E. P. REICHHELM.

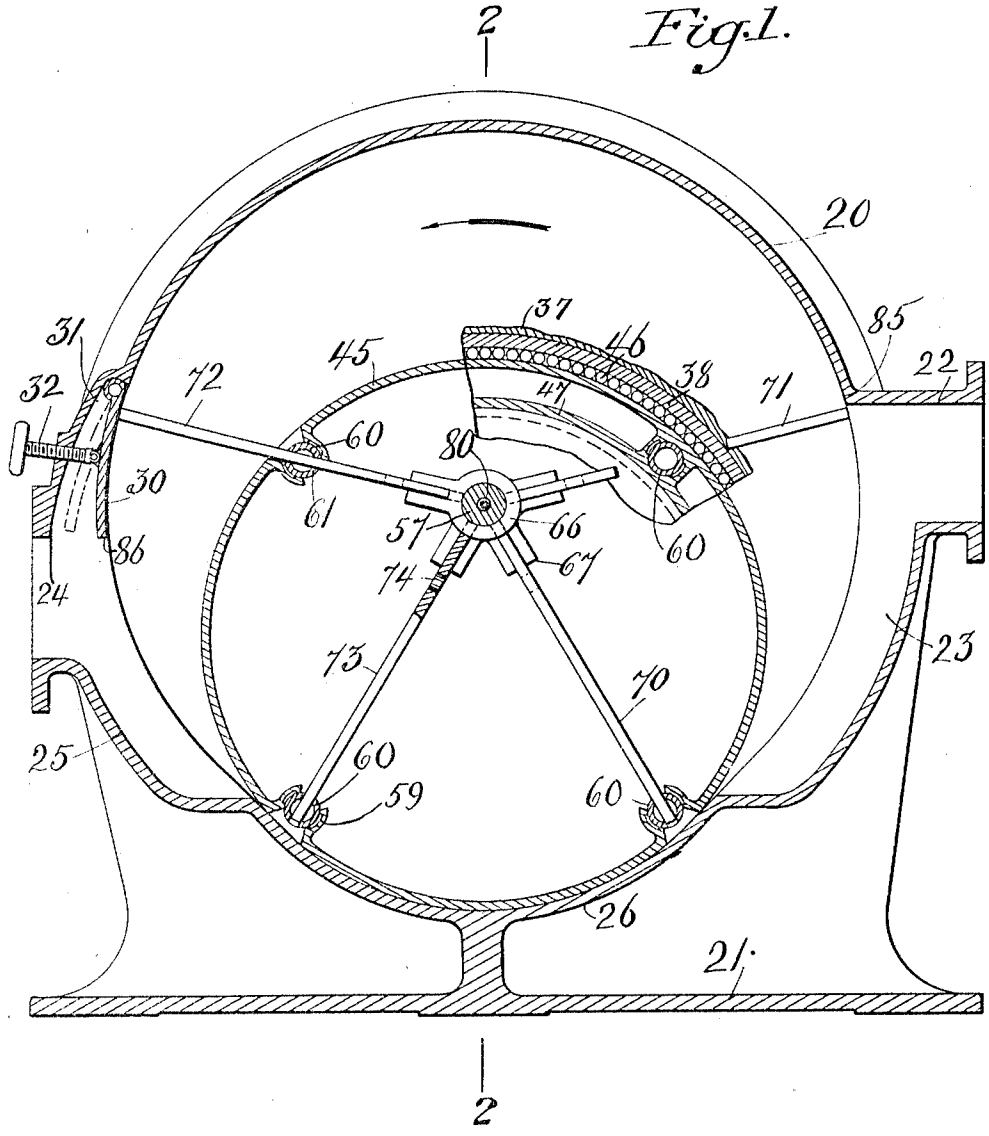
ROTARY BLOWER.

APPLICATION FILED DEC. 10, 1907.

1,012,440. Patented Dec. 19, 1911.

3 SHEETS—SHEET 1.

Fig. 1.




Witnesses
G. A. Manwaring
Martin Zimansky

Inventor
Edward P. Reichhelm
By his Attorney
Arthur Bomeville

E. P. REICHHELM.

ROTARY BLOWER.

