E. E. OVERHOLT.

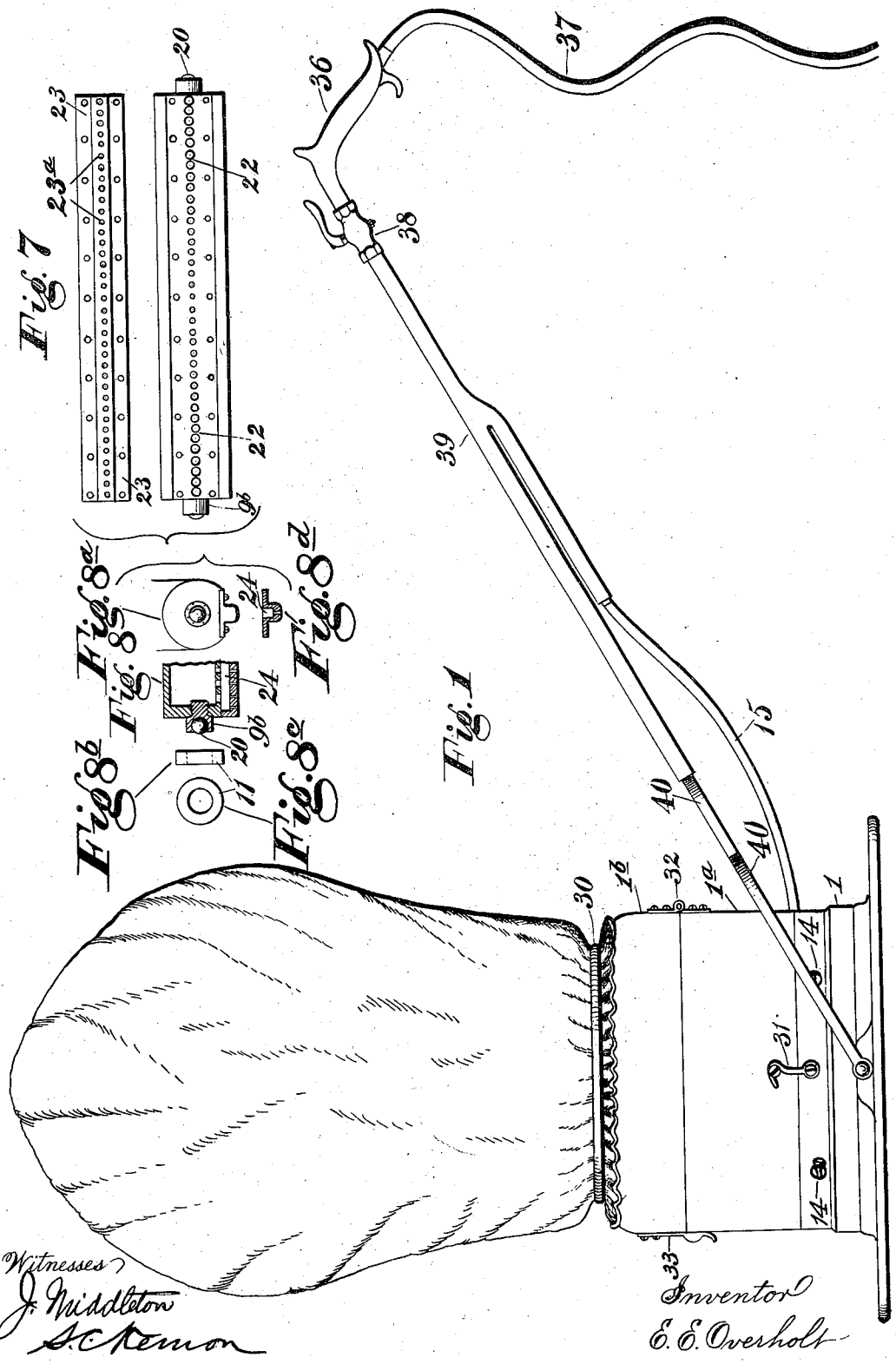
PNEUMATIC CARPET CLEANER.

APPLICATION FILED JAN. 30, 1906.

