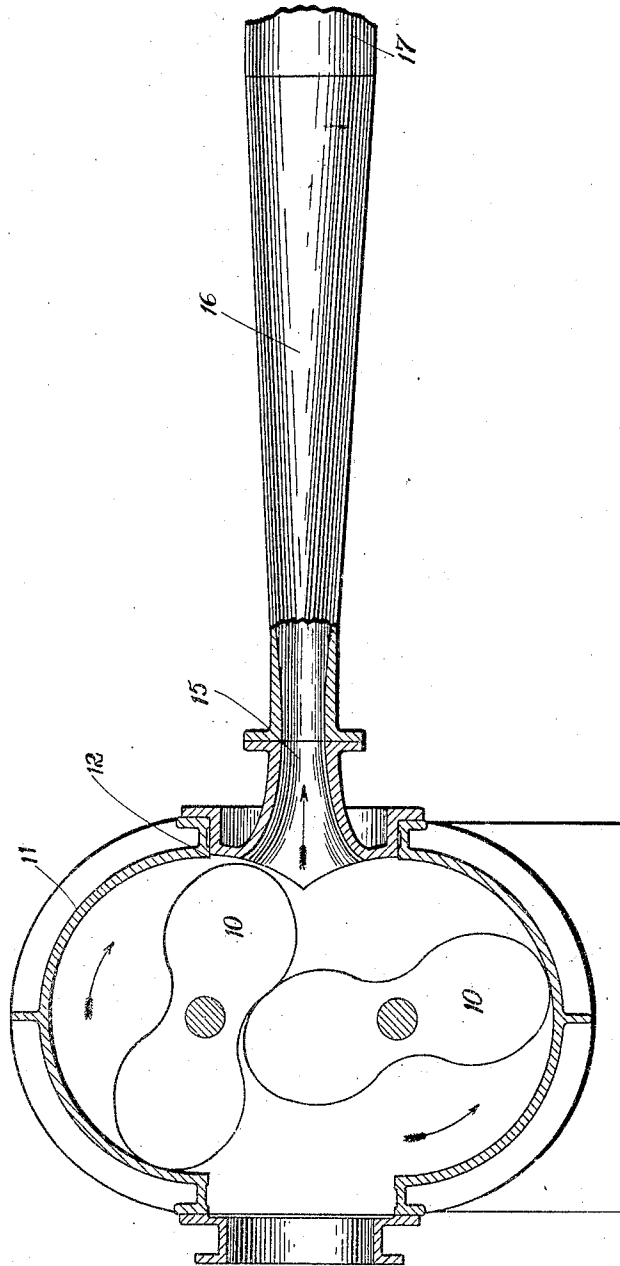


J. T. WILKIN.
ROTARY BLOWER OR GAS PUMP.
APPLICATION FILED APR. 16, 1907.

905,967.

Patented Dec. 8, 1908.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN T. WILKIN, OF CONNERSVILLE, INDIANA, ASSIGNOR TO THE CONNERSVILLE BLOWER CO., OF CONNERSVILLE, INDIANA, A CORPORATION OF INDIANA.

ROTARY BLOWER OR GAS-PUMP.

No. 905,967.

Specification of Letters Patent.

Patented Dec. 8, 1908.

Application filed April 16, 1907. Serial No. 368,551.

To all whom it may concern:

Be it known that I, JOHN T. WILKIN, a citizen of the United States, residing at Connorsville, in the county of Fayette and State of Indiana, have invented certain new and useful Improvements in Rotary Blowers or Gas-Pumps, of which the following is a specification.

The object of my invention is to so construct the discharge passage of a gas pump, of the rotary-impeller type, as to produce a more uniform flow of air or gas in the discharge pipe and thereby to save power by obtaining to some extent a gradual compression of air within the pump.

The accompanying drawing is a partial transverse section of a pump of the two-lobed impeller type provided with my improvement, but it is to be understood that my invention is not limited to the particular form shown.

When a blower or pump takes its supply, a quantity of gas or air is inclosed between the impeller 10 and the cylinder 11 and when the end of lobe of an impeller passes the edge 12 of the cylinder adjacent the discharge outlet, this quantity, which is being driven forward by the impeller, is suddenly exposed to the greater pressure of the air in the discharge pipe and this pressure in the discharge pipe produces at that time a backward flow toward the impeller until the air, which is being driven forward by the impeller, is raised to the pressure in the discharge pipe. This backward flow of the air in the discharge pipe absorbs a considerable amount of power. In order to overcome this difficulty I provide a doubly tapered discharge opening, as clearly shown in the drawing, the passage beginning as nearly as possible to the paths of movement of the tips of the impellers, diminishing in diameter to a constricted throat 15, and then gradually widening, as shown at 16 to the main pipe 17. By this means the velocity of discharge, closely adjacent the cylinder, is comparatively high, without however being increased in the main discharge pipes at a distance from the pump. As a consequence the inertia of air through the throat 15 is such that, before the flow can be reversed by reason of the sudden release of pressure, due to the movement of the impellers, the impellers will have moved forward sufficiently to have raised the pressure of air in the blower high enough to prevent the

backward flow from the discharge system. After the air has passed through the throat 15 it passes through the diffusion tube 16 which gradually increases in size to the main blast pipe 17 where the high velocity of the air is converted into pressure.

Under ordinary conditions a rotary blower is not an economical compressor because the impellers are continually subjected to the full discharge pressure but, by means of the constricted discharge throat and gradually expanding diffusion tube, I obtain a partial gradual compression of each displacement of air which becomes more effective as the speed of the blower is increased, and backward flow of the discharge is prevented.

It is to be understood that the constriction in the discharge passage must be of such character, as compared with the velocity of outflow produced by the blower that the constriction results in such an increase of velocity, over that which would ordinarily be produced by the blower that there can not be a reversal of movement of the current in the short time during which there is a release of pressure owing to the movement of an impeller past the discharge opening.

In practice I have found that with a machine operating against a 7 lb. pressure in the supplied system, the constriction throat between the pump and the supplied system should be such that the velocity through the throat will be about 238 feet per second whereas operation under a 6 lb. pressure in the supplied system requires approximately a velocity of about 208 feet per second in the constricted throat. The higher the pressure in the supplied system, the higher the velocity required in the throat.

I claim as my invention:

1. The combination, with a gas pump comprising a pair of co-acting rotary lobed impellers producing pulsatory discharges, of a discharge passage for said pump, said discharge passage having a constricted portion at a point between its beginning and its end.

2. The combination, with a gas pump comprising a pair of co-acting rotary lobed impellers producing pulsatory discharges, of a discharge passage for said pump, said discharge passage being constricted at an intermediate point and gradually widening beyond said constriction.

3. A gas pump comprising a pair of co-acting rotary lobed impellers producing pulsa-

tory discharges, of a discharge passage beginning at a point closely adjacent the paths of travel of the impellers and diminishing in size to a constricted throat and subsequently increasing, whereby a sufficient velocity of discharge immediately adjacent the pump is produced to prevent backward flow between discharge pulsations of pump.

4. A gas pump comprising a pair of co-acting rotary lobed impellers producing pulsatory discharges, of a discharge passage beginning at a point closely adjacent the paths of travel of the impellers and diminishing in size to a constricted throat and subsequently

increasing by a gradual taper, whereby a sufficient velocity of discharge immediately adjacent the pump is produced to prevent backward flow between discharge pulsations of pump. 15

In witness whereof, I, have hereunto set my hand and seal at Connersville, Indiana, this tenth day of April, A. D. one thousand nine hundred and seven. 20

JOHN T. WILKIN. [L. s.]

Witnesses:

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