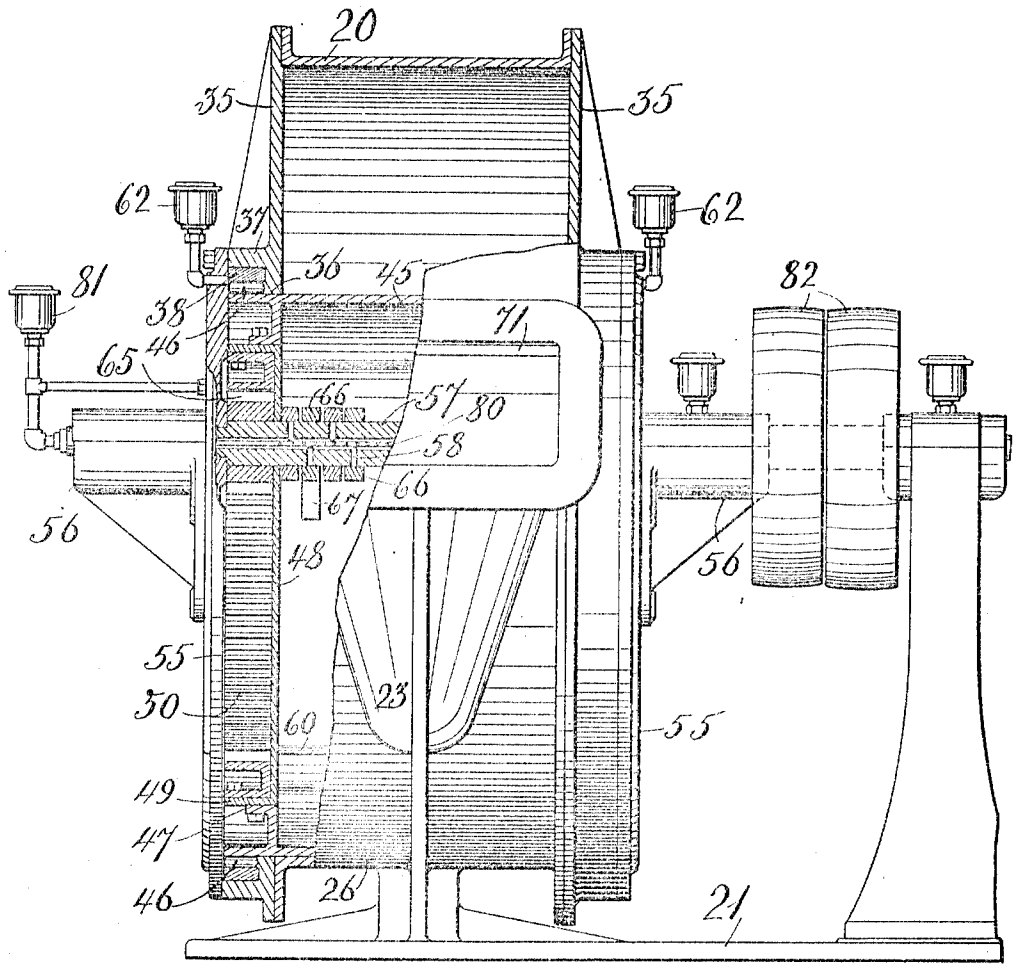
APPLICATION FILED DEC. 10, 1907.

1,012,440.

Patented Dec. 19, 1911

3 SHEETS—SHEET 2.

Fig. 2.




Witnesses
G. A. Manwaring
Martin Zimansky.

Inventor
Edward P. Reichhelm
By his Attorney
Leslie Bonneville

E. P. REICHHELM.

ROTARY BLOWER.

