

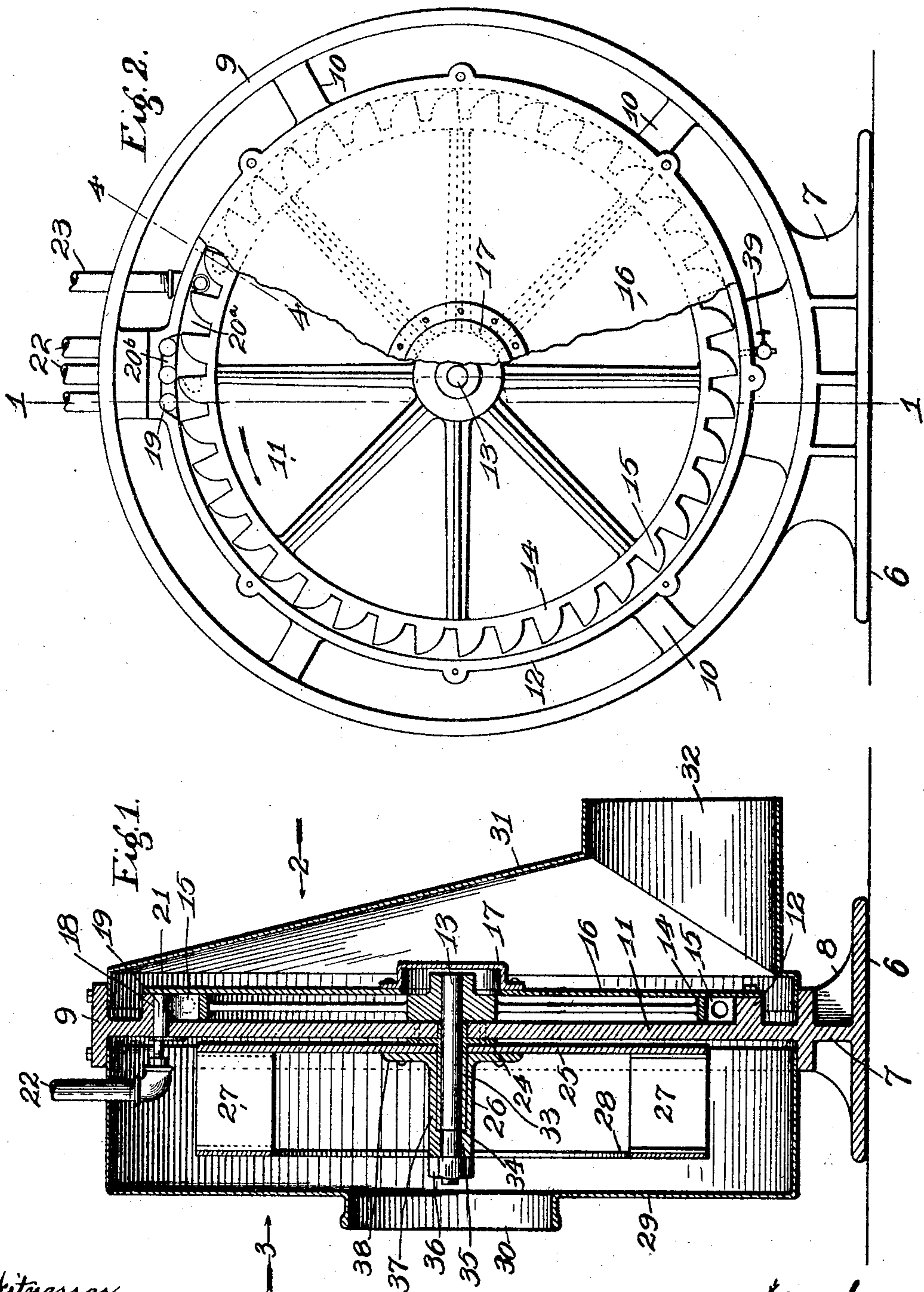
No. 799,561.

PATENTED SEPT. 12, 1905.

