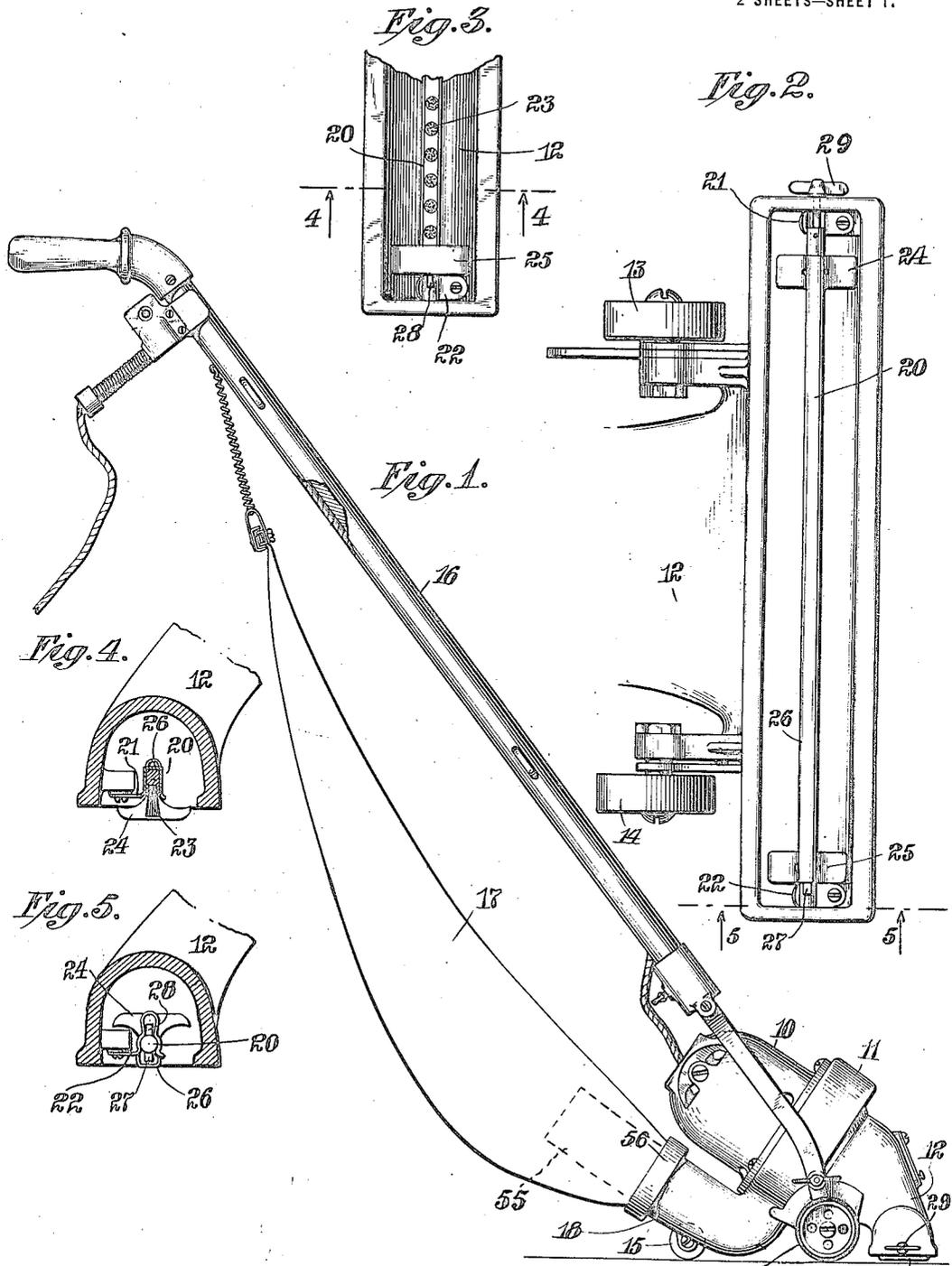


W. W. ROSENFELD,
 SUCTION CLEANER.
 APPLICATION FILED MAY 24, 1915.

1,348,582.

Patented Aug. 3, 1920.
 2 SHEETS—SHEET 1.



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Inventor: *William W. Rosenfeld*
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Fig. 6.

