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C. H. TAYLOR
SUCTION CLEANING APPARATUS
Filed Jan. 7, 1942

2,326,311

FIG. 1.

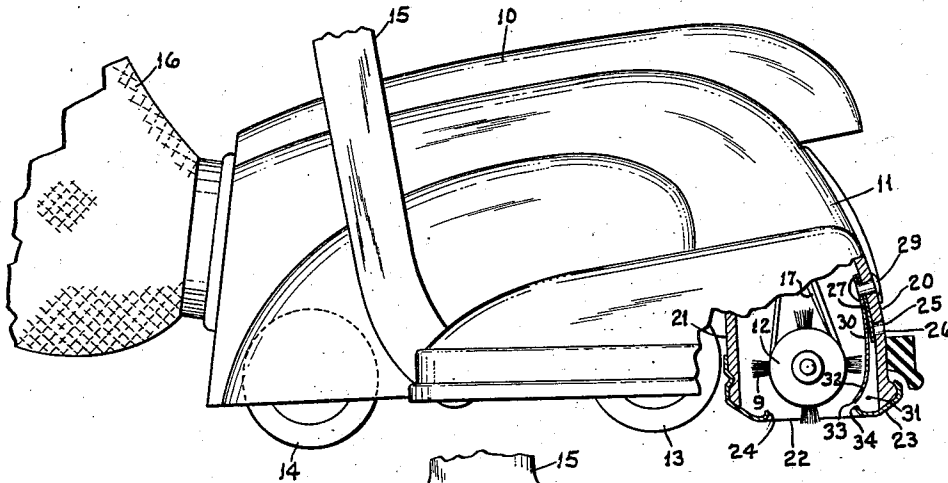


FIG. 2.

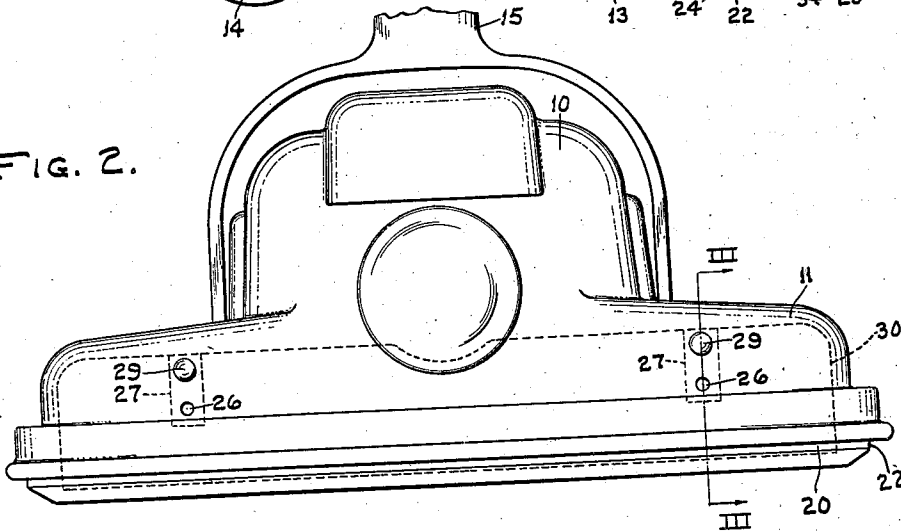


FIG. 3.

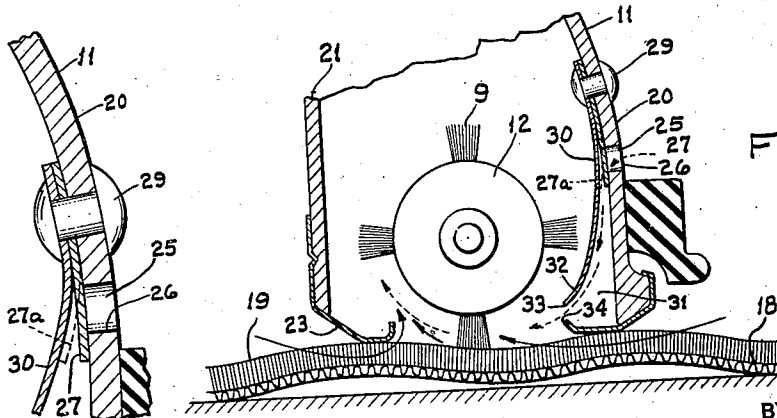


FIG. 4.

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SUCTION CLEANING APPARATUS

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1 Claim. (Cl. 15-8)

This invention relates to suction cleaning apparatus.

An object is to provide improved apparatus of the type described.

When cleaning some floor coverings (carpets or rugs), particularly carpets or rugs having a dense nap, or tightly woven base, the nozzle of the cleaner makes a tight seal with the nap. This tight seal cuts down the air flow in the nozzle and thereby lowers the cleaning efficiency of the cleaner and, also, permits a high suction to build up in the nozzle. This high suction sometimes pulls the covering up against the nozzle of the cleaner, making it difficult to push the cleaner over the covering being cleaned. In some instances the covering is drawn so far up into the nozzle that it bears against the brush roll with sufficient force to slow it down, thereby decreasing the efficiency of the cleaner.

Accordingly, it is a further object to provide a suction cleaner wherein the above objections are eliminated.

