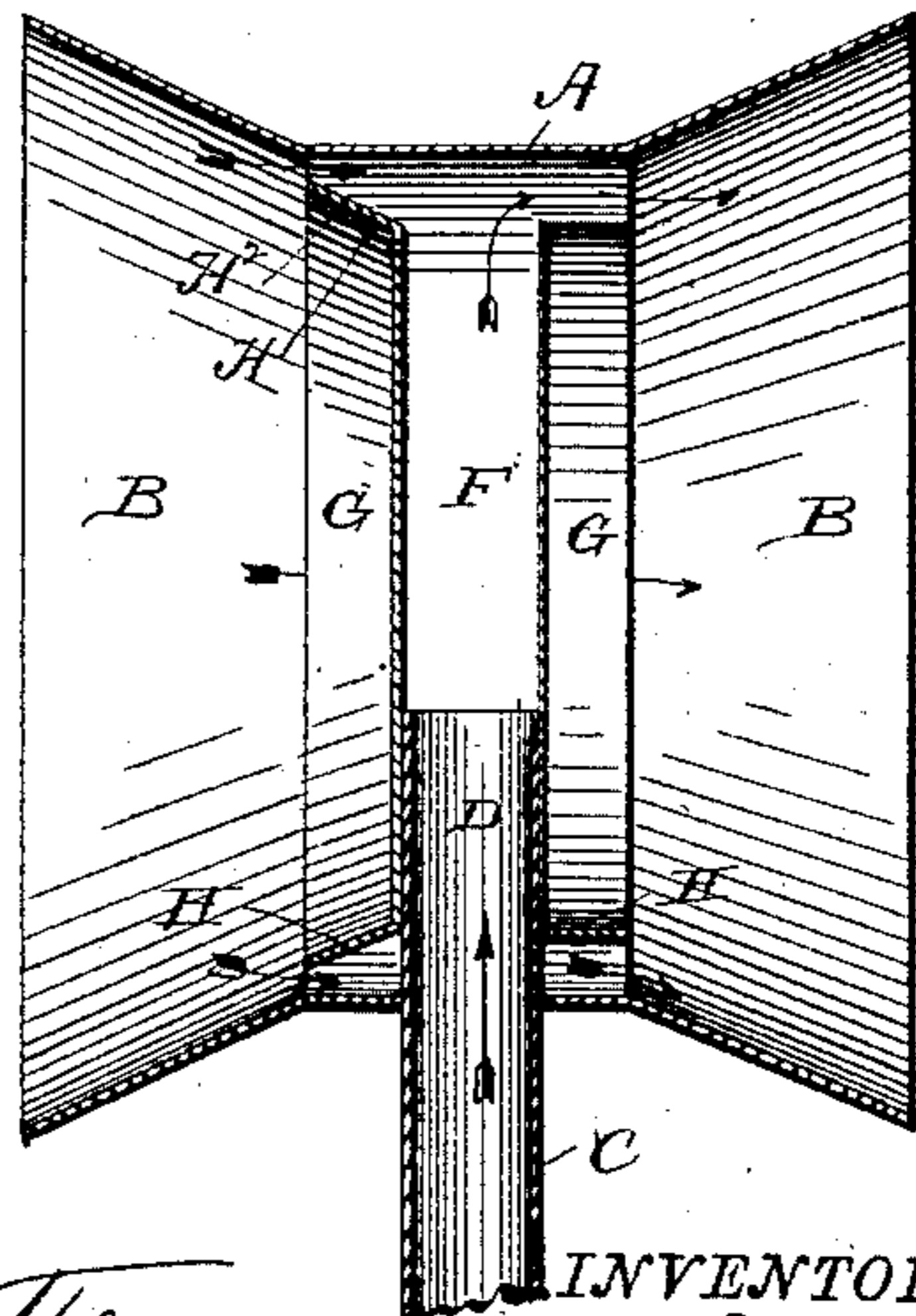
