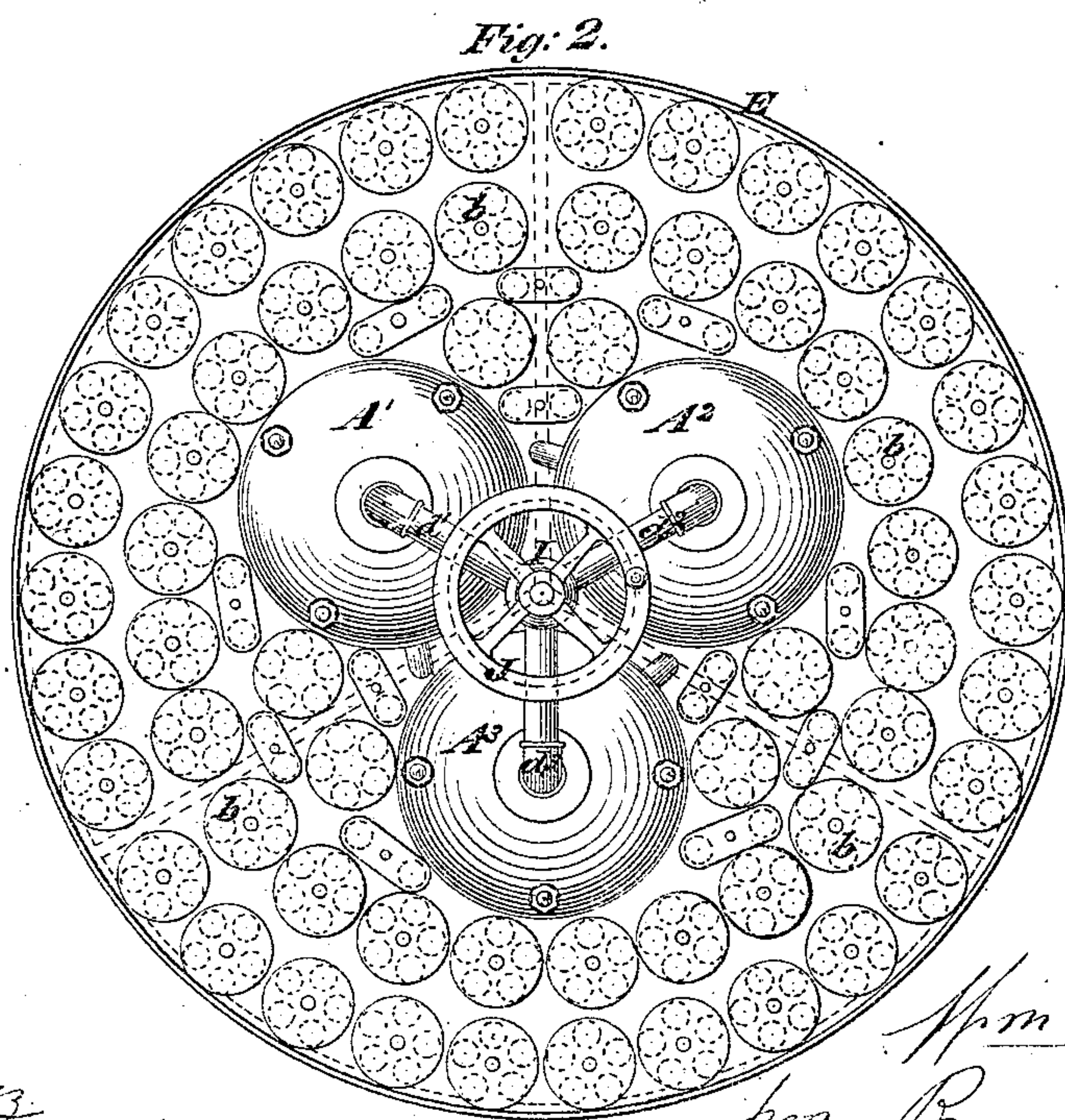