R. W. HAMANN.
BLOWER.

APPLICATION FILED JAN. 8, 1904. RENEWED MAY 22, 1905.

2 SHEETS—SHEET 1.



Witnesses
Alfred E. Eick
M. S. Dixon

Inventor
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by Higdon & Longan, Attys.

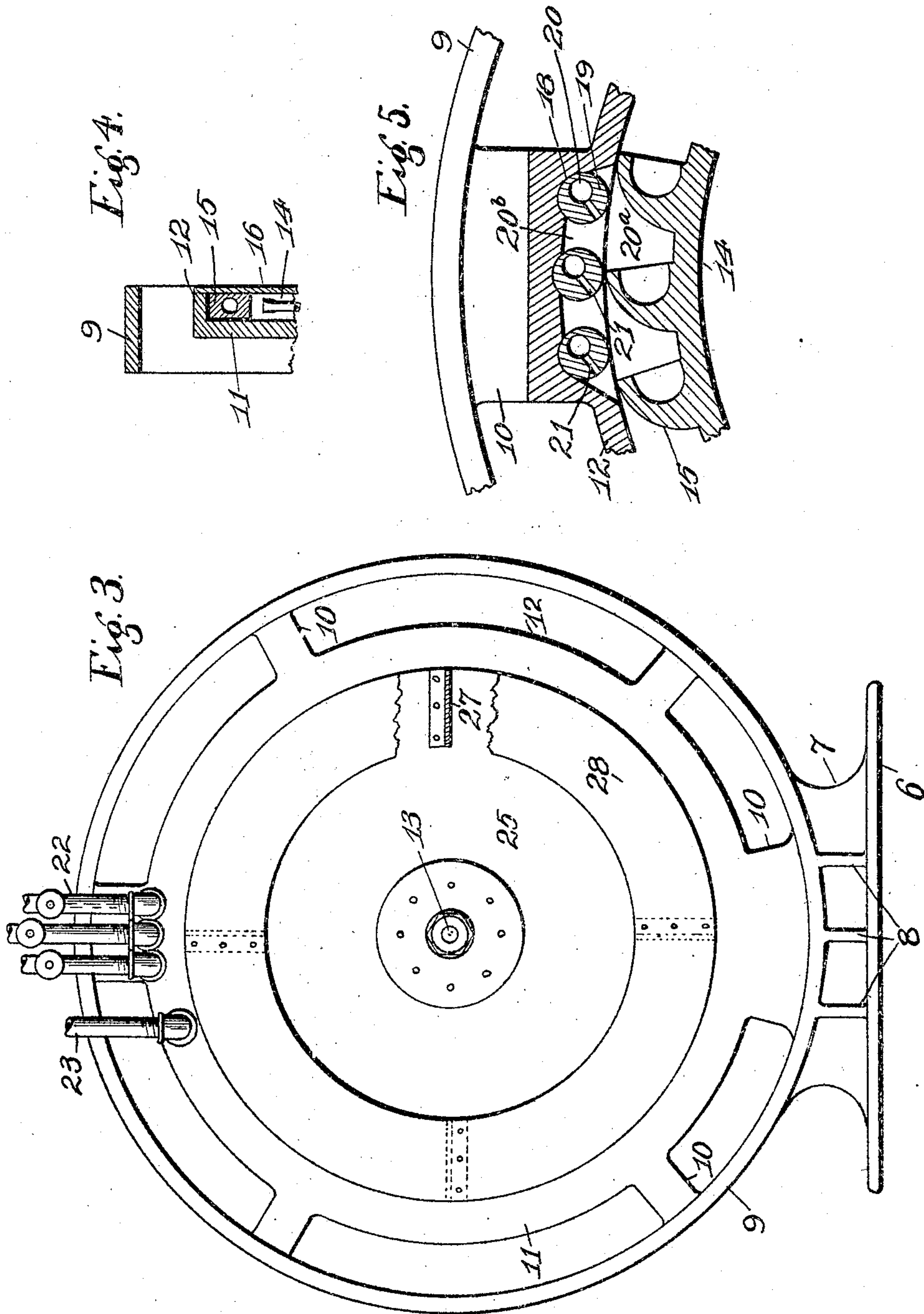
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Witnesses
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UNITED STATES PATENT OFFICE.

