

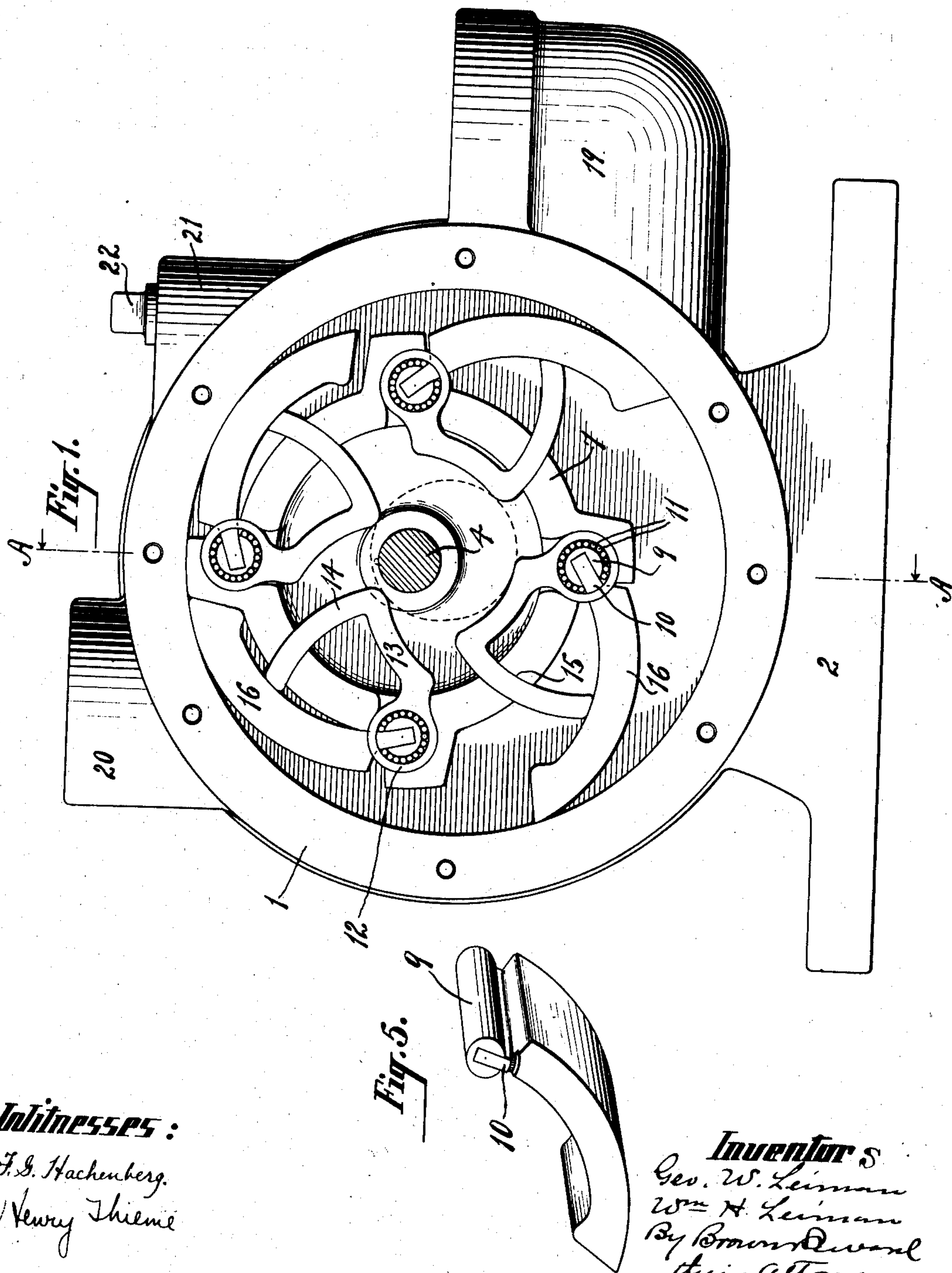
No. 883,464.