1,136,434.

Patented Apr. 20, 1915.

3 SHEETS—SHEET 1.



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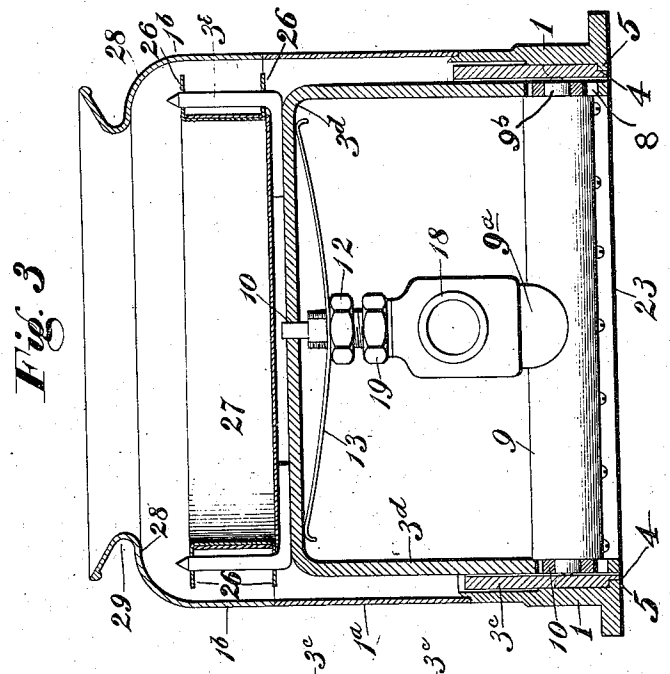


