

June 13, 1967

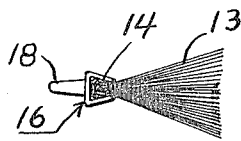
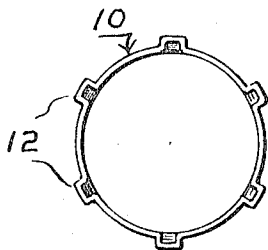
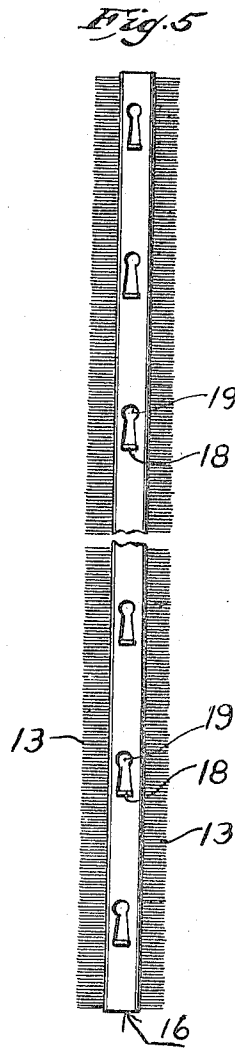
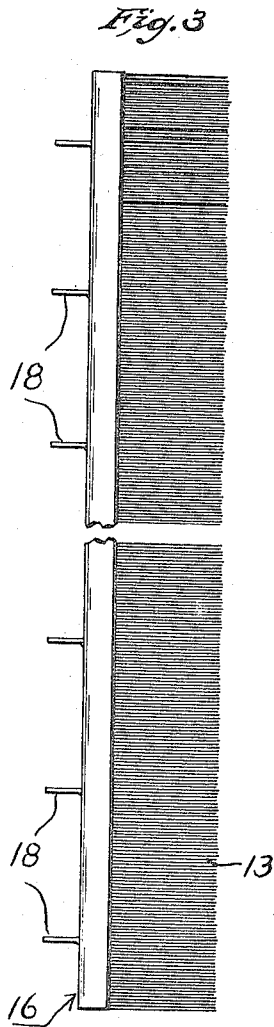
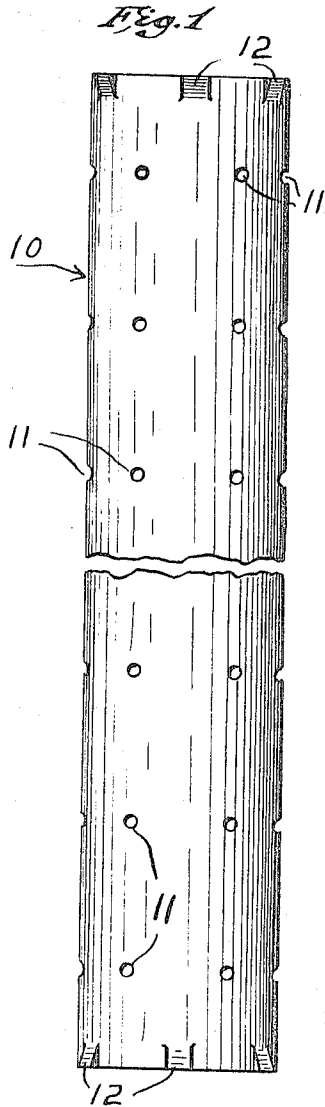
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3,324,496