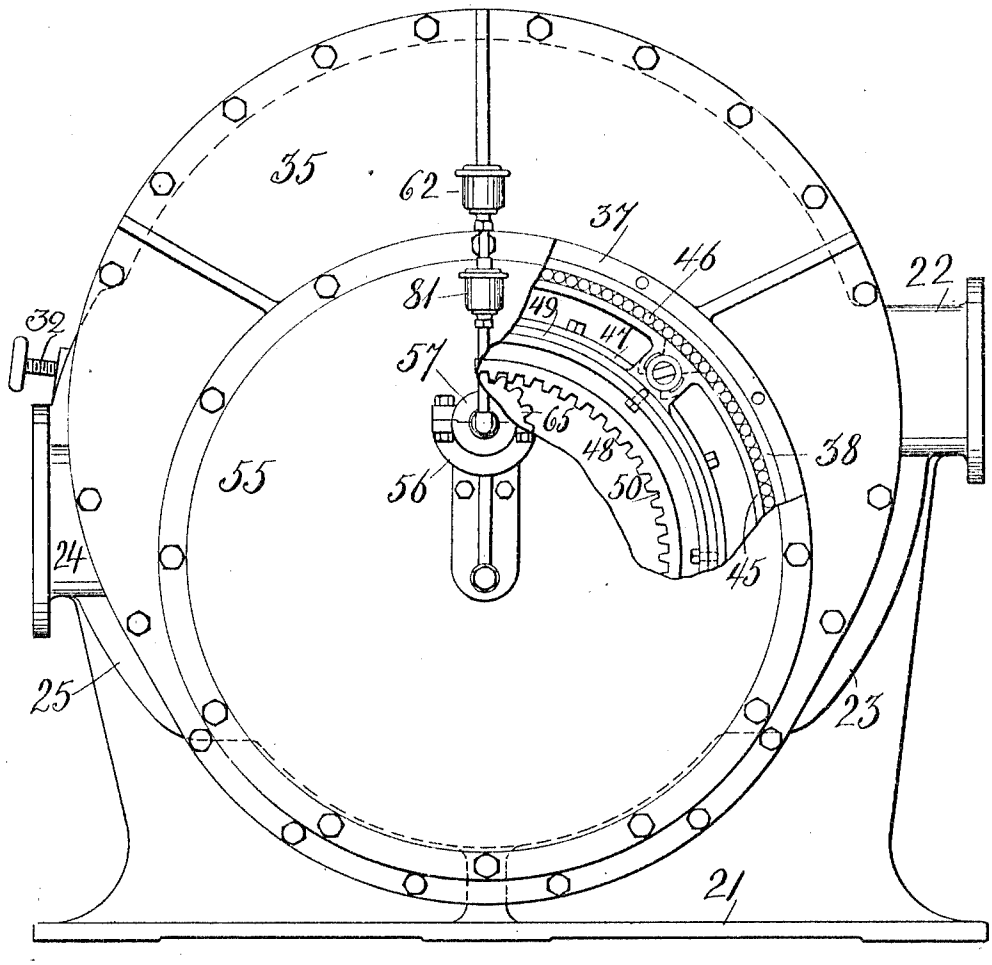
APPLICATION FILED DEC. 10, 1907.

**1,012,440**

Patented Dec. 19, 1911.

3 SHEETS—SHEET 3.

*Fig. 3.*




Witnesses
G. A. Manwaring.
Martin Zimansky.

Inventor
By his Attorney Edward P. Reichhelm
J. Lee Bonwell

# UNITED STATES PATENT OFFICE.

EDWARD P. REICHHELM, OF BAYONNE, NEW JERSEY.

## ROTARY BLOWER.

1,012,440. Specification of Letters Patent. Patented Dec. 19, 1911.

Application filed December 10, 1907. Serial No. 405,884.

*To all whom it may concern:*

Be it known that I, EDWARD P. REICHHELM, a citizen of the United States, and resident of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Rotary Blowers, of which the following is a specification.

This invention relates to rotary blowers, but the combination of the elements is also applicable to a motor or more specifically an engine.

The organization of the invention comprises a casing, which is essentially cylindrical, a piston cylinder eccentrically located therein, and a depressed segmental portion of the casing concentric with the said piston cylinder and forming a seat therefor.

A port or duct extends from one end of the segmental portion of the casing to the inlet opening thereof, and a duct or port leads from the other end of said portion to the outlet opening of said casing. Blades are rotatably supported on a shaft located in the axial line of the casing, passing through swinging joints in the piston cylinder and extending to the inner cylindrical wall of said casing. An adjustable release valve is connected with the outlet of the casing, and a pinion on the said shaft gears with an internal gear connected with the piston cylinder.

The coaction of the main portion of the casing and the piston cylinder located in the depressed segmental portion thereof secures a maximum effective working area for each blade, by reason of the large area obtained between the upper surface of the piston cylinder and the crown of the casing. The coaction of the piston cylinder with the segmental portion of the casing reduces leakage to a minimum. The duct or port at the inlet allows the influx of the charge for the apparatus before the blades are opposite said inlet securing what I herein term lead, and the duct or port at the outlet prevents back pressure. The adjustable release valve near the outlet provides a variable exhaust. The blades are also provided with openings within the piston cylinder so that the pressure in the chambers between the blades and inner wall of the piston cylinder can be regulated.