RICHARD W. HAMANN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO EUGENE J. FEINER, OF ST. LOUIS, MISSOURI.

BLOWER.

No. 799,561.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed January 8, 1904. Renewed May 22, 1905. Serial No. 261,664.

To all whom it may concern:

Be it known that I, RICHARD W. HAMANN, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Blowers, of which the following is a specification, containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to blowers, my object being to combine a steam-turbine with blowing apparatus and mount the whole upon a suitable stand and in a suitable frame.

My improved blower comprises the novel features herein shown, described, and claimed.

In the drawings, Figure 1 is a vertical central section on the line 1 1 of Fig. 2. Fig. 2 is a rear elevation as seen looking in the direction indicated by the arrow 2 in Fig. 1, the air-delivery hood being omitted and the turbine-casing being broken away. Fig. 3 is a front elevation as seen looking in the direction indicated by the arrow 3 in Fig. 1, the air-intake hood being omitted. Fig. 4 is a sectional detail on the line 4 4 of Fig. 2. Fig. 5 is a sectional detail showing the steam-jet ports upon an enlarged scale and on a plane parallel with Fig. 2.

Referring to the drawings in detail, the stand consists of the base-plate 6 of any suitable size, the longitudinally-extending vertical web 7 and the ribs 8 extending forwardly and backwardly from the web to act as braces. The air-casing ring 9 extends upwardly from the upper ends of the web and ribs, and the turbine-supporting arms 10 extend inwardly a short distance from the ring 9, said ribs being spaced substantially equal distances apart, as shown in Fig. 2. The turbine-supporting housing-plate 11 is centrally located relative to the ring 9 and is supported by the arms 10. The turbine housing-ring 12 extends horizontally backward from the edge of the plate. The parts 6, 7, 8, 9, 10, 11, and 12 are shown cast integral; but it is obvious that they might be cast in two or more pieces and attached together. The shaft 13 is rotatably mounted through the center of the housing-plate 11, and the turbine-wheel 14 is fixed upon the rear end of the shaft. The turbine-wheel is provided on its periphery with bucket-shaped steam-blades 15, said blades being of uniform size and fitting closely within the housing-ring 12. A sheet-metal disk 16 is attached

to the housing-ring 12 and has a cap 17 at its center, said disk and cap serving as a casing to complete the inclosure of the turbine-wheel. The upper one of the turbine-supporting arms 10 is enlarged, and a plurality of openings 18 is bored horizontally through this arm, and a plug 19 is driven tightly into each opening, there being ports 20 located eccentrically in said plugs and extending from the front backwardly, but not entirely through the plugs. The turbine-chamber 20^a has an enlargement 20^b, the object of said enlargement being to uncover the rear ends of the plugs 19.

The small steam-jet holes 21 are bored through the thick part of the walls of the plugs 19 to the ports 20, said jet-holes being at a favorable incline, so that steam discharging through said jets will strike in the buckets of the turbine-wheel, as shown in Fig. 5. The angle of the jets is adjusted by rotating the plugs 19. I bore the ports 20 eccentric in the plugs, so as to give a thick wall to form the jet-holes in without unduly increasing the size of the plugs. Any desired number of these jets may be employed, but I have shown and prefer to use three. Steam-supply pipes 22 are tapped into the front ends of the ports 20 and lead to the source of steam-supply. The steam-exhaust pipe 23 is tapped through the housing-plate 11 on the opposite side of the jet-holes 21 from the direction in which said jets point. By using a very fine jet-hole I get great velocity with a very small quantity of steam. Each of the supply-pipes has an independent cut-off or throttle, so that one or more jets may be cut off without reducing the pressure and velocity of the remaining jet or jets. As a matter of economy in steam consumption this feature is of great importance.