ROTARY BRUSH

Filed Dec. 6, 1965

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

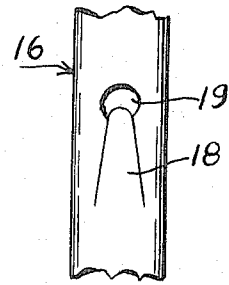
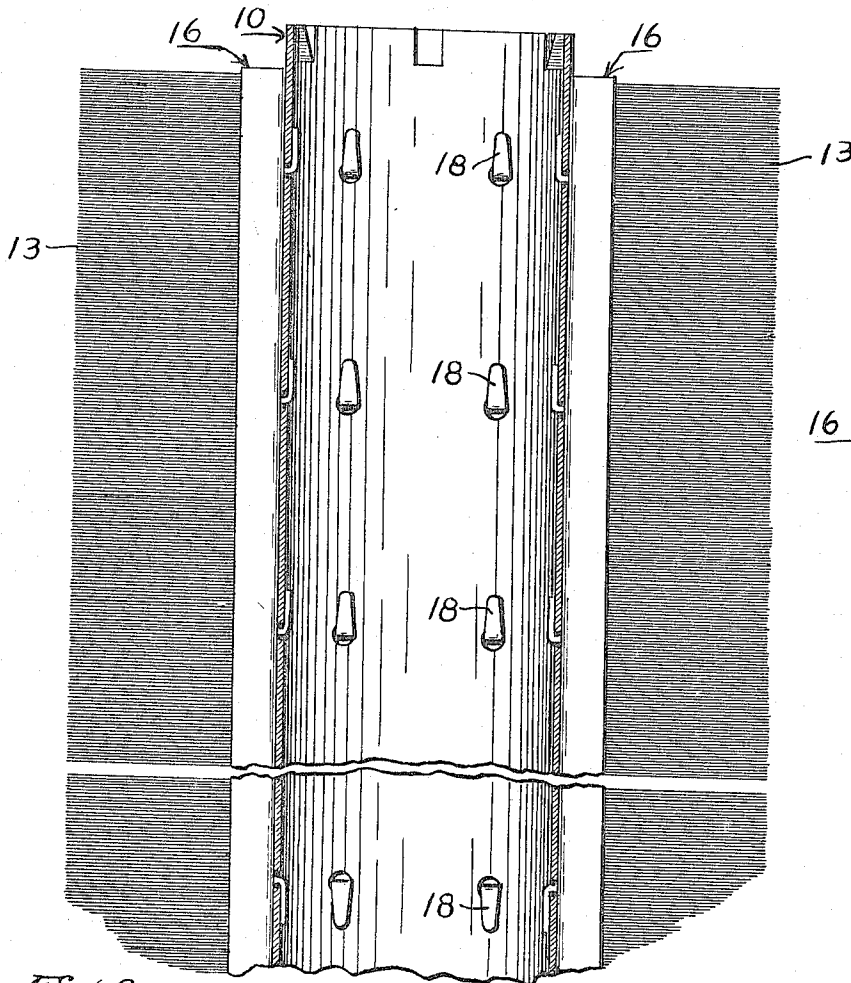


Fig. 6

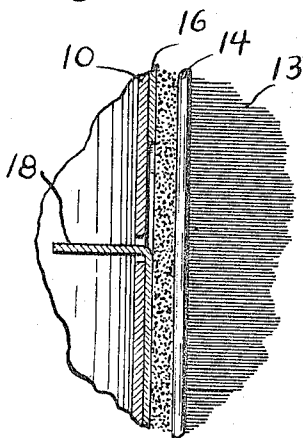


Fig. 8

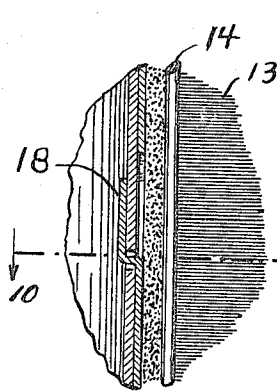


Fig. 9

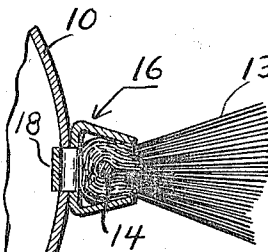


Fig. 10

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3,324,496

ROTARY BRUSH

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1 Claim. (Cl. 15-183)

This invention relates to rotary brushes and more particularly to a novel construction of a rotary brush adapted for use on a dulling machine.

In the manufacture of laminated plastics, aluminum grain lithograph plates, electronic printed circuits, etc., rotary brushes are utilized to produce finishes of various types. These brushes are carried by a dulling machine provided with means for mounting and rotating a plurality of brushes. During use, the brushes wear rapidly, thereby requiring frequent replacement.

Generally, a dulling machine carries as many as eight brushes and it is highly desirable to provide brushes of low cost and constructed to permit quick replacement on the machine. My U.S. Patent No. 3,142,079, dated July 28, 1964, discloses a rotary brush mounting arrangement which facilitates the replacement of worn brushes. In this arrangement, a core, carrying radially-extending bristles, is clampingly secured in operative position by arbors inserted into the ends of the core. These arbors are provided with cooperating threaded members whereby the arbors may be separated, quickly, to permit replacement of the brush without dismantling other components of the dulling machine. The present invention is directed to an improved construction of the brush, as such, which brush is adapted for use in the quick-change arrangement shown in the above-referenced patent, as well as in other applications requiring a rotatable brush.

An object of this invention is the provision of an improved construction of a brush of the class wherein the bristles extend radially from a core.

An object of this invention is the provision of a brush having sets of bristles secured to backing strips which backing strips are removably carried by a tubular core.

