Aug. 15, 1967 K. E. WEILER 3,335,444

MINIATURE BRUSH CONSTRUCTION AND MEANS OF STEM MOUNTING

Filed Aug. 15, 1966

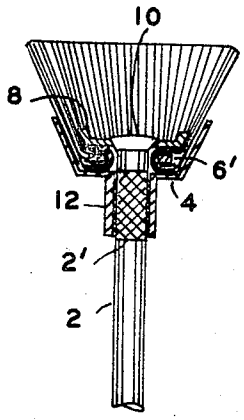


FIG 2

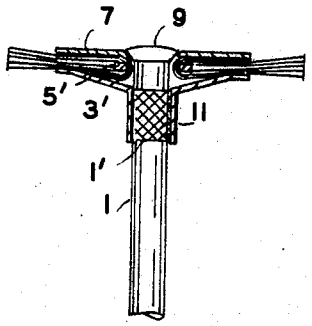


FIG 1

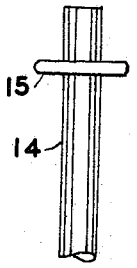


FIG 3

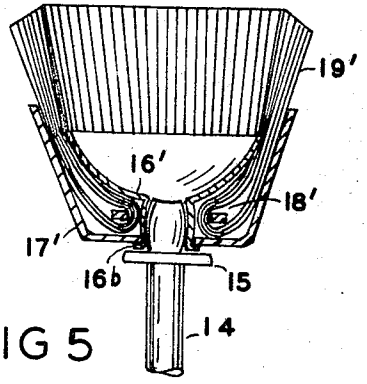


FIG 5

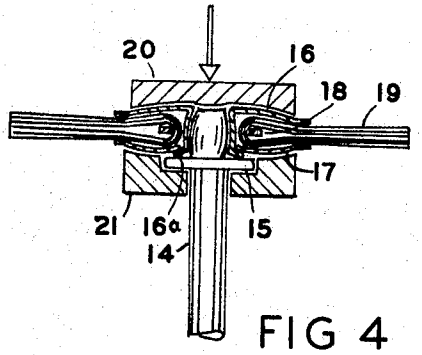


FIG 4

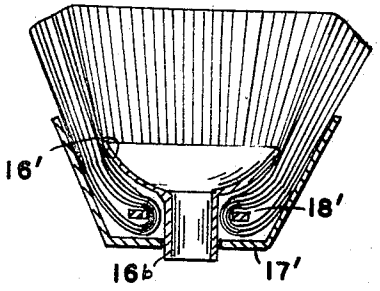


FIG 7

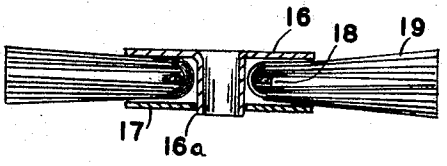


FIG 6

INVENTOR.
KARL E. WEILER
BY James P. Malone

United States Patent Office 3,335,444 Patented Aug. 15, 1967

3,335,444

MINIATURE BRUSH CONSTRUCTION AND MEANS OF STEM MOUNTING

Karl E. Weiler, Cresco, Pa. 18326

Filed Aug. 15, 1966, Ser. No. 572,524
2 Claims. (Cl. 15—179)

ABSTRACT OF THE DISCLOSURE

A rotary brush having a novel stem with a collar, the brush assembly being held together and on the stem by swelling of the stem inside the assembly caused by heading, staking or otherwise radially expanding the stem inside the brush assembly.

This invention relates to rotary wheel and cup type miniature brushes mounted on steels stems containing a fill material or wire or horsehair of any of the other well known brush filling materials.

Brushes now known to the art are mounted on a shank resembling a nail with an eyelet of either a flat or cup shape where brush fill material is looped around a retaining ring. The eyelets are held in place on serrations impressed on the stem. The disadvantage of this construction lies in the fact that pressure on the brush in use often loosens the eyelet causing the brush to come apart or allowing the fill material to rotate with relation to the mounting.

The present invention eliminates the serrations of the stem by providing a novel stem with a collar, the brush assembly being held together and on the stem by swelling of the stem inside the assembly caused by heading, staking or otherwise radially expanding the stem inside the brush assembly.

Accordingly, a principal object of the invention is to provide new and improved method for making rotary brushes.

Another object of the invention is to provide new and improved rotary brush means.

Another object of the invention is to provide new and improved stem means for rotary brushes.

Another object of the invention is to provide means for mounting a wheel or cup like brush assembly on a stem.

Another object of the invetnion is to provide a new improved process brush assembly with rotary type brushes.

