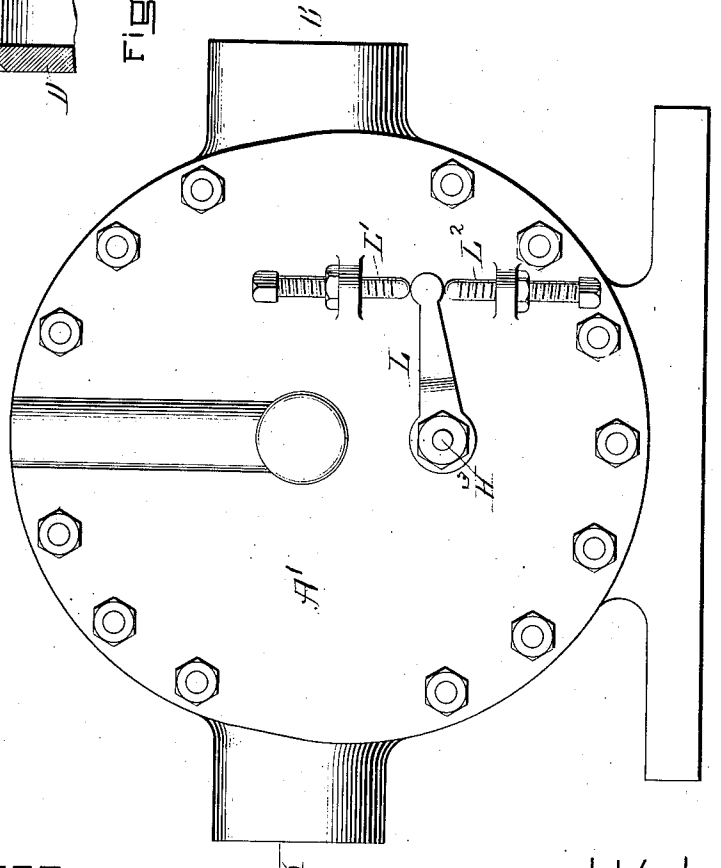


Fig. 3.

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REINOLD BERRENBERG, OF BOSTON, MASSACHUSETTS.

ROTARY PUMP.

No. 888,779. Specification of Letters Patent. Patented May 26, 1908.

Application filed February 17, 1906. Serial No. 301,654.

To all whom it may concern:

Be it known that I, REINOLD BERRENBERG, a citizen of the United States, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Rotary Pumps, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of devices in which the rapid rotation of the interior working parts is utilized for the purpose of pumping fluids, compressing air and gases, and for producing vacuums: and consists in the peculiar construction of the parts and their combination which may be best understood by reference to the specification and drawings.

The device is shown in the following-described illustrations of which

Figure 1 is a longitudinal vertical section taken through the center. Fig. 2 is a cross vertical section taken on line 2—2 of Fig. 1. Fig. 3 is a side elevation of the pump. Fig. 4 shows in elevation a part of the piston-carrying drum. Fig. 5 shows in perspective a part of the piston-carrying drum illustrating certain distinctive parts. Fig. 6 shows in perspective an adjusting device. Fig. 7 shows in perspective the construction of the pistons.

My rotary pump may be used for any liquids, hot or cold, and also for liquids that contain more or less foreign matter such as the liquids incidental to the operations of dye-houses, bleacheries and tanning plants, etc. It may also be used in breweries for pumping beer in its various stages of preparation. Air and gases may be compressed or rarefied by this device.