PATENTED MAR. 31, 1908.

G. W. & W. H. LEIMAN.
BLOWER.

APPLICATION FILED JULY 13, 1906.

3 SHEETS—SHEET 1.



Witnesses:

F. B. Hachenberg.
Henry Thieme

Inventors
Geo. W. Leiman
Wm. H. Leiman
By Brown & Wood
their Attorneys

No. 883,464.

PATENTED MAR. 31, 1908.

G. W. & W. H. LEIMAN.
BLOWER.

APPLICATION FILED JULY 13, 1906.

3 SHEETS—SHEET 2.

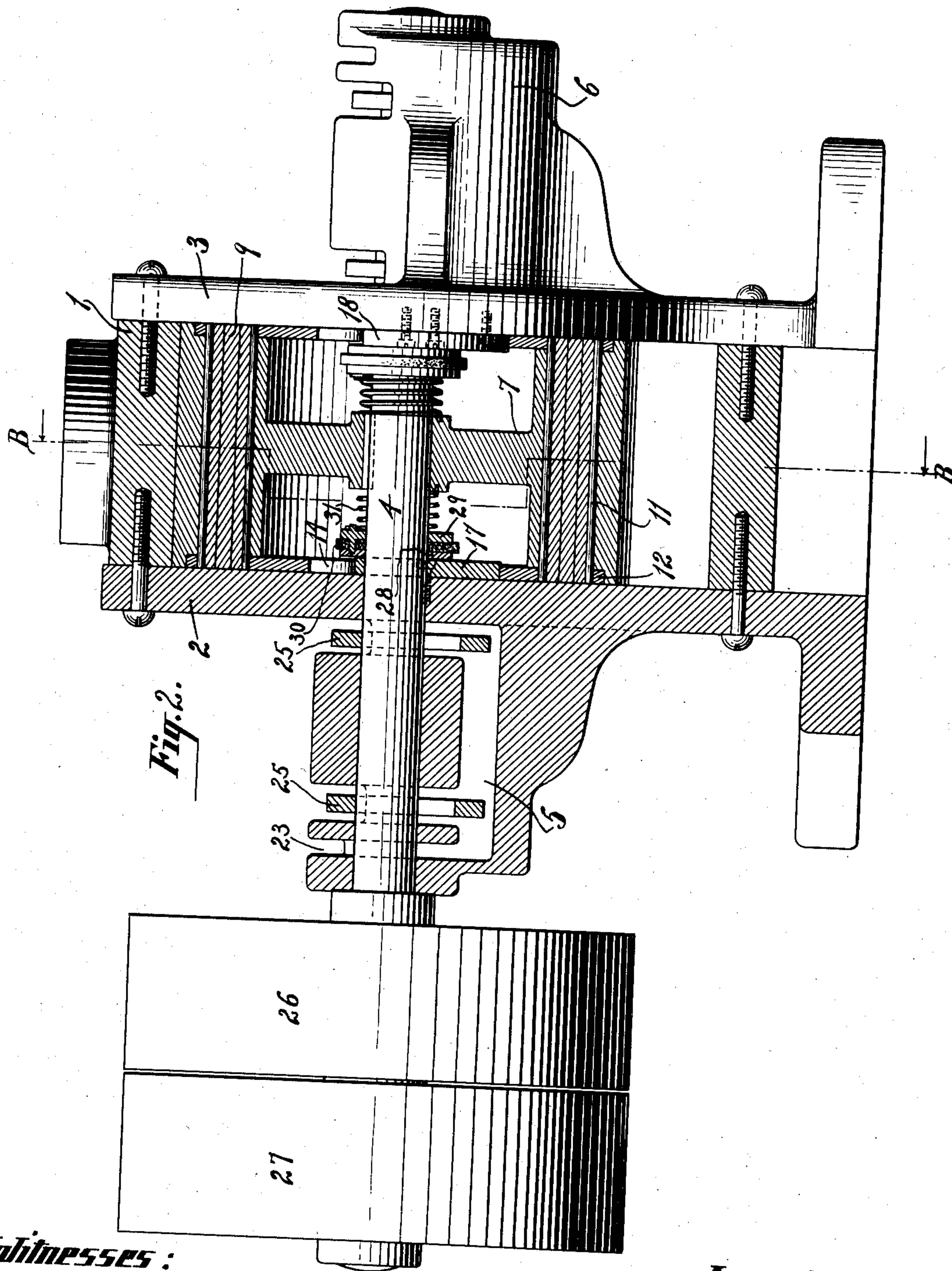


Fig. 2.

Witnesses:

F. S. Hachenberg,
Henry Thieme.

Inventors

Geo. W. Leiman
Wm. H. Leiman
By Brown & Ward
their Attorneys

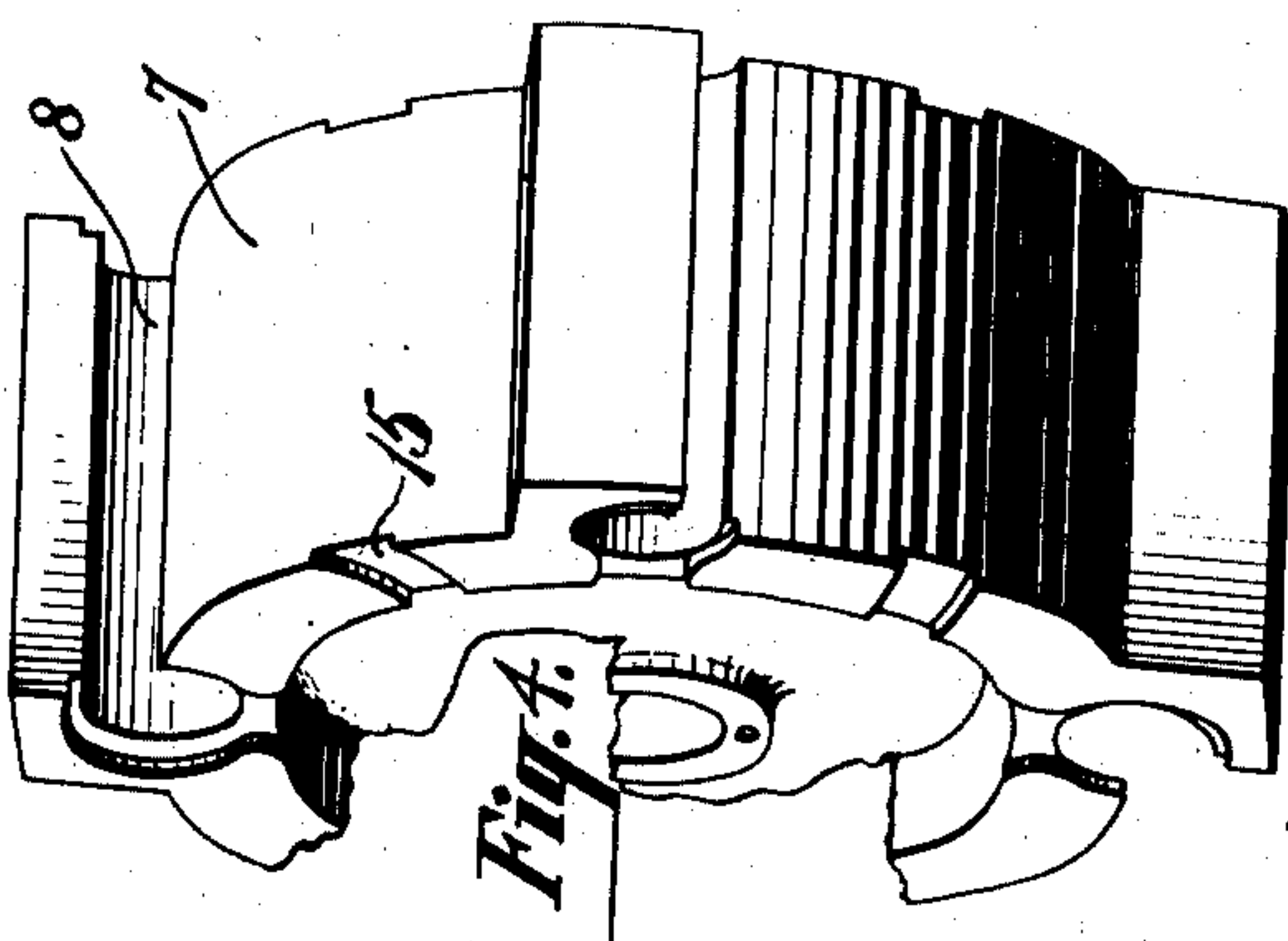
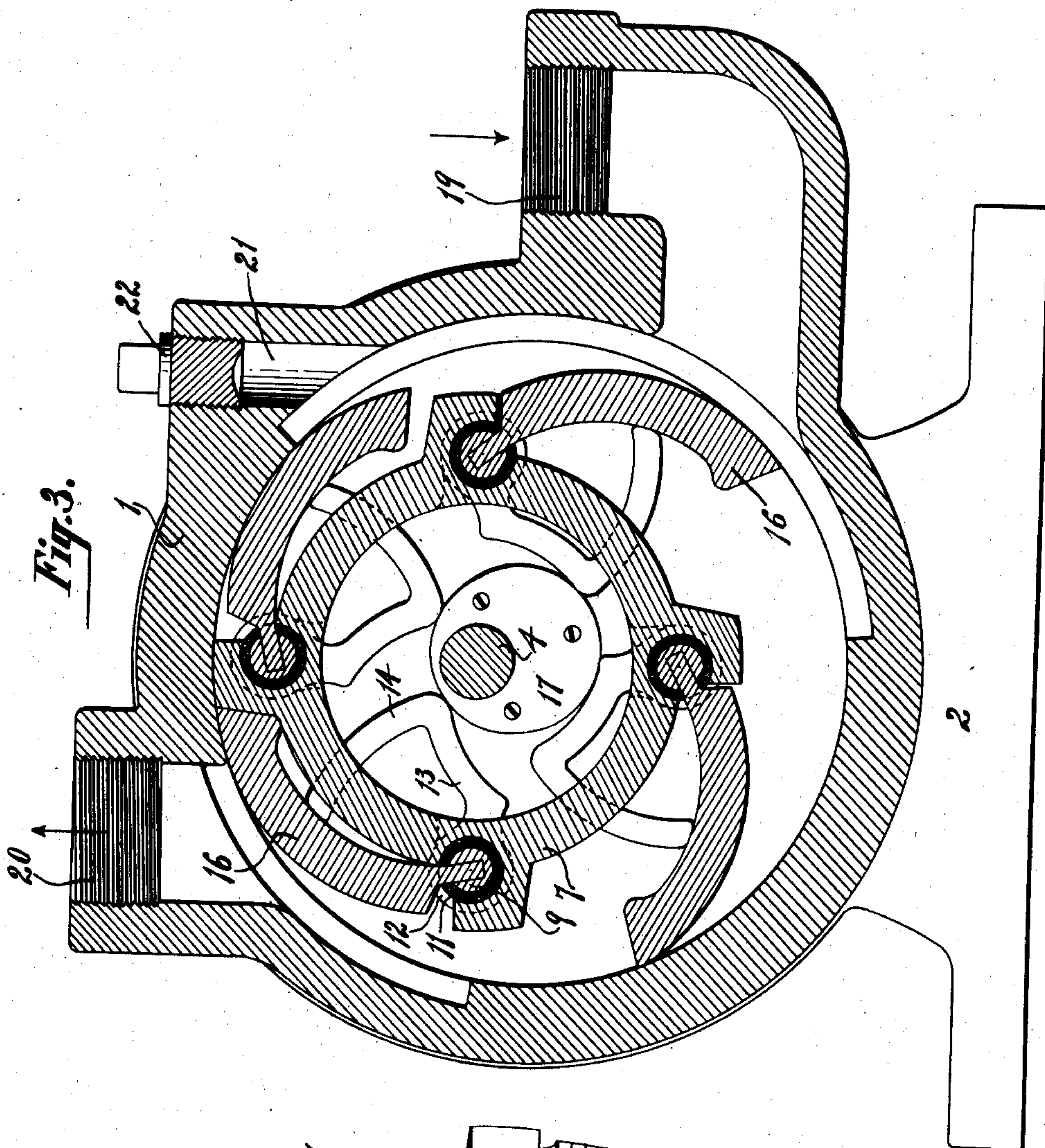
No. 883,464.