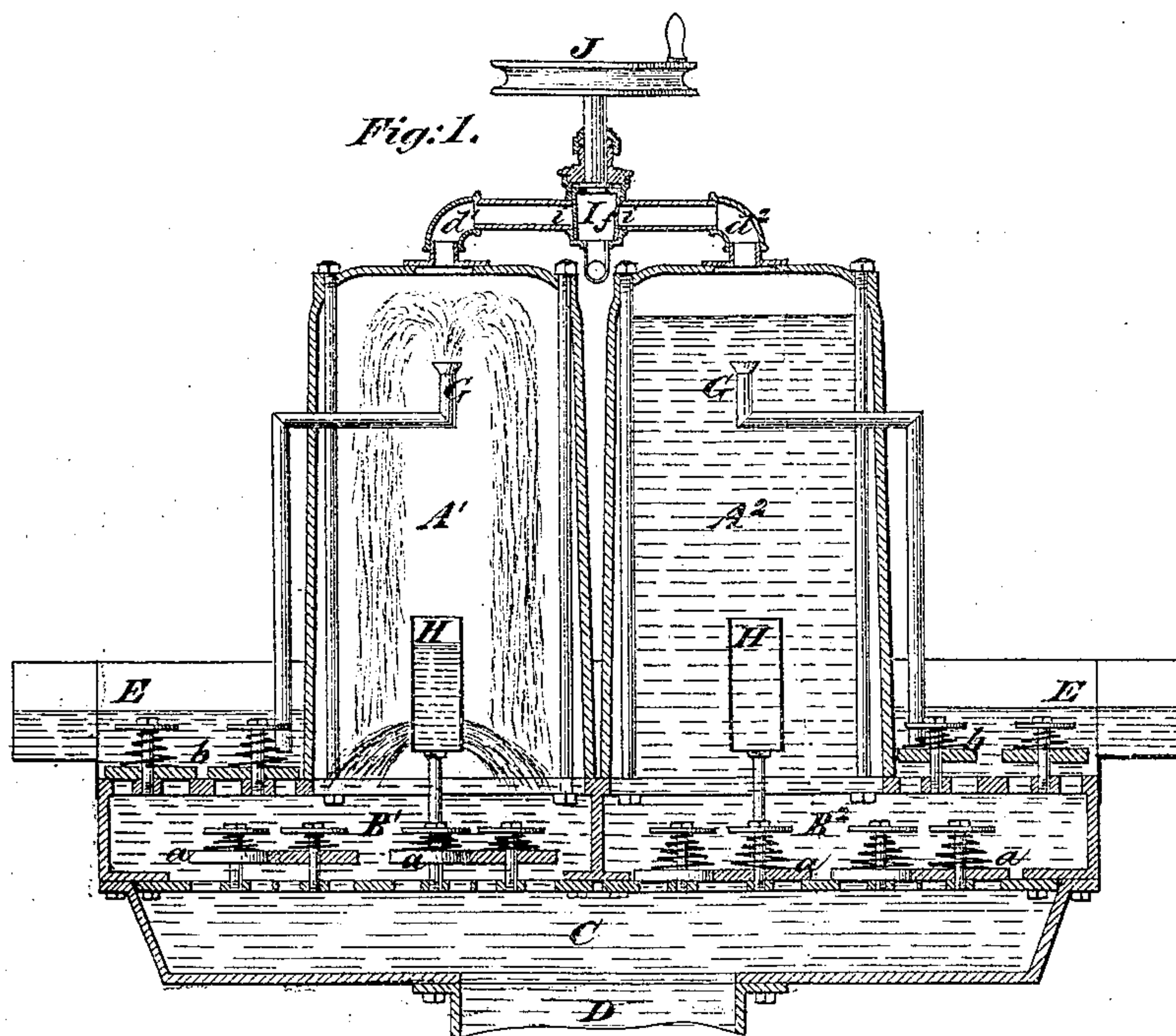


