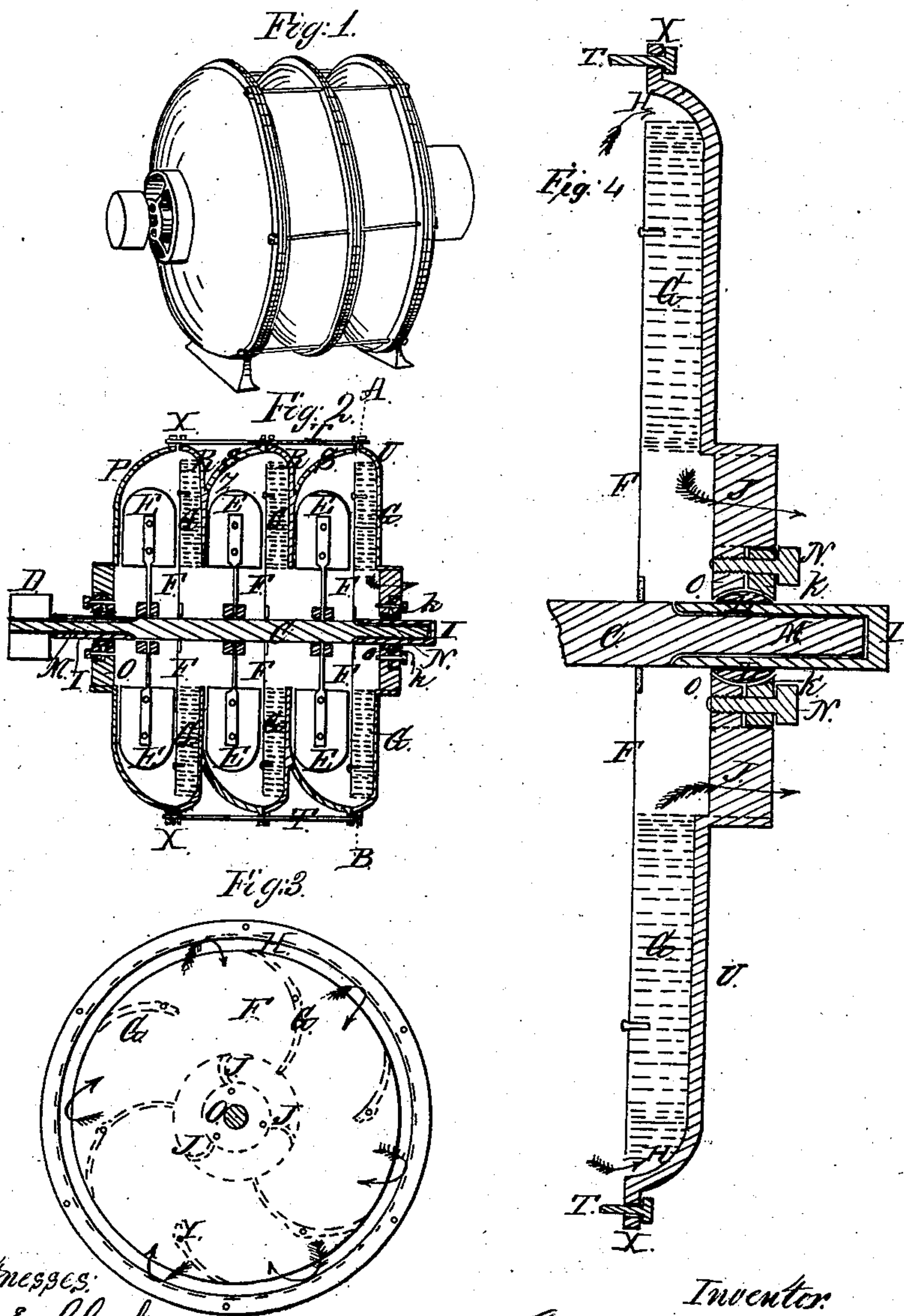


P. Clark
Fan Blower.

No 85,213.

Patented Dec. 22, 1868.



Witnesses:
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Inventor:
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United States Patent Office.

PATRICK CLARK, OF RAHWAY, NEW JERSEY.

Letters Patent No. 85,213, dated December 22, 1868.

IMPROVEMENT IN FAN-BLOWERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, PATRICK CLARK, of the city of Rahway, in the county of Union, and State of New Jersey, have invented certain new Improvements in Compound or Multiplying Fan-Blowers, of which the following is a full and exact description.

The nature of my invention consists—

First, in so constructing the outer shell or case as to make it conform to the direction which the air is desired to take in passing through the machine, and also in the manner of fitting the various sections of the shell together;

Second, in providing an improved means to arrest the rotary motion of the air, thereby causing it to pass from one fan-chamber to the next, without material loss of pressure; and,

Thirdly, in providing the shaft and bearings with a new and improved means of adjustment, by means of which the shaft of the fan may be adjusted longitudinally after the machine is set up.

