Dec. 19, 1922. 1,439,159

C. E. FROST.
HELICAL BRUSH.
FILED MAR. 20, 1919.

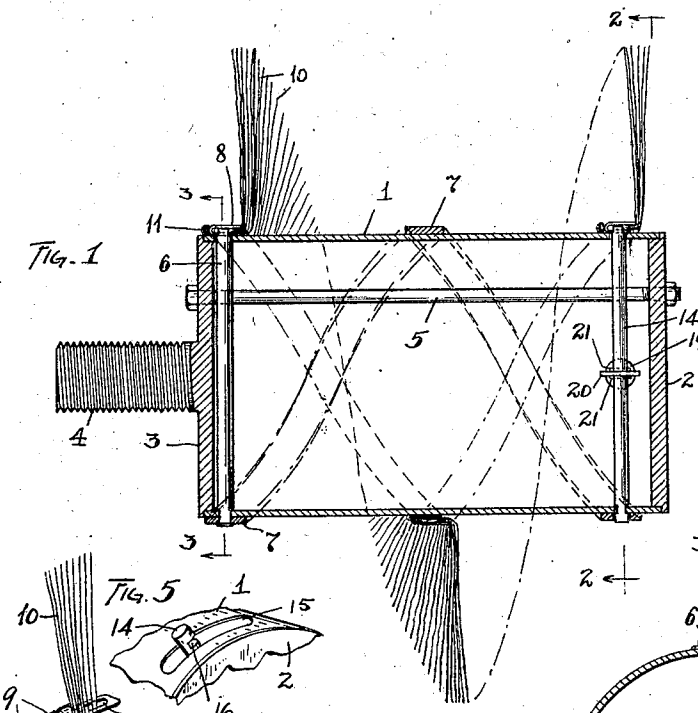


FIG. 1

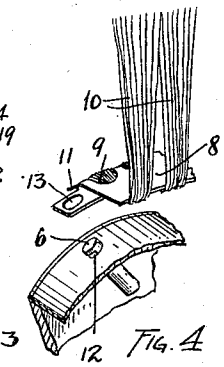


FIG. 4

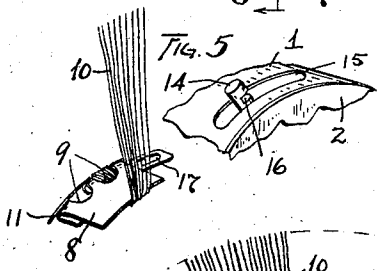


FIG. 5

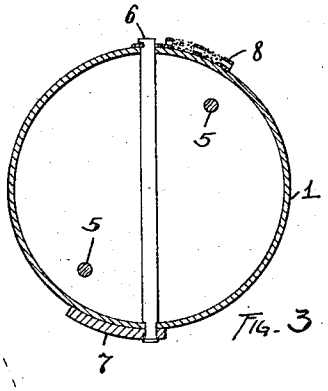


FIG. 3

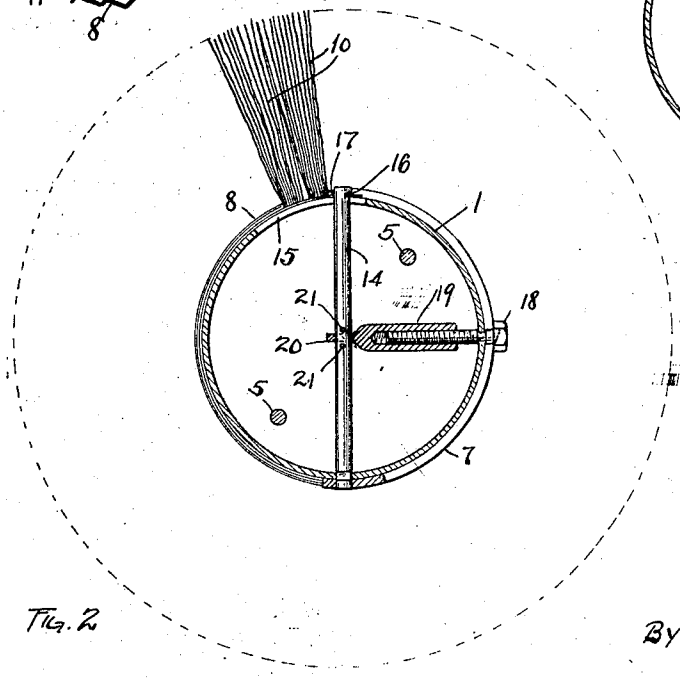


FIG. 2

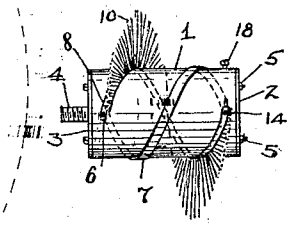


FIG. 6

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UNITED STATES PATENT OFFICE.

CLINTON E. FROST, OF EAST CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND OSBORN MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

HELICAL BRUSH.

Application filed March 20, 1919. Serial No. 283,751.

