A. S. CAMERON.

PUMP.

No. 184,586. Patented Nov. 21, 1876.

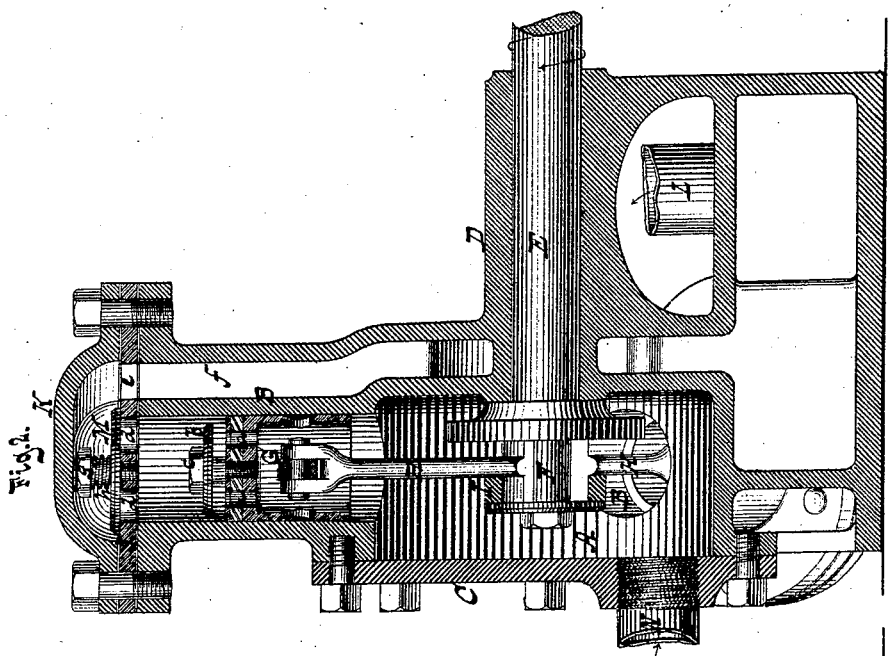

Fig. 2.

Fig. 3.

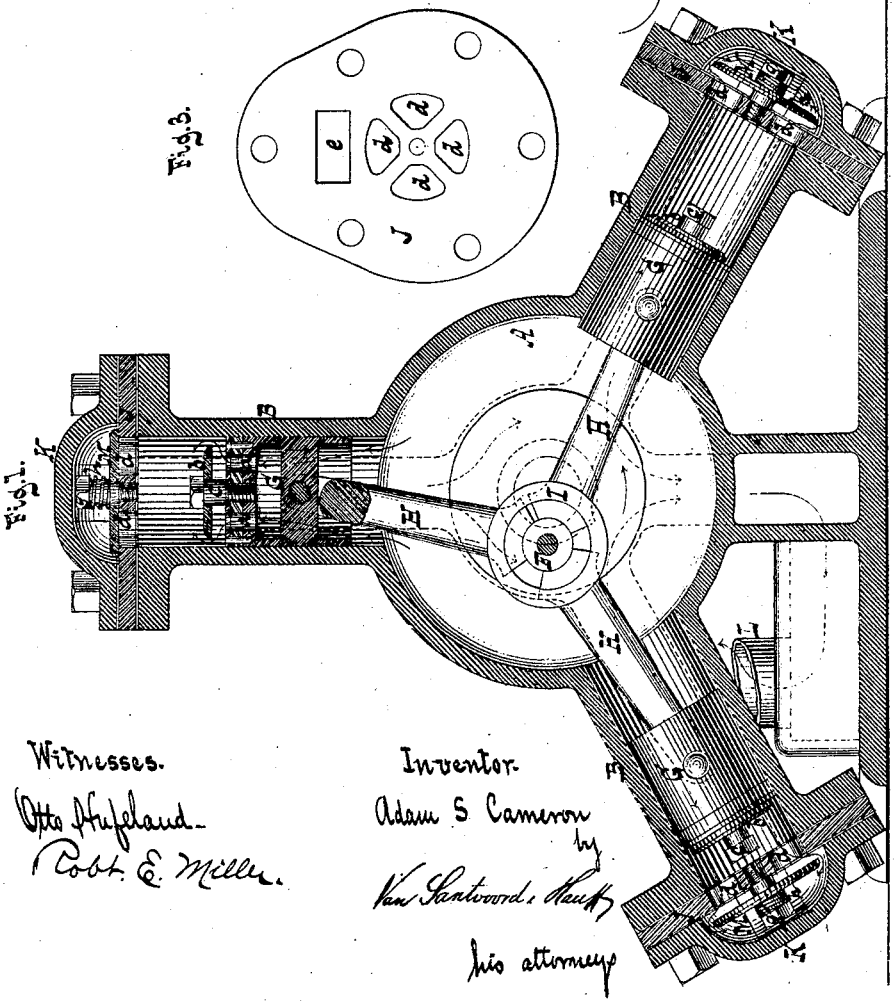

Fig. 1.

