

G. C. HICKS, JR.
VALVE FOR BLOWERS.
APPLICATION FILED JULY 9, 1910.

975,240.

Patented Nov. 8, 1910.

Fig. 1.

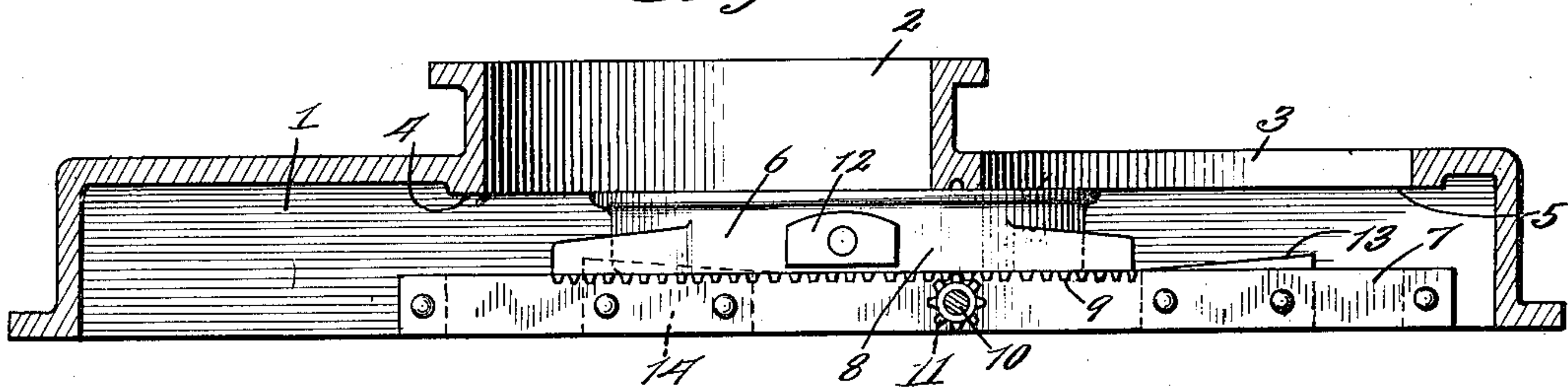


Fig. 2.

