J. HURD, Jr.

Chimney Cowl.

No. 2,063. Patented April 24, 1841.

Fig. 1

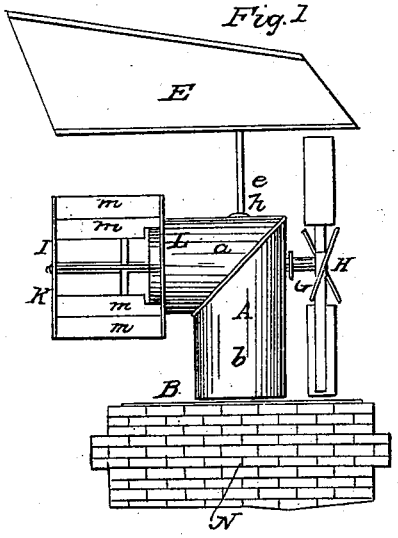


Fig. 2

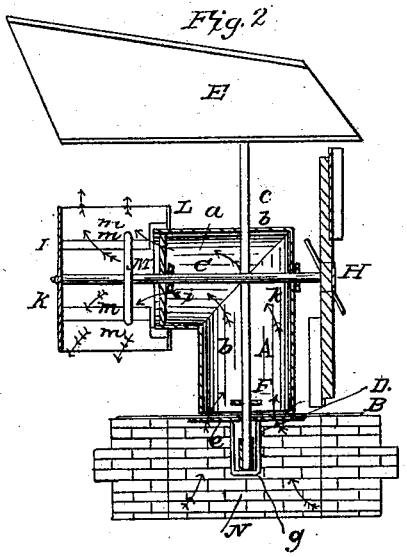


Fig. 3

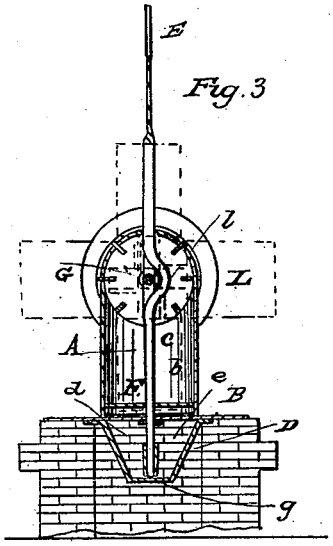


Fig. 4

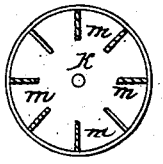
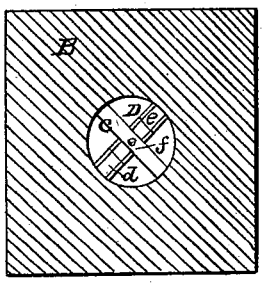


Fig. 5.



UNITED STATES PATENT OFFICE.

JOSEPH HURD, JR., OF STONEHAM, MASSACHUSETTS.

APPARATUS TO BE ATTACHED TO CHIMNEYS TO INCREASE THE DRAFT AND PREVENT THEIR SMOKING.

Specification of Letters Patent No. 2,063, dated April 24, 1841.

To all whom it may concern:

Be it known that I, JOSEPH HURD, Jr., of Stoneham, in the county of Middlesex and State of Massachusetts, have invented a new and useful apparatus to be applied to chimneys to increase the draft of the same and thereby prevent them from smoking and also to buildings of different kinds for the purpose of ventilating the apartments thereof and thereby remedying any noxious gases or impure atmospheric air which may in any manner be detrimental to health or to any operations conducted therein, and that the following is a full and exact description of the same, reference being had to the accompanying drawings, which, taken in connection herewith, form my specification, setting forth the principles of my invention (by which it may be distinguished from others of a like character) and such parts or combinations thereof as I claim and for which I solicit an exclusive property to be secured to me for fourteen years by Letters Patent.

Figure 1 represents an elevation of a smoke discharger and ventilator as placed in a chimney or flue. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a perpendicular transverse section of the same. Fig. 4 exhibits the floats of the discharging wheel and Fig. 5 shows the plate which is placed on the top of the chimney or ventilating flue.

