F. VILLARD.

Chimney Cowl.

No. 99,983.

Patented Feb. 15, 1870.

Fig. 1

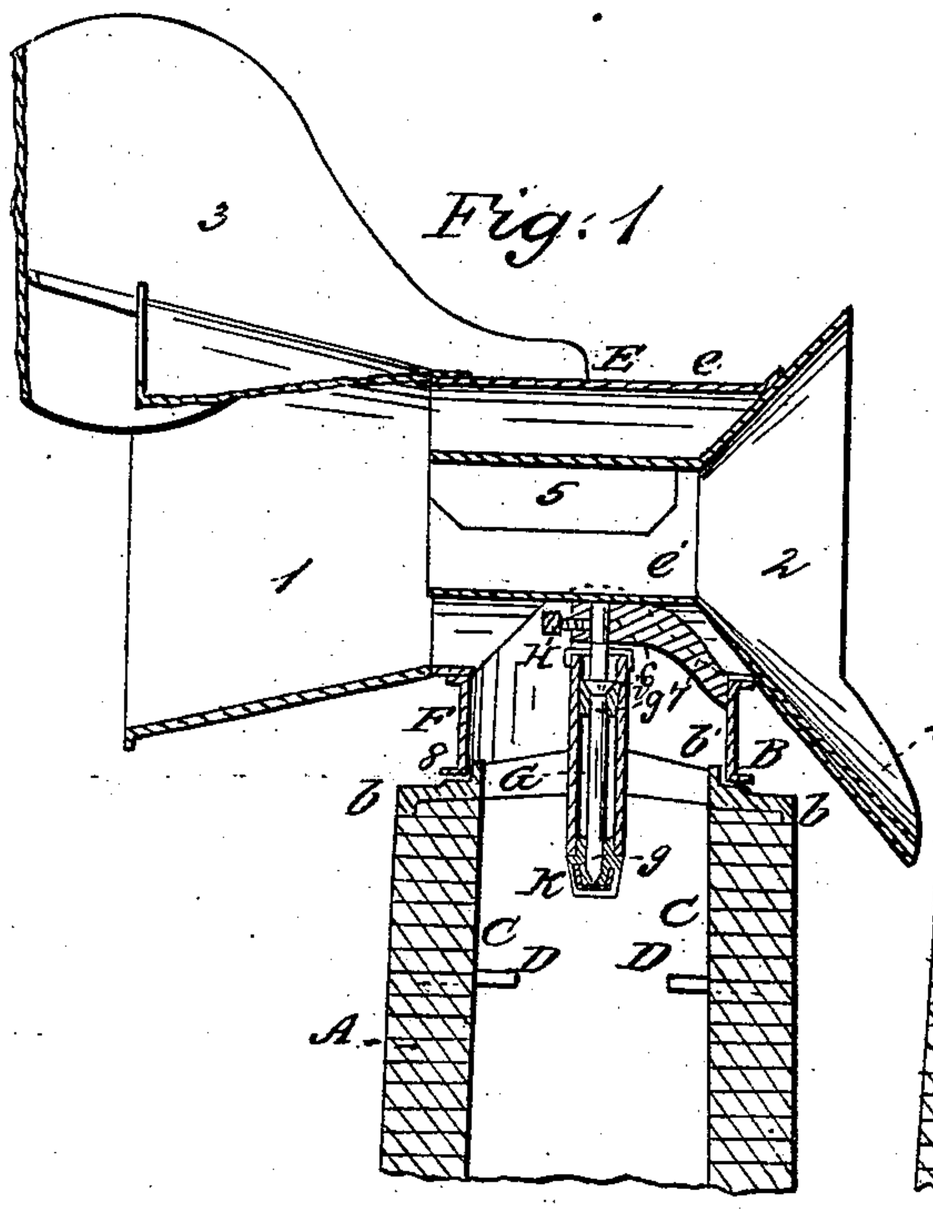


Fig. 2

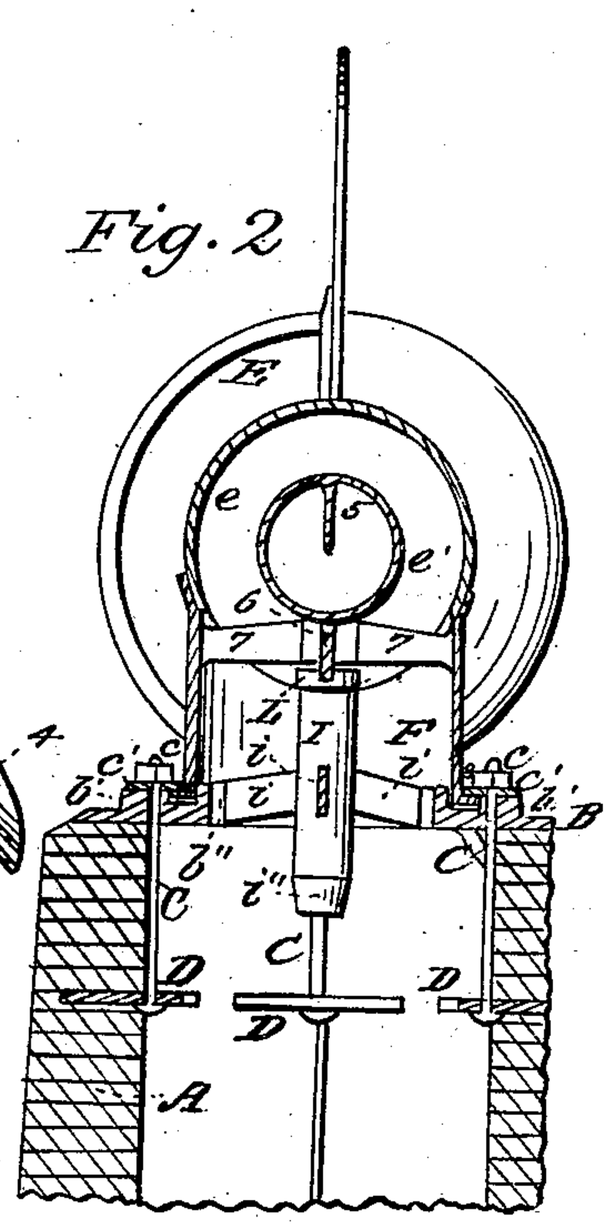


Fig. 3