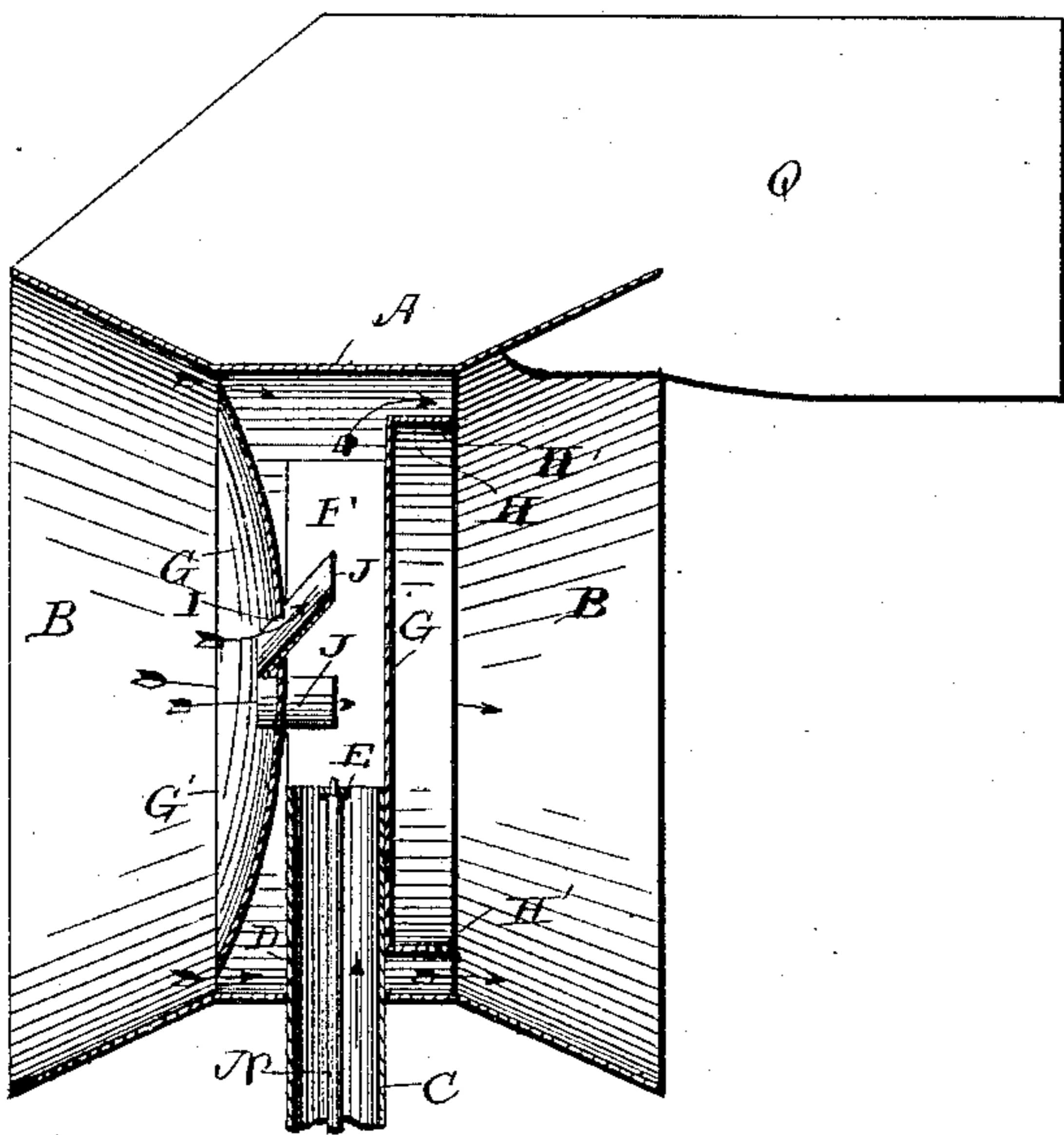
