H. T. MATTERN.

NOZZLE FOR VACUUM CLEANING APPARATUS.

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1,182,028. Patented May 9, 1916.

Fig. I.

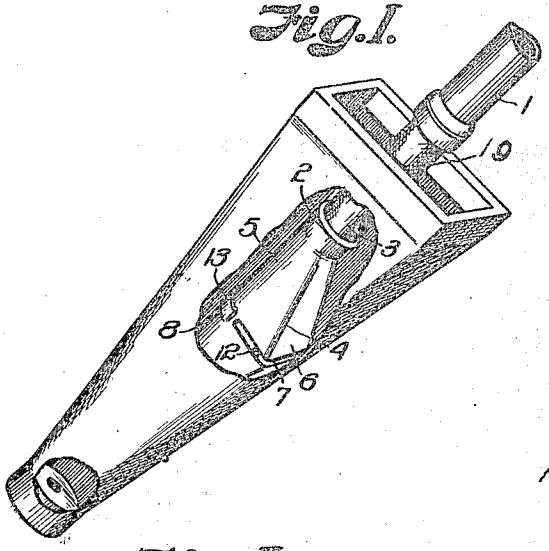


Fig. II.

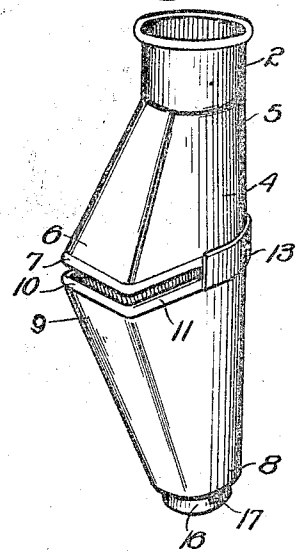
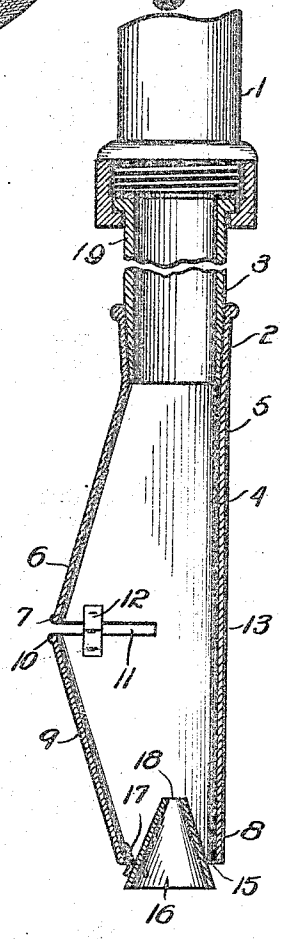


Fig. III.



WITNESSES:

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NOZZLE FOR VACUUM CLEANING APPARATUS.

1,182,028. Specification of Letters Patent. Patented May 9, 1916.

Application filed April 15, 1915. Serial No. 21,525.

To all whom it may concern:

Be it known that I, HERMAN T. MATTERN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Nozzles for Vacuum Cleaning Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to a nozzle for vacuum cleaning apparatus, and more particularly to a nozzle for use in cleaning closed objects, such as the stocking of an ordinary dust separator of the type commonly used in flour mills; the principal object of the invention being to provide a nozzle having a laterally opening mouth and means for impelling matter admitted through the mouth in the direction of the dust receiver of the cleaning apparatus. In accomplishing this object I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:—

Figure I is a perspective view of a nozzle containing my improvements, illustrating the use of the nozzle in cleaning a dust separator stocking. Fig. II is an enlarged detail perspective of the nozzle. Fig. III is a longitudinal section of the same.

Referring more in detail to the parts:— The nozzle is adapted for connection with a suitable vacuum producer (not shown) by the usual hose 1, and comprises a circular neck 2 to which the hose is applied preferably by the usual friction coupling 3. At the inner end of the neck 2 the body of the nozzle continues as a body 4, one side of which is curved as at 5 to the same contour as the neck 2, while the opposite side is flared to form a single wedge-shaped structure having a flat outer face 6 and a beaded mouth edge 7.