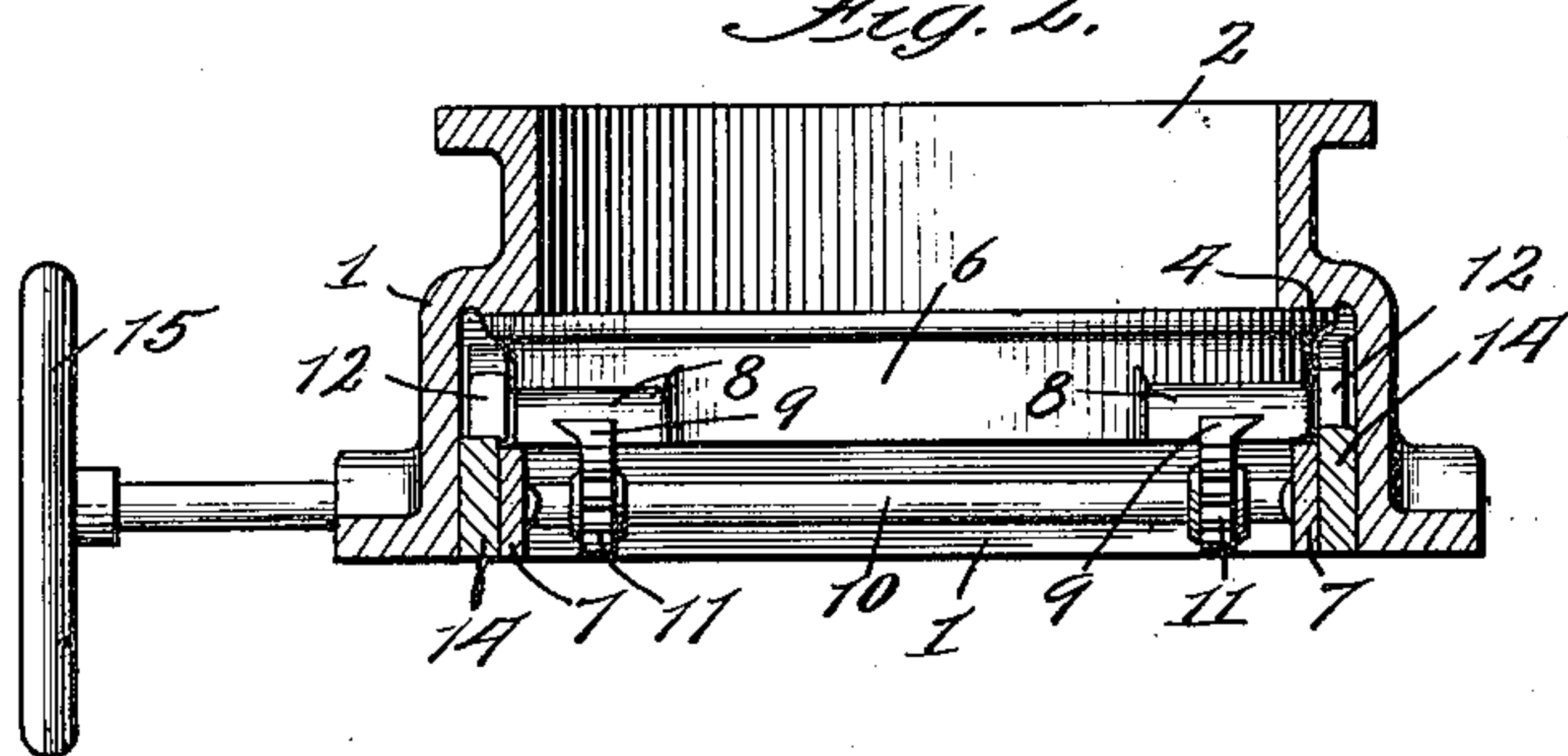
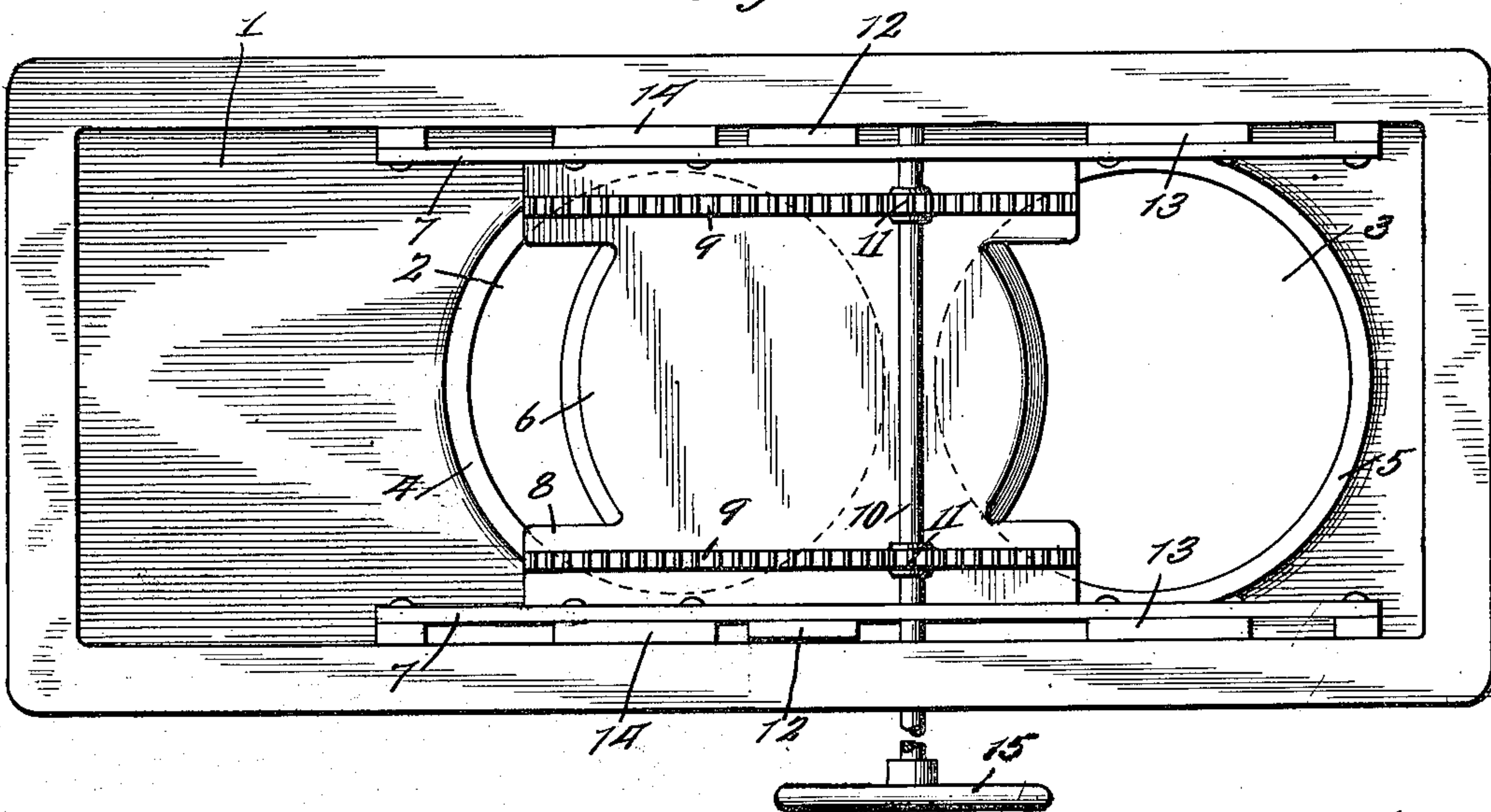


