

Sheet / 3 Sheets

B. F. Sturtevant.

Blower

N^o 86469.

Patented Feb. 2. 1869.

Fig. 1.

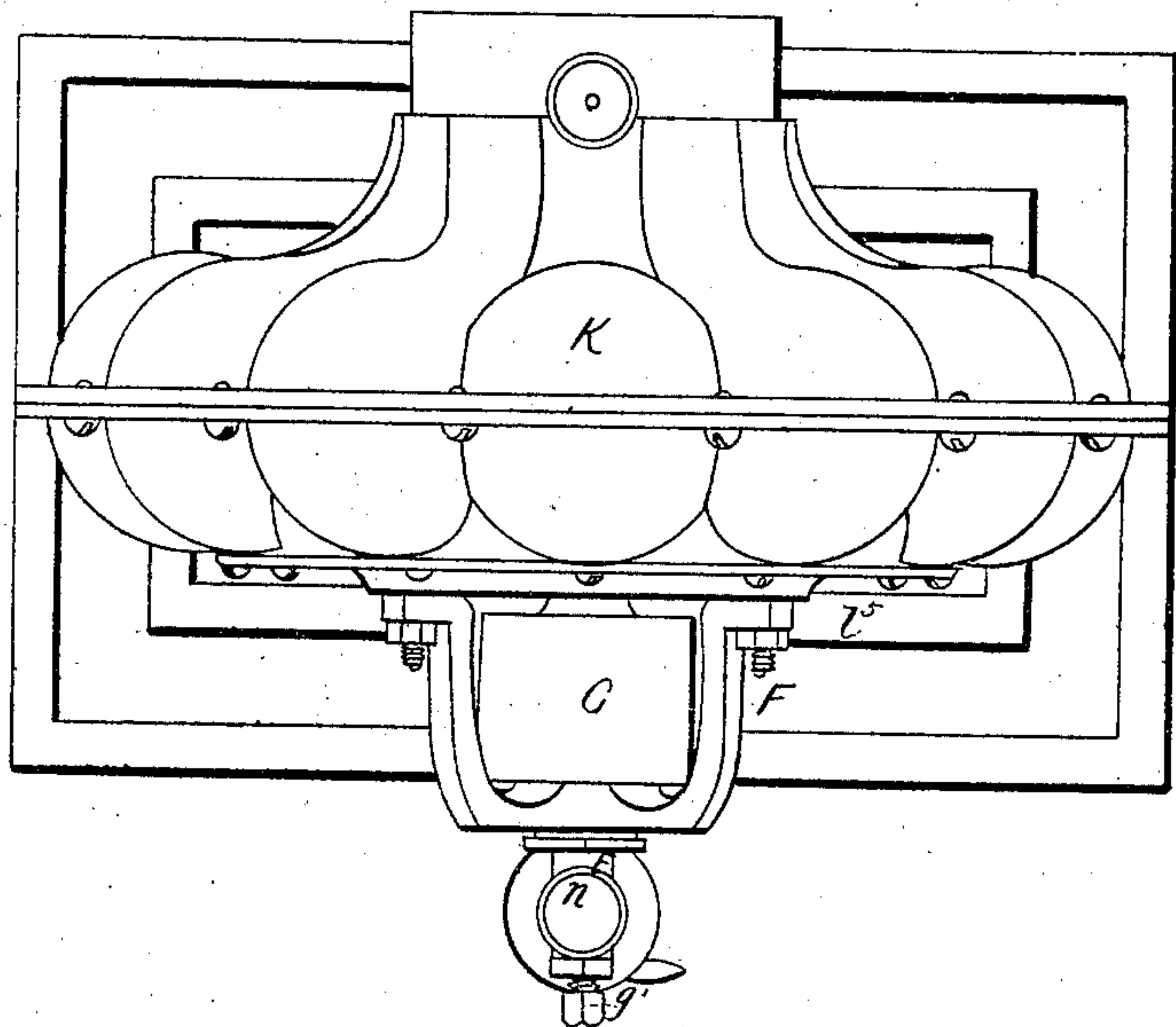
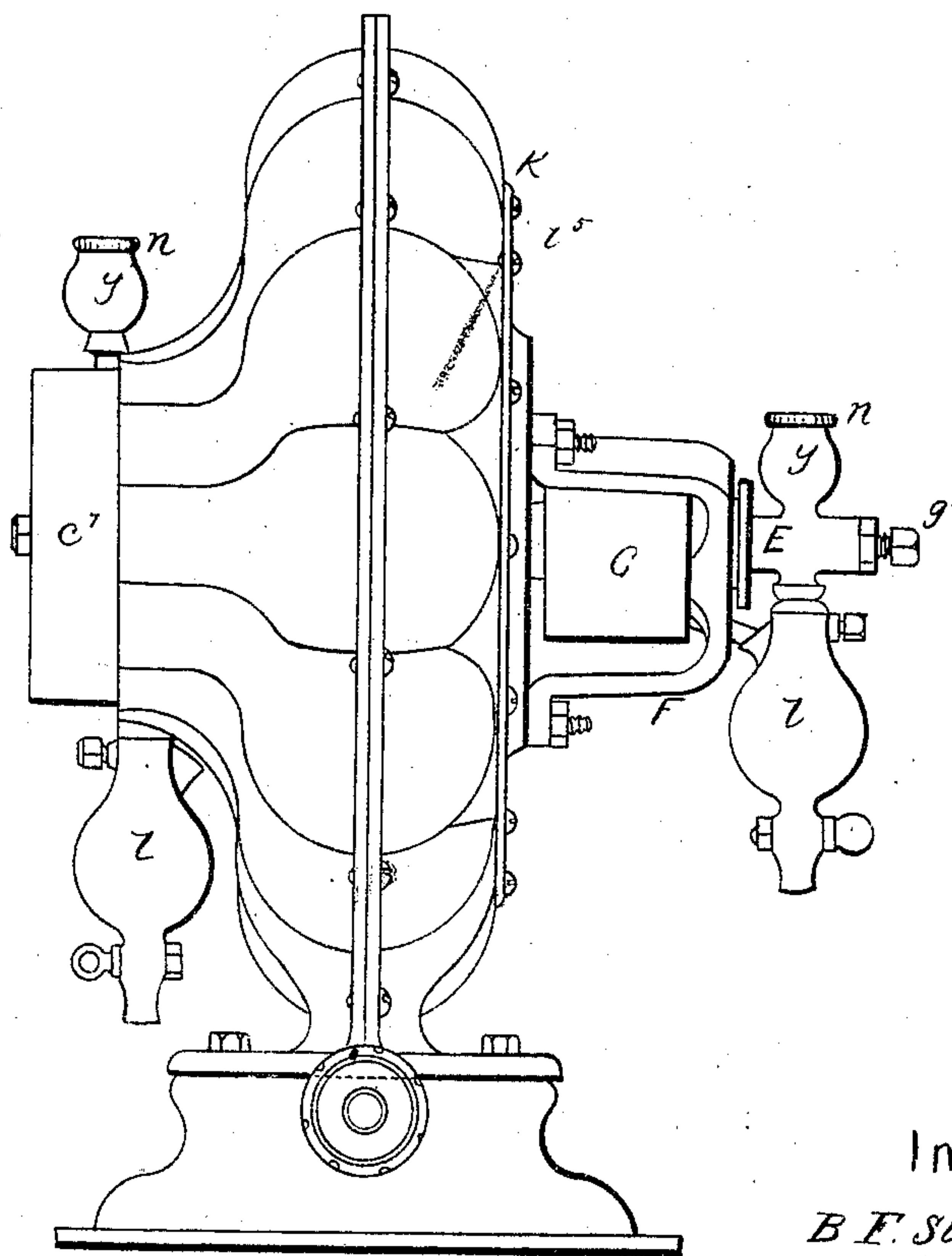


Fig. 4.



