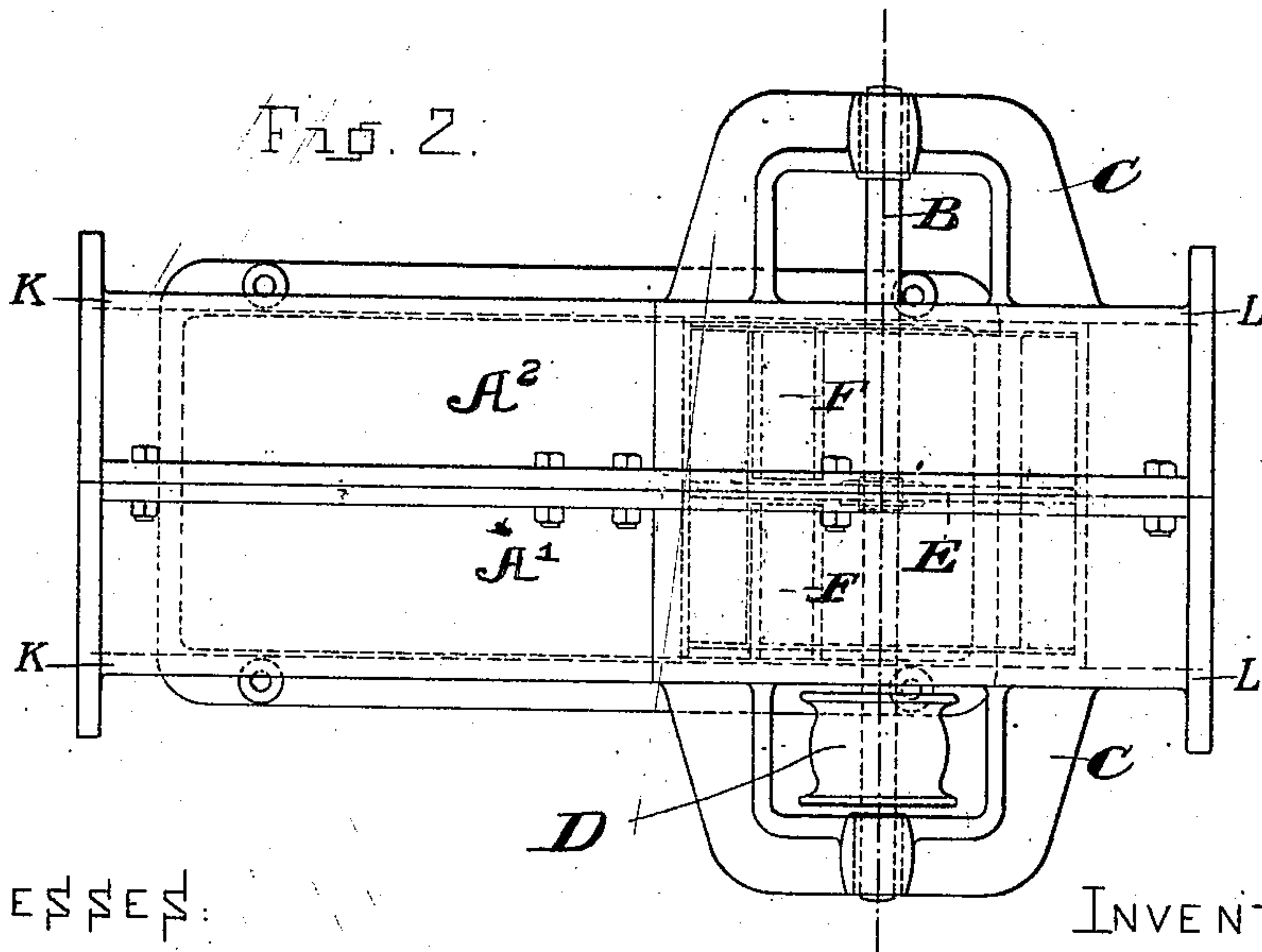
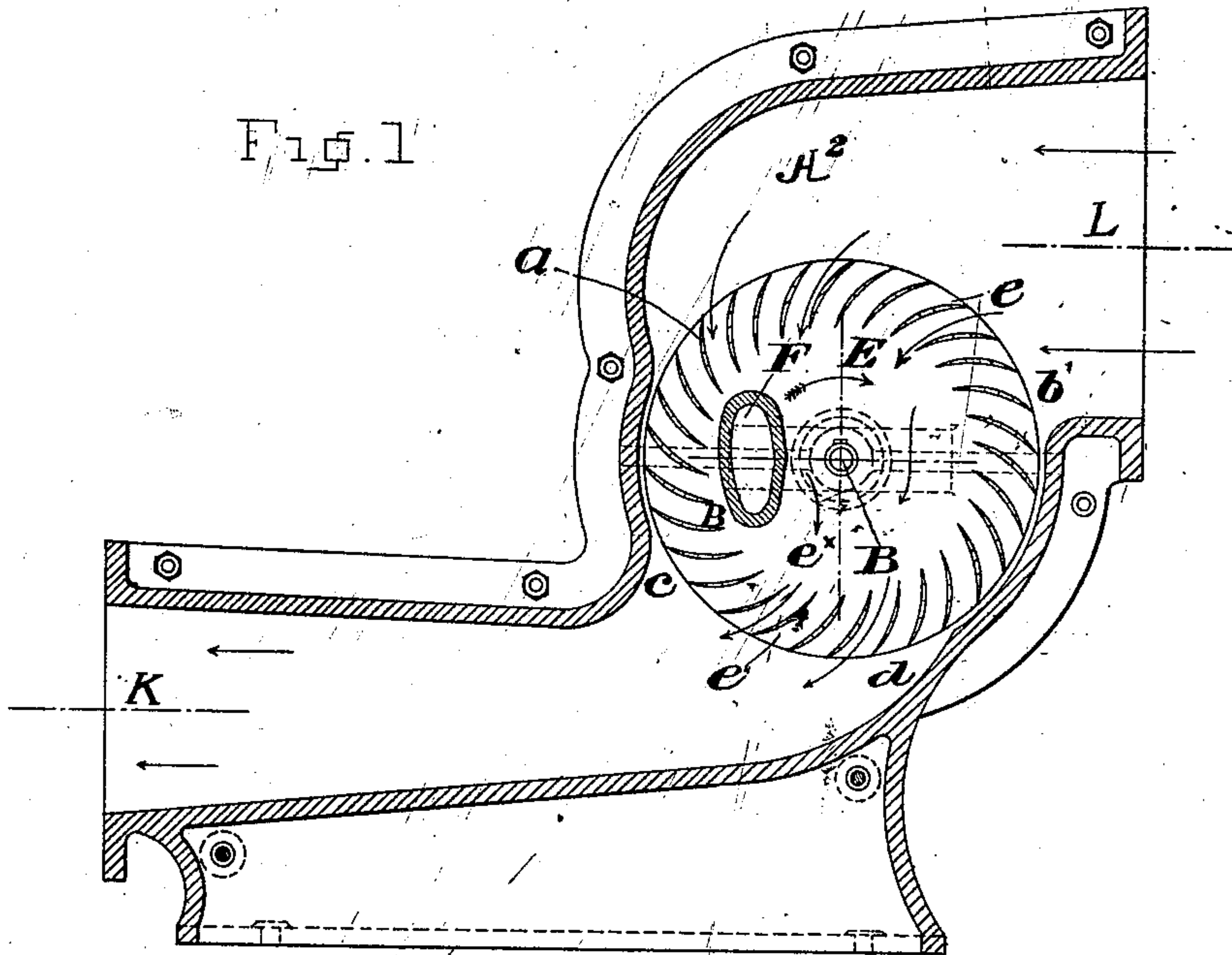