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE C. HICKS, JR., OF CONNERSVILLE, INDIANA, ASSIGNOR TO THE P. H. & F. M. ROOTS COMPANY, OF CONNERSVILLE, INDIANA.

VALVE FOR BLOWERS.

975,240.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed July 9, 1910. Serial No. 571,154.

To all whom it may concern:

Be it known that I, GEORGE C. HICKS, JR., a citizen of the United States, residing at Connerville, Fayette county, Indiana, have invented certain new and useful Improvements in Valves for Blowers, of which the following is a specification.

In the use of some blowers, those of the well known Roots type for instance, it becomes under certain circumstances desirable to relieve them entirely of pressure on the discharge side. When such blowers, or blowers of some other types, are driven by electric motors of a certain class, it becomes necessary, after a stoppage of the motor, to restart the motor under conditions of no load. Again, cases have arisen, in which a blower has been driven by an engine and, the engine suddenly breaking down, the regurgitation of the air caused the blower to act as a motor, turning in reverse direction, and drive the disabled engine to its destruction.

The present invention relates to a valve for use in connection with blowers and permitting all pressure to be quickly relieved from the discharge side of the blower, and the invention will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a vertical longitudinal section of a valve exemplifying my present invention; Fig. 2 a vertical transverse section of the same; and Fig. 3 a bottom view of the same.

In blowers of the Roots type the casing containing the impellers is usually provided with a top-plate and a bottom-plate each provided with an opening, one opening forming the inlet and the other the outlet. I illustrate my present invention in connection with the top-plate of such a blower and on the assumption that the blower discharges at its top.

In the drawing:—1, indicates a valve-casing which, in the illustration, is adapted to take the place of the ordinary top-plate of a blower so that the discharge side of the blower is always in free communication with the valve casing; 2, the discharge outlet from the valve-casing, representing the usual discharge pipe connection from a blower; 3, a second outlet from the valve-casing, to discharge into the atmosphere; 4, a valve-seat