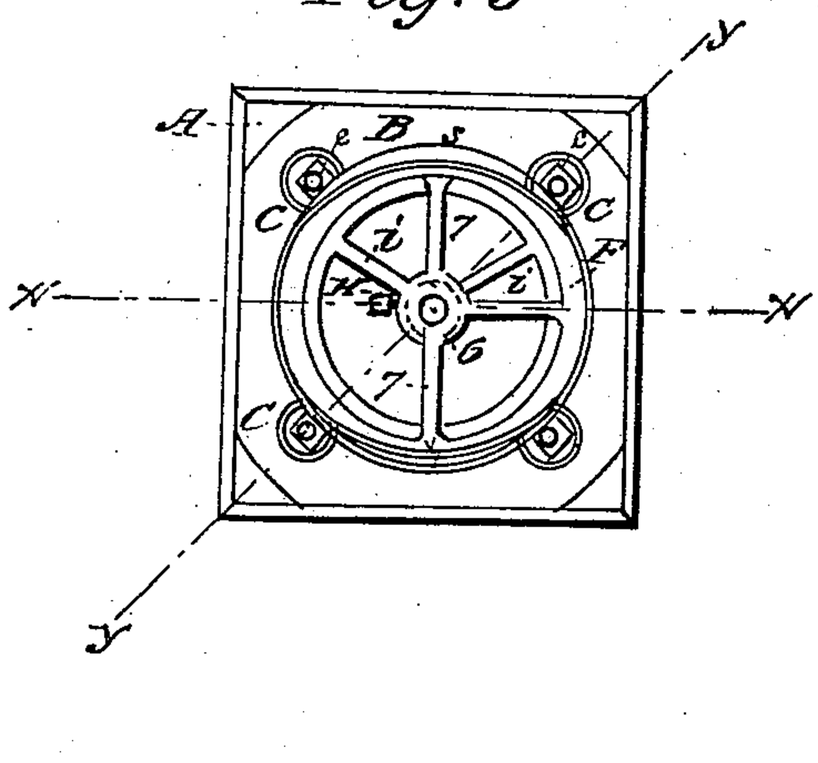
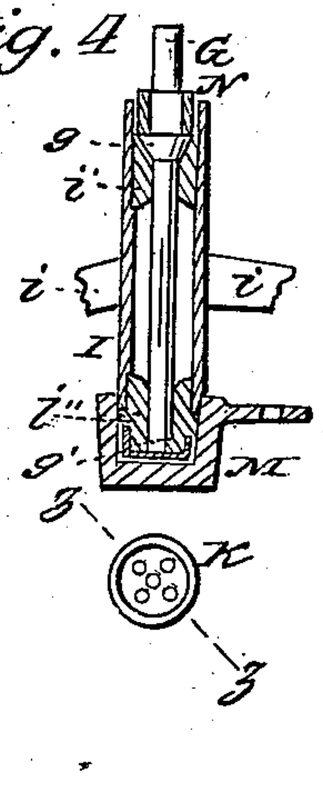


Fig. 4



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FRIEDRICH VILLARD, OF MOUNT EATON, OHIO.