Fig. 3

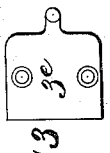


Fig. 13

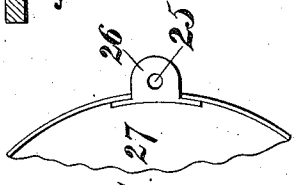


Fig. 11

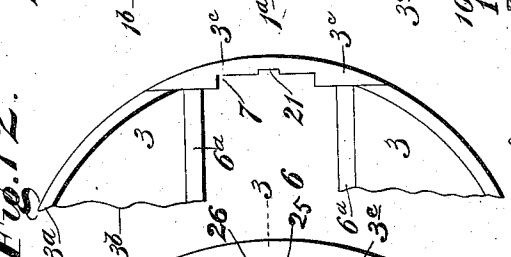


Fig. 12

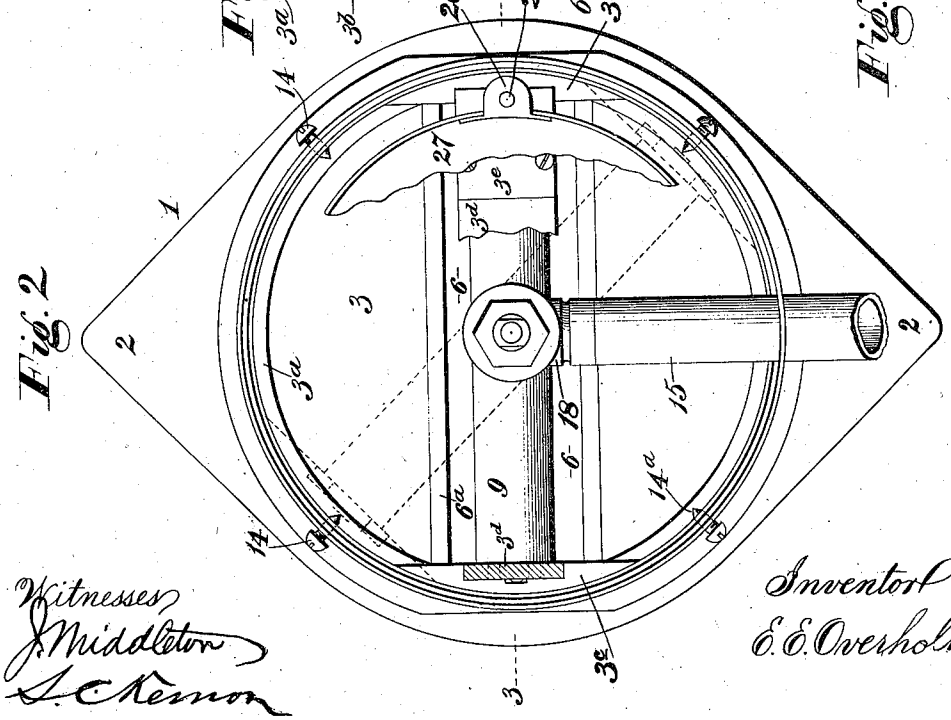


Fig. 2

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3 SHEETS—SHEET 3.

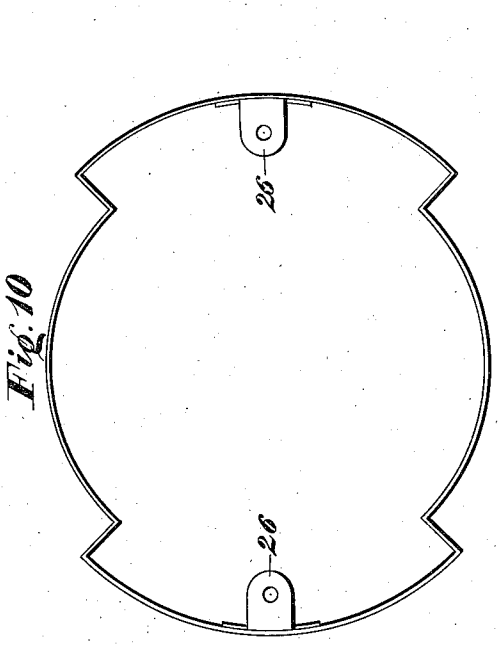


Fig. 10



Fig. 6

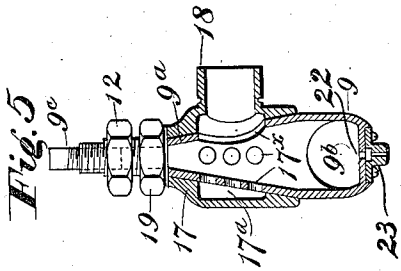


Fig. 5

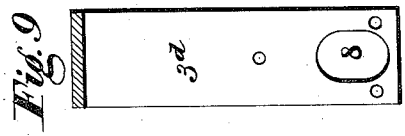
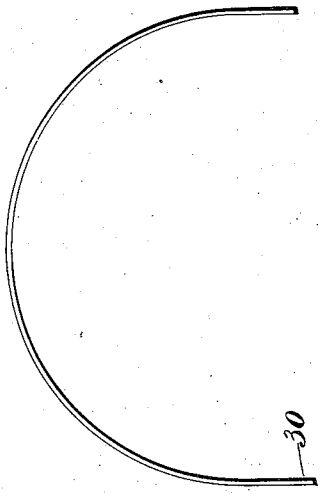