W. BURDON.
Steam Vacuum-Pumps.

No. 135,199.

Patented Jan. 28, 1873.



Witnesses:
Fred Haynes
Fred Fusch

Wm Burdon
per Brown & Allen
Attorneys

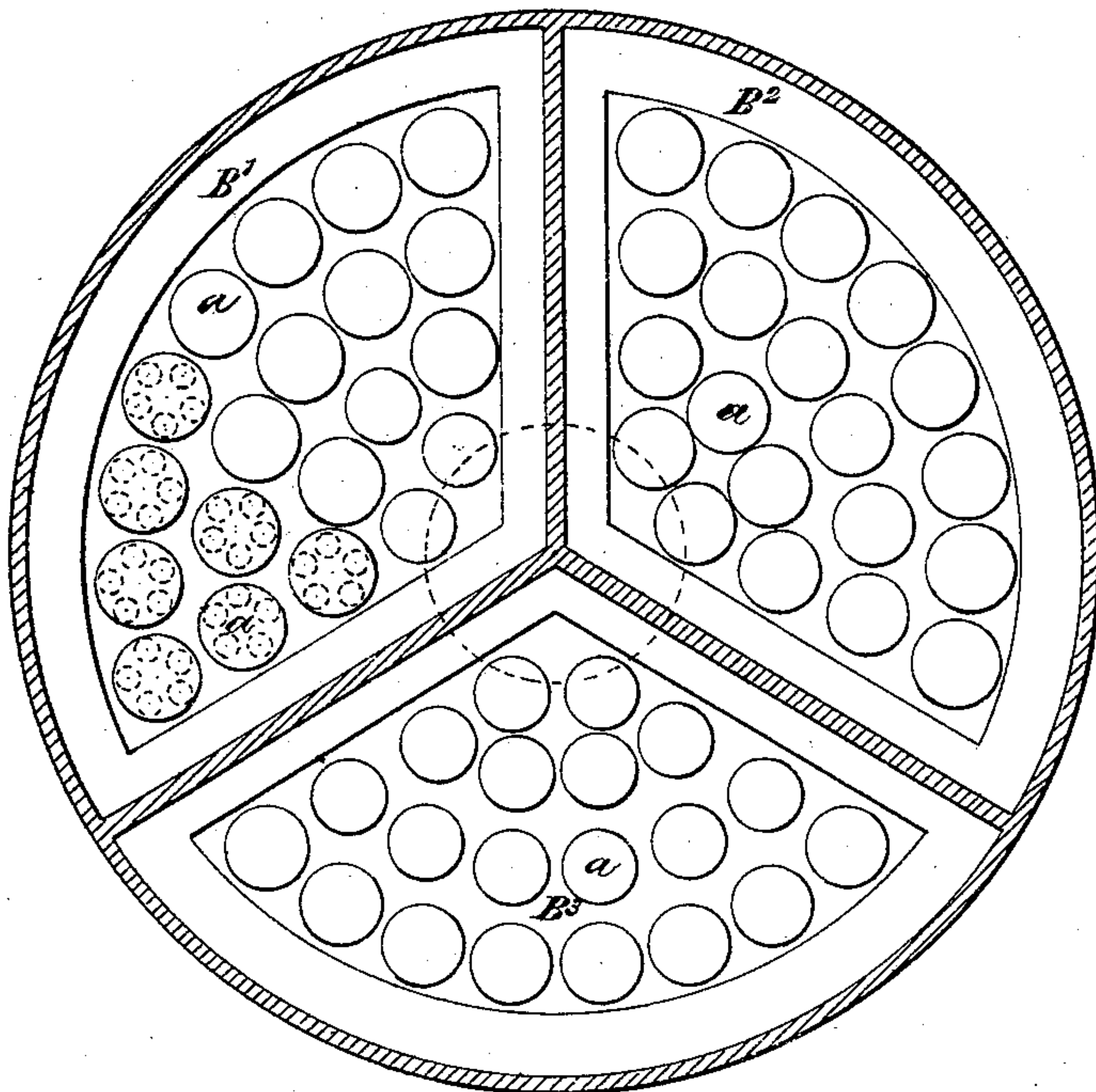
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Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM BURDON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STEAM VACUUM-PUMPS.

