(No Model.) 2 Sheets—Sheet 1.

J. BARNES.

EXHAUSTER AND VENTILATOR.

No. 454,836. Patented June 30, 1891.

Fig. 1.

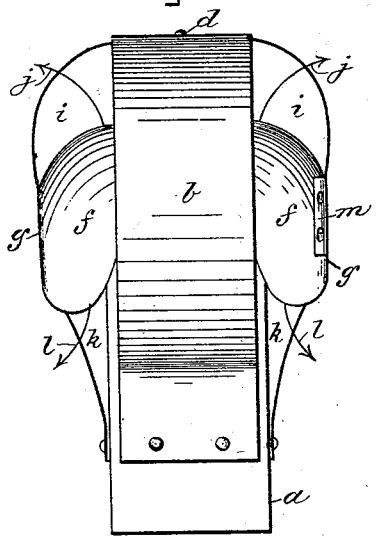


Fig. 2.

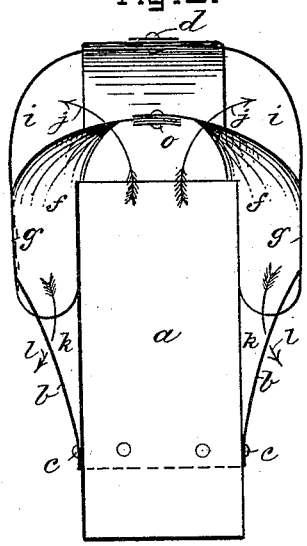
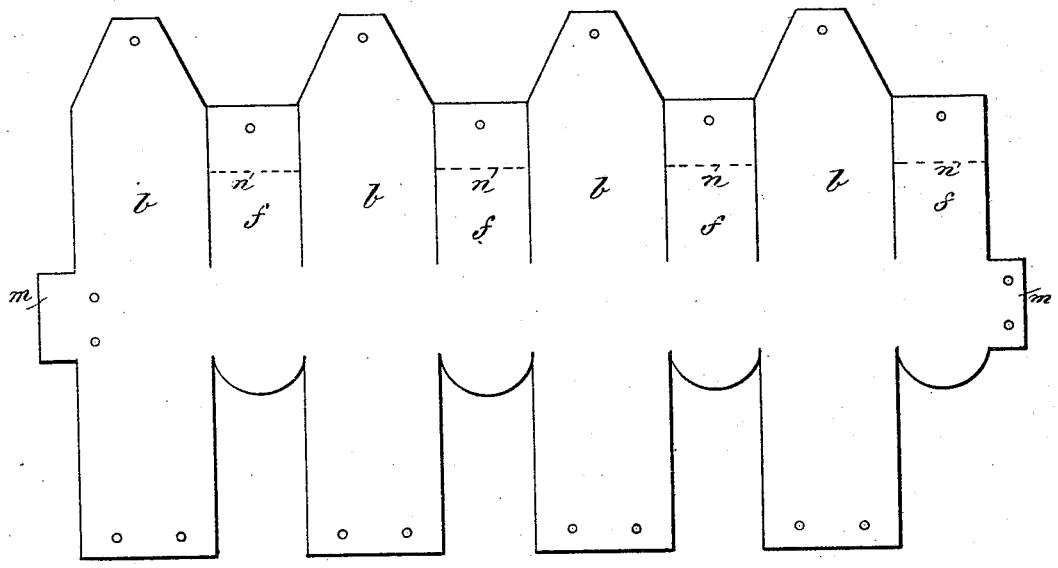


Fig. 3.



INVENTOR.

WITNESSES.

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Atty.

(No Model.) 2 Sheets—Sheet 2.

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EXHAUSTER AND VENTILATOR.

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Fig. 5.

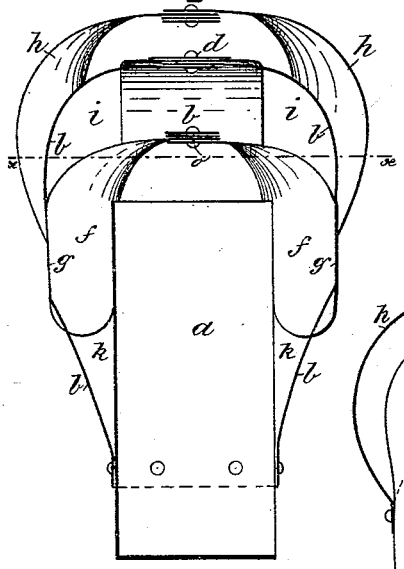


Fig. 4.