Fig. 9



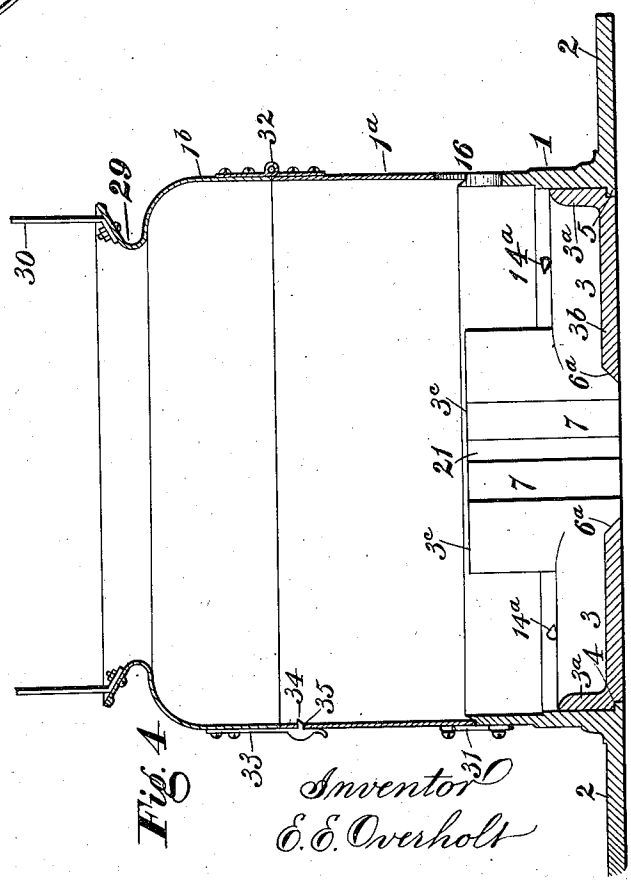


Fig. 4

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UNITED STATES PATENT OFFICE.

EDWIN E. OVERHOLT, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO MODERN COMPRESSED AIR CLEANING CO., A CORPORATION OF THE DISTRICT OF COLUMBIA.

PNEUMATIC CARPET-CLEANER.

1,136,434. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed January 30, 1906. Serial No. 298,617.

To all whom it may concern:

Be it known that I, EDWIN E. OVERHOLT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Pneumatic Carpet-Cleaners, of which the following is a specification.

My invention relates to that class of carpet cleaners which delivers a blast of compressed fluid directly into the fabric to be cleaned, as in the case of my Patent No. 799575, certain features of which are embodied in my present construction.

One object of my invention is to provide means whereby the same nozzle may be made to traverse, at each stroke of the machine, a broader or a narrower strip of carpet, as the operator shall choose; which arrangement enables me to concentrate the entire force of the blast from the nozzle upon as narrow a strip as may be desired, when operating upon a very dirty or a very heavy carpet.

Another object is to provide means whereby the machine when used on a carpet that is not stretched or fully straightened out on the floor, will smooth the wrinkles out of that portion of the carpet upon which it is operating, and will not ride up over them.

A further object is to provide means for readily deflecting the dust inward as it falls down from the sides of the hood, and causing it to deposit in the dust receptacle located in the dust chamber without the necessity of valves for preventing a portion thereof from falling back upon the carpet.

Generally speaking, the first of these objects is attained by providing my sweeper with an elongated horizontal nozzle designed to be normally disposed at right angles to the line of travel of the machine when at work, but adapted to be rotated endwise to occupy a position at any desired angle to said line of travel. The second object is attained by tapering the bottom of the machine in the direction of said line of travel. And the last object is attained by providing an inclined ledge extending inwardly over a space between the casing and a dust receptacle located therein, said ledge extending inwardly sufficiently to also overhang the sides of the dust receptacle.

The invention consists in certain novel features and parts, and combinations of the same, as will be particularly described in the appended specification, pointed out in the claims, and illustrated in the accompanying drawings, which form a part of this application, and in which;

Figure 1 is an elevation of my invention complete; Fig. 2 is a top plan view thereof, with the handle and also the hood and upper portion of the casing removed; certain parts being broken away, and one side of the yoke of the revoluble frame being shown in section; Fig. 3 is a vertical section of the casing and revoluble frame, the section being taken on the line 3—3 of Fig. 1; Fig. 4 is a vertical longitudinal section of the casing, and the circular portion of the revoluble frame; Fig. 5 is a vertical section of the rotatable nozzle connection; Fig. 6 is a plan view showing the top of the rotatable nozzle connection illustrated in Fig. 5; Fig. 7 shows a bottom plan of the nozzle with the wear-plate removed to one side; Fig. 8 shows a longitudinal section of one end of the nozzle and wear-plate, and discloses the friction roller at the extreme end of the nozzle. Fig. 8^a is an end elevation of the same. Fig. 8^b is a side elevation of the friction roller employed at the end of the nozzle. Fig. 8^c is a face elevation of said roller. Fig. 8^d is a transverse section of the wear plate. Fig. 9 shows the inner face of one side of the yoke 3^d of the rotatable frame; Fig. 10 shows one form of dust pan employed with my device; Fig. 11 is a fragmentary view of the circular dust pan, also shown in section in Fig. 3; Fig. 12 is a fragmentary view of the lower portion of the rotatable frame, which is shown in section in Fig. 4; while Fig. 13 is a top plan view of one of the angles employed to hold the dust receptacle in position, said angles being illustrated in side elevation in Fig. 3.