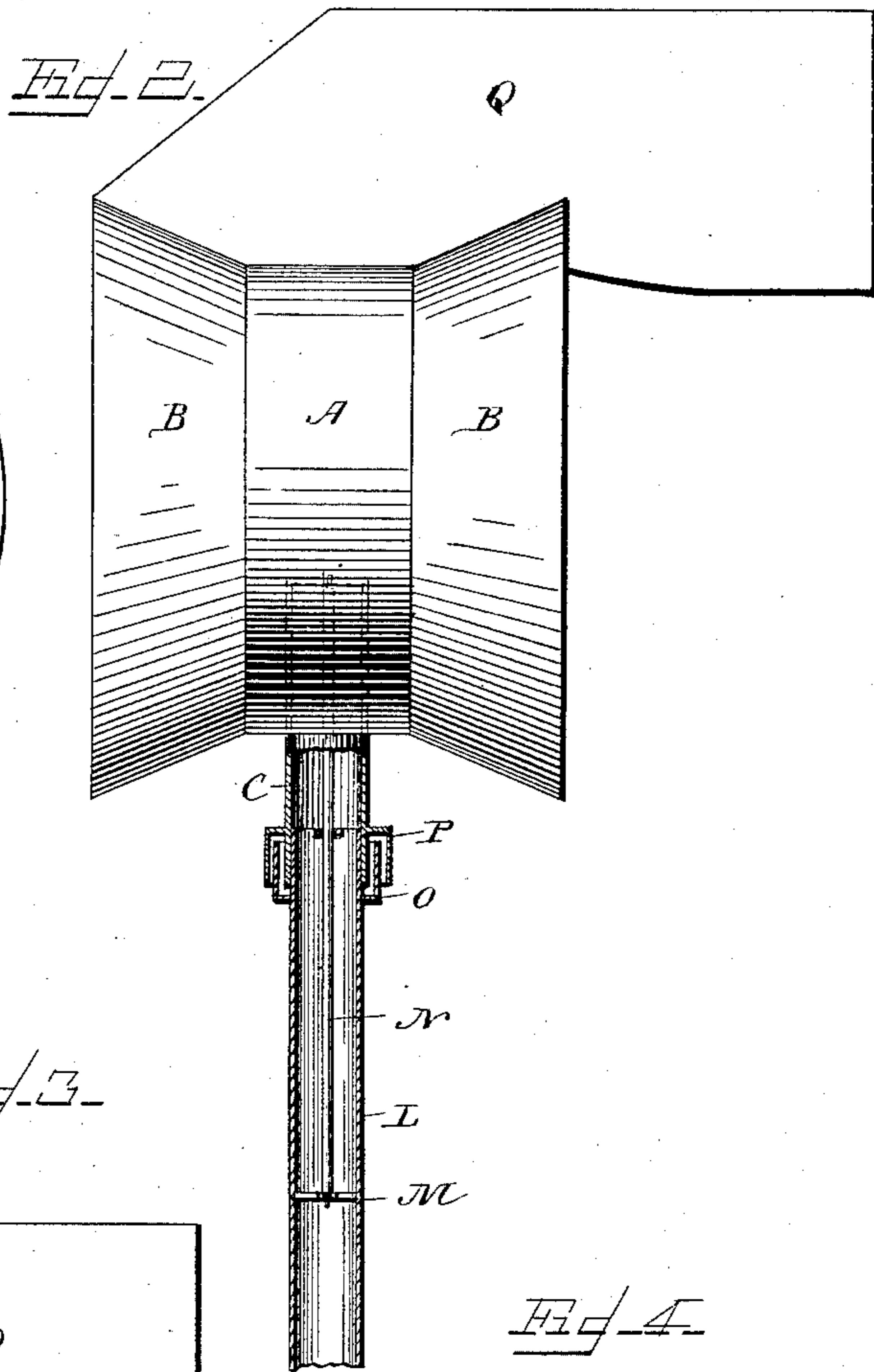
