(No Model.)

2 Sheets—Sheet 1.

A. SIEGRIST.

ROTARY PUMP.

No. 263,975. Patented Sept. 5, 1882.

Fig. 2.

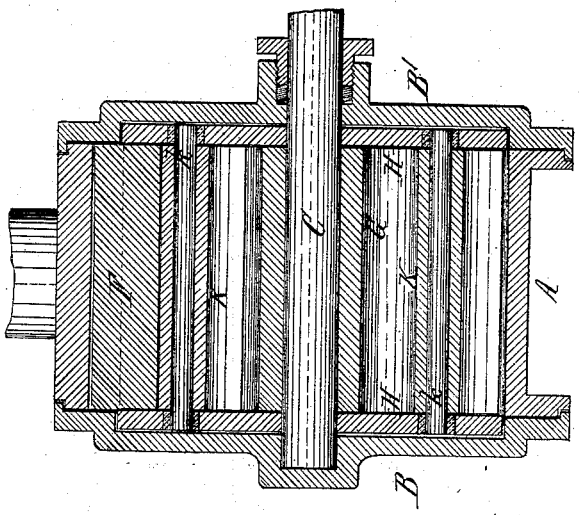
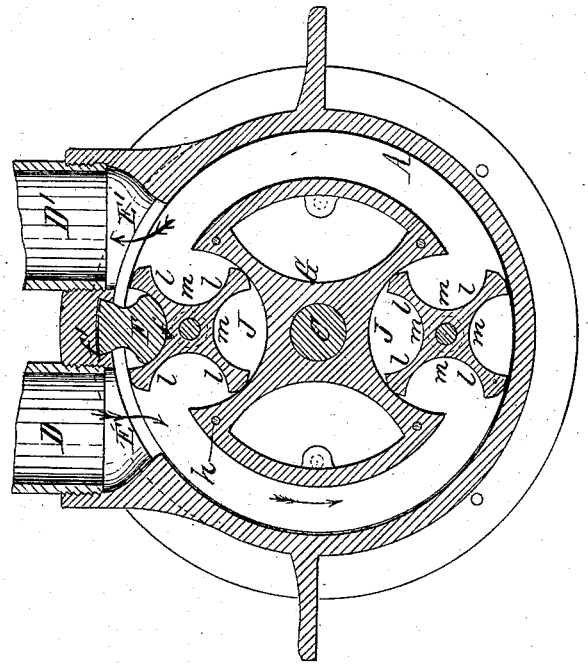


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

A. SIEGRIST.

ROTARY PUMP.

No. 263,975. Patented Sept. 5, 1882.

Fig. 3.

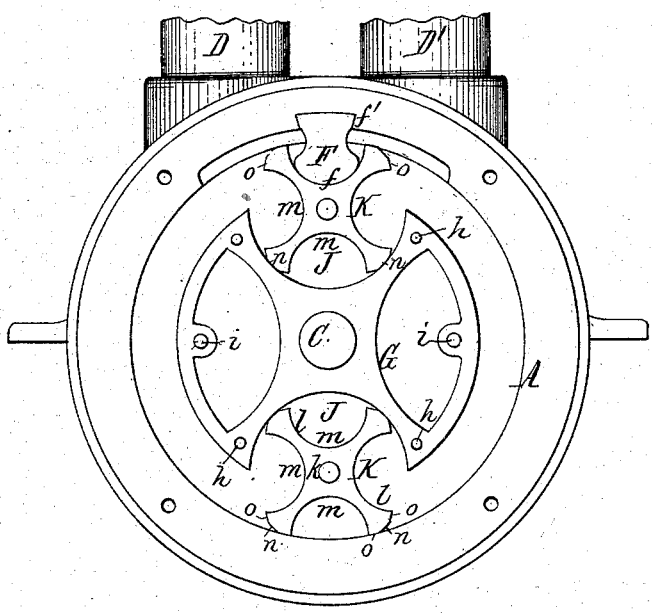
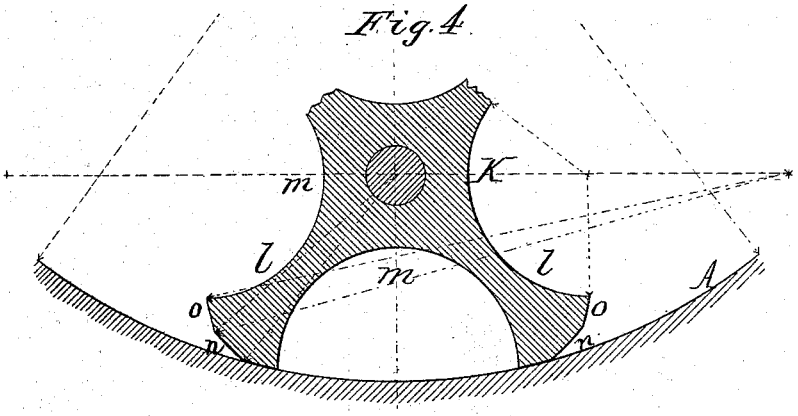


Fig. 4.



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UNITED STATES PATENT OFFICE.

AUGUST SIEGRIST, OF BUFFALO, NEW YORK.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 263,975, dated September 5, 1882.