The outer case of the pump consists of a short hollow cylinder, A, of metal and two side disks A^1 A^2. This case has an inlet B and an outlet K, a shaft C journaled in the side disk A^1 and A^2 is firmly keyed to the piston-carrying drum D D^1, see Figs. 1 and 4 and 5. This piston-carrying drum consists of a single disk D, keyed to the shaft C, and a cylindrical ring D^1. The said piston-carrying drum is provided with radial openings D^2 D^2 in which the pistons P P are frictionally held and are free to be moved in and out as the drum rotates. The outward motions of these pistons are controlled by the ring E which is free except that the adjusting roll, H, holds it, as shown in Fig. 1, in such a position that it, the ring, will cause one at least of the pistons P P to bear against the interior of the case as shown. The inlet B is connected to a port-way B^1 which extends to the point B^2 and the outlet K has a port-way K^1 which begins at K^2, see Fig. 1. The terminations B^2 and K^2 of these port-ways are so near together that no "pocket" for the liquid can exist that is, the port-way K^1 is longer than the port-way B^1 so that the capacity of the chamber I will always be less than the capacity of the chamber I^1 hence there can be no crowding in the chambers between the pistons, which, if it existed, would be a great detriment to the working of the pump and subtract largely from its efficiency.

The adjusting roll H is mounted upon a journal H^2 which is connected to the disk H^1 which in turn is connected eccentrically to the shaft H^3, see Fig. 6. By turning the shaft H^3 the position of the roll H is changed, that is, it may be advanced towards the port-way K or withdrawn from it, thus changing the position of the piston-controlling ring E and adjusting it so that the greatest pressure of the ends of the pistons P upon the inner surface of the case shall be at the desired point between the ends of the port-ways and also the position of the chambers I and I^1, the object being to have the capacity of the chamber I^1 always less than the capacity of the chamber I, thereby preventing the possibility of crowding in the chamber I. The shaft H^3 that operates the adjusting roll H extends through the side A^1 of the case and has attached to it a lever L, see Fig. 3. The moving end of the lever L is operated upon by the companion screws L^1 and L^2 by the turning of which the adjusting roll H may be placed in any desired position, thus governing the piston-controlling ring E and through it the actions of the pistons P P.

The pistons P are constructed as shown in Fig. 7, that is, each consists of a number of plates each of which has an opening P^1, as shown; this opening is of the same length in each of the plates of which the piston is formed, but not located longitudinally in relation to each plate the same, so that the tendency of the spring S within the openings is to force the bearing ends of the said plates to extend unevenly, some from one side of the drum and the others from the other side, as shown in Fig. 7, so that some of the plates will bear upon the disk A^1 of the case and the others upon the disk A^2, thus insuring a

close-fitting tight joint at both ends of the said pistons.

When this pump is used for pumping a liquid that has mixed with it semi-solids, like brewers' grains and parts of hops and other material that might clog the pump, I have diagonal fillets or ribs both on the exterior of the piston-carrying drum and upon the interior of the cylindrical part of the case. The ribs on the drum are indicated by D^3, Fig. 5, and those on the interior of the case by A^3, Fig. 2. These ribs will crush and grind up the clogging material and thus prevent it from interfering with the action of the pump.

To avoid the effect of small solid particles that by chance get into the pump and catch between the pistons and the case, I cut away a part of the piston-carrying drum as shown at R, Fig. 1, and I cut into the case as shown at T, Fig. 1, so that if any solid particles get in through the inlet B they will be caught in one of the recesses R and be carried to the outlet K, and as the pistons are forced inward the solids will be likely to fall off and be ejected through the outlet; even if the solids be carried to the recess T, Fig. 1, then they will be pushed off and dropped. For convenience in oiling I have oil ducts and holders N and N^1, see Fig. 2. From the duct N leaders N^2 and N^3 take the oil to the interior.

Claims.

1. In a rotary pump having an elliptical case and radial pistons, a piston-controlling ring, an adjusting roll eccentrically mounted upon a shaft; said shaft; a lever attached to said shaft and adjusting screws constructed to adjust and hold said lever, thereby fixing the position of said piston-controlling ring; substantially as and for the purpose set forth.

2. In a rotary pump of the class described having an elliptical case and piston-carrying drum, sets of diagonally placed ribs, one of said sets being on the outer surface of the said piston-carrying drum and the other set upon that part of the case that is located above the inlet and outlet ports; substantially as and for the purpose set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, on this 10th day of February A. D. 1906.

REINOLD BERRENBERG

Witnesses:

FRANK G. PARKER,

A. C. KAISER.