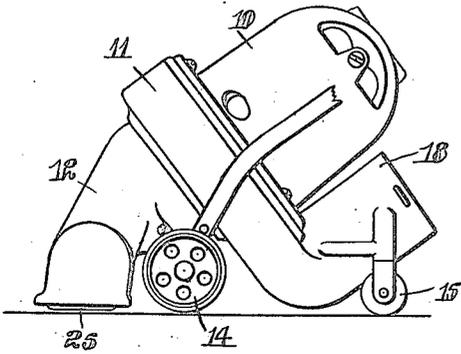
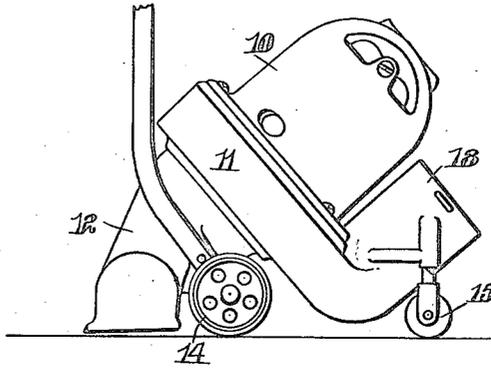


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM W. ROSENFELD, OF NEW YORK, N. Y., ASSIGNOR TO ELECTRIC VACUUM
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SUCTION-CLEANER.

1,348,582.

Specification of Letters Patent.

Patented Aug. 3, 1920.

Application filed May 24, 1915. Serial No. 29,968.

To all whom it may concern:

Be it known that I, WILLIAM W. ROSENFELD, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Suction-Cleaners, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in suction cleaners, and more especially to suction cleaner nozzles.

The object of the invention is to provide a suction cleaning nozzle which shall be adapted to operate efficiently both in picking up threads, fibers and similar articles or materials which tend to adhere to the surface being cleaned, and also for cleaning by the suction of air through, and extraction of dust and dirt from; the pile or body of the carpet or other fabric to be cleaned.

A full understanding of the invention can best be given by a detail description of an illustrative embodiment of the same in the form now considered best, and such a description will now be given in connection with the accompanying drawings illustrating such an embodiment of the invention, and in which;

Figure 1 is a side view in elevation of a self-contained suction cleaner embodying the various features of the invention;

Fig. 2 is an enlarged bottom plan view of the nozzle and adjacent portions of the machine;

Fig. 3 is a broken bottom plan view of one end of the nozzle on the scale of Fig. 2 but showing the nozzle brush and one of the runners in operative position;

Fig. 4 is a sectional view of the nozzle taken on line 4—4 of Fig. 3;

Fig. 5 is a similar view taken on line 5—5 of Fig. 2;

Fig. 6 is a side view in elevation of the body of the cleaner showing the opposite side from that shown in Fig. 1;

Fig. 7 is a view similar to Fig. 6 but showing the adjustable running wheel adjusted to throw the nozzle nearer the floor and the nozzle brush and runners being turned up out of operative position.

Referring to the drawings, the suction cleaner shown has a body formed by a motor casing 10 within which an electric motor is

mounted, fan casing 11 containing a centrifugal fan connected directly with and driven by the motor, and a nozzle 12 extending downward from the front of the fan casing. The nozzle is as usual extended transversely at the bottom to provide a comparatively long and narrow suction inlet opening or mouth between the lips of the nozzle. The body is mounted on a pair of running wheels 13 and 14 located adjacent and to the rear of the nozzle and a small rear wheel 15. The cleaner is operated by a pivoted handle rod 16 and is provided with a porous dirt receptacle or bag 17 connected at its lower end to the discharge throat or conduit 18 extending backward from the lower portion of the fan casing, the upper end of the bag being supported by a connection to the upper end of the handle rod.

The running wheels are positioned to support the nozzle slightly above the normal plane of the surface to be cleaned, and the running wheel 15 may be adjustable for the purpose of raising or lowering the nozzle. For this purpose the rear wheel 15 may be adjustable to predetermined upper and lower positions as described in my Patent No. 1,300,196, dated April 8, 1919.