Letters Patent No. 99,983, *dated February* 15, 1870.

CHIMNEY-COWL.

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

I, FRIEDRICH VILLARD, of Mount Eaton, in the county of Wayne, and State of Ohio, have invented a new and useful Improved Revolving Chimney-Top, of which the following is a specification.

My improvements relate primarily to the revolving chimney-top for which Letters Patent No. 62,578 were, on the 5th day of March, 1867, granted to me, but are also applicable in part to others of its class not possessing its peculiar characteristics.

My improved chimney-top in its preferred complete form consists essentially of a bed-plate covering the top of the chimney, and suitably secured thereto, and a horizontal double funnel-shaped sheet metal top proper or cowl, so constructed as to receive the smoke from the chimney through a central orifice, and to receive the wind always at one end adapted to receive it and discharge it with the smoke at the other, being so attached to said bed-plate as to revolve freely thereon in a horizontal plane, so as to present the proper end to the wind at all times, as described in my former patent aforesaid.

By my improvements on the construction set forth in said patent, the socket or step of the spindle of the top proper is cast in one part with the bed-plate, being adapted to receive and provided with box-metal bearings for the spindle. The spindle is constructed with conical shoulders at both bottom and top for its support in its step, and is mounted and secured in a novel manner, a socket for its reception being provided within the cap proper, and is secured therein by means of a set-screw arranged in the front of the socket, and thus rendered easily accessible from the broad mouth of the top.

The bed-plate has cast on it for the reception of the attaching bolt, of the bed-plate and top proper, bosses of a suitable height, supported on which the common nuts and washers are enabled to properly engage with the flange of the attaching collar.

The usual sheet metal portion of the vertical cylinder of the top proper is dispensed with, and the cast collar requisite for the attachment of the top so extended as to enable it to perform the functions of said part.

The funnel end of the top is provided with an extended and weighted lower edge to counterbalance the vane end, and the inner cylinder is provided with a longitudinal blade or flange to prevent the wind from whirling through it.

The parts not above specified preferably correspond substantially with those set forth in my former patent aforesaid.

In the drawings—

Figures 1 and 2 are vertical sections of my improved cap attached to a chimney, being respectively transverse and diagonal of the chimney and its accessories, and longitudinal and transverse of the top proper.

Figure 3 is a plan view with the horizontal portion of the top proper removed, indicating by the dotted lines *x x* and *y y* the plane of the sections of the chimney and accessories in figs. 1 and 2 respectively.

Figure 4 represents a sectional view of the spindle and its socket or step with the devices employed in casting the bearings in said step.

Figure 5 is a plan view of a perforated cap incorporated in the metal forming the lower bearing of the spindle step, to strengthen the same, as represented in fig. 4, the dotted line *z z* indicating the plane of the section of this part shown in said figure.

Similar letters of reference indicate like parts in the several figures.

A, figs. 1, 2, and 3, represents the chimney, and B the bed-plate of the top, which is secured on the chimney by marginal flanges *b*, preventing lateral displacement, and vertical tie-rods or bolts C attached to anchors D built in the masonry of the chimney across the angles of the flue, and provided on top of the bed-plate through which they pass with screw-nuts *c* and washers *c'*.

E, figs. 1 and 2, represents the revolving top proper, or cowl;

e, the outer and *e'* the inner of its horizontal cylinders;

1 2, the funnel-shaped ends or mouths of the cylinders *e e'*;

3, the vane with which the open end or mouth 1 of the cylinder *e* is provided;

4, the projecting weighted lip formed on the mouth 2 of the cylinder *e'* to counterbalance the vane; and

5, the blade or flange provided in the cylinder *e'* to prevent the whirling or spiral motion which the air otherwise has in passing through it, and thus to increase its force.

F, figs. 1, 2, and 3, represents the combined vertical cylinder and attaching collar of the top E, and G the spindle of said top, which is arranged concentrically therein.

6, figs. 1, 2, and 3, represents the socket for the support of the spindle G;

7 7, the arms by which said socket is supported; and

H the set-screw for the securement of the spindle therein.

8, figs. 1, 2, and 3, represents the radial flange on the lower end of the collar F for the attachment of the top E to the bed-plate B by projection beneath the washers *c'* on the tie-rods C; and

b', studs or bosses on the bed-plate B for the support of said washers.

b'', figs. 1, 2, and 3, represents the annular flange bordering the orifice in the bed-plate B for the passage of the smoke to support the top E against lateral displacement.