In Figs. 1, 2, 3 A, represents a common cowl or hollow cylinder of sheet iron or copper, the top portion *a* of which is bent to an elbow or at right angles to the upright part *b*, which is placed as will be hereafter described directly over the opening in the top of the chimney. A plate B Figs. 1, 2, 3, 5, of metal, of any desirable shape, resting and properly secured upon the top of the chimney, has a circular space, cut out of the center of the same, which is subdivided by a cross bar *c*, into two openings *d*, *e*, Fig. 5, through which the smoke from the chimney escapes into the cowl A as denoted by the arrows in Fig. 2. The cowl A is situated directly over the openings *d*, *e*, and is supported in position by a perpendicular rod C which passes through a circular hole *f*, Fig. 5, in the bar *c* and is continued some considerable distance downward, and its lower end is formed conical or as a pivot and rest and turns in a suitable step or bearing *g* Figs. 2 and 3 of a bent stirrup D, attached to and extending down from the plate B as seen in Fig. 3. The rod C has a vane E affixed on its top and said rod is suitably fastened or connected to the upper part of the cowl, when it passes through the same or at *h*, Figs. 1 and 2 and is also fastened to the lower part of the cowl, by a bar F, Figs. 2, 3, extending across the center from one side to the other of the same.

A horizontal shaft G, Figs. 1, 2, 3, passes through the center of the upper part *a* of the cowl, and is supported near the middle by a bar *i*, Fig. 2, extending across the mouth of the cowl, the shaft passing through the bar and turning freely therein, or in a suitable box applied thereto. It also has a bearing in the back of the cowl at *k*, in which it revolves. The upright rod C is bent a little as seen at *l* Fig. 3 so as to clear the shaft G when it passes the same.

A common windmill wheel H, see Figs. 1, 2, constructed of sheet iron or copper, is affixed on the end of the shaft G in front of the cowl. It is represented in Figs. 3 by dotted lines. It has its sails or vanes so arranged upon the arms that when the wind impinges perpendicularly upon the plane of the wheel, or in a direction of the shaft G it will be put in rapid revolution. The smoke discharger is arranged upon the other end of the shaft G, over the mouth of the cowl and is thus constructed.

A circular plate K fixed on the extremity of the shaft has a series of floats *m*, *m*, *m*, Figs. 1, 2, 4, attached to and projecting from its front face, the said floats radiating or diverging from the center of the plate, as seen in Fig. 4, and being attached at their other ends to a circular plate or ring L, Figs. 1, 2, 3, through the circular aperture of which the end of the cowl is inserted loosely a short distance as seen in Figs. 1, 2. The discharging wheel is still further connected to the shaft G by a cross bar M, which extends across from one float to the opposite and through the center of which the shaft G passes and is secured.

From the above it will be seen that when the shaft G is revolved by the windmill wheel H that the discharging wheel is also put in motion with it, and the air or smoke between the floats, being thrown out from the same by the centrifugal force generated by the revolutions of the wheel, a fresh supply of air or smoke rushes out from the in-

terior of the cowl, to supply its place, and is also immediately thrown out, and as there is a quantity of smoke or air continually drawn from the cowl, to supply the place of that carried off by centrifugal force as above mentioned, thus a rapid current of air up the chimney or flue N is created, which carries with it the smoke or other volatile matters, and discharges the same into the external atmosphere. It will be seen by inspection of Figs. 1, 2, that the vane E projects back from the rod C on which it is affixed, more than it advances in front of the same, so that when the wind strikes upon the same, it shall always turn the cowl A in such manner as to present the windmill wheel H to the full action of the wind, or the shaft G in the direction in which the wind blows.

An apparatus constructed upon the above principles, may be applied to the roofs of buildings, over flues communicating with any of the apartments thereof, to discharge any noxious gases or effluvia which may be therein generated, and will be found peculiarly useful for ventilating public lecture, and court rooms, chemical laboratories, iron foundries, work shops, railway tunnels, mines &c.

Instead of applying the discharging wheel to a bent cowl, and operating the same by a wind-mill-wheel, as above described, it may be arranged upon a perpendicular flue, with its floats and shafts set vertically, and the same whether disposed in such, or in any other manner may be revolved by any suitable machinery connected thereto. The effect will be the same as before set forth, that is to say, the centrifugal force generated on the air between the floats, by the circular motion of the wheel, will cause a rapid current up the flue and if the same proceeds from a building, a tunnel or a mine, the gases or impure air therein accumulated, will be drawn out or discharged as before mentioned.

Having thus described my invention I shall claim,

Discharging the smoke from a chimney, or the impure air of an apartment from the same, by a discharging wheel constructed and revolved as above described, and also by means of a cowl having a horizontal shaft passing through it, upon the front end of which a wind mill wheel is affixed, and upon the rear end, and over the mouth of the cowl a discharging wheel, to be set in motion by the action of the wind on the former, the proper position of said cowl, with respect to the wind being regulated by a vane suitably attached to, and which turns the same; the whole being arranged and operating substantially as herein before set forth.

In testimony that the foregoing is a true description of my said invention and improvement I have hereto set my signature this eleventh day of March in the year eighteen hundred and forty one.

JOSEPH HURD, Jnr.

Witnesses:
R. H. Eddy,
Ezra Lincoln, Jr.