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SUCTION NOZZLE OF VACUUM CLEANING APPARATUS

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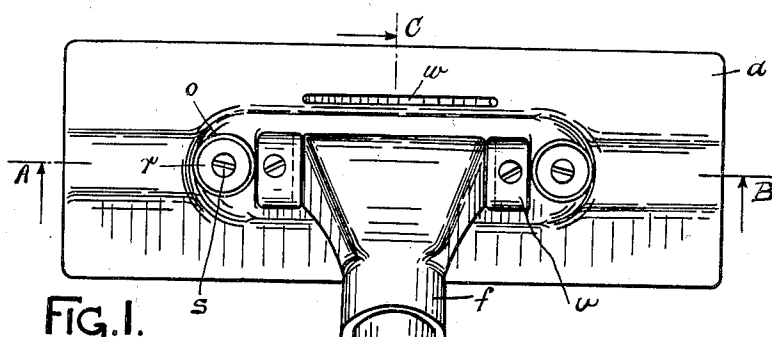


FIG. 1.

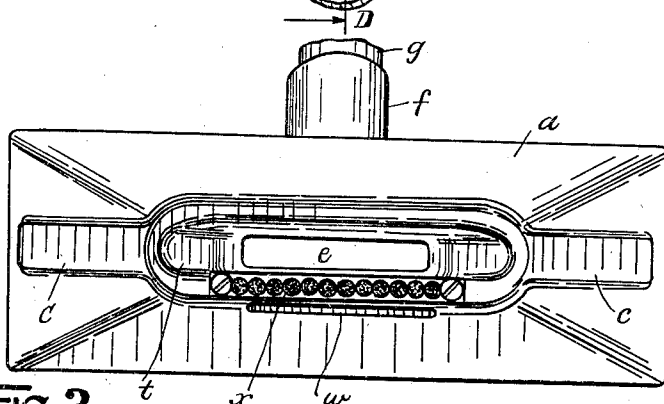


FIG. 2.

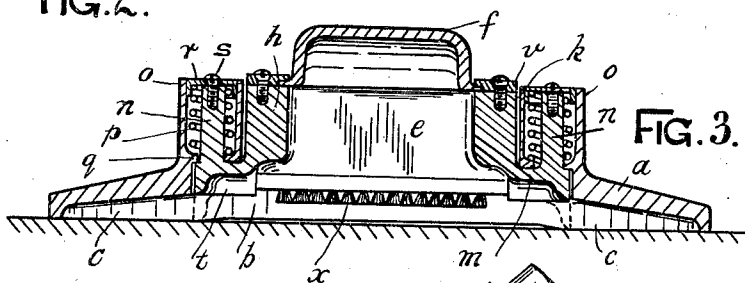


FIG. 3.

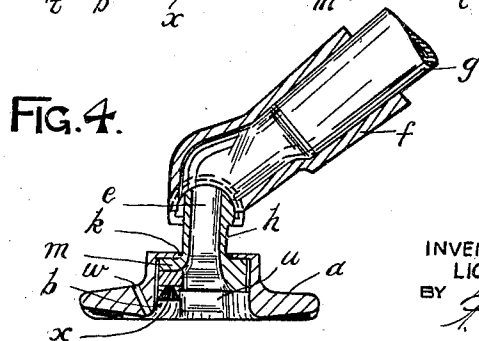


FIG. 4.

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SUCTION NOZZLE OF VACUUM CLEANING APPARATUS

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10 Claims. (Cl. 15—158)

This invention relates to vacuum cleaning apparatus and more particularly to suction nozzles therefor which are adapted to be moved by a handle over the surface of the carpet, for example, to be cleaned, the lower surface of the nozzle being formed with a nozzle opening including a recess that communicates with the suction hose whereby the dust, fluff, hair and other matter is extracted from the carpet and drawn through the hose into the bag or dust container.

The object of the present invention is to provide an improved construction which provides for the thorough cleansing of the surface of the carpet, all matter that is apt to cling thereto such as cotton yarn, hairs, and fluff being effectively removed.

A further object of my invention is to provide an improved construction in which a brush is enclosed within a nozzle and so arranged that the brush is adapted to be moved into contact with the surface to be cleaned.

A still further object of the present invention is to provide an improved nozzle which is divided into two parts one of which is movable relatively to the other and each of which in itself forms an effective nozzle.

It is known to enclose a brush within a suction nozzle and to arrange for the brush to be adjusted toward and away from the surface to be cleaned. According to the present invention, the brush is normally held back by springs from that surface, for example a carpet. Pressure downward on the handle, however, will bring the brush into contact with the carpet.

In a preferred embodiment of the invention, an auxiliary suction nozzle is fixed alongside the brush and is arranged to move therewith within the main suction nozzle. A more concentrated suction is thereby provided along the brush when this is depressed into operative position.

If it is desired one or more apertures may be provided in the main suction nozzle to permit air to enter the nozzle and to pass through the brush to increase its effectiveness and to keep it clean.

But in order that this and other features of the invention may be clearly understood reference should now be made to the accompanying drawing in which similar reference characters relate to like parts in all the figures and in which:

Figure 1 is a plan of the double nozzle as viewed from the top and

Figure 2 a plan viewed from below,

Figure 3 is a longitudinal section on the line A—B Figure 1, and

Figure 4 a cross section on the line C—D of the same figure.