Referring to the drawings; the numeral 1 indicates the base section of the casing; 1^a the cylindrical extension or middle portion thereof; and 1^b the hood-band or top portion.

The casing is preferably approximately cylindrical in form, and the lower section 1 has the outwardly extending bottom plate 2, which tapers to rounded points at the front and rear sides of the machine. When

the machine is at work on loosely laid carpets, the apexes of these tapered portions first engage the wrinkles and break them, as it were, at the point of engagement, and then smooth them out to right and left as the machine advances upon them.

Within the section 1 is the rotatable frame 3, having the upwardly extending circular flange 3^a; the bottom 3^b; the upwardly extending ears 3^c diametrically opposite each other, and preferably integral with the flanges 3^a; the yoke 3^d; and the angles 3^e, all suitably connected together as will be hereinafter described.

The bottom of the frame 3 is provided at its lower outer edge or corner with an annular groove 4 which coöperates with a corresponding inwardly extending flange 5 of the bottom section 1 of the casing, to hold the rotatable frame against downward movement in said section of the casing, while the bottom of the rotatable frame is in the same plane with the bottom of the casing and forms therewith a single continuous bottom for the machine. The bottom 3^b of the rotatable frame has a diametrical opening 6 extending from one to the other of its ears 3^c, and provided with inclined side walls 6^a. The ears 3^c are provided with vertical grooves 7 into which are snugly received, and secured by screws or otherwise, the side members of the yoke 3^d, which members are provided near their lower ends with the elongated openings 8 into which the reduced ends 9^b of the nozzle 9 are received. By this arrangement the nozzle is held in the diametrical opening 6 in the bottom of the rotatable frame 3. This nozzle has an upwardly extending section 9^a terminating at its upper end in a reduced section 9^c which is freely received into a coöperating opening 10 in the top section of the yoke 3^d to move longitudinally therein as the nozzle moves upwardly and downwardly in the slots 8 near the lower ends of the yoke. To reduce the friction occasioned by lateral strain upon the nozzle, its reduced ends 9^b are provided with rollers 11 which are of a suitable size to be snugly received into the elongated openings 8 of the yoke.

The vertical section 9^a of the nozzle is provided near its top with a nut 12, and between this nut and the top section of the staple is interposed the spring 13. (See Fig. 3). When this nut is moved upwardly or downwardly, more or less of the weight of the device will be imposed upon the nozzle to continuously press it downwardly, and thereby imparting to it a strong tendency to project below the lower face of the machine into the pile of the carpet beneath. But since the advantages of this weighted or loaded nozzle are fully set forth in my Patent No. 799,575 already referred to that feature need not be further referred to here.

From the construction thus far described and illustrated it will be seen that the revolving frame 3 carrying the nozzle 9, may be rotated to bring the nozzle to any desired position. In Fig. 2 the dotted lines indicate the nozzle as occupying a position of 45 degrees to the line of travel of the machine when at work; and it will be readily understood that when the nozzle is disposed at this angle a narrower strip of carpet will be traversed by it at each stroke of the machine, than when it is in the position indicated, in the same figure in full lines, and that the greater the angle of inclination of the nozzle the narrower will be the portion of carpet traversed by it at each stroke as the machine is moved back and forth. Hence it will be seen that I have provided means whereby the blast from the nozzle may be delivered upon a strip of carpet equal in width to the length of the nozzle, or may be concentrated upon a strip as much narrower than that as the operator shall choose. By this arrangement the same machine which is used for cleaning light and thin carpets may be adjusted to adapt it equally well for use on very heavy and very dirty carpets.

The rotatable frame is locked in any desired position by the screws 14 (see Fig. 2) which are threaded through the walls of the lower section 1 of the casing, and are provided with tapered points 14^a which engage the top edge of the annular flange 3^a of the rotatable frame.

