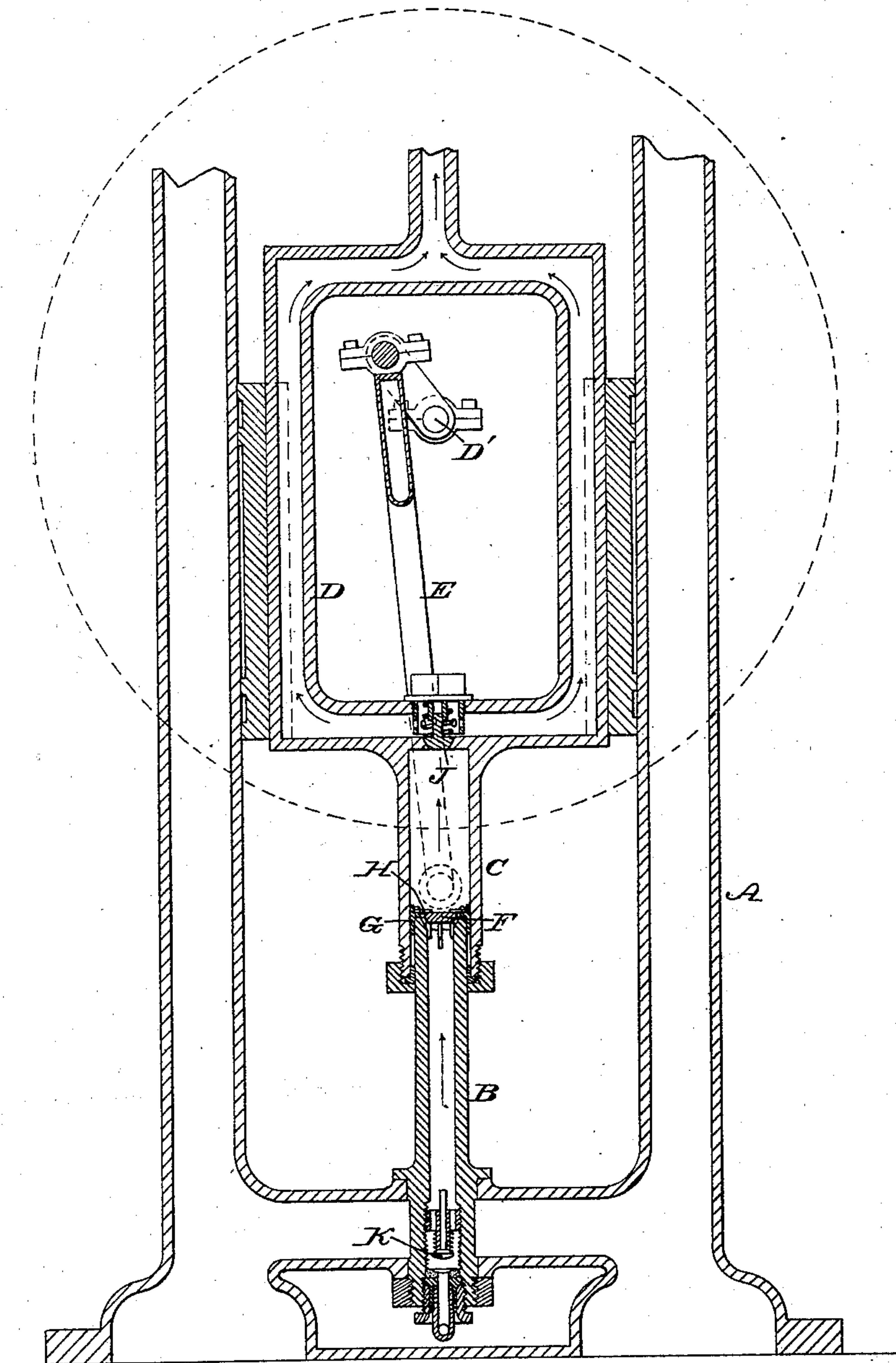


(No Model.)

W. J. CUNNINGHAM.
CARBONATING APPARATUS.

No. 290,749.