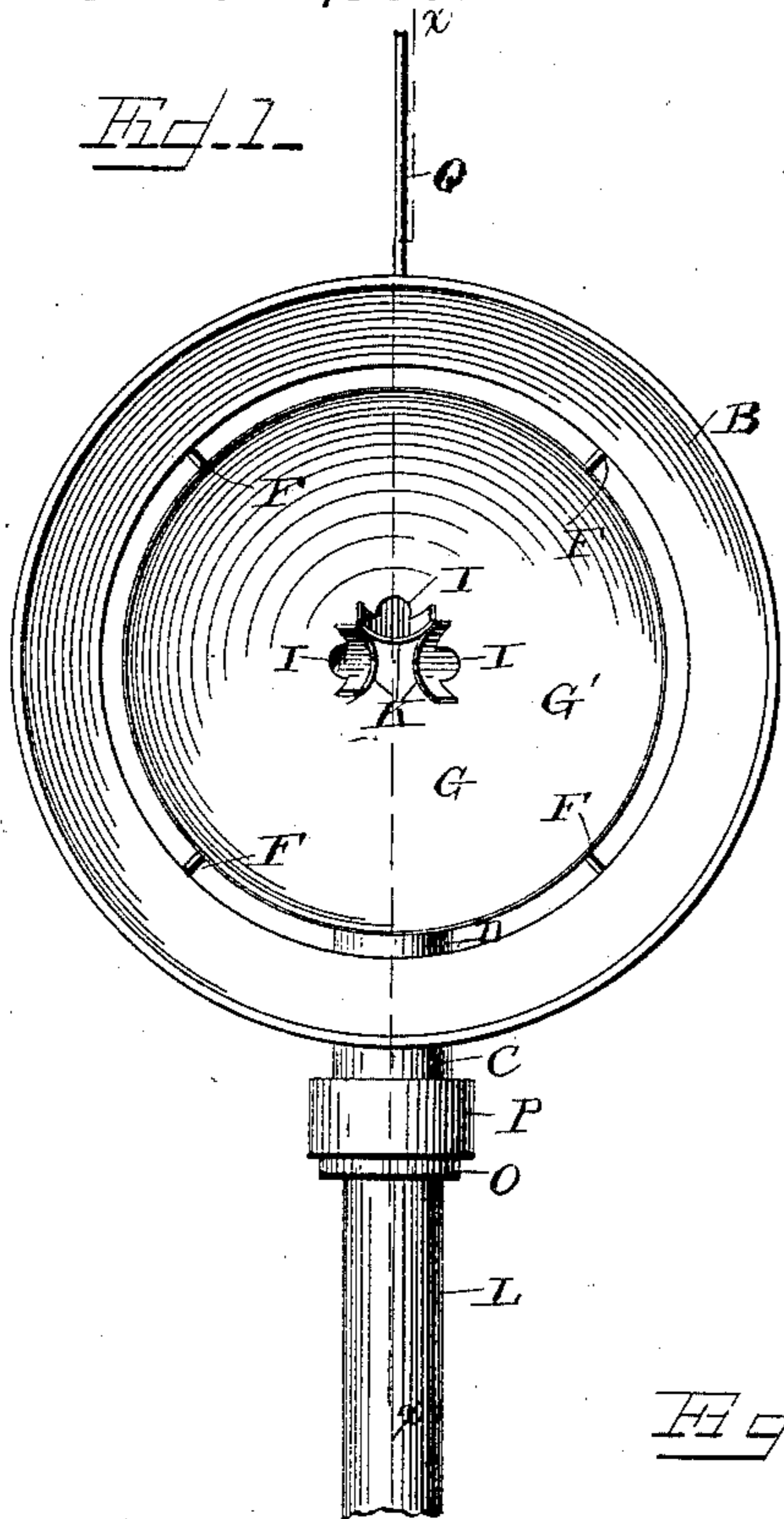