It is desirable that a suction cleaning nozzle of a self-contained suction cleaner or other suction cleaning nozzle shall be adapted to pick up from a carpet or other surface being cleaned, thread, lint, hair, or other loose fibrous material, and for this purpose the nozzle should be provided with a suitable thread-disturbing device. In order to be efficient for this purpose, however, the nozzle must in addition to being provided with a thread-disturbing device be formed or provided with means to cause a current of air to pass over and against the surface of the carpet to pick up the threads, etc., which have been loosened from the carpet or disturbed by the disturbing device. For thorough cleaning of the carpet and extraction of its contained dust, however, it is desirable that the nozzle shall operate without causing such surface cleaning current of air, but so as to cause substantially all of the sucked-in air to pass through the body of the carpet, and for this purpose, it is desirable, therefore, that the nozzle positioned slightly above the normal plane of the surface of the carpet shall not be hindered from drawing the carpet up slightly

away from the floor and against its lips so that nearly all the air entering the nozzle shall pass completely through the portion of the carpet beneath the inlet opening or mouth of the nozzle, and that what portion of air enters by passing directly beneath the nozzle lips shall also be caused to pass through the body of the carpet. The present invention provides a suction cleaning nozzle which meets the above conditions and requirements, a nozzle made in accordance with the invention being provided with means whereby threads, etc. will be disturbed and the necessary surface cleaning air current secured, and such means being adjustable into operative or inoperative positions so as to avoid interference with the regular suction or vacuum cleaning operation of the nozzle.

As shown in the drawings (see especially Figs. 1 to 5), the nozzle has mounted within its mouth a rod or bar 20 mounted to turn in spring bearings 21 and 22 at the ends of the nozzle. The bar 20 has extending from one side thereof means forming a thread-disturbing rib or brush 23 which, when the bar is turned in one position, projects slightly beyond the plane of the nozzle lips. The rib should be of a suitable character to frictionally engage and exert the necessary pull or drag on the threads, etc., with which the rib comes in contact, and might for this purpose be made of suitable soft rubber or rough felt but is most desirably formed by a row of tufts of suitable bristles providing a long narrow brush as shown in the drawings. The brush or disturbing rib thus provided may be of sufficient stiffness and extend a suitable distance beyond the plane of the nozzle lips to hold the carpet sufficiently away from the nozzle lips to secure the desired surface cleaning current of air inward beneath the nozzle lips and past the surface of the carpet when the cleaner is in operation. But it is not found desirable to depend upon the disturbing rib for holding the carpet away from the nozzle because of the otherwise unnecessary pressure of the disturbing rib on the carpet which then results and which causes difficulty in operation of the cleaner and is liable to injure the surface of the carpet. Such arrangement is especially objectionable with a comparatively wide nozzle such as shown. I therefore provide means other than the disturbing rib for holding the carpet away from the nozzle lips, and for this purpose I find it best to provide one or more runners to extend slightly below the plane of the nozzle lips when the disturbing rib or brush is in operative position. These runners, of which two are shown in the drawing and marked 24 and 25, are best mounted on the bar 20 at the ends of the brush so that when the bar

is turned to bring the brush into operative position, as shown in Figs. 3 and 4, the runners will also be in operative position with their running faces lying below the plane of the nozzle lips and about in or slightly below the plane of the engaging face of the brush. These runners serve, as will be evident from Figs. 1 to 4, to hold the carpet adjacent thereto slightly away from the nozzle lips and so provide draft passages or spaces beneath the nozzle lips for the passage of the desired surface cleaning current of air. In order to secure such surface cleaning current of air throughout the whole length of the nozzle, additional runners might be provided between the two shown, but the use of two end runners as shown is found to give good practical results and is desirable for simplicity of construction. The runners are most desirably made flat and of a length at least equal to nearly the width of the nozzle slot. When mounted as shown, on the rod 20, their length is limited by the necessity of their being turned upward within the nozzle. If otherwise mounted the runners might of course be longer. Such long runners, of about the relative length shown or longer, in addition to securing the desired surface cleaning current of air, also avoid excessive pressure of the carpet against the brush and nozzle and so insure easier running of the cleaner.