I, figs. 1, 2, 3, and 4, represents the socket or step of the spindle G, and *i i* its supporting arms.

i' i'', figs. 1 and 4, represent the box-metal bearings provided in the step I for the spindle G; and

K, figs. 1, 4, and 5, the perforated cap incorporated in the latter bearing, to form the bottom for the step.

L, figs. 1 and 2, represents the removable cap for closing the upper end of the step I when in use.

g g', figs. 1 and 4. represent the conical shoulders of the spindle G.

M, fig. 4, represents a cup or mould; and

N, a gauge-ring used in casting in the bearings *i' i''* of the step I.

The bed-plate B with its flanges *b b''* and bosses *b'*, the step I (without the bearings *i' i''*) and its supporting arms *i*, are preferably all cast in one piece from iron, and the collar F with the spindle-socket 5 and its supporting arms 6 in another piece.

The top E *e e'*, 1, 2, 3, 4, may be made of any suitable sheet metal, the weight 4 being made by filling a space between two thicknesses of such metal with lead or other suitable material, or by casting such on a projection of single thickness, or in other suitable manner.

The spindle G may be cast or forged from suitable metal and turned to the proper form.

The perforated cap K, for incorporation in the lower bearing *i''* of the spindle-step I, is preferably made of sheet tin.

The bearings *i' i''* are formed in the step I in the following manner:

The collar being supported in an inverted and perfectly level position, the gauge-ring N is placed on the socket 6, and the upper end of the spindle G inserted in the socket through said ring. Three or four pieces of leather or wood about one-eighth of an inch in thickness are then laid on the flange 8 of the collar F at about equal distances apart, and the step I with its accessories, also inverted, placed concentrically over the spindle, being supported at the proper height by the bed-plate B resting on the pieces of leather or wood on the flange of the collar F, referred to. A proper quantity (about two ounces) of melted box-metal is then poured into the lower end of the step I, around the spindle forming the upper bearing *i*. This being allowed to cool, the perforated cap K is placed over the lower (now upper) end of the step and temporarily secured, and the parts, in the position in which the first bearing was cast, are reverted, and the lower end of the step I with the cap K thereon forced into the cup M, which has had melted in it or been supplied with a similar quantity to that used for the first bearing of melted box-metal, which is thus forced through the perforated cap K and confined in the proper shape for the lower bearing *e''* which is thus formed.

The perforated cap K becoming incorporated with the box-metal prevents its cracking, and thus insures a perfectly oil-tight bottom for the step.

The step is preferably provided with conical portions or projections for the support of the bearings *i' i''*, as shown in fig. 4.

The cup M and ring N form no part of the apparatus proper, and are removed when the casting of the bearings *i' i''* is completed, as are also the pieces of leather or wood referred to, which are employed to insure the support of the collar F a sufficient distance above the surface of the bed-plate to avoid friction.

For use the apparatus is mounted on a chimney, as represented in figs. 1 and 2 of the drawing, when the smoke passing up through the collar F into the external cylinder *e* of the top E is forced out at the flaring mouth 1 of said cylinder, by the discharge of air through the inner cylinder *e'*, the flaring mouth 2 of which is always kept to the wind by the vane 3 on the opposite end of the top.

Before or after the mounting of the apparatus, the spindle-step I is filled with a suitable lubricant, which is protected from dust by the cap L of said step.

The provision of the lubricated bearings for the spindle, the improved construction of the spindle, and the provision of the counterbalance 4, evidently facilitate the rotation and consequently the proper action of the top.

The provision of the blade or flange 5 greatly augments the effect of the primary construction of the cap, while my other improvements simplify the construction and building of the top, lessening the cost of manufacture, and rendering the article in every respect better.

Having thus described my invention,

I claim and desire to secure by Letters Patent—

1. The counterbalance 4 arranged on the front or funnel end of the revolving top, as described, for the purpose set forth.

2. The blade or flange 5 arranged and operating substantially as and for the purpose specified.

3. The spindle-step I provided with the box-metal bearings *i' i''*, substantially as represented, for the purpose set forth.

4. In combination with the lower bearing *i''* of the spindle-step I, the perforated cap K employed and operating as and for the purpose described.

5. The spindle G constructed with the conical shoulders *g* and *g'*, as described.

6. The spindle-socket 6 arranged within the horizontal portion of the top, and provided with the set-screw H in its front side, as represented, for the purpose set forth.

7. The bed-plate B constructed with the studs or bosses *b'*, as represented and described for the purpose set forth.

FRIEDRICH VILLARD.

Witnesses:

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