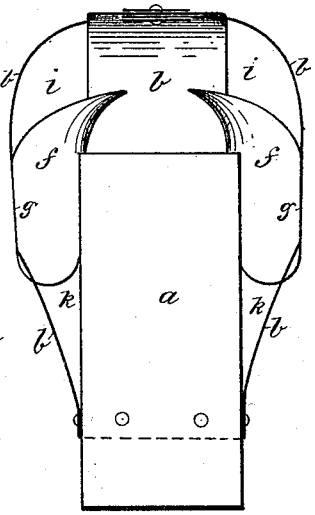


Fig. 6.

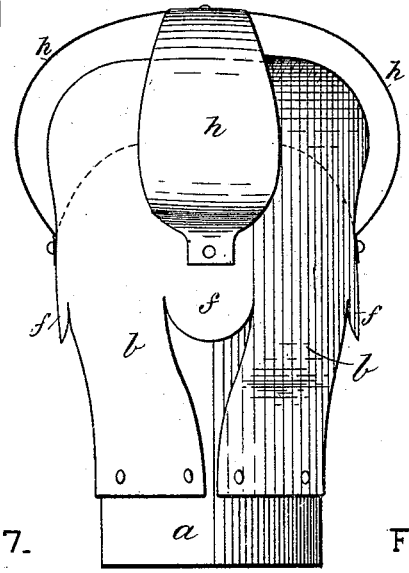


Fig. 7.

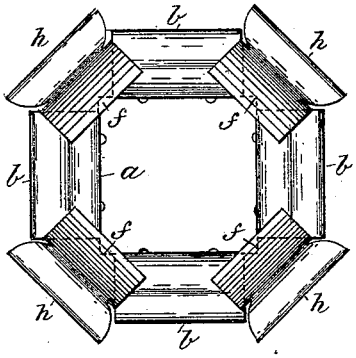
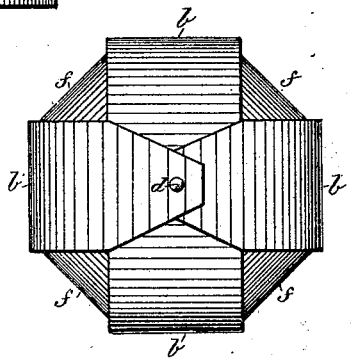


Fig. 8.



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W. B. Ewell

UNITED STATES PATENT OFFICE.

JOSHUA BARNES, OF BROOKLYN, NEW YORK.

EXHAUSTER AND VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 454,836, dated June 30, 1891.

Application filed December 6, 1890. Serial No. 373,760. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA BARNES, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Exhausters and Ventilators, of which the following is a specification.

My invention consists of improved contrivances of bow-shaped strips of sheet metal or other approved material over the top or end of the pipe in a manner to cause effective suction in the pipe whichever way the wind may blow against the exhauster, and affording very simple and cheap construction, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 a vertical section, of my exhauster in the most preferable form. Fig. 3 is a diagram of a sheet of metal cut in the form adapted for providing the cover-strips in the most approved manner. Figs. 4 and 5 are vertical sections of modified forms of the exhauster. Fig. 6 is a side elevation of the device as represented in Fig. 5. Fig. 7 is a horizontal section of the form of Figs. 5 and 6 on line $x\,x$, Fig. 5; and Fig. 8 is a top view of the device as in Figs. 1, 2, and 4.