PATENTED MAR. 31, 1908.

G. W. & W. H. LEIMAN.
BLOWER.

APPLICATION FILED JULY 13, 1906.

3 SHEETS—SHEET 3.



Witnesses:
F. G. Hackenberg.
Henry Thieme.

Inventor's
Geo. W. Leiman
Wm. H. Leiman
By Brown & Duval
their Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. LEIMAN AND WILLIAM H. LEIMAN, OF NEW YORK, N. Y.

BLOWER.

No. 883,464.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed July 13, 1906. Serial No. 326,019.

To all whom it may concern:

Be it known that we, GEORGE W. LEIMAN and WILLIAM H. LEIMAN, citizens of the United States, and residents of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Blowers, of which the following is a specification.

Our invention relates to a blower.

10 The object is to provide a simple and effective blower in which the fan blades shall be positively held against the inner wall of the cylinder whether the machine be in operation or not and whatever the rate of speed of the machine so that there will be no out-throw of the blades at or near the time of starting and the consequent noise and possible injury thereby avoided.

20 A further object is to provide simple means for maintaining a supply of oil in the shaft bearings.

In the accompanying drawings, Figure 1 is a view of the blower in side elevation, one of the cylinder heads being removed to show the parts therein, Fig. 2 is a view in transverse section in the plane of the line A—A of Fig. 1, one end of the cylinder and the bearing box and cam fixed to the head of the cylinder being shown in elevation, Fig. 3 is a section in the plane of the line B—B of Fig. 2, Fig. 4 is a partial view in perspective of the fan or blade support, Fig. 5 is a view in detail of one of the fans or blades.

35 The cylinder is denoted by 1 and its heads by 2 and 3. A shaft 4 extends eccentrically through the cylinder 1 passing through the heads 2 and 3 and through suitable bearings in oil receptacles 5 and 6 connected to or formed integral with the outer faces of the cylinder heads 2 and 3.

45 To the shaft 4, the fan or blade support 7 is secured in any well known or approved manner, for instance, by a feather and groove connecting its hub with the shaft 4, the support 7 being cylindrical in form and provided on its exterior face at suitable intervals with open sockets 8 for the reception of the blade pintles 9, the mouths of the sockets being contracted as shown for the passage of the neck 10 of the blade and the socket 8 itself being of sufficient size to permit a series of roller bearings 11 to be inserted between the hinge pintle 9 and the interior of the socket 8. These roller bearings 11 consist of a series of small rollers preferably having a length substantially equal to that of the

socket 8 and they are held circumferentially in position by the annular hubs 12 of the blade regulating dogs.

The rollers 11 are held endwise in position between the opposite heads of the cylinder 2 and 3.

The ring hubs 12 of the blade regulating dogs are let into the ends of the blade support 7 a distance equal to their thickness and consist of a branch 13 extending inwardly from the hub 12 toward the shaft 4 and a branch 14 extending thence outwardly through a narrow slot 15 in the end of the support 7 into engagement with the inner face of the blade 16.