A bushing 33 has a flange 24, which is secured to the front face of the plate 11, the rear end of said bushing extending through said plate 11, and the shaft 13 is rotatably mounted in this bushing 33. The forward end of the shaft 13 is reduced to form a shoulder 34. The fan-wheel hub 35 is placed upon the forward end of the shaft against the shoulder 34 and is clamped in position by the nut 36. The bearing-shell 37 extends backwardly from the hub 35, outside of the bushing 33, and has a flange 38 at its rear end to which the fan-wheel is secured, said fan-wheel comprising the solid disk 25, mounted upon the shaft against the flange, the blades 27 ex-

tending forwardly from the disk, said blades being equally spaced around the hub and located radially near the outer edge of the disk, as shown in Fig. 3, and the flat ring 28, attached to the forward ends of said blades.
 5 The air-intake hood 29 has an intake-opening 30 at its center and fits within the forward part of the air-casing ring 9, thus inclosing the fan-wheel, said hood being considerably
 10 larger in diameter than the fan-wheel. The air-delivery hood 31 is funnel-shaped and fits within the rear part of the air-casing ring 9 and terminates in the air-pipe nipple 32.

When the steam is turned on, fine strong
 15 jets will pass through the jet-holes 21 and strike the blades of the turbine, thus rotating the turbine at a high rate of speed, and as the turbine is rotated air is drawn in through the opening 30 in the intake-hood and through
 20 the ring of the fan-wheel and is discharged by centrifugal force outwardly between the blades and the fan-wheel and is compressed in the hood and forced through the openings between the supporting-arms 10, and the streams
 25 of air which pass through said openings are collected by the air-delivery hood 31 and forced through the pipe-nipple 32, from which it may be piped to any desired locality.

Thus it will be seen that I have produced a
 30 blower which is self-contained within a very small space and which is simple in construction and effective in operation.

A drain-cock 39 is tapped through the ring 12 at its lowest point to provide means of
 35 drawing the water of condensation out of the turbine-chamber.

I desire to call especial attention to the housing-plate 11, supported by arms with the turbine-wheel on the back side of the plate
 40 and the fan-wheel on the front side of the plate, with a large space around the fan-wheel, so that the fan-wheel discharges at all parts of its periphery, the air passing from the fan-wheel chamber between the arms 10 and
 45 around the periphery of the turbine, thus

greatly reducing the resistance of the fan-wheel when compared to the old-style blowers at only one point in the periphery of the fan-wheel.

I claim—

1. In a blower, the base-plate 6, the longitudinally-extending vertical web 7 upon the base-plate, the ribs 8 extending forwardly and backwardly from the web, an air-casing ring 9 extending upwardly from the web and ribs,
 55 the turbine-supporting arms 10 extending inwardly from the ring, the turbine-supporting housing-plate 11 centrally located in said ring and supported by said arms, the turbine housing-ring 12 extending horizontally backward
 60 from the edge of said plate, the shaft 13 rotatably mounted through the center of the housing-plate 11, the washer 24 upon the shaft 13 in front of the housing-plate 11, the disk 25 upon the shaft in front of the washer, the
 65 hub 26 fixed upon the shaft and secured to the disk, the blades 27 extending forwardly from the disk, the flat ring 28 attached to the forward ends of the blades, the air-intake hood 29 attached to the front of the air-casing
 70 ring 9, and the air-delivery hood 31 attached to the rear of the air-casing ring 9, substantially as specified.

2. In a blower, a base, a casing-ring supported by the base, arms extending inwardly
 75 from the casing-ring, a housing-plate supported by the arms, a turbine mechanism upon one side of the housing-plate, a fan-wheel mechanism upon the other side of the housing-plate, so that the fan mechanism discharges
 80 between said arms and around the turbine mechanism, substantially as specified.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

RICHARD W. HAMANN.

Witnesses:

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 M. G. IRION.