Air is admitted to the nozzle through a flexible tube 15 which passes through a suitable opening 16 in the casing (Figs. 2 and 4); and in order that this tube may not be strained when the nozzle is shifted to different positions, I provide a jointed connection for the nozzle and tube as illustrated in Fig. 5, from which figure it will be seen that the vertical section 9^a extending upwardly from the center of the nozzle is tapered and hollow and has internal communication with the nozzle. Fitted on the outer tapered face of the tubular section 9^a, and adapted for rotation thereon, is the outer casing 17, having air-tight connection at its upper and lower ends with said face, and provided at its center with an annular chamber 17^a. Communicating with this chamber is the short tube or nipple 18 to which the flexible tube 15 is connected.

The tubular section 9^a is provided with a number of openings 17^x in its portion surrounded by the annular chamber 17^a of the outer casing 17, by which arrangement the nozzle may be shifted to any position desired without changing the position of the flexible tube 15 and the outer casing 17 relatively to each other, since the tubular section 9^a simply revolves in said outer casing 17. It is furthermore apparent that whatever the po-

sition of the nozzle, air will be admitted freely from the chamber 17^a downward into the nozzle. The outer casing 17 is held in air-tight engagement with the section 9^a by means of the nut 19.

When the nozzle of the machine is working in an inclined position, there will be a certain amount of longitudinal strain imposed upon it, and to prevent this from causing appreciable friction at the ends of the nozzle I mount in the reduced ends 9^b thereof the friction balls 20; and to make room for these balls to project slightly from said ends I provide the shallow grooves 21 in the rear walls of the grooves 7 in the ears 3^c of the revolving frame.

The nozzle is provided with a primary outlet for air which consists of a series of holes 22 extending longitudinally in the lower wall thereof (see Fig. 7). The nozzle is further provided with a wear-plate 23 which also has an outlet consisting of a series of holes 23^a (preferably all the same size) extending longitudinally thereof. Between the air outlet in the nozzle and that in the wear-plate is an intervening chamber here shown in Fig. 8 as formed by the groove 24 in the wear-plate.

To prevent the air from being delivered with greater force at the center of the wear-plate than at its ends, the primary outlet 22 of the nozzle is made to increase in area as its distance increases from the point at which air is admitted. By this means air is delivered more freely to the chamber 24 at those parts therein where there would naturally be less pressure, and hence the pressure of the escaping current is equalized in the chamber 24, and this causes air to pass with equal force from all points in the outlet of the wear-plate. The wear-plate is secured to the nozzle by screws or in any other desired manner.

The angles 3^e are suitably secured by screws or otherwise to the top of the yoke 3^d of the revolving frame, and their upwardly extending pins (see Fig. 3) are adapted to be received into openings 25 in the ears 26 of the dust pan 27, by which means the pan is held in position on top of the revoluble frame.

The dust pan is spaced from the walls of the casing either throughout the whole or a part of its circumference to leave ample room for the upward passage of dust-laden air into the hood. The ledge 28 of the hood band 1^b at the top of the casing, overhangs the space just referred to, and projects inward slightly over the outer periphery of the dust pan, so that all the dust falling down from the sides of the hood onto said ledge will be deflected into the pan. This arrangement while dispensing with the necessity of valves for preventing dust from falling back from the hood onto the carpet, also prevents any dust from settling in the casing till it has reached the dust receptacle.

The top of the hood band is flared outwardly and upwardly to cause it to bear against the sides of the hood, so that it will readily catch all dust falling down therefrom, and direct the same into the dust pan. The annular external groove or depression 29 at the base of this flared portion, forms admirable means for engaging the hood to secure the same to the hood band 1^b. A cord or elastic band 30 may be employed for this purpose. The top of the hood may be held up in position by well known means not herein illustrated, or if desired may be supported by means of the loop 30, upon the hood band as illustrated in Fig. 4.

The central section 1^a of the casing may be secured to the base section 1 in any desired manner as for instance by the hooks 31 illustrated in Figs. 1 and 4. The object of this construction is to give easy access to the internal parts of the machine.