(No Model.)

P. MORTIER.
FAN OR BLOWING APPARATUS.

No. 507,445.

Patented Oct. 24, 1893.



WITNESSES:

S. L. Wood

Louisa M. Lennan

INVENTOR:

Paul Mortier

By his attorney

Edward P. Thompson

UNITED STATES PATENT OFFICE.

PAUL MORTIER, OF ST. ETIENNE, FRANCE.

FAN OR BLOWING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 507,445, dated October 24, 1893.

Application filed January 21, 1893. Serial No. 459,135. (No model.) Patented in France August 21, 1891, No. 215,662, and in Belgium February 16, 1892, No. 98,366.

To all whom it may concern:

Be it known that I, PAUL MORTIER, electrical engineer, a citizen of the Republic of France, residing at St. Etienne, in the Department of Loire, in the Republic of France, have invented certain new and useful Improvements in Fans or Blowing Apparatus, (patented in France, No. 215,662, dated August 21, 1891, and in Belgium, No. 98,366, dated February 16, 1892,) of which the following is a specification.

This fan or blowing apparatus is essentially one without any openings, in that it has its sides perfectly plain. The air is therefore drawn in at one part of its periphery and it is again discharged with increased speed at another part of the same. According to this invention, therefore, no centrifugal force is created, as the intake and discharge take place at an equal distance from the axis of the apparatus.

