May 14, 1929. P. J. FITZGERALD 1,713,274

BRUSH ATTACHMENT FOR VACUUM CLEANERS

Filed May 23, 1928

Fig. 1.

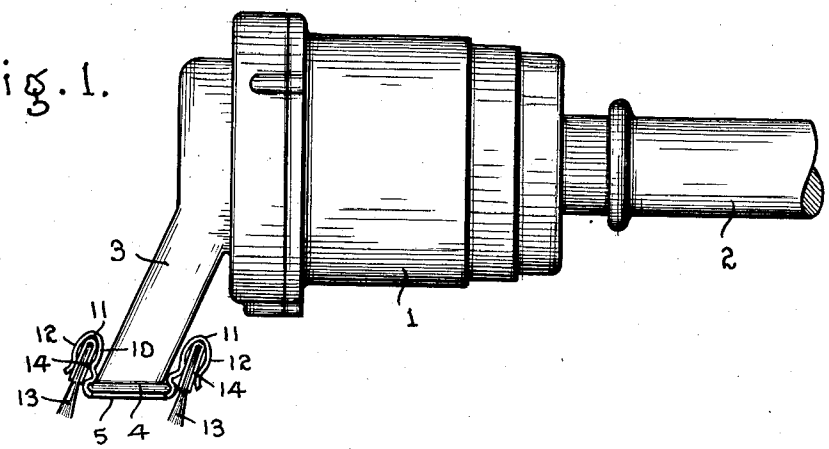


Fig. 2.

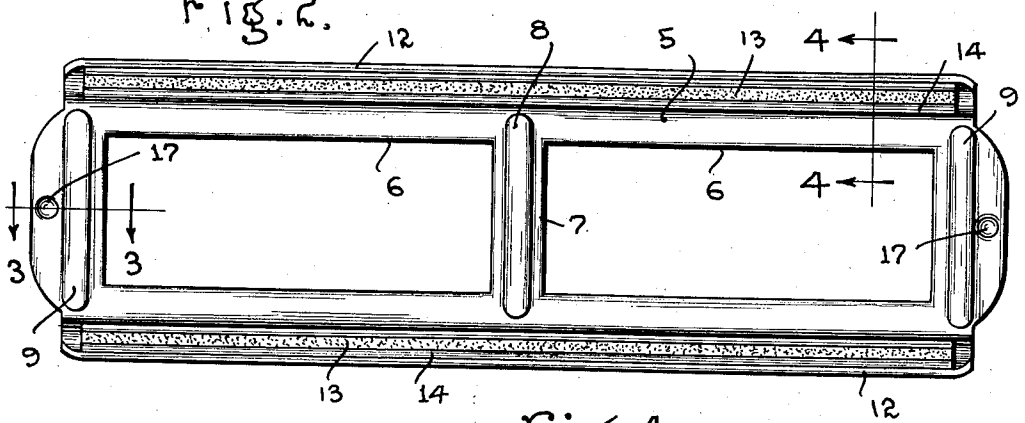
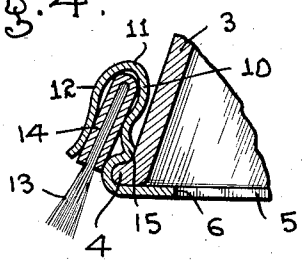


Fig. 4.



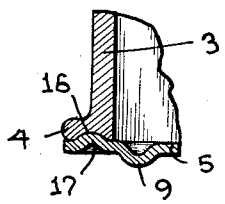


Fig. 3.

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UNITED STATES PATENT OFFICE.

PATRICK J. FITZGERALD, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE FITZGERALD MANUFACTURING COMPANY, OF TORRINGTON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

BRUSH ATTACHMENT FOR VACUUM CLEANERS.

Application filed May 23, 1928. Serial No. 280,109.

The invention relates to new and useful improvements in hand vacuum cleaners, and more particularly to a brush attachment for the same.

An object of the invention is to provide a brush attachment for the nozzle of a hand vacuum cleaner, which brush may be readily applied to and removed from the nozzle, and wherein said brush supporting frame may be made very rigid so that it will not spring and become detached from the nozzle when the movements of the nozzle are obstructed.

A further object of the invention is to provide yielding means for holding said brush attachment on the nozzle.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings:—

Fig. 1 is a side view of a hand cleaner embodying the improvement.

Fig. 2 is a bottom plan view of the nozzle with the brush attachment.

F g. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 2 on an enlarged scale.

The improvement is shown as applied to a hand cleaner which includes a body portion attached to a handle whereby the hand cleaner may be moved about for cleaning purposes. In this body portion of the hand cleaner is an electrically operated suction creating means. Extending from the body portion is a nozzle of the usual type. The nozzle is provided with an outwardly projecting flared edge portion and the brush attachment is secured to the nozzle through the aid of this projecting flange. The brush attachment includes a very rigid frame structure, preferably formed of one integral portion of sheet metal. Said frame structure extends across the nozzle from side to side thereof, and from end to end of the nozzle. The frame structure is provided with one or more cross struts. The sheet metal in the cross strut and at the ends is provided with strengthening ribs so that the frame structure is very rigid and free from flexing. The metal portion of the frame structure at the sides of the nozzle is bent upwardly alongside of the nozzle, thence outwardly and thence downwardly. Housed at each side of the nozzle in this bent portion of the metal is a brush which projects below the face of the nozzle. The frame structure alongside of the nozzle is provided with a rib which projects inwardly toward the nozzle and this rib is adapted to slide over the top of the projecting flange on the nozzle. The ribs at their opposite sides project toward each other and provide a recess which receives the end of the nozzle by the sliding of the support for the brushes endwise of the nozzle. The frame structure at each end of the nozzle is bent so as to provide an upwardly projecting portion which is adapted to spring into a recess formed in the nozzle for the purpose of yieldingly holding the brush attachment on the nozzle.