The curved portion of the body is extended beyond the mouth edge 7 to form an integral neck; the extended portion of which comprises a curved side 8 along the same lines as the side 5 of the inner section and a flat flaring outer face 9 that terminates in a mouth edge 10 adjacent the edge of the said inner section; the mouth edges of the inner and outer sections being spaced to form a slotted mouth 11 that extends entirely across the width of the body at the ridge of the wedge-shaped outer faces of the inner and outer sections and along the sides thereof to a point beyond the longitudinal center of the body, so that the mouth is constantly open at the outer edge throughout more than one-half of the width of the body.

In order to brace the ridge portion of the nozzle I preferably connect the mouth edges of the opposite sections by straps 12 which may be soldered or welded to the inner faces of said sections, and I also preferably reinforce the curved side opposite the mouth by a strap, or the like, 13. The outer end of the nozzle terminates in a circular port 15, of substantially the same cross-sectional area as the neck 2, and seated in said mouth is an injector cone 16 that is secured to the body of the nozzle preferably by straps 17; the cone being arranged concentrically, so that the contracted inner end 18 is concentric with the neck channel and inset from the mouth 15, while the outer end of the cone is located a short distance beyond the end of the nozzle body.

In using my improved nozzle for cleaning objects such as the stocking of a dust separator, the end of the stocking is exposed and the nozzle projected thereinto, so that when vacuum is applied through the hose 1 suction within the nozzle draws dust-laden air through the nozzle mouth and through the hose; the force of the suction, when a proper producer is used, being sufficient to draw the air through the stocking material and remove the particles of dust which have lodged therein so that they may pass into the nozzle and be conducted to the dust receiver.

While the dust laden air is being drawn through the nozzle mouth, it also enters through the cone 16, and through the restricted orifice 18, so that should the mouth 11 lie against a surface that is sufficiently dust packed to restrict flow of air into said mouth, air entering through the cone and orifice and being drawn across the mouth toward the receiver will serve to suck dust through the mouth 11 into the nozzle, the air that is drawn into the nozzle through the annular orifice or mouth 15 at the outer

end of the nozzle serving also for cleaning parts of the stocking that are not accessible to the slotted mouth.

In order to better adapt the nozzle for use in cleaning objects like the dust collector stocking, I use an elongated connection 19, having the friction coupling 3 formed integrally therewith, and swivel this connection onto the hose 1, so that the nozzle may be held by grasping the connection and turned freely on the swivel.

By extending the side portions of the nozzle mouth over more than one-half of the width of the nozzle, the latter is adapted for cleaning the stocking, or other object, at one projection and withdrawal thereof into and from the stocking, as the nozzle may be projected into the stocking so that the mouth comes into operative proximity to one edge and more than one-half of the width of two sides of the stocking, as during the inward travel and when the nozzle is turned and drawn outwardly into the same operative proximity of the other edge and remaining area of the sides.

It is apparent that while I have described the operation of the nozzle for cleaning dust separator stockings, such description has been merely for illustration as the nozzle is not limited to use for this particular purpose although especially adapted therefor.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters-Patent, is:—

1. In a nozzle, a body member, comprising side walls and an edge flared from opposite ends to a ridge, and having a mouth extending across the ridge and into the adjacent side walls.

2. In a nozzle, a body member comprising side walls and an edge flared outwardly and spaced to form an intake mouth; the intake mouth continuing from said edge into the side walls and beyond the longitudinal center of the latter.

3. In a nozzle, a body member comprising side walls and a curved edge, and an edge inclined from opposite ends and spaced to form an intake mouth and with the intake mouth extending into the side walls to points beyond the longitudinal center of the body.

4. A nozzle having a free outer end and having a side wall inclined toward an intermediate position, and having a transverse slot at the ridge of said wall, and an injector cone located at the open end of the nozzle and spaced therefrom to form an annular orifice.

5. A nozzle having an open outer end and having a transverse slot at its intermediate position, and a cone located in the open outer end of the nozzle and spaced therefrom to form an annular orifice, the base of the cone being projected beyond the end of the nozzle and the point of the cone extending into the interior thereof substantially as set forth.

In testimony whereof I affix my signature in presence of a witness.

HERMAN T. MATTERN.

Witness:
E. B. Reese.