formed within the casing around outlet 2 and adapted to be closed by the shearing motion of the gate-valve; 5, a valve-seat formed around the outlet 3, valve-seats 4 and 5 being in a common plane so that a sliding gate-valve may close them alternatively; 6, a gate-valve adapted to slide from one seat to the other so as to close either of the outlets as desired; 7, a track-rail disposed within the casing at each side of the valve; 8, runners carried by the valve and sliding on the track-rails and adapted to hold the valve near the valve-seats at all times; 9, a pair of racks, one under each side, these racks being preferably formed separately from the valve and secured thereto, the illustration showing the racks as being dovetailed into the valve; 10, a shaft journaled in the valve-casing across and under the valve; 11, pinions fast on the shaft, one engaging each of the racks; 12, an outward projection from each side of the valve at its center length, these projections being in the form of shoes pivoted to the valve, the common axis of the two shoes being in a line at right angles to the sliding movement of the valve, the shoes projecting outwardly beyond track-rails 7, which track-rails are supported at a distance inwardly from the side-walls of the casing; 13, an incline rigidly supported by the valve-casing just outside each track-rail, and in such longitudinal position that when the valve is finally closing outlet 3 the shoes will ride up on the inclines and force the valve tightly to valve-seat 5; 14, a pair of similar inclines, but so disposed longitudinally in the valve-casing that the shoes will cooperate with them and force the valve to valve-seat 4 when the valve is finally closing discharge outlet 2; and 15, a hand-wheel on the shaft.

When the blower is in normal operation, the valve will be at outlet 3 and held tightly to the valve-seat of that outlet, thus preventing escape of air except through the normal discharge outlet 2, precisely as though plate 1 was the usual top-plate of the blower. If, now, there should be a breakdown, or if there should be a motor drive requiring the restarting of the motor under conditions of no load, the valve will be shifted, in an obvious manner, so as to close discharge outlet 2 and open outlet 3 to the atmosphere. When the valve is so shifted the inclines 14 will force the valve tightly to seat 4 of the discharge outlet. Under these conditions there

can be no regurgitation of the pressure air to drive the motor backward as a motor and the blower, in being restarted after a stoppage, offers no resistance due to pressure of discharge. When the blower has gotten into motion then the valve may be shifted back to normal position, closing outlet 3. In shifting the valve there may, of course, be certain waste of pressure air from discharge outlet 2 through outlet 3, but for all practical purposes this is immaterial.

I claim:—

1. A valve for a blower comprising, a plate having through it two openings having surrounding valve-seats with their faces in a common plane, a gate-valve adapted to slide over said seats and close the openings alternatively, and means for sliding the valve upon the seats, combined substantially as set forth.

2. A valve for a blower comprising, a plate having through it two openings having surrounding valve-seats with their faces in a common plane, a gate-valve adapted to slide over said seats and close the openings alternatively, means for sliding the valve upon the seats and means for pressing the valve against the seat of the opening which it may be closing, combined substantially as set forth.

3. A valve for a blower comprising, a plate having through it two openings having surrounding valve-seats with their faces in a common plane, a gate-valve adapted to slide over said seats and close the openings alternatively, means for sliding the valve upon the seats, a track rigidly supported by the plate and adapted to guide the valve in close proximity to the valve-seat, and inclines rigidly supported by the plate in position to be engaged by the valve at either extremity of its travel and force the valve against the seat of the opening which it may be closing, combined substantially as set forth.

4. A valve for a blower comprising, an open-sided valve-casing adapted to form the outlet-plate of a blower and provided with two outlet openings having valve-seats within the casing, a valve adapted to slide on said seats and close either of the openings, and mechanism for shifting the valve from one seat to the other, combined substantially as set forth.

5. A valve for a blower comprising, an open-sided valve-casing adapted to form the outlet-plate of a blower and provided with two outlet openings having valve-seats within the casing, a valve adapted to slide on said seats and close either of the openings, mechanism for shifting the valve from one seat to the other, a rail carried by each side-wall of the casing and adapted to guide the valve in close proximity to the valve-seats, a projection from each side of the valves, and inclines carried by the rails and adapted to be engaged by said projections and force the valve against the seat of the opening which it may be closing, combined substantially as set forth.

6. A valve for a blower comprising, an open-sided valve-casing adapted to form the outlet-plate of a blower and provided with two outlet openings having valve-seats within the casing, a valve adapted to slide on said seats and close either of the openings, mechanism for shifting the valve from one seat to the other, a rail carried by each side-wall of the casing and adapted to guide the valve in close proximity to the valve-seats, a pivoted shoe projecting from each side of the valves, and inclines carried by the rails and adapted to be engaged by said shoes and force the valve against the seat of the opening which it may be closing, combined substantially as set forth.

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Witnesses:

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