On a short section a of pipe, of preferably substantially rectangular cross-section, I arrange bow-strips, preferably of sheet metal, over the end by attaching a short strip b at one end to said pipe at c, one to each side, and springing the upper ends together above or beyond the ends of the pipe and fastening them at d in such condition that the bows project laterally from the upper end of the pipe a distance equal to about half the diameter of the pipe, more or less, and so that they are joined at a somewhat greater distance from the end, and I preferably rivet the ends of the strips forming the several bows all together at d, where the bows cross each other. The strips forming the bows b are preferably a little narrower than the sides of the pipe to which they are attached, as seen in Fig. 1, but they may be the same width. Besides these bows I provide an equal number of other shorter and narrower bows f between the bows b, as best seen in Fig. 8, which for their lower support are joined at their edges to the edges of the bows b, respectively, as shown at g, the lower ends terminating in the most outward position of the bows b and about where said bows begin to converge upon the pipe. These bows cross the end of the pipe and each other and are fastened together at m, similarly to the arrangement of bows b, at about midway between the pipe and said bows, as represented in Figs. 1, 2, and 5, in the most preferred arrangement; but they may be so modified as to be divided and so that the two parts do not quite reach together, as in Fig. 4. The effect will be about the same, and I mean to include this arrangement as well when I speak of these bows. I will also in some cases apply other bows h above the bows b, attaching the lower ends to the outer sides of bows f and causing them to bulge outward in somewhat larger measure than bows b do and to extend over them the same as they extend over bows f.

When the suction is upward, the smoke escapes from under bows f and out through the open spaces i, as indicated by arrows j, and when it is downward the escape is through openings k, as indicated by arrows l.

If the wind blows sidewise upon the device, it passes through openings i and k, producing suction on the pipe by passing through openings i, and is at the same time effectually prevented from entering the pipe by the bows b and f, as will clearly be understood by looking at Figs. 1 and 2. A downward gust is deflected by said bows b and f, as seen in Fig. 8, producing suction through openings i and k.

If made of separate strips of metal, the several strips will be so as to overlap and be riveted together at g; or they may be fastened thereat to a hoop or band; but the preferred way of constructing the device is to partly cut the several strips from a single sheet of metal, (represented by the diagram, Fig. 3,) which after being so cut may be bent into a circle and fastened by riveting the flaps m, lapped together. Then the lower ends of the strips b are riveted to the pipe at c, and the upper ends are bent together and fastened, as shown, except when it is preferred to have the open bows f, as in Fig. 4, in which case these strips will be cut shorter, as indicated by the dotted lines n in the diagram.

It will be seen that my improved exhauster and ventilator can be used in a horizontal pro-

jection from the side of a building, the effect of the wind from any direction on it in that position being to produce suction the same as when it stands upright.

While I have described and represented sheet metal as the material of which to construct my improved exhauster and ventilator, it is obvious that it may be molded in clay or cement in a plastic state and be burned or dried hard, and I propose to utilize such material when preferred.

I claim as my invention—

1. The combination, with the pipe *a*, of the bow-strips *b*, attached to the sides of said pipe a short distance from the end and extending over or around said end and bulging laterally therefrom, also the shorter bows *f*, intermediate to bows *b* and joined at their edges to the edges of said bows *b*, so as to form a continuous circle at the bulge of bows *b*, and extending over or around the end of the pipe between it and said bows *b*, substantially as described.

2. The combination, with the pipe *a*, of the bow-strips *b*, attached to the sides of said pipe a short distance from the end and extending over or around said end and bulging laterally therefrom, also the shorter bows *f*, intermediate to bows *b* and joined at their edges to the edges of said bows *b*, so as to form a continuous circle at the bulge of bows *b*, and extending over or around the end of the pipe between it and said bows *b*, and also the bows *h*, attached to bows *j* and extending over or around the end of the pipe exterior to bows *b*, substantially as described.

3. The combination, with the pipe *a*, of the sheet-metal bow-strips *b*, attached to the sides of the pipe a short distance from the end and extending over or around said end and bulging laterally therefrom, also the shorter bows *f*, intermediate to bows *b* and joined at their edges to the edges of bows *b*, so as to form a continuous circle at the bulge of the bows *b*, and extending over or around the end of the pipe between it and said bows *b*, said bows *b* and *f* being integral parts of a single sheet of metal, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 5th day of December, 1890.

JOSHUA BARNES.

Witnesses:
W. J. MORGAN,
W. B. EARLL.