Patented Dec. 25, 1883.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM J. CUNNINGHAM, OF PHILADELPHIA, PENNSYLVANIA.

CARBONATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 290,749, dated December 25, 1883.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. CUNNINGHAM, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Carbonating Apparatus, which improvement is fully set forth in the following specification and accompanying drawing, in which the figure is a vertical section of the portion of the carbonating apparatus embodying my invention.

My invention relates to improvements in the pumping and compressing mechanism of carbonating apparatus known as the "continuous system," more especially shown in the Letters Patent No. 246,968, granted to John Matthews on the 13th day of September, 1881, said mechanism consisting of a reciprocating pump, the barrel or cylinder of which moves on a hollow stationary plunger, said pump being provided with suction and delivery valves, the location and uses of which are fully explained and illustrated in said Letters Patent.

I have found by practical experience that in the apparatus made in accordance with said Letters Patent water, when charged or mixed with carbonic-acid gas, has a certain amount of elasticity, and that it is necessary for the proper working of said apparatus to reduce the amount of space contained in the cylinder and hollow plunger thereof. This I accomplish as the object of my invention by placing an additional valve at or near the top of the hollow plunger, whereby nearly all of the water in the cylinder is forced out of the same and held out by the valve at the upper end of the cylinder, so that almost a perfect vacuum exists in the cylinder when raised for the next stroke, and the water and gas unfailingly rush thereinto.

Referring to the drawing, A represents the frame of the apparatus.

B represents the stationary plunger, which is supported in a vertical position on the lower part of said frame, and C represents the reciprocating vertical cylinder, which is fitted on the upper portion of the stationary plunger B, and is connected with the hollow or tubular frame D, to which is attached, by means of a rod, E, an operating crank-shaft, D', whereby when said shaft is operated the

cylinder is raised and lowered, moving or sliding on the stationary plunger.

F represents a vertically-moving valve, whose seat is on the upper end of the stationary plunger, and G represents a cup washer or packing, which encircles the top of the stationary plunger, and has its horizontal portion secured to said plunger by means of an annular plate, H, which rests on said portion, and is screwed to the plunger, it being noticed that the vertical portion or peripheral rim of said washer fits snugly in the space between the reciprocating cylinder and stationary plunger.

J represents the discharge-valve, placed at the junction of the cylinder C, with the lower arms of the tubular frame D, and K represents the suction-valve, which is located in the lower part of the stationary plunger and held upon its seat by a spring or weight suitably applied.

In the operation of the improvement, it will be understood that when a proper supply of water and gas is admitted to the stationary plunger and the pump set in motion the valve in the top of the cylinder is closed on the upward stroke, and the water and gas enter through the valve F and fill the cylinder. On the downward stroke said valve F is instantly forced upon its seat, and as the cylinder goes to the top of the plunger all of the water and gas above the valve F is discharged through the valve J and forced therefrom to the condenser and agitator above, and the gas and water are thoroughly mixed. As the valve F is in the upper end of the hollow plunger, all of the water is forced out of the cylinder at every stroke, instead of allowing a large quantity of water and gas to remain in the cylinder and plunger, which prevents the quick operation of the valves. Furthermore, I am enabled to obtain a greater pressure in less time and retain the same than can be accomplished in other apparatus with which I am acquainted.

Owing to the cup washer or packing G, I close any existing space between the cylinder and plunger, and provide a tight joint between said parts, whereby there is no liability of the "gassed" water entering said space or joint, and I avoid the necessity of a box and packing at the lower end of the cylinder.

Having thus described my invention, what I

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

1. In a carbonating apparatus, a reciprocating cylinder having valve J, and a stationary
5 plunger provided with a vertically-moving valve, F, having its seat on the upper end thereof, and a cup washer or packing, G, substantially as and for the purpose set forth.

2. In a carbonating apparatus, a reciprocating

cylinder and stationary plunger, in combination with packing or a washer formed of a vertical and horizontal portions and the annular fastening-plate, substantially as and for the purpose set forth.

WM. J. CUNNINGHAM.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. GRANT.