Witnesses.

S. N. Piper.
J. B. Snow.

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B. F. Sturtevant.

by his attorney.
R. H. Eddy

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Fig. 2

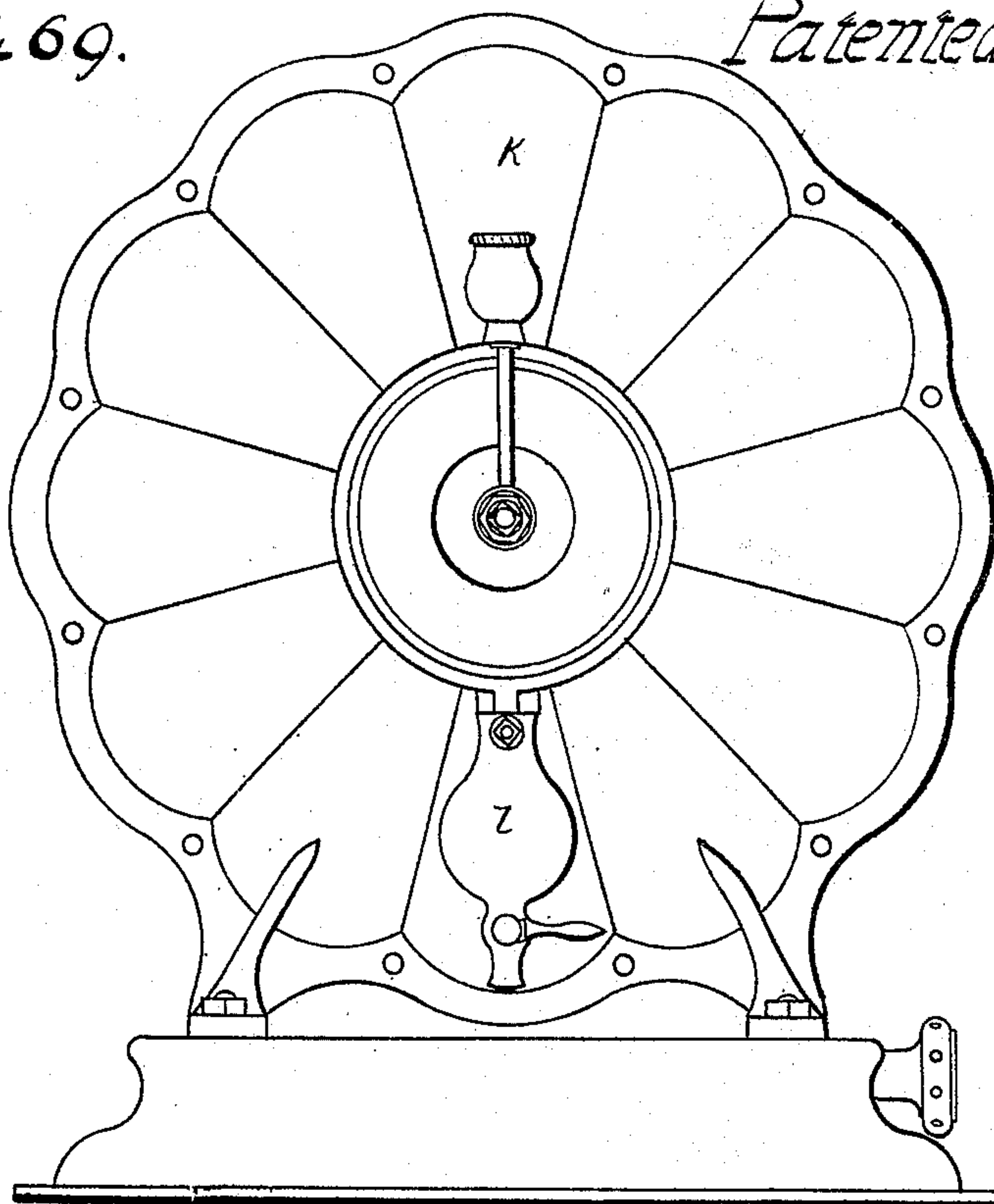
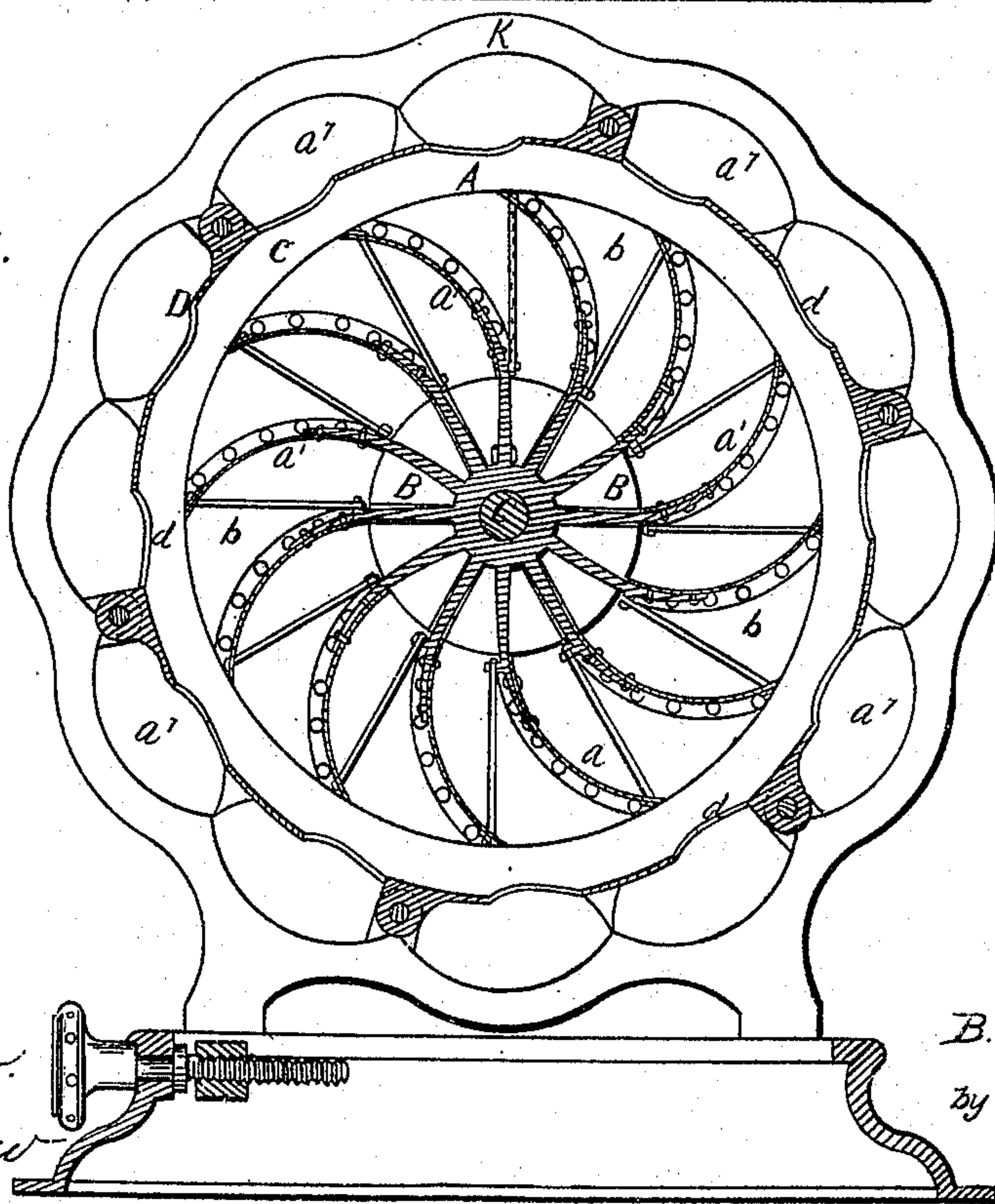


Fig. 6.