In the drawings, Figure 1 represents a partial vertical longitudinal section of a blower with the invention incorporated therewith, Fig. 2 shows a partial right hand side view of the invention and a partial section as on the line 2 2 of Fig. 1 and Fig. 3 is a front view of the blower with a portion broken away.

The blower exemplifying the invention comprises the cylindrical casing 20 mounted on the bed plate 21. It has the inlet 22 with inlet port or duct 23, outlet 24 with outlet port or duct 25, and segmental portion 26 eccentric with the main portion thereof. An exhaust relief valve 30 is hinged in a cavity 31 of the said casing, the wall of which latter is threaded for a screw 32. The end of the screw is connected with the said release valve 30, so as to swing it out of the line of the path of the blades to be described, to obtain a variable release for the discharge of the blower.

To the sides of the casing 20 are bolted the bonnets 35 having the cylindrical openings 36 and the cylindrical flanges 37 eccentrically located with respect to the axis of the casing. Bearing rings 38 bear against the inner cylindrical surface of the flange 37. A hollow piston cylinder 45 is eccentrically located in the casing 20 and extends through the said openings 36, being supported on roller bearings 46 bearing against the bearing ring 38. Cylindrical openings with cylindrical flanges 47 are formed in the sides of the piston cylinder 45, and to the flanges 47 are bolted the piston bonnets 48, having the flanges 49. Internal gears 50 are fastened to the flanges 49. To the flanges 37 are bolted the bonnets 55, and to the bonnets 55 are bolted the journal bearings 56 which support the hollow shaft 57 having the oil holes 58. The piston cylinder 45 has formed across its face bearings 59 for the swinging tubes 60, which two latter elements constitute swinging joints for the blades to be described. The tubes 60 have openings 61 for the said blades. Oil cups 62 are attached to the bonnets 55 for lubricating the roller bearings 46 and piston cylinder 45. Pinions 65 are fastened to the shaft 57, the teeth of which mesh with the teeth of the internal gears 50.

Sleeves 66 having the jaws 67 are rotatably supported on the shaft 57, and the jaws of a pair of said sleeves tightly secure each one of the similar blades 70, 71, 72, 73, which are guided in the swinging tubes 60, and extend to the inner cylindrical surface of the casing 20. In each of the said blades

is formed an opening 74. To each of the journal bearings 56 is fitted a lubricating device comprising a tube 80 located in the hollow shaft 57, and which is connected by piping with the oil cup 81. Pulleys 82 for the shaft 57 are provided for a driving belt not shown.

To operate the blower one of the pulleys is driven by said belt which rotates the shaft 57 in the direction of the arrow. The pinion 65 on the shaft 57 rotates the internal gear 50 connected with the piston cylinder, with a uniform peripheral speed, and the latter carries the blades 70, 71, 72, 73, around the axis of the shaft 57.

When the blades are located as best shown in Fig. 1, the blade 70, is just about to leave the segmental portion 26 of the casing 20 and swing opposite the inlet port 23 allowing an influx of the charge of fluid in the chamber below the said blade 70, and prevents the tendency to form a vacuum on the lower side or back thereof, because the charge admitted through said inlet port will flow to both sides of the said blade.

The compression of the charge begins when the blade leaves the edge 85 of the inlet opening 22, and terminates when the blade leaves the edge 86 of the release valve 30, at which latter instant exhaust also begins through the outlet opening 24. After the blades leave the end of the release valve 30 they travel by the exhaust duct 25, and the latter extending radially beyond the edges of the blades avoids back pressure against the said blades, secures a prolonged release and increases the efficiency of the blower by avoiding waste energy. By adjusting the release valve 30 the instant of exhaust can be varied resulting in delivering charges at different pressures.

Having described my invention I claim:

In a blower, the combination of a cylindrical casing, having an outlet and inlet, a piston cylinder eccentrically located therein, a shaft in the casing and concentric therewith, a depressed segmental portion of the casing concentric and of equal radius with the piston cylinder, means to rotate said piston cylinder and thereby rotate the blades in the casing, a release valve hinged in the casing concentric with its cylindrical portion when in its normal position, and means to change the position of the release valve.

Signed at the borough of Manhattan in the county of New York and State of New York, this 7th day of December, A. D. 1907.

EDWARD P. REICHHELM.

Witnesses:

G. A. MANWARING,

MARTIN ZIMANSKY.