(No Model.)

T. J. SIMPSON.
VENTILATOR.

No. 327,330.

Patented Sept. 29, 1885.



WITNESSES
F. L. Ourand.
H. O. McElwain

INVENTOR
Thomas J. Simpson,
By Louis Bagger & Co.,
Attorneys

UNITED STATES PATENT OFFICE.

THOMAS J. SIMPSON, OF WORTHINGTON, MINNESOTA.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 327,330, dated September 29, 1885.

Application filed July 11, 1885. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. SIMPSON, a citizen of the United States, and a resident of Worthington, in the county of Nobles and State of Minnesota, have invented certain new and useful Improvements in Ventilators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front elevation of a ventilator embodying my improvements. Fig. 2 is a side view of the same. Fig. 3 is a longitudinal vertical sectional view taken on the line $\alpha \alpha$ in Fig. 1, and Fig. 4 is a longitudinal vertical sectional view illustrating a modification in the construction of my improved ventilator, whereby it is particularly adapted for use in positions where it is not required to revolve.

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

This invention relates to that class of ventilators which are used for purifying the atmosphere in buildings, railroad passenger-cars, refrigerator-cars, or other structures to which they may be applied, mainly by creating a current whereby the impure and vitiated air shall be removed from the structure through said ventilator, and be replaced by pure and vitalized air, which may be supplied through any suitable source; and the invention has for its object to provide a device of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency. With these ends in view the invention consists in the improved construction, arrangement, and combination of the parts composing the said ventilator, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, A designates a cylindrical band which forms the body of my improved ventilator, and the ends of which are provided with flaring or funnel-shaped flanges B B, which may be of any desired dimensions, and at any desired angle to the central cylinder or body. The said cylindrical body is mounted upon a vertical tube

or pipe, C, the upper end of which extends up into the said cylinder, as shown at D, and is usually provided at its upper end with a cross piece or brace, E, as will be seen in Fig. 3 of the drawings.

The cylindrical body A is provided with a series of interior radiating braces, F F, to which are secured the disks or heads G G, one of which is secured on either side of the upper end or extension, D, of the pipe C, and which said disks or heads are smaller than the interior diameter of the cylinder or body A, as will be clearly seen in the several figures of the drawings. The edges of the said disks or heads are provided with rims or flanges H H, which may be either placed at right angles to the said heads, as shown at H', or they may be made flaring, as shown at H². The width of the said rims or flanges may also be varied to any desired extent, as may be found desirable or necessary, for the various purposes to which the ventilator may be applied.

The heads or disks G G may be made either straight and flat, or they may be made concavo-convex or dishing, the latter construction being illustrated at G' in Figs. 1 and 3 of the drawings. The disk or head which is made thus concave or dishing is the one which may be designated the front one, or which, as will be hereinafter more fully described, will in practice face the wind. Said head or disk is also provided with a series of centrally-arranged perforations, I I, three or four of these perforations being the number usually employed, although the number may be varied to suit circumstances. These openings have inwardly-extending tubes or tubular projections J, extending over the upper end of the extension D of tube C, as shown, and their outer sides may be provided with suitably-arranged flanges K K; but the latter may be dispensed with when desired.

In practice, when the wind strikes the dishing-head G', it will be concentrated toward the center of the latter, and be forced to pass through the openings I and tubes J, which latter are made divergent, as shown, and will carry the air-current over the upper end of the tube D C, in which an upward draft or suction is thus created.

L designates a tube or pipe extending up-

wardly from the roof of the structure to which my improved ventilator is to be applied, and connecting either directly or in any suitable manner with the interior of the same, or with
 5 any desired portion thereof. At some suitable point in the said tube is arranged a cross-bar, M, affording a step or bearing for the lower end of a vertical rod or shaft, N, the upper end of which is journaled in the cross piece or
 10 brace E of the extension D of pipe C, thus supporting the ventilator in such a manner that it may revolve freely, as upon a pivot. Suitably attached to the pipe L, near its upper end, is an annular oil-cup, O, of turned brass
 15 or other suitable material, into which extends the lower end of the tube C of the ventilator. Attached to the said tube C, near its lower end, is an annular flange, P, which overlaps the said oil-cup, as will be clearly shown in
 20 the drawings, thus forming a guard for the same.