Witnesses.

S. N. Piper.

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Fig: 3.

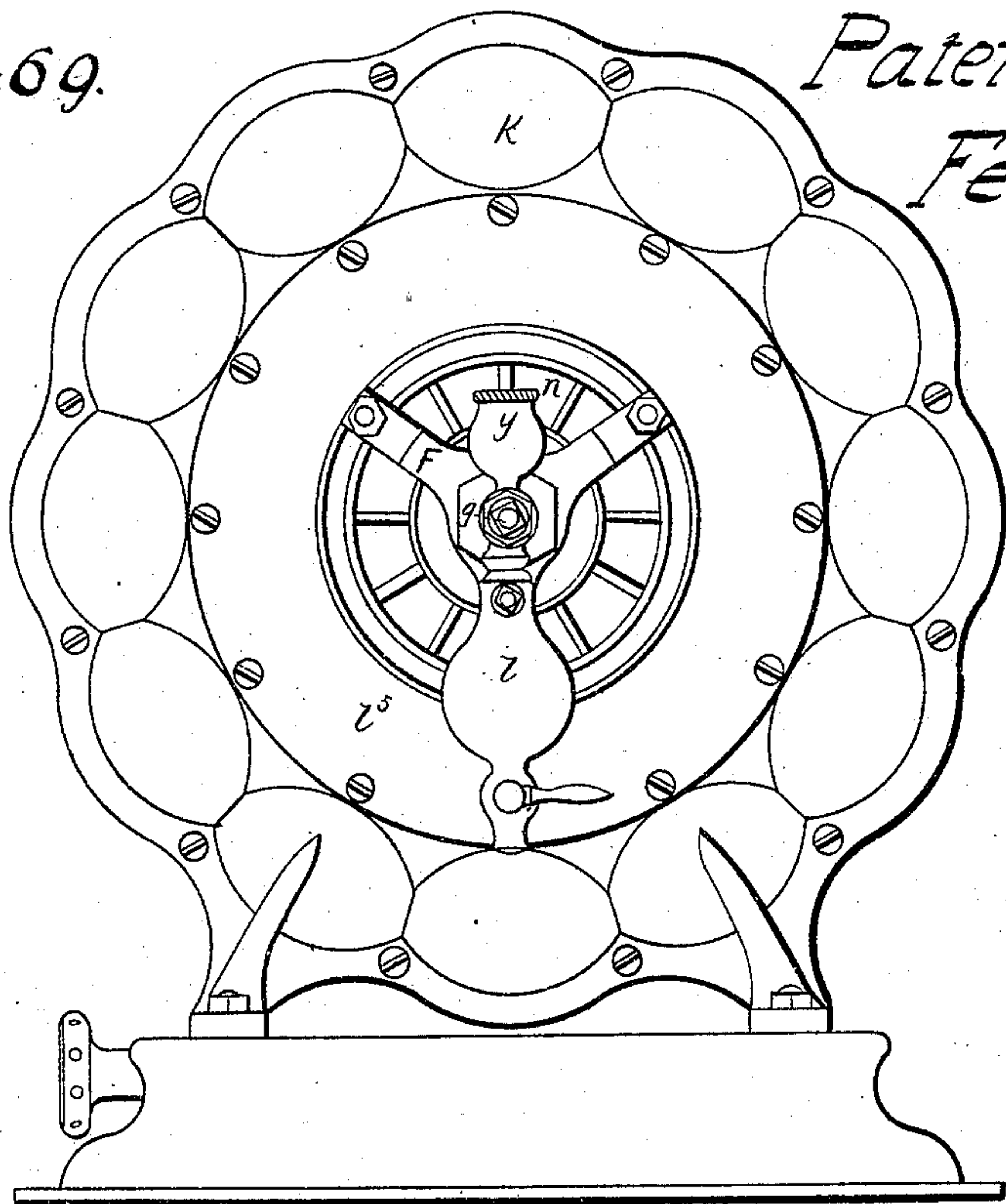
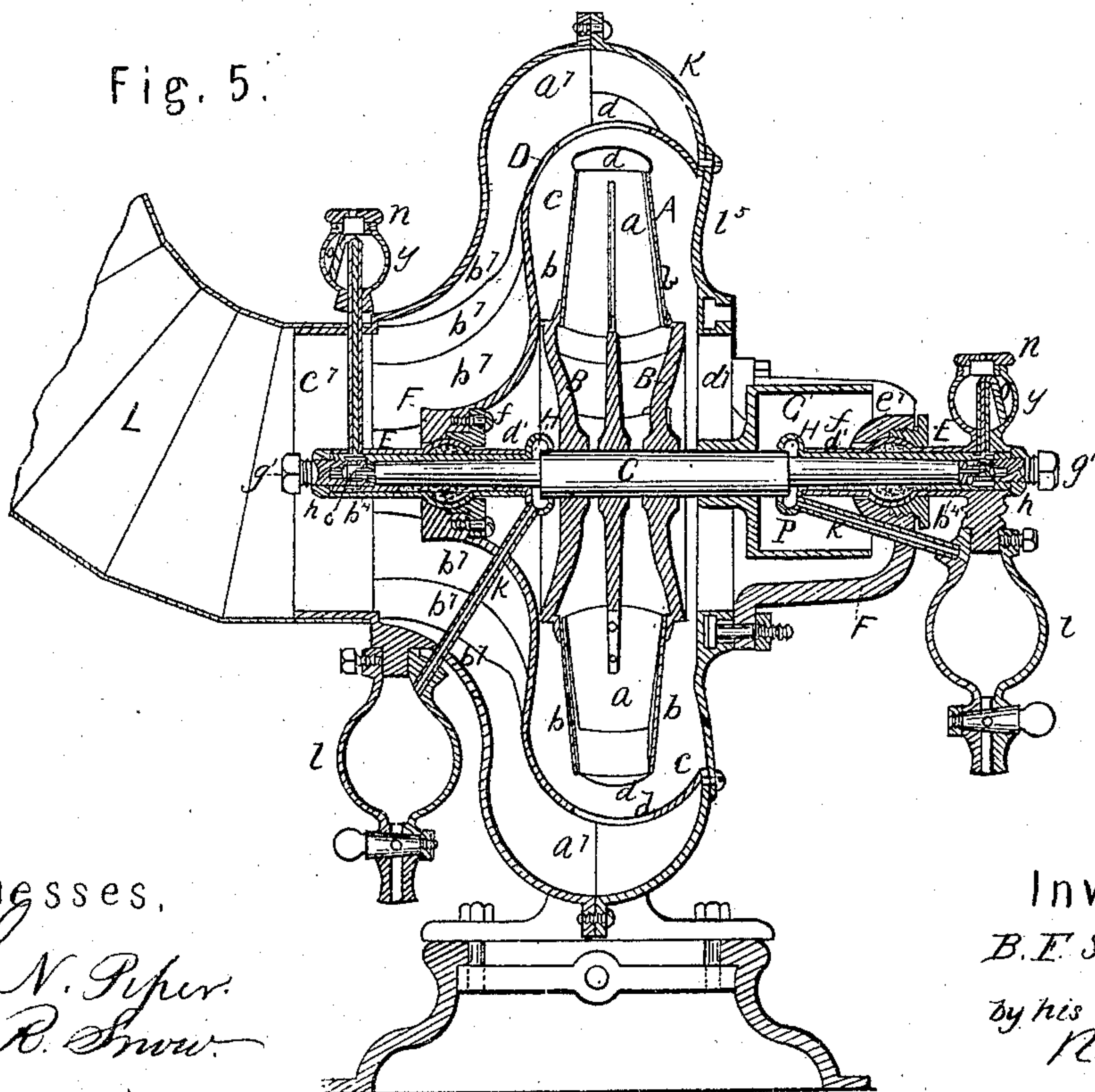


Fig. 5.



