Dec. 3, 1963 R. V. HIRST 3,112,505

ROTARY PAINT BRUSH COMB

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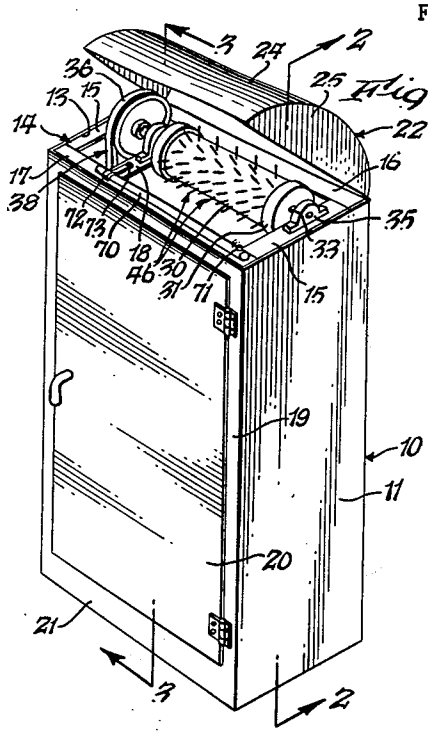


Fig. 1.

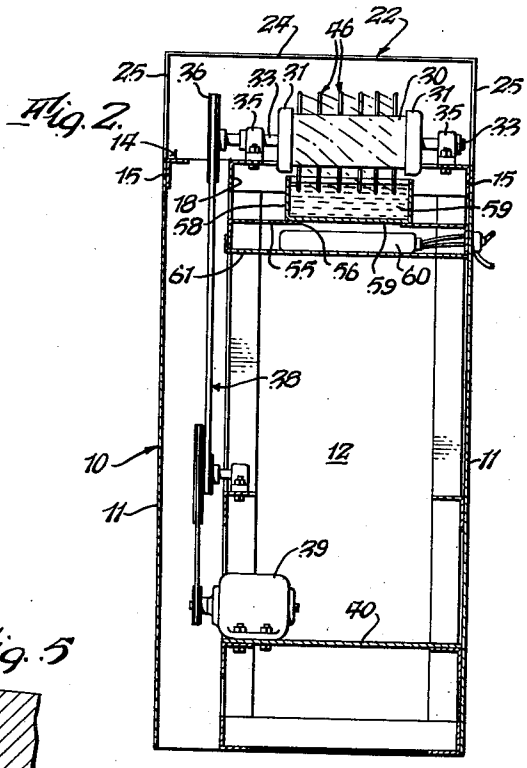


Fig. 2.

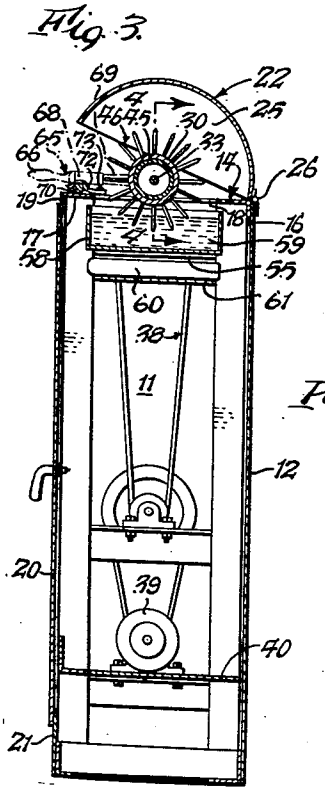


Fig. 3.

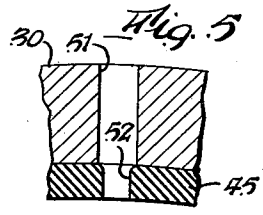


Fig. 5

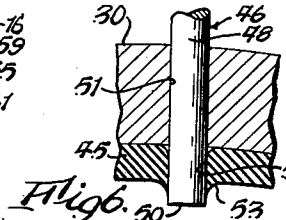


Fig. 6.

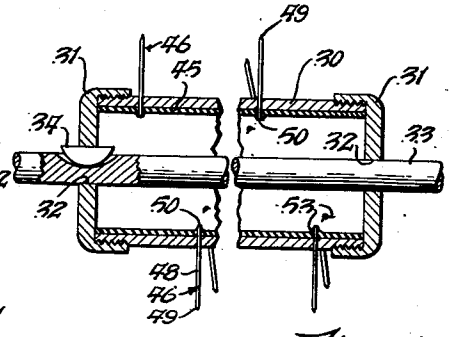


Fig. 4.

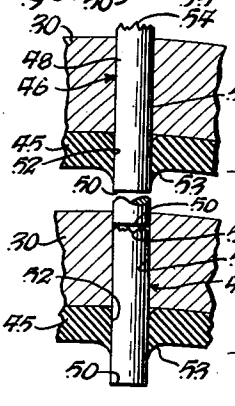


Fig. 7

Fig. 8.

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ROTARY PAINT BRUSH COMB

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The present invention relates to a rotary comb used in conjunction with cleaning hardened paint from paint brushes after they have been steamed, worked in a detergent solution, soaked or otherwise treated, for the purpose of softening the paint on the paint brush so that the rotary comb will be effective to physically loosen the paint solids from the bristles and remove and/or bring the paint solids to the surface.