When the parts are placed in position, as shown clearly in Fig. 3 of the drawings, the rod or shaft N forms a spindle upon which the
 25 ventilator may readily revolve, and oil being placed in the cup provided for the purpose, it will form a seal which will make the joint between the tubes C and L absolutely air as well as water tight.

30 The upper side of the ventilator is provided with a vane, Q, of suitable construction, which will serve to keep the end which has already been designated as the front end turned constantly to the wind.

35 The operation of this invention and its advantages will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. When the wind strikes the front end or face of the
 40 ventilator, the flaring front flange serves to condense and force it against or toward the front head, as well as around the same, as will be clearly understood when reference is had to the darts or arrows shown in the figures of the drawings. A suction is thus
 45 created in the space between the front and rear heads which tends to create an upward draft in the tubes or pipes D C L, which serves to remove the impure or vitiated air
 50 from the structure or the portion of the structure with which the said pipes communicate. The impure air is then forced by the through-draft around the peripheral edge of the rear disk, where it is surrounded, as it
 55 were, by the air-blast, and is driven out with great force, the flaring shape of the rear flange enabling the air-blast to expand freely around it and forming a true and effective center draft.

60 It will be understood that although I prefer to use them, the central openings in the front disk, with their adjuncts, may be dispensed with whenever desired, inasmuch as the peripheral draft will be found sufficient under
 65 all ordinary circumstances to accomplish

the purposes of the ventilator thoroughly and efficiently in the manner described.

By the modification of my invention, illustrated in Fig. 4 of the drawings, the same is
 70 connected with the structure to be ventilated by the pipe C direct, and no provision is made for its revolving. In this case both of the heads G may be made either flat or concave and imperforate, and the peripheral draft
 75 alone is relied upon. In this form, which is somewhat simplified, and consequently less expensive, the ventilator is particularly adapted to railroad-cars, to which it is applied lengthwise, so that one end will always
 80 face the direction in which the cars are moving and receive the air-current caused by such motion. The operation is precisely the same as that of the form of ventilator above described.

My improved ventilator, as will be seen, 85 combines great simplicity of construction and inexpensiveness with great efficiency in practical operation. The principle upon which it operates—viz., that of creating a vacuum by
 90 an upper through-draft or air-blast above or in the upper end of the exit-pipe of the structure to be ventilated, and hence an upward draft in the said pipe—is practically and efficiently carried out, and the provision for carrying off the foul and vitiated air by practi- 95 cally surrounding it with an air-blast will absolutely prevent it or any portion thereof from returning.

It will be seen that in the practical manufacture of this invention various minor changes 100 may be made with regard, for instance, to the relative proportions of the several parts and to such parts as may be interchangeably or optionally used; and I would therefore have it understood that I do not limit myself to the
 105 precise construction and arrangement of parts herein shown and described, but reserve to myself the right to all such modifications as may be resorted to without departing from the spirit of my invention. 110

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a ventilator, a central cylindrical body provided at its ends with flaring or funnel-shaped flanges and mounted upon a vertical
 115 pipe, the upper end of which extends into the said central body, in combination with the disks or heads, the edges of which are provided with outwardly-projecting, annular
 120 or peripheral flanges, flaring or otherwise, substantially as and for the purpose herein set forth.

2. In a ventilator, the combination of the central cylindrical body provided at its ends 125 with flaring or funnel-shaped flanges, the vertical supporting and connecting pipe extending upwardly into the said central body, a dishing or concave front disk or head having a flaring annular flange and provided near 130

its center with perforations having inwardly-
extending tubes and outwardly - extending
flanges, an annularly-flanged rear disk or head,
a suitable vane, and a vertical suitably-ar-
5 ranged pivoting-rod, all combined and oper-
ating substantially as and for the purpose
herein shown and specified.

In testimony that I claim the foregoing as
my own I have hereunto affixed my signature
in presence of two witnesses.

THOMAS J. SIMPSON.

Witnesses:

ARTHUR L. MORSELL,
WM. BAGGER.