Witnesses.

S. N. Piper.
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UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN STURTEVANT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN BLOWERS.

Specification forming part of Letters Patent No. 86,469, dated February 2, 1869.

To all persons to whom these presents may come:

Be it known that I, BENJAMIN FRANKLIN STURTEVANT, of Boston, in the county of Suffolk and State of Massachusetts, have made an invention of an Improved Blower for Furnaces, &c.; and I do hereby declare the nature of my said invention and the manner in which it is to be performed to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Figs. 2 and 3 opposite side elevations, Fig. 4 an end elevation, Fig. 5 a transverse section, and Fig. 6 a longitudinal section, of a blower containing the improvements constituting my invention.

In this blower the air from the wheel-case is discharged through a series of openings in its periphery and into a corrugated case or multiduct surrounding such periphery and one side of the blower-case and leading into one educt, the purpose of the multiduct being not only to intercept the air and convey it into the educt, but to operate to prevent such air from revolving or whirling around while entering the educt.

The nature of my invention may be briefly stated as follows—that is to say:

It consists in a corrugated case or multiduct surrounding the periphery and one side of the blast-wheel case, and serving both to conduct the air from the peripheral educts of such case to an eduction-pipe or conduit, and to prevent it, to a considerable degree, if not entirely, from whirling or revolving while passing into the eduction-pipe; also, in the combination as well as in the arrangement of such a multiduct with the blast-wheel and with its case, provided with an induction-opening in one side of it and with a series of eduction openings or passages arranged in its periphery; also, in a peculiar arrangement of oil-vessels and their pipes with respect to the multiduct.

In the drawings, A denotes the wheel, composed of a series of curved deflectors or floats, *a a a*, &c., and two conical or frusto-conical annuli or pieces, *b b*, such annuli being nearest together at their outer peripheries and fixed to the rims of two spoked wheels, B B, mounted on a shaft, C, going concentrically and horizontally through the wheel and its case D.

The case D, instead of fitting closely, or nearly so, to the sides and periphery of the

wheel, is formed so that there shall be within it and about the periphery of the wheel, and on the opposite sides of the said wheel, a large air space or chamber, *c*, of sufficient capacity to allow the air blown from the wheel while it is in revolution to fully and freely escape through a series of holes, *d d*, &c., made in the periphery of the case D.

The wheel-case is surrounded, on its periphery and one side, by what I term a "multiduct," or air-interceptor, K, which is composed not only of a series of globular or other proper-shaped chambers, *a' a'*, &c., arranged about the periphery of the wheel-case and opening into one another, but of a series of curved channels, *b' b'*, &c., leading from them into a common circular neck, *c'*, the whole forming an auxiliary corrugated or multi-chambered or grooved or channeled case, for receiving the air from the several holes *d* and directing it into one common educt or pipe, L, fitted and clamped on the said neck. This multiduct or intercepting-case, made and described as represented, when arranged with the wheel-case and the peripheral openings thereof, in manner as represented in the drawings, operates not only to direct the air from the wheel-case into the eduction-pipe, but to prevent such air from whirling about or revolving around while entering the educt.

The air from the wheel-case will be directed in convergent currents into the eduction-pipe by a corrugated mouth-piece, which extends from such pipe and embraces one side and the periphery of the wheel-case, in manner as shown in the drawings.