The opposite side of the bar 20 from that which carries the brush is formed to provide a smooth and, most desirably, metal surfaced rib 26 which when the bar is turned to the position shown in Figs. 2 and 5 lies about in the plane of the nozzle lips. This bar serves a useful function in preventing the carpet from being drawn up by the suction somewhat into the nozzle and so decreases friction between the nozzle and the carpet and insures an easier running cleaner. The bar is mounted in its bearings 21 and 22 so that it may be moved slightly endwise therein, and at one end is provided with two oppositely extending lugs 27 and 28; one or the other of which extends into a spring pocket formed as shown in Fig. 5 in the bearing spring 22 when the bar is moved endwise toward the end of the nozzle at which the bearing spring 22 is located, that is, when the bar is in its normal endwise position as shown in Fig. 2. By endwise movement of the bar toward the other end of the nozzle, the lug 27 or 28 will be drawn out of the pocket in the bearing spring so as to permit the bar to be turned to the position in which the brush is in its operative position as shown in Figs. 3 and 4, or in which the brush is in its inoperative position and the smooth face of the bar lies in the plane of the nozzle lips as in Figs. 2 and 5. When turned to either of these positions the bar by the slight

endwise movement to carry the lug 27 or 28 into the pocket of the bearing spring 22 will be locked against turning. The bar may be manipulated by taking hold of it directly or may be provided with a suitable finger piece such as the finger piece 29 carried by a pin which passes through an opening in the end of the nozzle and extends into and is secured in the end of the bar 20. By pulling out on the finger piece the bar 20 will be shifted endwise to the position in which it may be turned and then when it has been turned to the desired position it will be moved back and locked against turning by simply pushing inward on the finger piece. The finger piece pin should be detachably secured in the end of the bar 20 so that it may be removed to permit the bar to be removed from the nozzle, such removal of the bar being effected by simply pulling it out of its spring bearings.

When used with the brush and runners 24 and 25 in operative position, the cleaner will usually be used with the running wheel 15 adjusted to position the nozzle in its uppermost position or position farthest away from the normal plane of the surface of the carpet as shown by Fig. 6; but for thin carpets or floor coverings it may sometimes be desirable to have the cleaner adjusted to bring the nozzle into its lower position when using the brush. When the brush is turned up to its inoperative position, the cleaner will usually be used with the nozzle in its upper position for thick carpets, and its lower position for thin carpets or for cleaning uncarpeted or uncovered surfaces, as shown by Fig. 7.

It is to be understood that the invention is not to be limited to the exact construction, arrangement and combinations of parts shown and to which the foregoing description has been largely confined, but that it includes changes and modifications thereof within the claims, and that parts of the apparatus claimed may be used in combination with other parts differing from those shown or in cleaners of other types and construction.

What is claimed is—

1. The combination with a suction cleaning nozzle, of a thread-disturbing member mounted within the mouth of the nozzle, means for supporting said member for adjustment into and out of operative position without detachment of said member and for holding said member in operative or inoperative position, said member projecting slightly beyond the plane of the nozzle lips when in operative position, and means for holding the carpet away from the nozzle lips mounted to move into and out of operative position with the thread-disturbing member.

2. The combination with a suction cleaning nozzle, of a thread-disturbing member

mounted within the mouth of the nozzle and adjustable into and out of operative position, said member projecting slightly beyond the plane of the nozzle lips when in operative position, and means for holding the carpet away from the nozzle lips mounted to move into and out of operative position with the thread-disturbing member.

3. The combination with a suction cleaning nozzle, of a thread-disturbing brush adjustable into and out of operative position within the mouth of the nozzle and projecting slightly beyond the plane of the nozzle lips when in operative position, means movable into and out of operative position for holding the carpet away from the nozzle lips when the brush is in operative position, and a smooth surfaced rib mounted within the mouth of the nozzle and arranged to extend substantially in the plane of the nozzle lips when the brush is in its inoperative position.

4. The combination with a suction cleaning nozzle, of a thread-disturbing member adjustable into and out of operative position within the mouth of the nozzle and projecting slightly beyond the plane of the nozzle lips when in operative position, and a smooth surfaced rib mounted within the mouth of the nozzle and arranged to extend substantially in the plane of the nozzle lips when the thread-disturbing member is in its inoperative position.