Another object of the invention is to provide new and improved rotary brush comprising a stem having a collar fixedly mounted adjacent one end thereof, a brush assembly adapted to be mounted on said stem, said brush assembly comprising, an annular retaining ring, a plurality of bristles mounted around and inside said retaining ring, an annular eyelet, said eyelet mounted inside said bristles and having a radially extending top portion, a bottom plate adapted to be mounted on said eyelet, said brush assembly being mounted on said stem adjacent said collar.

These and other objects of the invention will be apparent from the following specification and drawings of which:

FIGURE 1 is a cutaway view showing mounting of a wheel brush on a stem of the prior art.

FIGURE 2 is a cutaway view showing the mounting of a cup brush on a stem of the prior art.

FIGURE 3 is a side view of a stem of the type employed in this invention.

FIGURES 4 and 5 show wheel and cup brushes repectively mounted in accordance with this invention.

FIGURES 6 and 7 are detail views of brush assemblies according the present invention.

Referring to the figures, FIGURES 1 and 2 show rotary brushes of the prior art, wherein the stems **1** and **2** have serrations **1'** and **2'** and the brush assemblies **3** and **4** are squeezed onto the serrated portions of the stem.

In FIGURES 1 and 2, the bristles are held by retaining ring **5** and **6'**. Top plates **7** and **8** which are held by the heads **9** and **10**, and the bottom members **11** and **12** are squeezed against the bristles.

Since these brushes are rotated at high speed, and are pressed against the work piece, the brush assembly may become loose on the stem.

FIGURE 3 shows a stem **14** having an integral collar **15** made according to the present invention.

FIGURE 4 shows an embodiment of the invention comprising a brush assembly consisting of an eyelet **16** having a separate lower plate **17**, retaining ring **18** and bristles **19**. The assembly is made by placing the bristles inside the retaining rim **18** spaced evenly around the perimeter of the retaining ring. The eyelet **16** is then placed inside the retaining ring and bristles, and the bottom plates are then placed underneath and then over the central lower rim portion of the member **16** which is originally straight as in FIGURE 6. The subassembly is slid onto the stem **14** above the collar **15** and held with suitable jig or fixture **21**. The stem is then headed or staked by hitting on top with a hammer like tool **20** so as to expand the portion **14'** of the stem above the collar. A portion of the tool **20** also bears on the eyelet assembly. This force causes the central lower rim **16*a*** of the eyelet to roll over the underplate **17**.

Therefore, the bristles are securely clamped above and below as in the prior art and also in the radial direction between the central portion of the eyelet member **16** and the retaining ring **18**. This provides a greatly improved holding of the bristles as well as the entire subassembly and it is practically impossible to remove the subassembly from the head of the stem.

FIGURE 5 shows a cup shaped brush. This assembly includes an eyelet member **16'** and lower member **17'** which is curved to provide a cup shape for the brush. Otherwise, the assembly is made the same as in FIGURE 4 with the lower central rim **16*b*** of the eyelet member **16** rolled over member **17**. The bristles **19'** are held by the retaining ring **18'** in the same manner as discussed in connection with FIGURE 4.

Note, in FIGURE 6, that the eyelet member **16** has not yet been formed by to tool **20** and the lower rim **16*a*** has not yet rolled over by the action of the tool **20**.

FIGURE 7 shows a similar view of the assembly for the cup embodiment of FIGURE 5.

Many modifications may be made by those who desire to practice the invention without departing from the scope thereof, which is defined by the following claims.

I claim:

1. A rotary brush comprising,

a stem having a flat collar fixedly mounted adjacent one end thereof,

a brush assembly adapted to be moutned on said stem, said brush assembly comprising,

an annular retaining ring,

a plurality of bristles mounted around and inside said retaining ring,

an annular eyelet, said eyelet mounted inside said bristles and having a radially extending top portion,

a bottom plate adapted to be mounted on said eyelet,

said brush assembly being mounted on said stem adjacent said collar and being held together and onto said stem by an expanded portion of said stem.

2. Apparatus as in claim 1 wherein said bottom plate fits over the bottom rim portion of said eyelet, said bottom rim extending under said bottom plate.

References Cited

UNITED STATES PATENTS

959,191	5/1910	Abbott	15—179
1,054,160	2/1913	Abbott	15—179
2,495,559	1/1950	Weiler	15—198

FOREIGN PATENTS

834,598	5/1960	Great Britain.

CHARLES A. WILLMUTH, *Primary Examiner.*

PETER FELDMAN, *Assistant Examiner.*