Specification forming part of Letters Patent No. 135,199, dated January 28, 1873.

Q'.

To all whom it may concern:

Be it known that I, WILLIAM BURDON, of the city of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Steam Vacuum-Pumps, of which the following is a specification:

This invention relates to the employment of three or more vacuum-chambers, which operate alternately in such manner that there will be no cessation of the action of the apparatus at the time of the termination of each operation of each chamber, as is apt to be the case when there are only two chambers. The improvement consists in the combination, with the three or more chambers, of a valve common to all, so actuated by a belt or other suitable means of transmitting motion from a steam-engine or other motor, as to give steam to and shut it off from the several chambers in regular succession.

Figure 1 in the accompanying drawing is a vertical section of a three-chambered apparatus constructed according to my invention. Fig. 2 is a plan of the same. Fig. 3 is a horizontal section of the extended water-chambers in the hollow base of the apparatus.

The three vacuum-chambers $A^1 A^2 A^3$ are represented erected one upon each of the radially-divided upper compartments $B^1 B^2 B^3$ of the hollow base to the lower compartment C, of which the suction-pipe D is connected. The water-inlet valves $a a$ are represented as arranged on the horizontal partition between the upper and lower compartments of the hollow base, and the discharge-valves $b b$ as arranged upon the top of the upper compartments. The discharge-valves are represented by an open water-box, E, which keeps the said valves always submerged in water. Steam-condensing devices G H are shown in the respective chambers. I will state, however, that this invention is not limited to any particular construction or arrangement of the water receiving and discharge conduits and valves or of the condensing devices, being only limited to the means of admitting the steam. It is nevertheless desirable, in order to obtain a rapid repetition of the operation, that the system of water-valves should be such as to provide for a very free ingress and egress of the water. To provide for the application of the

one steam-valve I, common to all the chambers $A^1 A^2 A^3$, the said chambers are arranged at equal distances from a common center, and as near together as convenient, but at equal distances apart. The valve I represented is of a kind well known as a rotating hollow conical plug-valve, and is arranged, as shown in Figs. 1 and 2, over the central space between the chambers, with pipes $d^1 d^2 d^3$ leading from it to the upper parts of the chambers $A^1 A^2 A^3$, one for each chamber, the three ports i in the casing through which said pipes communicate with the valve being at equal distances apart in a circumferential direction. The valve is quite open at the bottom to receive steam internally from the steam-pipe e , which connects with the bottom of the valve-casing. It has a port, f , in one side, which ranges with the ports i of the casing. The valve-spindle is represented as furnished with a pulley, J, through which it receives motion by a driving-band from a steam-engine or other motor.

Rotary motion being given to the valve I by the means above stated, steam is admitted through the port f to one after another of the ports i and their respective chambers $A^1 A^2 A^3$ in regular succession. The velocity of revolution should be so regulated as to give each chamber just time to fill and discharge. With three chambers and a proper velocity of the valve, one chamber at least must be filling, and one at least must be always discharging, and hence there will be a continuous discharge. This discharge may in some cases be rendered more perfectly uniform by providing a greater number of chambers.

I do not claim, broadly, a vacuum-pump with three or more vacuum-chambers; but

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

The combination, with the three or more vacuum-chambers, of a valve common to all, and so actuated by a steam-engine or other motor as to give steam to and shut it off from the several chambers in succession, substantially as herein described.

WM. BURDON.

Witnesses:

MICHAEL RYAN,
FRED. HAYNES.