Witnesses.
Otto Hufeland
Robt. E. Miller.

Inventor.
Adam S Cameron
by
Van Santvoord & Hauff
his attorneys

UNITED STATES PATENT OFFICE.

ADAM S. CAMERON, OF NEW YORK, N. Y.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **184,586**, dated November 21, 1876; application filed October 11, 1876.

To all whom it may concern:

Be it known that I, ADAM S. CAMERON, of the city, county, and State of New York, have invented a new and useful Improvement in Pumps, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical section in the plane *x x*, Fig. 2. Fig. 2 is a vertical section in the plane *y y*, Fig. 1. Fig. 3 is a detached plane of one of the discharge-valves.

Similar letters indicate corresponding parts.

This invention relates to a pump composed of three or more cylinders, which radiate from a common suction-chamber, and the pistons of which receive their motion from one and the same crank-pin, the connection of this crank-pin with the pistons being inclosed in the suction-chamber. The communication between the suction-chamber and the interior of the cylinders is controlled by valves in the pistons, and the valves through which the liquid discharges from said cylinders are mounted in diaphragms situated between the cylinders and the bonnets that cover them.

In the drawing, the letter A designates a circular chamber, from which radiate three or more cylinders, B. One side of this chamber is closed, and the other side is open and provided with a closely-fitting cover, C, which is secured in position by screws or any other suitable means. From the closed side of the chamber A extends a projection, D, which forms the bearing for a shaft, E, that extends into said chamber, and is provided with a crank-pin, F. Each of the cylinders B contains a piston, G, and all the pistons are connected, by means of rods H, with the crank-pin F. The inner ends of the rods H are made T-shaped, with concave faces, which fit the surface of the crank-pin, and, by slipping over said T-shaped ends a ring, I, a simple and efficient connection between the rods H and the crank-pin F is produced. The ring I is retained in position by a washer and screw, as shown in Fig. 2. Any other suitable means may, however, be adopted for connecting the rods H to the crank-pin. Each of the pistons is provided at its outer end with openings *a*, on which is placed a valve, *b*, that moves on a guide-pin, *c*. The cylinders B are open at their outer ends, and on these ends are secured diaphragms J and bonnets K. Said diaphragms are provided with apertures *d*, (see Fig. 3,) and with a port, *e*, the apertures *d* being situated inside of a circle, the diameter of which is equal to the bore of the corresponding cylinder, while the port *e* is situated outside of said circle, and when the diaphragm is in position, said port corresponds with a channel, *f*, that leads to the ascension-pipe L. Over the apertures *d* in each diaphragm is placed a valve, M, which opens outward, and is guided by a pin, *g*. A spring, *h*, has a tendency to keep this valve down upon its seat. The bonnets K are concave on their inner surfaces, so that when the valves M are opened a communication is produced between the interior of the cylinders and the channels *f*, which lead to the ascension-pipe. The chamber A is provided with a hole, in which is secured the suction-pipe N. In the example shown in the drawing this suction-pipe is secured in the cover C of the chamber A; but it may be secured in any other portion of said chamber.

If the crank-shaft E is revolved, one or more of the pistons G move outward, and the others inward. By the outward motion of each piston a suction is produced, whereby the chamber A is filled with liquid, while the liquid which may be contained in the outer ends of the respective cylinders is forced out, through the valve M and channels *f*, to the ascension-pipe L. At the same time the valves B of those pistons which move inward are forced open, and the liquid is admitted to the outer ends of the respective cylinders. By these means a pump is obtained which can be worked with very great speed in either direction, and which works with very good effect.

It will be noticed that all the working parts are inclosed in the suction chamber A, so that the same are constantly kept lubricated by the liquid which passes through the pump.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a pump, the combination of a central suction-chamber with a series of cylinders radiating from said chamber, and with a crank-shaft, the crank-pin of which is situated in the interior of the suction-chamber, and connects

with the pistons working in the several cylinders, substantially in the manner shown and described.

2. The combination, with the central suction-chamber A, radiating cylinders B, and pistons G, of diaphragms J and concave bonnets K, the pistons and diaphragms being provided with valves, substantially in the manner and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 9th day of October, 1876.

A. S. CAMERON. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.