The hood band 1^b is secured to the section 1^a of the casing by the hinge 32, located preferably at the rear side of the casing, and by the spring catch 33 at the front side thereof. This spring catch has a hook or projection 34 which takes into a coöperating opening 35 in the section 1^a. When the spring catch is disengaged from the section 1^a, the hood band may be swung back upon its hinge to give ready access to the dust pan when it is desired to remove the same.

The form of dust pan illustrated in Fig. 10 extends outwardly to the casing throughout a part of its circumference; but in order to provide space between the pan and casing for the easy upward escape of dust-laden air into the hood, the pan is reduced in diameter at its front and rear sides, at which points—due to the relative position of the nozzle—the air can most easily escape. And since the pan is carried around with the revoluble frame, the relative position of these open spaces to the nozzle is never changed. The top of the nozzle stem 9^a is slightly flattened on opposite sides as shown in Fig. 6, to prevent the spring 13 from turning thereupon.

The hand grip 36 of my device is hollow, and the air hose 37 is connected to the lower end thereof. Air is admitted through this grip 36, and the valve 38, into the bifurcated handle 39, and on through the lower branch of said handle—which is tubular—into the flexible tube 15, and from there to the nozzle as already described. The upper branch of the bifurcated handle is closed to prevent the passage of air therethrough. This branch has at its lower end a forked section 40 of usual construction, which engages the base section of the casing. Slight flattened surfaces are provided on the casing at the points of engagement. It will be understood that the handle of my machine may be

connected thereto to extend therefrom in alinement with the plane of any diameter whatever of the casing.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In pneumatic carpet cleaners, a casing having a dust chamber therein, and an elongated nozzle adapted to move up and down within said dust chamber, and means for adjusting the nozzle angularly relative to its line of travel.

2. In pneumatic carpet cleaners, the combination with a cylindrical casing, of a frame forming an internal collar rotatable therein; and a nozzle carried inside said collar and disposed diametrically of the same.

3. In pneumatic carpet cleaners, the combination with a casing having a bottom elongated in the direction of the line of travel of the machine; of a transverse nozzle adjustable angularly relative to the longitudinal extent of said bottom.

4. In pneumatic carpet cleaners, the combination with a casing forming a dust chamber and having a nozzle movable with respect to said dust chamber, of an air pipe passing through said casing and communicating with said nozzle, and an adjustable connection between said nozzle and air pipe, said connection being inside the dust chamber.

5. In pneumatic carpet cleaners, an elongated nozzle having an inlet for compressed fluid and a series of primary outlets longitudinally arranged, said outlets increasing in area as their distances from the inlet increase, and a wear-plate for the nozzle, said plate having a series of longitudinally disposed final outlets for the compressed fluid, and said primary and final outlets having a chamber interposed between them.

6. In pneumatic carpet cleaners, a casing having an outlet for the escape of dust-laden air, means for extracting the dust from a carpet, and a dust receptacle located between said means and said outlet and spaced from the sides of the casing to afford space for the escape of dust-laden air past the dust receptacle, the upper part of said casing being formed first into an upwardly and inwardly extending ledge overarching said space and then extending upwardly and outwardly above said overarching ledge to provide a flared top for the casing to guide the falling dust into the dust receptacle and to form a peripheral groove on the outside of the casing for the reception of the lower end of the dust bag.

7. In pneumatic carpet cleaners, the combination with a casing forming a dust chamber, of a frame mounted within said casing to rotate therein; a nozzle carried by said frame to rotate therewith; an air pipe extending inwardly through the casing to the nozzle; and a connection between said air pipe and nozzle, said connection being rotatably adjustable, whereby to adapt the nozzle to connect with the air pipe at any angle desired.

8. In pneumatic carpet cleaners, the combination with an open-bottomed casing forming a dust chamber and adapted to rest upon the carpet, of a frame located within said chamber and movable relatively thereto for angular adjustment; and a nozzle carried by said frame, at the bottom of the dust chamber, in engagement with the carpet, and movable relatively to the frame.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN E. OVERHOLT.

Witnesses:
J. MIDDLETON,
SOLON C. KEMON.