We have shown two blade regulating dogs for each of the blades, one at each end and symmetrically arranged and this arrangement we prefer as it distributes the pressure evenly upon the opposite sides of the blade but it is obvious that the blade regulating dogs at one end of the blade might be omitted and those at one end only be employed to keep the blades in position.

80 At opposite ends of the cylinder 1, cams 17 and 18 are located and fixed to the interior faces of the cylinder heads 2 and 3, the said cams surrounding the shaft 4 and so placed that they will hold the blade regulating dogs, by contact with the knees of the dogs, pressed outwardly to just a sufficient extent to hold the free ends of the blades or fans in contact with the interior curved surface of the cylinder throughout the entire revolution of the shaft and the blades attached thereto.

Air is admitted to the cylinder 1 through an inlet 19, and is forced from the cylinder through an outlet 20. The interior of the cylinder may be oiled as required from time to time through an oil duct 21 closed by a plug 22 and oil may be supplied to the shaft bearings by keeping a supply of oil in the oil receptacles 5 and 6 through a feed opening 23, the oil being lifted from the receptacles 5 and 6 in such small quantities as may be desired and applied to the shaft 4 by means of rings 24, 25, hung loosely on the shaft 4. It is to be understood that the receptacle 6 is provided with oil transmitting rings similar to the rings 24, 25, for lubricating the shaft bearings at that end.

The shaft is provided with suitable fast and loose pulleys 26 and 27 as is usual.

In operation, the rotary movement of the shaft 4 carries with it the blade support 7 and the blades thereon and these blades are posi-

tively held against the inner curved surface of the cylinder by the several blade regulating dogs, the said dogs traveling around on the curved surface of the cams which, in turn, are fixed to the interior faces of the cylinder heads. These blade regulating dogs have the additional function of holding the rollers of the bearings circumferentially in position on the pintles of the blades and the blower operates with very little noise and very slight wear.

To prevent the oil from being sucked from the oil boxes through the shaft bearing to the interior of the blade support 7 or the escape of air from within, we provide spring actuated washers surrounding the shaft and pressing outwardly against the cams 17, 18. Each washer preferably consists of a plurality of metal disks 28, 29, separated by a disk 30 of leather or other suitable tough yielding material, the metal disks being preferably fastened together through the interposed washer 30. The combination of disks thus formed is pressed outwardly by means of an interposed spring 31, preferably a coil spring surrounding the shaft between the hub of the support 7 and the washer.

What we claim is:—

1. The combination with a cylinder, a shaft extending through the cylinder and swinging blades indirectly connected with the shaft, of roller bearings for the blades and blade regulating dogs arranged to hold the roller bearings in position and a cam for operating the blade regulating dogs.

2. The combination with a cylinder, a shaft extending through the cylinder and

swinging blades connected with the shaft, of blade regulating dogs hinged concentric with the blades and fixed cams for operating the dogs to regulate the positions of the blades during the rotary movement of the shaft.

3. The combination with a cylinder, a blade support eccentrically located therein and blades hinged to the support, the said support having its ends recessed, of blade regulating dogs hinged to the blade support and extending through said recessed ends of the support and fixed cams in position to engage the dogs to positively hold the blades in position.

4. The combination with the cylinder, the blade support, the blades and the shaft connected with the blade support and extending through the cylinder, of a washer comprising a plurality of disks, one of said disks having a substantially non-yielding bearing face to close the joint between the shaft and the cylinder and another of said disks being of elastic material and a spring in position to bear against the elastic disk and through said elastic disk force the joint-closing-disk toward the joint.

In testimony, that we claim the foregoing as our invention, we have signed our names in presence of two witnesses, this June 21st 1906.

GEO. W. LEIMAN.
WILLIAM H. LEIMAN.

Witnesses:

FREDK. HAYNES,
C. S. SUNDGREN.