

F. M. CASE.

BRUSH.

APPLICATION FILED AUG. 9, 1911.

1,044,488.

Patented Nov. 19, 1912.

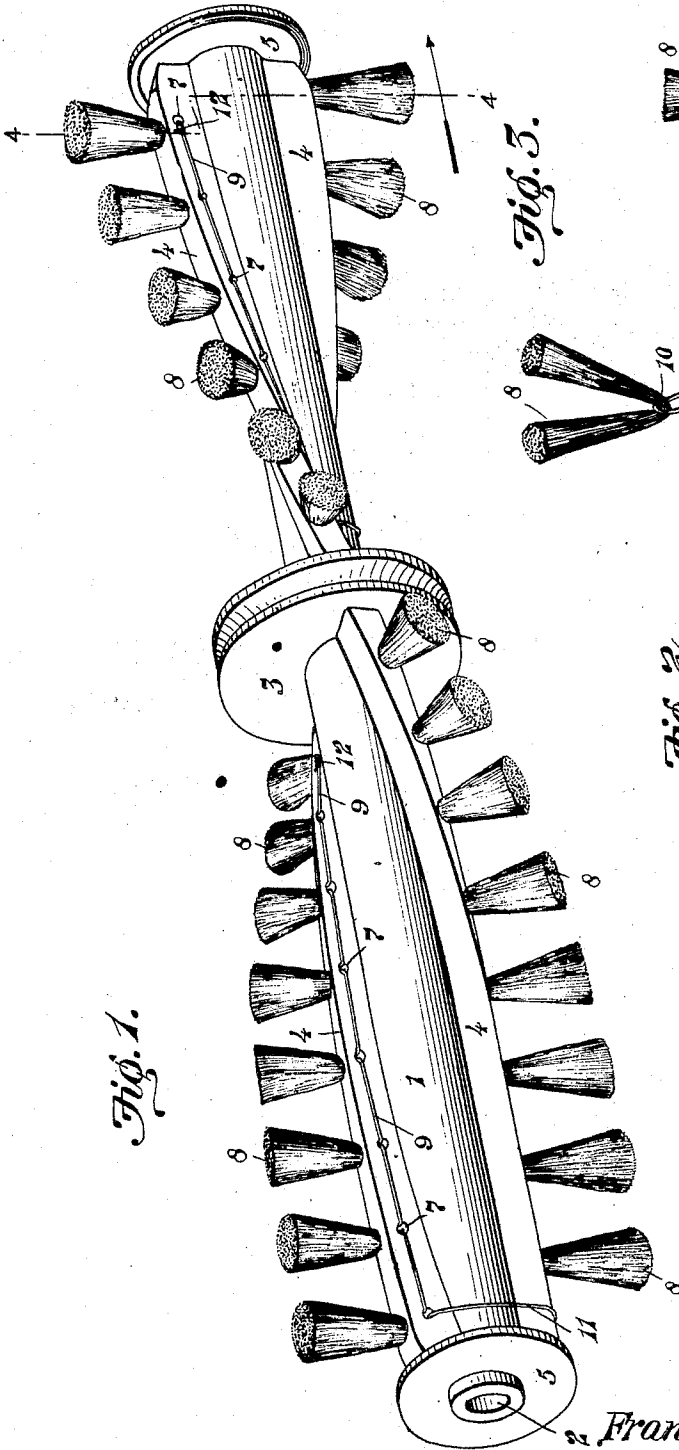


Fig. 1.

Fig. 3.

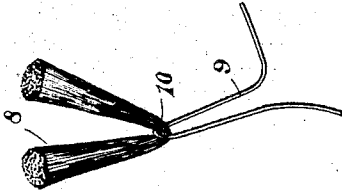
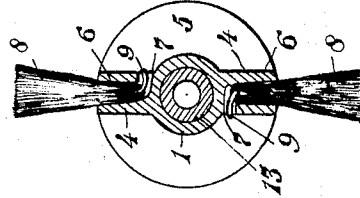
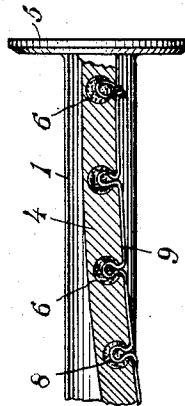


Fig. 4.

Fig. 2.



Inventor

Francis Mills Case.

Witnesses

J. H. Bishop.
Irene Lutz.

By

Bond & Miller

Attorneys

UNITED STATES PATENT OFFICE.

FRANCIS MILLS CASE, OF CANTON, OHIO, ASSIGNOR TO THE HOOVER SUCTION SWEEPER COMPANY, OF NEW BERLIN, OHIO, A CORPORATION OF OHIO.

BRUSH.

1,044,488.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANCIS MILLS CASE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

This invention relates to improvements in brushes and while it is applicable to many forms and kinds of brushes the advantages of my novel construction are more apparent when embodied in rotatable brushes for carpet sweepers and the like wherein the tufts of bristles are connected to a rotatable spindle.

The objects of the invention are to generally improve devices of the character mentioned and to provide a strong, substantial, easily and cheaply made brush wherein the tufts of bristles are held firmly in place, the construction being such that said tufts may be readily fastened by a comparatively simple operation, the necessary wiring being done without difficulty. These objects, together with other objects readily apparent to those skilled in the art, may be attained by the construction illustrated in the accompanying drawings, although the invention may be embodied in other forms, the construction illustrated being chosen by way of example.