In the accompanying drawings which serve to illustrate my invention, Figure 1 is a vertical mid-section taken through the blower in a plane at right angles to the rotating element and Fig. 2 is a plan view of the blower.

As the object for which a fan or blowing apparatus is employed is more generally to produce pressure rather than speed, the final active force must be transformed into manometric pressure by the provision of a coned discharge pipe the action of which is well known. Such is the object of the bell-mouth discharge pipe K shown on the accompanying drawings.

My improved fan or blowing apparatus is composed essentially—First, of a wheel, the short floats *e e* of which are arranged symmetrically on both sides of a plain disk E, which is itself keyed on the motor shaft B of the apparatus. The floats *e* are of the form of an arc of a circle in cross section and form an angle of about ninety degrees with the internal circle which limits them, and an angle of about forty-five degrees with the external circle or periphery of the disk E, to which they are secured. Second, of a casing, the two sections A' A² of which, bored for the passage to the shaft, inclose the wheel laterally, and the cylindrical surface or channel of which partially incloses the periphery of the

wheel. The two parts of the circumference of the wheel E, namely, *a*, *b* and *c d* not covered by the casing, form the inlet and outlet orifices. The inlet orifice *a b* is surmounted by a cap L which is connected with the inlet pipe and the outlet opening is prolonged by a widened out passage K, which is connected with the discharge pipe. Third, of two fixed blocks F F formed in one with the plates of the casing and projecting into the open central parts of the wheel on each side thereof, so as almost to touch the disk.

The mode of action is as follows: The air enters the wheel by the intake L with a certain speed, being drawn in by the curved floats in their movements, entering the space between these floats with a rotary speed greater than its primitive speed. The air then escapes from the series of floats into the interior of the wheel with a still greater speed imparted by the curvature of the floats *e* and traverses this central portion *e^x* inside the path which the floats *e* traverse in their rotation, the streams of air from the several floats deviating a little from a straight line so as to avoid the shaft which slightly obstructs the passage. The air again passes between the floats from the space *e^x* in the interior, and finally quits the wheel which projects it into the widened discharge channel K with a further augmented absolute speed.

The various diversities of speed developed in the two inlets and the two exits cause the air to emerge from the fan wheel with a final speed almost treble that of its initial entrance speed.

The blocks F F, which are fixed in the chamber, while the wheel revolves, have for their object to guide the stream of air traversing the wheel and to guard it from the pull in the inverse direction which the left portion of the wheel might exercise upon it, thus leaving the favorable action of the right portion of the wheel quite intact.

I declare that what I claim is—

1. In a blower, the combination with a casing having an inlet and an outlet, of a wheel mounted therein, said wheel consisting of a disk having an annular series of floats and a free space within said floats, and a block mounted on said casing and projecting into

the free space within the floats of the wheel, substantially as set forth.

2. In a blower, the combination with a casing having an inlet and an outlet, of a shaft journaled in said casing, a wheel mounted on said shaft, said wheel consisting of a disk having an annular series of floats and a free space within said floats and blocks projecting from the opposite interior sides of said casing into the free space within said series of floats, substantially as set forth.

3. In a blower, the combination with a casing having an air inlet and outlet, and an enlarged chamber communicating with said inlet and outlet, of a shaft, journaled in said casing transversely of said chamber, a wheel mounted on said shaft in said chamber, said wheel consisting of a disk having an annular series of floats and a free space within said floats, and blocks projecting from opposite sides of the interior of said chamber into the free space within said annular series of floats, said blocks being aligned with one another and being adapted to fill said free space on one side of the shaft, substantially as set forth.

4. In a blower, the combination with a casing consisting of two sections having corresponding channels forming an air passage

through the casing, said passage having an enlarged substantially circular portion, of a shaft journaled in said casing transversely of said enlarged portion of the air passage a disk on said shaft, an annular series of floats on said disk said floats each having a width less than the radius of said disk whereby an annular space is provided within said floats and surrounding the shaft, and blocks projecting from the inner sides of the respective sections into the spaces within said floats to one side of the shaft, substantially as set forth.

5. In a blower, the combination with a casing having an inlet and an outlet, of a wheel mounted therein, said wheel consisting of a disk having an annular series of floats arranged about its edge, said floats having a width less than the radius of said disk and having a crosssection bounded by two curved surfaces formed by arcs of eccentric circles, substantially as set forth.

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

PAUL MORTIER.

Witnesses:

XAVIER JANICOT,
JEAN GERMAIN.