To all whom it may concern:

Be it known that I, CLINTON E. FROST, a citizen of the United States, and a resident of East Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Helical Brushes, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements relate, as indicated, to a rotary brush of the type in which the brush material is disposed in more or less helical fashion about the holder or body. The object of the invention is to provide both an improved helical brush section wherein brush material in the form of strands is firmly held, and a mounting for such a section which will permit of the ready attachment or removal of the latter, in order to change sections or replace a worn one with a new one. To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is an axial section through my improved brush and mounting; Fig. 2 is a transverse section thereof taken on the plane indicated by the line 2—2, Fig. 1; Fig. 3 is a similar section taken on the plane indicated by the line 3—3, Fig. 1; Fig. 4 is a broken perspective view illustrating the manner in which one end of the brush section is attached to the mounting or holder; Fig. 5 is a view similar to Fig. 4, but showing the manner in which the other end of the brush section is thus secured; and Fig. 6 is a front elevational view of the brush section and mounting complete.

The mounting or holder which constitutes the base to which the brush section proper is attached, comprises a cylindrical or drum-like member 1, preferably of sheet metal, the ends of which are closed by disks 2 and 3 respectively, such last mentioned disk having a threaded extension 4 by means of which the brush is attached to the driving spindle or shaft, whatever the character of the latter. The disks 2 and 3 are rabbetted about their peripheries to receive the corresponding ends of the shell 1, and longitudinally extending bolts or rivets 5 hold such ends firmly together. Projecting beyond the cylindrical surface of the shell 1 adjacent the end member 3 is a stud 6 which preferably extends diametrically through the shell and is secured at its opposite end thereto.

Such opposite end of stud 6 in fact is riveted to one end of a helical metal strip 7 so as to secure the same to the shell 1 in a position just 180° from the position of the brush section base 8. The latter consists of a flat strip of sheet metal bent over in U-form and having its doubled over edge intersected at close intervals with apertures 9, through which the bases of the looped strands 10 composing the brush material are inserted. Such looped bases of the strands 10 pass around a wire 11 lying without the base 8, whereby it will be seen that the strands are securely locked in place in the base. Such strands are then bent at right angles to the base, so that they will project in a radial direction from the shell 1.

The end of stud 6 designed to engage with the brush section is notched as shown at 12 in Fig. 4, so as to interfit with a suitable aperture 13 in the corresponding end of such brush section. At the opposite end of the holder is a second stud 14, which, however, is oscillatorily held in the shell 1, i. e. while its one end is pivotally attached to the shell, its other end is slidably held in a slot 15, being notched at 16 to engage with a suitable aperture 17 in the corresponding end of the brush section base.

The pivotally attached end of this stud 14 serves also to hold the outer end of the helical strip 7 in place on the shell, positive oscillation of the stud in both directions being provided for through the medium of a shouldered bolt 18 rotatably but not longitudinally movably secured in the shell 1 adjacent the stud 14 and at approximately right angles thereto. The threaded end of this bolt engages an internally threaded member 19 that is pivotally attached to the stud by means of an apertured extension 20 passing around the same between pins 21 thereon.

The mode of operation of my improved

brush and mounting should be readily apparent from the foregoing description. Assuming a brush section is to be secured in place on the holder, the aperture 13 in the one end of the base of such section is slipped over stud 6 so as to engage the notch 12 therein, and the aperture 17 in the other end of such base is similarly slipped over the projecting end of stud 14 into engagement with notch 16 therein, it being understood that such stud is swung to the left from the position shown in Fig. 2, so as to permit such engagement to readily take place. Thereupon, by rotating the bolt 18, the stud 14 is swung to the right and tension correspondingly put on the brush section base until the latter is caused to tightly fit the shell 1. The helical metal strip 7 serves as a counterweight by virtue of its disposition, being, as previously stated, just 180° about the axis of the brush, from the position of the brush section.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a brush of the character described, the combination of a cylindrical holder; a helical brush section fitted thereto; a fixed radially projecting stud near one end of said holder adapted to engage with one end of said section; and a circumferentially movable radially projecting stud near the other end of said holder adapted to engage with the other end of said section.

2. In a brush of the character described, the combination of a cylindrical holder; a helical brush section fitted thereto; a fixed radially projecting stud near one end of said holder adapted to engage with one end of said section; a radially projecting stud transversely oscillatorily mounted in said holder near its other end and adapted to engage with the other end of said section; and means adapted to oscillate said stud.

3. In a brush of the character described, the combination of a hollow cylindrical holder; a helical brush section fitted thereto; a transverse bolt fixed in said holder near one end and forming a fixed radially projecting stud adapted to engage one end of said section; another transverse bolt pivoted in said holder near its other end the corresponding end of said holder being formed with a transverse slot and said bolt projecting there-through to form a movable stud adapted to engage the other end of said section; and means adapted to oscillate said bolt so as to adjust the position of said stud in such slot.

4. In a brush of the character described, the combination of a cylindrical holder; a helical brush section wound thereon; and a counterweight in the form of a helical strip attached to said holder approximately 180° about the axis of the latter from said section.

5. A brush section comprising a wire, brush material looped upon said wire, and a perforated strip through which the loops of material pass, said strip being bent longitudinally into U-cross-section so as to laterally compress said material at the base of the loops and secure the same in place on said wire, the free brush material being bent at right angles to the base consisting of said wire and strip.

Signed by me, this 18th day of March, 1919.

CLINTON E. FROST.