Application filed November 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, AUGUST SIEGRIST, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Rotary Pumps, of which the following is a specification.

This invention relates to a novel construction of a rotary pump; and it has for its object the production of a simple and effective pump which is readily constructed and easily kept in repair.

My invention consists principally of a pump combining in its construction a cylinder provided with a stationary abutment and winged pistons, which are seated in a rotating hub, and which are capable of rotary movement in their seats in the hub, as will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a cross-section, and Fig. 2 a longitudinal section, of my improved pump. Fig. 3 is an end elevation with the cylinder-cover removed. Fig. 4 is an enlarged end view of one of the wings of the rotary pistons.

Like letters of reference refer to like parts in the several figures.

A represents the cylinder; B B′, the cylinder-covers; C, the shaft, and D D′ the inlet and outlet pipes connecting with recessed ports E E′ of the cylinder.

F is the stationary abutment, secured to the inner side of the cylinder between the ports E E′, and having an inner convex face, *f*, of the form of a cylinder-segment. The abutment F may be secured in the cylinder by a dovetail feather, *f′*, formed on the abutment and fitted in a corresponding groove in the cylinder, or by any other suitable means.

G represents the hub, which is secured to the shaft C, and H H are two disks or circular heads, secured to both ends of the hub G by screw-bolts *h*. The hub is also preferably provided with dowel-pins *i*, which project into openings formed in the heads H H and serve to retain the latter in the proper position.

K represents two or more rotary pistons arranged in recesses J of the hub G, between the heads H thereof, and provided with pivots *k*, which turn in bearings in the heads H. These pistons are each provided with a suitable number of wings, *l*, some of which bear against the inner surface of the cylinder and some of which bear against the surface of the recess J, in which the piston is arranged, thereby interrupting the continuity of the annular space between the hub and the cylinder. Between each pair of wings there is formed a concave depression or recess, *m*, which is shaped to fit snugly against the convex face of the abutment F, as shown in Fig. 1. The face of each wing *l* is composed of a central cylindrical portion, *n*, which is concentric with the axis of the piston, and two end portions, *o o*, which are concentric with the axis of the cylinder. The central face, *n*, bears against the surface of the concave recess J in the hub, and the end faces, *o*, bear against the inner surface of the cylinder, as clearly shown in Fig. 1. These faces are readily formed by first turning each piston to the proper size on its own axis, whereby the entire face of each wing is made concentric with the axis of the piston, and then arranging the pistons in the hub and turning the projecting portions of the faces of the wings down to fit in the cylinder, whereby the end faces, *o*, are formed, the remaining portion of the original face between the faces *o* constituting the central face, *n*, as indicated by dotted lines in Fig. 4. By constructing the faces of the wings as above described I obtain large bearing-surfaces of the wings against the adjacent surfaces of the cylinder and of the recesses of the hub, a close fit of the wings against these surfaces, which are curved from different radii, and a reduction in the diameter of the piston.

Assuming the shaft of the pump to be rotated in the direction of the arrow in Fig. 1, the liquid will enter the cylinder through the pipe D and be expelled through the pipe D′. In rotating with the hub G each piston K retains its position until it comes in contact with the abutment F. The latter arrests the movement of the outer foremost wing of the piston and causes the piston to turn on its axis in passing over the abutment. The recesses *m* between the wings permit the pistons to pass over the abutment and maintain a snug fit of the pistons with the inner face of the abutment until the piston has cleared the abutment. The wing of the piston which is outermost after the piston has cleared the abutment

projects into the port E, which is sufficiently deep to permit the wing to sweep through it without obstruction until the wing reaches the end of the port, when it is arrested, thereby turning the piston on its axis and bringing the next foremost wing in contact with the inner surface of the cylinder. The two outer wings of the piston now bear against the inner surface of the cylinder and the inner wings against the surface of the recess in the hub, as shown in Fig. 1, and the piston retains this position until it comes again in contact with the abutment, when the above-described operation is repeated.

By reason of the close fit of the pistons against the inner surfaces of the cylinder and of the hub-recesses, my improved pump is very efficient both in its sucking and forcing actions. This snug fit of the parts is maintained until the wings of the pistons are so far worn away that they no longer reach the inner surface of the cylinder. When this happens the pump is readily repaired by substituting new pistons for the worn-out pistons.

It is obvious that the pipes D D′ may be interchangeably used as inlet or outlet pipes, and that my improved pump may be used as a rotary engine by supplying a fluid under pressure to the cylinder through the inlet-pipe.

I claim as my invention—

1. The combination, with a cylinder, A, of a stationary abutment, F, secured thereto, inlet and outlet pipes D D′, arranged on opposite sides of the abutment, a rotary hub, G, provided with recesses J, and rotary pistons K, attached to the hub and provided with wings *l*, two of which bear against the inner surfaces of the cylinder and one or more against the recesses of the hub, the winged pistons being arranged to turn by contact with the abutment, substantially as set forth.

2. The combination, with a cylinder, A, provided with a stationary abutment, F, and a hub, G, of a piston provided with wings *l*, having their faces composed of a central portion, *n*, made concentric with the axis of the piston, and end portions, *o o*, curved to the radius of the cylinder in which the piston moves, substantially as set forth.

AUGUST SIEGRIST.

Witnesses:
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