An object of this invention is the provision of a brush comprising a tubular core for end mounting on rotatable arbors, said core having a plurality of holes formed therein, and sets of bristles carried by backing strips provided with prongs extending through the core and clinched against the inner wall of the core.

These and other objects and advantages will become apparent from the following description when taken with the accompanying drawings. It will be understood, however, that the drawings are for purposes of illustration and are not to be construed as defining the scope or limits of the invention, reference being had for the latter purpose to the claim appended hereto.

In the drawings wherein like reference characters denote like parts in the several views:

FIGURE 1 is a side elevational view of a tubular core made in accordance with this invention;

FIGURE 2 is an end view thereof;

FIGURE 3 is a side elevational view of one of the brush strips made in accordance with this invention;

FIGURE 4 is an end view of same;

FIGURE 5 is a back or rear face view of the brush strip;

FIGURE 6 is an enlarged fragmentary, longitudinal sectional view of the core with the brush strips assembled thereto;

FIGURE 7 is an enlarged, fragmentary, back face view showing one of the prongs prior to outward deformation thereof relative to the backing strip;

FIGURE 8 is an enlarged fragmentary sectional view showing a prong extending through a hole of the core;

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FIGURE 9 is a similar view showing the prong pressed into the clinching position; and

FIGURE 10 is a cross-sectional view taken along the line 10-10 of FIGURE 9.

Referring now to FIGURES 1 and 2, the brush core comprises a tubular member 10 made of any suitable material, preferably extruded aluminum tubing, to provide strength and light weight together with dimensional stability under high moisture conditions normally encountered in use on a dulling machine. A plurality of holes 11 are formed in the core, as by drilling or by a gang piercing operation, which holes are formed in sets of longitudinally-extending rows. Also, the end walls of the core are upset to form a plurality of spaced ears 12. Those skilled in this art will understand that the core may be mounted on suitable arbors, or spindles, inserted into the core ends, such spindles being provided with splines, entering into the ears 12, thereby to provide a positive rotation of the core.

A brush strip, shown in FIGURES 3-5, comprises a set of bristles 13 bent around a holding wire 14 and secured in fixed position by the inwardly-directed side walls of an elongated backing strip 16. Punched in the bottom wall of this strip are a plurality of tapered tanks, or prongs 18, and associated openings 19, see, particularly, FIGURE 7. When the prongs are formed, they lie flush with the bottom wall of the backing strip, thereby facilitating the assembly of the bristles to the backing strip. Then, by means of a suitable tool inserted into the holes 19, the prongs are offset outwardly to the positions shown in FIGURES 3-5. When the prongs are so bent, the spacing between the prongs corresponds to that of a set of longitudinally-aligned holes 11 formed in the core, whereby a plurality of the backing strips can be assembled to the core, as shown in FIGURE 6.

The enlarged, fragmentary cross-sectional view of FIGURE 6 shows the bristles 13 bent around the holding wire 14, the bottom wall of the backing strip 16 engaging the outer wall of the tubular core 10, and a prong 18 extending through the corresponding hole formed in the core. The length of the prong is such that when it is offset into the clinching position, as shown in FIGURES 9 and 10, the brush strip is secured firmly to the core. After the prongs of the brush strips have been inserted through the aligned holes of the core, all of the backing strips are held in engagement with the core by means of a suitable wrap-around holding fixture. This permits bending of all prongs to the clinching positions by forcing a rod, of suitable diameter, through the core.

In the drawings, the holes formed in the core are shown in longitudinally-aligned sets, whereby each set of holes accommodates the prongs of a described, elongated brush strip. It will be apparent, however, that each set of such holes may be formed along a spiral path, thereby to accommodate sets of brushes each carried by circular backing strips.

Having now described the invention, those skilled in this art will be able to make various changes and modifications without thereby departing from the scope and spirit of the invention as recited in the following claim.

I claim:

A quick-change, expendable rotary brush comprising, a tubular core having sets of spaced holes formed in the wall, and a plurality of brush strips each having a U-shaped member substantially equal in length to the length of said core and the base of which is provided with a plurality of integral prongs, said brush strips being mounted with the base of each in contact with the outer wall of said core and with the prongs thereof extending through a set of said holes and bent into contact with the inner wall of said core, said brush strips each having a rod dis-

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posed within said U-shaped member and bristles, the central portions of said bristles being bent around said rod and clampingly secured within the associated U-shaped member by the side arms thereof, said bristles extending radially of and providing a continuous bristle surface around said core.

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