5. The combination with a suction cleaning nozzle, of a bar mounted within the mouth of the nozzle and supported by means formed to hold the bar normally stationary and to permit a turning adjustment of the bar, and thread-disturbing means extending from one side of the bar and adapted to project slightly beyond the plane of the nozzle lips when the bar is in one position and to be retracted within the nozzle mouth out of operative position when the bar is turned to another position.

6. The combination with a suction cleaning nozzle, of a bar mounted within the mouth of the nozzle and supported by means permitting a turning adjustment of the bar, and thread-disturbing means extending from one side of the bar and adapted to project slightly beyond the plane of the nozzle lips when the bar is in one position and to be retracted within the nozzle mouth when the bar is turned to another position, a smooth side of the bar lying substantially in the plane of the nozzle lips when the bar is turned to bring the disturbing means into inoperative position.

7. The combination with a suction cleaning nozzle, of a bar mounted within the mouth of the nozzle and supported by means permitting a turning adjustment of the bar, thread-disturbing means fast on and extending from one side of the bar and adapted to project slightly beyond the plane of the

nozzle lips when the bar is in one position and to be retracted within the nozzle mouth out of operative position when the bar is turned to another position, and means outside the end of the nozzle for turning said bar.

8. The combination with a suction cleaning nozzle, of a bar mounted within the mouth of the nozzle to turn and capable of slight endwise movement, positioning means for holding the bar against turning movement when in one position of its endwise adjustment and permitting the bar to turn when in another position of its endwise adjustment, and thread-disturbing means extending from one side of the bar and formed to project slightly beyond the plane of the nozzle lips when the bar is turned to bring such means into operative position.

9. The combination with a suction cleaning nozzle, of a bar mounted within the mouth of the nozzle to turn and capable of slight endwise movement, positioning means for holding the bar against turning movement when in one position of its endwise adjustment and permitting the bar to turn when in another position of its endwise adjustment, thread-disturbing means extending from one side of the bar and formed to project slightly beyond the plane of the nozzle lips when the bar is turned to bring such means into operative position, and runners carried by said bar for holding the carpet away from the nozzle lips when the bar is turned to bring the disturbing means into operative position.

10. The combination with a suction cleaning nozzle, of a member mounted within the mouth of the nozzle and carrying a thread-disturbing member adapted to project slightly beyond the plane of the nozzle lips, and flat runners carried by said member for holding the carpet away from the nozzle lips.

11. The combination with a suction cleaner nozzle, of a bar mounted within the mouth of the nozzle and supported by means permitting a turning adjustment of the bar, a brush carried by said bar and extending from one side thereof to project slightly beyond the plane of the nozzle lips when the bar is in one position and to be retracted within the nozzle mouth when the bar is

turned to another position, and runners carried by said bar for holding the carpet away from the nozzle lips when the bar is turned to bring the brush into operative position.

12. The combination with a suction cleaner nozzle, of means for supporting the nozzle with its lips slightly above the normal plane of the surface to be cleaned, a thread disturbing member mounted within the mouth of the nozzle and adjustable into and out of operative position and projecting slightly beyond the plane of the nozzle lips when in operative position, and means mounted to move into and out of operative position with said thread-disturbing member for holding the carpet away from the nozzle lips when the thread disturbing member is in operative position.

13. The combination with a suction cleaning nozzle, of a thread-disturbing member mounted within the mouth of the nozzle, and means comprising flat runners projecting beyond the plane of the nozzle lips and adjustable into and out of operative position for holding the carpet away from the nozzle lips.

14. The combination with a suction cleaning nozzle, of a thread-disturbing member mounted within the mouth of the nozzle and adjustable into and out of operative position, and means for holding the carpet away from the nozzle lips mounted to move into and out of operative position with the thread-disturbing member.

15. The combination with a suction cleaning nozzle, of a thread-disturbing member pivotally mounted within the mouth of the nozzle for movement into and out of operative position and spaced away from the front and rear walls thereof, said member when in operative position projecting slightly beyond the plane of the nozzle lips, and means for holding the carpet out of contact with the nozzle lips, said means being connected with the thread-disturbing member to move into and out of operative position with said thread-disturbing member.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM W. ROSENFELD.
Witnesses:
A. L. KENT,
PAUL H. FRANKE.