To enable others skilled in the art of making and using fan-blowers to make and use my improved fan-blower, I will describe the construction and operation of my improvements in the following specification and the accompanying drawings, which form a part of this specification.

In the accompanying drawings—

Figure 1 is a perspective view;

Figure 2, a vertical longitudinal section;

Figure 3, a vertical cross-section through the line A B, and parts to the right of said line, viewed from the left-hand end in the line of the shaft; and

Figure 4 is an enlarged vertical cross-section of the same parts, made large to show the details of an improvement connected with the bearings.

The same letters refer to the same parts in all the figures.

In the accompanying drawings—

C, fig. 2, is the shaft, driven by the pulley D, and carrying three fans E E, &c., each in a separate compartment, but having communication with each other through the spaces and openings in the direction marked by the arrows.

F F are the diaphragms or partitions, which form one side of the space in which the fan-wheels revolve.

These partitions do not extend entirely across the diameter of the shell, but have an annular opening, H, fig. 4, through which the air escapes to the back of the diaphragm or partition F, and down between it and the outside of the next fan-chamber, to the centre of the next fan, as shown by the arrows in figs. 2, 3, and 4. These partitions are conveniently made of sheet-iron, and may be made to fit the shaft by means of a leather packing. As the air leaves the fan-wheel, it has a motion in common with it, which rotary motion must be arrested, or otherwise the air would not return toward the centre of the next fan-chamber.

To arrest this rotary motion of the air, the stops or

deflectors G-G, figs. 2, 3, and 4, are introduced between the back of the partition F, figs. 2, 3, and 4, and the side of the next fan-chamber. They might be extended into the fan-chamber itself, at its outer periphery, but by so doing the fan would require a very considerable additional amount of power to drive it. These deflectors or stops are shown in figs. 2 and 4, in vertical longitudinal section, and in fig. 3, in vertical cross-section.

M M, figs. 2 and 4, are the journals of the shaft, revolving in bearings I I, figs. 2 and 4. These bearings are secured in their place as follows:

The hubs O O, figs. 2, 3, and 4, are supported by the arms J J, figs. 3 and 4, which arms are cast fast to those sections of the shell marked P and U. The hole through the centre of the hub is so formed as to fit half of the exterior of a plano-convex ring.

The hole in the centre of the loose part of the hub, marked K, figs. 3 and 4, has the same form, but on the reverse side, so that, when they are brought together, they form a segment of a spherical cavity.

Into this spherical cavity is fitted the plano-convex ring L, figs. 2 and 4, bored out to fit the exterior of the journal-box I. This plano-convex ring is cut in the line of its axis, *i. e.*, in the line of the shaft of the blower.

These parts being put together as described, it is plain that the axis of the journal-box will be free to go into line with the axis of the journal, by reason of its partial revolution about the central point of the spherical belt, and that the journal-box and shaft may be adjusted longitudinally, by reason of the journal-box being free to slide through the spherical belt in the line of the shaft.

When the adjustments are thus made, the journal-box I may be fastened by tightening the screws N N.

The general shell, enclosing the fans and other arrangements, is constructed most conveniently of cast-iron. It consists of four pieces, *viz.* P, R, S, and U, but S and P are so near alike that they may be said to be identical. They are shown in perspective in fig. 1, and in section in fig. 2.

P, fig. 2, which constitutes one end of the shell, is of a dishing form, having a depth sufficient to allow the fan-wheel to revolve freely within it, and a diameter at least one-fourth greater than the fan-wheel, the other parts of the shell having an equal diameter.

It forms a junction with R, the second plate in the series, at X, figs. 2 and 4, by means of a flange. Plate R is also of a dishing form, but not so deep as P, but sufficiently deep to allow of a free passage of the air, between the partition F and plate R, to the central opening of the next fan-chamber.

To this plate, on the left side, are attached the stops or deflectors G G, figs. 2, 3, and 4, the sheet-iron partition F resting against them, and secured by the screws or rivets Y Y.

On the right side of plate R, at Z, fig. 2, is a projecting bead, on which fits the dishing plate or section

S, which, with that part of plate R against which it rests, forms a section similar to P, making a second fan-chamber, and so on for any number of fans required, the whole shell being made up of repetitions of R and S based on P, the whole series being secured together by the bolts T T.

Now, I do not claim constructing a fan-blower, having two or more fans on the same shaft revolving in separate compartments, for such a machine was patented by James A. Stewart, August 18, 1840; nor do I now claim the diaphragms or partitions F F, for they were patented by me in 1866; nor do I claim the plano-convex rings L L, when they are in one piece with the journal-box I, as they have been long in use on saw-mandrel journal-boxes; but

. What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The stops or deflectors G G, in combination with the diaphragms or partitions F F, for the purpose named in the annexed specification.

2. The plano-convex ring L L, in combination with the compound hub O K, when so made that the journal-box I will slip lengthwise through it, to facilitate the longitudinal adjustment of the shaft C.

3. The case or shell of the blower, substantially as described, in combination with the other parts of a multiplying fan-blower.

Witnesses:

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