Referring more in detail to the drawings, the hand cleaner includes a body portion 1 in which is located the suction means preferably driven by a motor. Projecting from this body portion 1 is a handle 2 by which the cleaner may be supported and moved about for cleaning purposes. Also projecting from the body portion 1 is a nozzle 3. This nozzle 3 is of the usual type and is elongated. Adjacent the intake opening of the nozzle and on the outer face thereof is an outwardly projecting flange 4 which extends all the way around the nozzle. This projecting flange is of the usual construction.

The brush attachment is secured to the nozzle by the aid of this projecting flange. The brush attachment includes a frame structure 5 which is preferably made of sheet metal. This frame structure, as clearly shown in Fig. 2, extends from end to end of the nozzle and laterally from one side thereof to the other side thereof. The frame structure is provided with openings 6, 6 through which the current of air created by the suction means passes. Extending across from one side of the frame structure to the other is a central bridging portion 7. The metal of this bridging portion 7 is bent so as to form a rib 8 which extends all the way across from one side of the opening to the other and beyond. This is for the purpose of strengthening the bridging portion. Likewise at the ends of the metal support there are ribs 9, 9 which extend transversely across the end of the nozzle for the purpose of strengthening this supporting structure for the brushes. The metal structure is bent upwardly at 10 at each side of the nozzle, thence outwardly at 11, and thence inwardly at 12. Located in this bent portion of the metal structure is a brush 13. The brush

13 consists of suitable bristles secured by a metal clamping member 14 and the brush supporting structure is folded about and clamped against this member 14. This clamps the brush at each side of the nozzle. The brush extends all the way across from one end of the nozzle to the other and projects below the surface of the nozzle as indicated in Fig. 4. This metal frame structure is provided with an inwardly extending rib 15 which overlies the flange 4 on the nozzle. This rib 15 provides a recess extending from one end of the frame structure for the brushes to the other.

As clearly shown in Fig. 1 the brush may be attached to the nozzle by inserting the end of the brush holder onto the nozzle with the rib 15 above the flange 4. It is then moved endwise until it is brought into full engagement with the nozzle. At each end the nozzle is provided with a recess 16. The metal structure of the brush is provided with a projection 17 which is adapted to spring into the recess 16. There is one at each end of the brush attachment as clearly indicated in Fig. 2. The brush holder or attachment is given an endwise sliding engagement with the nozzle in the manner above described and the metal in the extreme end of the brush holder will yield so as to allow the projection to enter the recess and this holds the attachment from endwise movement on the nozzle unless enough pressure is exerted to cause the projection to yield and slip out of the recess.

From the above it will be apparent that the brush holder is formed so as to produce a very rigid frame structure and this frame structure is attached to the nozzle, not by the springing of the parts, but by an endwise movement of the nozzle into a formed recess in the brush holder. In view of this rigid structure of the brush holder any bumping of the brush holder during cleaning by the striking of the nozzle against an obstruction will not tend to detach the brush holder from the nozzle. The ends of the frame structure carrying the brushes terminate within the limits of the nozzle as shown in Figs. 2 and 3 so that the end of the nozzle striking an obstruction will take the blow rather than the brush holder. When the side faces of the nozzle strike an obstruction then the blow is in a direction which does not tend to shift the brush holder on the nozzle. The brush holder will not be detached through any springing of the parts or through the yielding of the holding means through the cleaner striking an obstruction.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

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

1. An attachment for a suction nozzle having a flange along each side, said attachment comprising a detachable brush holder including a sheet metal frame structure extending across the nozzle and bent upwardly so as to form recesses adapted to be passed over the flanges on the nozzle by an endwise movement of the frame structure, said frame structure supporting brushes at each side of the nozzle, and means for holding the frame structure from endwise movement on the nozzle.

2. An attachment for a suction nozzle having a flange along each side, said attachment comprising a detachable brush holder including a sheet metal frame structure extending across the nozzle and having openings leading to the nozzle, said frame structure having strengthening ribs extending transversely across the nozzle for strengthening said frame structure, said frame structure being bent and shaped so as to provide recesses adapted to engage over said flanges holding the brush holder on the nozzle, and said frame structure having bent portions for clamping brushes at each side of the nozzle.

3. An attachment for a suction nozzle having a flange along each side, said attachment comprising a detachable brush holder including a sheet metal frame structure extending across the nozzle and having openings leading to the nozzle, said frame structure having strengthening ribs extending transversely across the nozzle for strengthening said frame structure, said frame structure being bent and shaped so as to provide recesses adapted to engage over said flanges holding the brush holder on the nozzle, said frame structure having bent portions for clamping brushes at each side of the nozzle, said frame structure at the ends of the brush holder terminating within the ends of the nozzle and having at each end a projection adapted to yieldingly engage recesses in the nozzle and yieldingly hold the brush holder from endwise movement on the nozzle.

4. An attachment for a suction nozzle having a flange along each side, said attachment comprising a detachable brush holder including a rigid sheet metal frame structure, brushes clamped to said frame structure, said frame structure being provided with recesses adapted to pass over the flanges on the nozzle by an endwise movement of the frame structure, and yielding means for securing the brush holder on the nozzle.

In testimony whereof, I affix my signature.

PATRICK J. FITZGERALD.