It is accordingly a primary object of the present invention to provide such a comb which is particularly effective in removing paint solids from paint brushes and/or bringing them to the surface of the brush following treatment in which the paint on the brushes has been softened.

Another object of the invention is to provide such a comb having pins or tines which are strong and durable and not subject to breakage but which, when broken, can be very quickly and easily replaced thereby to minimize shut-down and maintain the comb at full working efficiency at all times.

Another object is to provide such a rotary comb in which the operator is protected from flying broken pegs or tines.

Another important object of the invention is to provide such a rotary comb, the principal components of which are standard threaded pipes and caps, and in which there is a minimum of machining so that the apparatus can be produced at low cost with commercially available materials.

Other objects and advantages of the invention will be apparent from the following description and drawings in which:

FIG. 1 is a perspective view of a cabinet containing a rotary comb and accessory equipment embodying the present invention.

FIGS. 2 and 3 are vertical sections taken generally along the correspondingly numbered lines of FIG. 1.

FIG. 4 is an enlarged fragmentary vertical section taken generally on line 4—4, FIG. 3.

FIGS. 5–8 are greatly enlarged fragmentary sections through the cylinder wall of the rotary comb and showing the manner in which the pins or tines are inserted and the manner in which broken tines are removed and replaced with new pins or tines.

The rotary comb of the present invention is supported at a convenient elevation for a standing worker and for this purpose is preferably mounted in the open top of a sheet metal cabinet indicated generally at 10 and shown as having side walls 11, a rear wall 12 and an opening 13 in its top surrounded by a horizontal rectangular frame 14 composed of side angle bars 15 secured to the tops of the side walls 11, a rear angle bar 16 secured to the top of the rear wall 10, a front horizontal angle bar 17 connecting the front ends of the side angle bars 15 and an intermediate fore-and-aft angle bar 18 arranged at one side of the cabinet in spaced relation to the adjacent side angle bar 15. The front wall of the cabinet is formed by a door frame 19 having a hinged door 20, this door providing access to the interior of the cabinet, a kick or toe space 21 being preferably provided below this front wall.

The open top of the cabinet preferably has a cover 22 composed of a semicylindrical sheet metal body 24 having semicircular end walls 25 to hold it in position. The rear edge of the semicylindrical body 24 is hinged, as indicated at 26, to the upper end of the rear wall 12 of the casing and this cover can be supported in a partly open position by any means (not shown), the purpose of such partially open support being to protect the worker from flying broken pegs or tines.

The comb itself comprises a short length 30 of three-inch standard water pipe having standard water pipe end caps 31 screwed on the opposite threaded ends thereof. These caps are drilled to provide coaxial bores 32 in which a shaft 33 is press-fitted, this shaft being prevented from turning with reference to the end caps 31 in any suitable manner, as by a key 34.

The opposite projecting ends of the shaft 33 are journalled in bearing blocks 35 of any suitable form and which are mounted on the fore-and-aft angle bar 18 and one of the side angle bars 15 of the top frame 14 of the cabinet.

The shaft 33 can be rotated in the bearing blocks 35 in any suitable manner as by a pulley 36 fixed to the end of the shaft 33 projecting beyond the fore-and-aft bar 18 of the top frame 14 and driven through on belt drive indicated generally at 38 from an electric motor 39 mounted on a shelf 40 in the bottom of the cabinet.

The pipe 30 has a tubular liner 45 of soft, resilient organic plastic flexible material, such as rubber, this tubular liner snugly fitting the inside cylindrical surface of the pipe 30 and being of sufficient thickness to form an anchorage for many pins or tines 46 which protrude radially from the pipe 30 and which are preferably uniformly spaced axially and circumferentially along and around the pipe. Each of these tines or pins is preferably in the form of a short length of cylindrical rod 48 provided at one end with a point 49, the opposite base end 50 being preferably cut off at right angles so as to present a circular face. The base end 50 of each pin is snugly received in a radial bore 51 drilled through the pipe 30. In line with this radial bore, the tubular liner 45 is provided with a cylindrical hole 52 which is, however, of smaller diameter than the companion bore 51 as illustrated in FIG. 5.

In this manner the tubular rubber liner 45 provides a very simple and effective anchorage for the many pins 46 in which these pins can be easily inserted and anchored and from which broken pins can be readily knocked out to be replaced with whole pins. Thus, to insert and anchor a pin in the bores 51 and 52 of the pipe 30 and tubular liner 45, respectively, as illustrated in FIG. 5, all that is necessary is to push a pin, base end 50 first, successively through these bores or holes from the outside of the pipe as illustrated in FIG. 6. The base end of the pin slides snugly through the bore 51 of the pipe but on encountering the smaller hole 52 of the rubber liner 45 is required to not only distend this hole to its own size, but also offsets the rubber around this hole radially inwardly, with reference to the pipe 30, so as to provide a conical inset 53 which serves to grip and prevent return or radial outward movement of the pin 46. The distortion of the rubber represented by the conical inset 53, FIGS. 6–8, has been found to be entirely effective in providing a reliable anchorage for the pins or tines 46 even when the pipe 30 is rotated, the rotation of this pipe in normal use being in the order of 45 r.p.m. At the same time the snugly fitted bore 51 through the pipe insures the pins being held in proper radial outwardly projecting relation and fully effective in combing the bristles of a paint brush.