On referring to the drawing it will be seen that the under surface of the nozzle base plate *a* is formed with the central recess *b* and end recesses *c* ordinarily communicating with the passage *e* leading to the swivel fitting *f* in which the tube *g* is mounted that forms a handle for the movement of the nozzle and is connected to the suction hose. In the present improved construction the passage *e* is a vertical slot formed in a central detachable block *h* slidably mounted in a rectangular slot *k* in the base plate *a* and formed with a lower horizontal flange *m* carrying the vertical rods *n* at each end that pass upwards through the hollow bosses *o* at each end of the base plate *a* and are encircled by the springs *p*. The lower ends of the springs *p* bear against the circumferential ledges *q* in the base of the bosses *o* while their upper ends press against the caps *r* that fit into the upper ends of the bosses *o* the tension of the springs *p* being adjusted by the pins *s* passing freely through holes in the caps *r* and engaging threaded holes in the rods *n*.

By these means the under surface of the block *h* with the recesses *t* and *u* therein is normally maintained above the level of the under surface of the base plate *a* with its recesses *b* and *c* but by pressure applied through the handle *g* to the fitting *f*, that is swivelably attached to the upper surface of the block *h* by the barrel hinges *v*, the block *h* is lowered so that its under surface is in contact with the carpet and the suction effect is concentrated within the recesses *t* and *u* and this combined with the action of the brush *x*, mounted in a cut-away of the undersurface of the flange *m* of the block *h*, effectively removes any obstinate clinging matter. On relaxation of pressure on the block *h* it returns to its normal position by the action of the springs *p*.

A slot *w* cut through the forepart of the nozzle base plate *a* and communicating with the recess *b* admits a jet of air to the under surface of the plate which facilitates the movement of the nozzle over any kind of carpet and materially assists the cleansing of its surface. Moreover when the interior nozzle *h* is brought into operation it tends to clean the brush *x*.

It will be understood that variations in the structure may be made within the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In a vacuum cleaner a nozzle comprising two telescopically mounted nozzle members, the inner member having a nozzle opening materially smaller than that of said outer member and being normally out of contact with the surface to be cleaned and so arranged that by telescoping said members the nozzle opening of the inner member may be brought into contact with the surface to be cleaned within the area of the nozzle opening of the outer member.
2. In a vacuum cleaner a nozzle comprising two telescopically mounted nozzle members resiliently secured in expanded relationship substantially normal to the surface to be cleaned, the inner member having a nozzle opening materially smaller than that of said outer member and being out of contact with the surface to be cleaned and so arranged that by telescoping said members the nozzle opening of the inner member may be brought into contact with the surface to be cleaned.
3. In a vacuum cleaner a nozzle comprising two telescopically mounted nozzle members, the inner member having a nozzle opening materially smaller than that of said outer member, said nozzle opening being in a different plane from that of the nozzle opening of the outer member and substantially parallel thereto, said inner member being arranged to telescope in a direction substantially normal to the surface to be cleaned and within the outer member so as to bring the nozzle opening of the two members into substantially the same plane.
4. In a vacuum cleaner a nozzle comprising an inner nozzle member telescopically mounted within an outer nozzle member, the inner member having a nozzle opening materially smaller than that of said outer member, the plane of said nozzle opening being above and substantially parallel to the plane of the nozzle opening of the outer member, a handle pivotally secured to said inner member, said members being so arranged that by pressure on said handle the nozzle opening of the inner member may be brought into the same plane as the nozzle opening of the outer member.
5. In a vacuum cleaner a nozzle comprising two telescopically mounted nozzle members, the inner member having a nozzle opening materially smaller than that of said outer member, spring means normally holding the inner member out of contact with the surface to be cleaned and in a direction substantially normal thereto and means for exerting pressure on said inner member to force the nozzle opening of said inner member into contact with the surface to be cleaned within the area of the nozzle opening of said outer member.
6. In a vacuum cleaner a nozzle comprising two telescopically mounted nozzle members the inner member being normally out of contact with the surface to be cleaned, a brush member secured to said inner member, the whole being so arranged that by telescoping said members the nozzle opening of the inner member together with the brush may be brought into contact with the surface to be cleaned, said outer member having an opening therein adjacent the position of said brush when said inner member is brought into contact with the surface to be cleaned for directing a current of air across said brush.
7. Vacuum cleaning apparatus comprising a nozzle member provided with a handle movable with respect thereto, a brush enclosed by said nozzle member, means for supporting said brush including spring means for holding said brush away from the surface to be cleaned, said handle being so connected and arranged with respect to said nozzle member and said brush supporting means that pressure thereon will move said handle with respect to said nozzle member to force said brush into contact with the surface to be cleaned within said nozzle member.
8. Vacuum cleaning apparatus comprising a nozzle member provided with a handle movable with respect thereto, a brush enclosed by said nozzle member, means for supporting said brush including spring means for holding said brush away from the surface to be cleaned, said handle being so connected and arranged with respect to said nozzle member and said brush supporting means that pressure thereon substantially perpendicular to the surface to be cleaned will move said handle with respect to said nozzle member to force said brush into contact with the surface to be cleaned within said nozzle member.
9. Vacuum cleaning apparatus comprising a main nozzle member provided with a handle, a brush and auxiliary nozzle enclosed by said main nozzle member, means for supporting said brush and auxiliary nozzle including spring means for holding the same away from the surface to be cleaned, said handle being connected to said brush and nozzle supporting means so that pressure thereon will move said brush and auxiliary nozzle within said main nozzle member into contact with the surface to be cleaned.
10. Vacuum cleaning apparatus comprising a nozzle member provided with a handle movable with respect thereto, agitating means enclosed by said nozzle member, means for supporting said agitating means including spring means for holding said agitating means away from the surface to be cleaned, said handle being so connected and arranged with respect to said nozzle member and said agitating means that pressure thereon will move said handle with respect to said nozzle member to force said agitating means into agitating relationship with the surface to be cleaned within said nozzle member.

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