A still further object is to provide a rotary brush suction cleaner having means for admitting outside air to the nozzle when the suction inside the nozzle reaches a predetermined value and means for utilizing this air to assist in cleaning the surface.

These and other objects are effected by my invention as will be apparent from the following description and claim taken in accordance with the accompanying drawing, forming a part of this application, in which:

Fig. 1 is a side elevation, with parts broken away, of a cleaner embodying this invention;

Fig. 2 is a front elevation thereof;

Fig. 3 is a partial section taken along line III-III of Fig. 2; and,

Fig. 4 is an enlarged detail section of one of the valves.

Referring to the drawing in detail, a cleaner body 10, in which there is mounted the usual fan and the usual motor for driving the same, is shown. The body 10 is formed with an elongated nozzle 11, and a brush roll 12 having tufts of bristles 9 thereon, is provided in the nozzle 11 in a well-known manner. The brush roll 12 is driven by the motor through a rubber belt 17, and it rotates in clockwise direction as seen in Figs. 1 and 3. The body 10 is provided with front wheels 13 and rear wheels 14 for supporting it above the surface to be cleaned. A handle 15, shown broken away for the sake of convenience, is provided for propelling the cleaner over the surface to be cleaned. A dust bag 16, shown

broken away, is provided for filtering out and holding the dust and other litter picked up by the cleaner.

The nozzle 11 is defined by a longitudinal front wall 20, a longitudinal rear wall 21, a pair of end walls 22, and a removable bottom wall 23 having an aperture 24 therein which provides the inlet for the nozzle. During normal cleaning of a floor covering 13 having a nap 19, the air flow into the nozzle is substantially as indicated by the solid arrows in Fig. 3.

To prevent the carpet or rug from being drawn far enough up into the nozzle 11 to make it difficult to propel the cleaner or to slow up the brush roll, a valve or valves, indicated generally by the reference character 25, are provided in the front wall 20 of the nozzle 11. In the drawing two valves have been shown, but it will be understood that any desired number may be provided. These valves automatically open when the suction inside the nozzle 11 reaches a predetermined value to admit outside air to the nozzle, and, thereby, prevent the suction from building up high enough to cause the nozzle to grip the carpet or rug so tightly that it is difficult to propel the cleaner over the same, or so tightly that the carpet or rug bears against the brush roll with sufficient force to slow it down. These valves also contribute to the efficiency of the cleaner, in that, they insure a substantially constant air flow through the nozzle 11 throughout the cleaning of practically any napped floor covering regardless of the texture or thickness of the nap or base of the covering. Each of the valves 25 includes a port 26 and a flexible resilient member 27. The members 27 are positioned on the inside of the nozzle 11 and are attached to the longitudinal front wall 20 by rivets 29 so that when they are in their normal position they cover the ports 26. When the suction in the nozzle reaches a predetermined value, the pressure differential between the inside and the outside of the nozzle will cause the members 27 to spring inwardly to the open position, indicated by broken lines and the reference character 27a in Figs. 3 and 4, and admit air to the nozzle. With this arrangement any desired suction within a predetermined range may be maintained in the nozzle by selecting members 27 of the proper resiliency. A deflector plate or shield 30 is also attached to the front wall 20 by the rivets 29. This plate or shield extends substantially the full length of the nozzle 11 and a lower portion 32 is spaced from the front wall 20. The lower portion of this shield is arcuate shaped, the arc

being substantially coincident with the arc circumscribed by the tip ends of the bristles 9. As seen from Figs. 1 and 3, the shield 30, the front wall 20, and bottom wall 23 define a chamber 31 into which the ports 26 open. The lowermost portion 33 of the shield 30 and an edge 34 of the bottom wall 23 are shaped so as to provide, in effect, a nozzle that directs the air from the chamber 31 across the portion of the carpet 18 that is swept by the bristles 9, in an arc substantially coincident to the arc circumscribed by the tip ends of the bristles 28, as indicated by the broken arrows Fig. 3. This air is blown against the carpet with considerable force and the action of the same across the area contacted and vibrated by the brush roll assists the brush roll in removing and carrying away dirt and litter located between the adjacent pieces of nap 19.

From the foregoing description, taken in connection with the drawing, it is seen that this invention provides an improved suction cleaner including means for admitting outside air to the inside of the nozzle when the suction in the nozzle reaches a predetermined value and means for directing this air across the portion of the floor covering contacted by the brush roll, thereby assisting the brush roll in removing and carrying away embedded dirt and litter from between adjacent pieces of nap.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of

various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claim.

What I claim is:

In a suction cleaner, a nozzle having elongated side walls and bottom wall portions which extend inwardly from said side walls, a brush roll member having bristles thereon rotatably mounted in said nozzle for sweeping the surface being cleaned, a port located in one of said side walls and communicating with the atmosphere and said nozzle, a flat spring attached to said one wall and normally obstructing said port, said spring being operable by the pressure differential between the inside and outside of said nozzle when the suction in said nozzle reaches a predetermined value to admit outside air to said nozzle, a shield also attached to the inside of said one wall of said nozzle at a position above said port and extending downwardly below said spring and said port, the lower portion of said shield being bent arcuately and inwardly so as to provide a downwardly flaring chamber between the same and said one wall into which the air admitted through said port enters, the bottom edge of said shield and the inner edge of the adjacent bottom wall portion forming an elongated nozzle directing said air across the area of the surface being cleaned that is contacted by the bristles.

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