The chief source of break-down of rotary combs of this character is the breaking off of the pins 46 at their bases, such a breakoff being indicated by the rough line 54 in FIG. 7. It is an important feature of the present invention that the broken stub of such a pin can be quickly removed. For this purpose all that is necessary is to push the base end 50 of a new pin 46 against the broken surface 54 of the stub. This causes the new pin 46 to enter the bore 51 and to push the stub ahead of it. This movement of the stub is not impeded since the embracing coni-

cal inset 53 of the rubber liner 45 projects radially inwardly with reference to the pipe 30. When the new pin has been pushed through to the position shown in FIG. 7, the stub has been pushed completely out of the hole 52 through the tubular liner and is arranged inside the lined pipe 30. A large number of stubs can accumulate within the lined pipe 30 without creating objectionable noise because of their contact with the soft rubber liner 45 instead of rattling around in an unlined metal pipe.

Desirably the pointed ends 49 of the pins or tines 46 dip into a heated lubricant as the comb rotates, and for this purpose a shelf 55 is shown as arranged in the cabinet 10 immediately below the rotary comb and as having an opening 56. On the shelf, above this opening, is mounted a pan 58 containing a body 59 of liquid lubricant, this being preferably at such level that the points 49 of the tines 46 dip into it as the rotary comb rotates. To maintain this liquid body 59 in this heated condition, a heater such as the electric heater 60, can be mounted on a shelf 61 immediately below the shelf 55, the effective area of this heater being below the opening 56.

The lubricant 59 used can be linseed oil or motor oil in which case the heater 60 would not be used. The lubricant used can also be a lubricous detergent, the lubricity of which provides the lubricant at the sides of the bristles to reduce friction of the pegs or pins 46 passing through the bristles and reduced damage to and loss of bristles. The cleansing character of the lubricous detergent serves to break up, soften and dissolve the paint and this is augmented by the use of the heater 60. However, the essential functioning of the body 59 is as a lubricant. Applying the lubricant directly to the pins 46 is more effective, of course, than constantly dipping the brushes in a lubricant, because dipping the pins in a lubricant positively insures lubricating its surfaces which contact the bristles. In this connection, the maximum speed of the comb, is in the order of 50 r.p.m., such speeds in excess of this being hazardous should a large snarled brush get caught in the pins.

The paint brushes 65 to be cleaned are each shown as being a standard paint brush having a wooden handle and head 66, the head being surrounded by a metal ferrule 68 which embraces the bristles 69 of the brush and secures these bristles to the wooden handle and head 66.

In removing the softened paint from the bristles 69 of such a brush, the rotary comb rotates in a counterclockwise direction, as viewed in FIG. 3, so that the bristles are acted upon by descending pointed ends 49 of the various tines or pins 46 with the brush held across the front bar 17 of the cabinet top frame 14.

A feature of the invention resides in a holder form of the brush, this holder comprising a round bar 70 mounted longitudinally upon the front angle bar 17 of the top frame 14 in front of the comb and having one end pivotally secured to this frame by a vertical pivot pin 71. The opposite end of this bar 70 is removably caught under a detent finger 72 which is secured to the fore-and-aft cross channel bar 18 as by a rivet 73.

The ferrules of the paint brushes are placed upon this bar 70 with the wooden handles 66 projecting outwardly and held by the worker and with the bristles projecting horizontally inwardly into the zone of action of the pins 46. As the paint is progressively removed by the pointed ends of the pins or tines 46 the workman moves the brush further into the zone of action of these pins so as to work the paint out of the heel of the brush. The spring clip 72 permits the worker to pull the bar 70 free if there is any danger of getting his hand caught between this bar rest and the comb.

From the foregoing it will be seen that the comb of the present invention achieves the objectives and has the advantages set forth.

I claim:

1. A rotary paint brush comb, comprising a tubular metal body, a tubular liner of soft resilient organic plastic flexible material having its periphery in full contact with the bore of said body, means rotating said body about its axis at a speed in the order of 45 r.p.m., a plurality of cylindrical bores extending generally radially through said tubular metal body, openings of smaller cross sectional size than said bores forming cylindrical continuations of each of said bores through said liner, and a pointed cylindrical pin having its body fitted in each of said bores and openings and being compressively seized by said liner to anchor each pin in its bore against outward movement but permitting inward movement thereof, said body of each pin being of substantially uniform diameter to permit of passing said pins endwise completely through said bores, whereby said pins can be inserted into said bores and openings from the exterior of said tubular metal body and the stub ends of broken pins can be driven through said bores and openings into the interior of said tubular liner.

2. A rotary paint brush comb as set forth in claim 1 wherein each pin base is surrounded by a cone of said liner offset toward the axis of said liner as a result of the pin being inserted from the exterior of said tubular metal body.

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