The multiduct or case K is fastened to the wheel-case, which I usually form in two sections, with a joint at the periphery extending around the case, the two sections being there bolted or otherwise properly fixed together. The said wheel-case has an air-eduction opening on that side of it which is uncovered by the multiduct K, such opening being shown at *d'*.

The wheel-shaft C is supported in tubular bearings E E, one of which is sustained by a ball-joint box, *e'*, of a tripod bracket, F, and the other in a ball-joint box, F', applied to the wheel-case D, in manner as represented.

Each of the bearings E E has a ball-joint, *f*, whereby it is enabled to accommodate or ad-

just itself to the shaft C while the said shaft may be in revolution. Each of such bearings has a tubular bushing, d' , arranged within it, the outer end of which is closed, except in being provided with a hole, in which a screw, g' , is screwed. This screw is tubular, to receive the shank of a bolt-head tubular bearing, b^4 , whose head rests against the end of the screw, and also against the adjacent end of the shaft C. The screws g' are to adjust the wheel into its proper position within its case. There is a set-nut on each of the screws g' . The bushings are to enable the bearing parts of the boxes, when too much worn, to be removed, and fresh ones substituted.

There is a chambered driving-pulley, G, fixed on the shaft C, it being arranged with respect to the wheel in manner as represented in the drawings.

Within the pulley, and surrounding the shaft, and fastened to the bearing E, is an annular box or oil-interceptor, H, from the lower part of which a pipe, k , leads to an oil-receiver, l .

An oil-cup, y , provided with a cover, n , is arranged on the shaft-bearing, and provided with a conduit or wick-tube, o , to lead oil into the bearing and upon the shaft.

As the bearing extends into the chamber p of the pulley and to the intercepting-vessel H, the oil discharged from the bearing will flow into and be caught by the vessel H, and from thence will be discharged into the cup or vessel I, from which it may be drawn by a faucet projecting from the lower part of such vessel.

By means of the vessel H we are enabled to catch the waste oil which otherwise would be thrown from the shaft into the current of air when rushing into the wheel, and by such current be forced into the wheel and its case, and from thence through the educts of the case, and be lost.

The opposite journal of the shaft C is provided with an oiling apparatus, in all respects substantially similar to that hereinafter described, except that the supplying and saving vessels y and l are arranged outside of and fastened to or connected with the multiduct or interceptor K.

I construct the wheel-case D with a mova-

ble annular slide, t^5 , fastened by bolts to the main part or the rest of the case, and arranged in manner as represented. By removing such part t^5 the fan or blast wheel can be taken from the case without requiring the latter to be separated at its middle flanges, or any separation of it from the multiduct.

Although I have represented the multiduct as provided with a series of globular chambers, with a channel leading from each to the common eduction-neck, I do not limit my invention to such a form, as it may be varied without changing the character of the multiduct, which embraces two constituents—viz., one for arresting the air or overcoming its tendency to revolve and the other to direct it to the common educt, for while escaping from the wheel it is thrown tangentially therefrom, and thereby would be caused to revolve in the outer case were it not to contain one or more features by which this is overcome.

As an equivalent for the globular chambers with the ducts, there may be chambers and ducts of different forms, or there may be a series of wings or flanges introduced into a plain and round case extending about the blower-case, as does the multiduct.

The oil-vessels and conductors herein described are shown primarily in my patent for a blower, of even date herewith, and are not herein claimed specifically.

Having thus described my improved air-blast apparatus, what I claim therein as my present invention is as follows:

1. I claim the multiduct or outer air-interceptor K, as connected with or forming part of a blower, substantially as described.

2. Also, the arrangement of the oil-vessels y l of the inner journal of the wheel-shaft and their conduits, communicating with the interceptor H, relatively to the multiduct, the whole being as represented, such vessels y l , under such an arrangement, being disposed outside of the multiduct, and their pipes being made to extend into it to the shaft-bearing and the interceptor H.

BENJ. F. STURTEVANT.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.