In the drawings Figure 1 is a perspective view of a rotatable carpet-sweeper brush embodying the invention. Fig. 2 is a fragmentary longitudinal, sectional view through one of the tuft holding ribs. Fig. 3 is a perspective view of a tuft of bristles and a portion of the tuft holding wire. Fig. 4 is a transverse sectional view through the brush taken on the line 4-4 of Fig. 1.

Throughout the several views similar reference numerals indicate similar parts.

In motor driven pneumatic carpet sweepers and cleaners wherein a rotatable brush is employed it has been found desirable to provide a hollow brush spindle, rotatable about a fixed shaft, the bristles of the brush being connected to said rotatable spindle. Such spindles may be made of any suitable material but metal is usually preferred. In order that the spindle may be made in one piece, with an axial opening from end to end it has been found undesirable and inconvenient to wire the tufts of bristles to place by any construction wherein the fastening

wire extends entirely through the spindle or into said axial opening. At the same time the bristles must be firmly fastened in place, as such brushes are frequently subjected to hard usage, and a simple, strong and practical construction in the bristling of such brushes is therefore of great importance.

In accomplishing the purposes and objects of my invention by the construction which I have illustrated in the accompanying drawings I employ a brush spindle preferably formed of a single piece of metal, such as aluminum, and comprising the hollow cylindrical spindle body 1, the axial opening 2 extending entirely from end to end of said body. Formed integrally with the body 1 and intermediate its ends is the pulley 3, forming no essential portion of the present invention but employed, in the construction illustrated, for the purpose of rotating the brush by means of a suitable belt (not shown) running over the same.

Formed integrally with the body 1 are the two, oppositely disposed, outstanding spiral tuft-attaching ribs 4, each rib being so disposed as to produce a spiral of one-half revolution about the body 1. At each end of the body an integral annular flange and thread guard 5 is provided, said flange being preferably of sufficient diameter to extend slightly beyond the ribs 4. Each rib is provided with a longitudinal series of spaced tuft holding apertures 6 extending radially into the rib, the tuft-holding apertures of the two ribs being relatively staggered so that in revolving the brush the tufts on each rib will sweep in an annular path between the annular paths swept by the tufts on the other rib and thus producing an unbroken sweeping area while having the tufts on each rib longitudinally spaced from each other. At the bottom of said apertures 6 lateral wire apertures 7 extend laterally through one side of the rib.

In wiring the tufts of bristles 8 into place in the tuft holding apertures 6 a tough, bendable wire 9, of small gage is employed. Said wire is run along the side of the rib provided with the wire apertures and at each of said apertures 7 the wire is extended into said aperture, and radially out through the aperture 6, then over the center of a tuft of bristles, as shown at 10 in Fig. 3, then downwardly through the aperture 6 again, and out through the same wire aper-

ture 7. Upon drawing the wire out tightly through said aperture 7 the tuft of bristles will be drawn down into the aperture 6 and held tightly in place as clearly illustrated in 5 Fig. 4. The wire proceeds from one tuft to another along the side of the rib, thus producing the construction illustrated in Fig. 1. In this way a skilful brush-maker is enabled to bristle a large number of such 10 brushes in a given time, the wire being at all times perfectly accessible, and the work being plainly in sight so that each tuft may be drawn down properly and tightly into place, producing a thoroughly substantial 15 construction. When the bristles have all been attached to one of the ribs it has been found convenient to merely extend the wire around the body 1 to the other rib as shown at 11 in Fig. 1, where the bristles are connected by the same wire as it extends from 20 aperture to aperture of that rib, both ends of the wire being thus fastened at the same end of the brush. This fastening of the ends of the wire may be accomplished in any 25 practical manner but it has been found desirable to merely fasten the first tuft on one rib and the last tuft on the other rib in place and then wrap the end of the wire around the body of the wire where it extends outwardly through the apertures 7 as 30 shown at 12 in Fig. 1.

It should be noted that by this construction the tufts are set diametrically apart from each other a very considerable distance, 35 considering the amount of metal in the spindle. An inspection of Fig. 4 will show how relatively small is the diameter of the body 1

as compared with the diameter from periphery to periphery of the ribs 4. In addition to this the depth of the tuft holding apertures 6 is sufficient to hold the tufts in a 40 firm and substantial manner, thus producing a more efficient and lasting brush.

It will be apparent that any number of ribs may be used although I have illustrated 45 a spindle provided with but two ribs, which is the usual construction.

If desired the bushings 13 may be arranged in the axial opening to produce a more lasting and at the same time more 50 readily renewable bearing upon the fixed shaft, said shaft being not shown in the drawings, as it forms no specific part of the present invention.

I claim: 55

A brush comprising a body having spiral tuft receiving ribs, each of said ribs having a longitudinal series of spaced tuft receiving apertures extending radially into the ribs, a series of apertures in said ribs extending into the radial tuft receiving apertures at the bottom and at one side of the rib, and a wire fixedly secured at one end to the tuft fitted in the end of one of the spiral ribs and successively engaged with the tufts 60 in the successive apertures of said ribs. 65

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

FRANCIS MILLS CASE.

Witnesses:

WILLIAM H. MILLER,
IRENE LUTZ.