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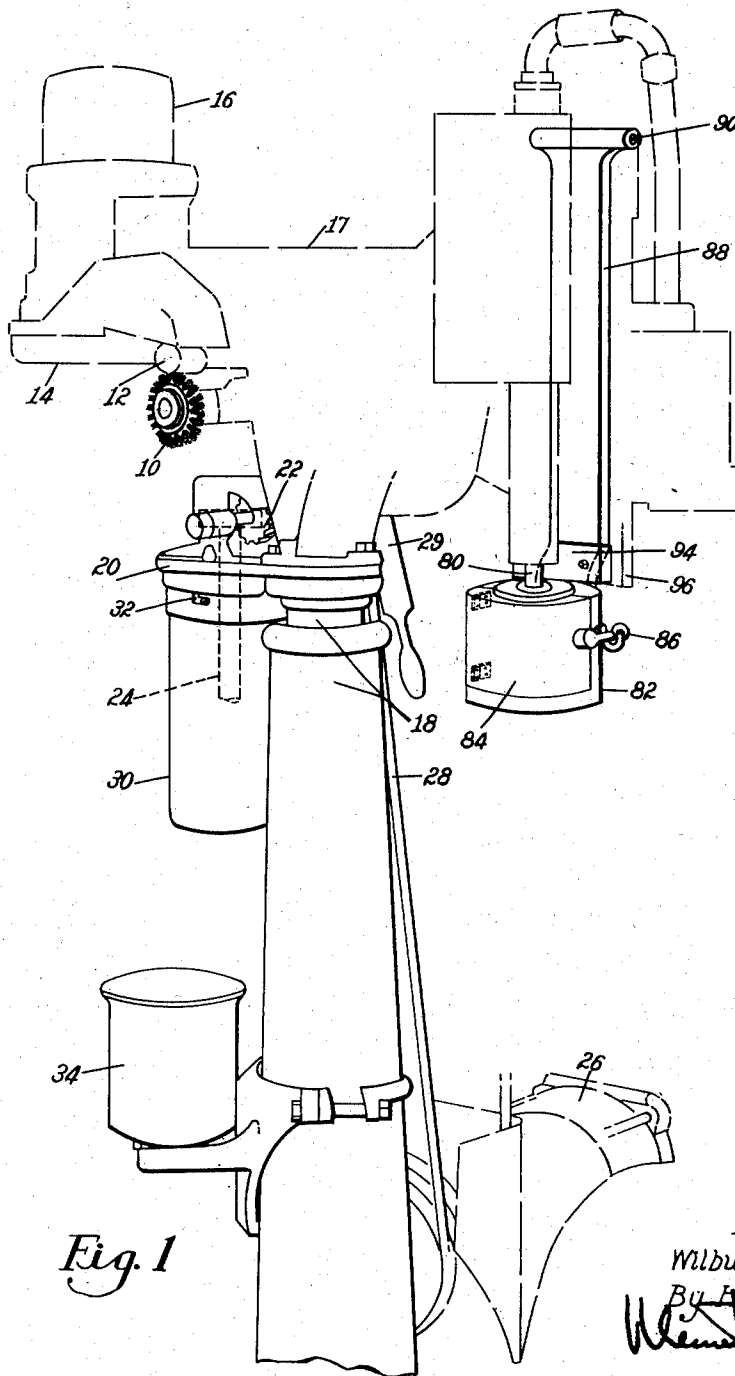
W. L. MacKENZIE

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CLEANING DEVICE FOR ROTARY BRUSHES

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2 SHEETS—SHEET 1



Inventor

Wilbur L. MacKenzie

By His Attorney

W. L. MacKenzie

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CLEANING DEVICE FOR ROTARY BRUSHES

Wilbur L. MacKenzie, Beverly, Mass., assignor to
United Shoe Machinery Corporation, Flemington,
N. J., a corporation of New Jersey

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This invention relates to cleaning devices for rotary brushes and is herein illustrated as applied to and designed for use with the brushes of cement-applying machines such as are employed in the shoe trade.

In the manufacture of shoes, it is common practice to provide a channel in the outsole of a shoe to receive the sole-attaching stitches and, after the shoe has been assembled, to close this channel by cementing the channel flap to the body of the sole. Excellent results have been secured in applying latex-type cements to such channels, for example, by means of a rotary brush such as is shown in Fig. 9 of Letters Patent of the United States No. 1,851,162, granted March 29, 1932, upon an application in the name of J. W. Cosgrove. During the use of such machines, a slow but continuous coagulation of particles of cement in the bristles of the brush takes place. This is particularly evident if the machine stands idle for a short period such as during the noon hour or over night and, then, the brush must be cleaned before it is suitable for reuse. However, solvents for latex-type cements which have become coagulated and which would be suitable for use in cleaning the cement from brush bristles are not readily obtainable and the cleaning process has been a tedious and disagreeable one. Attempts have been made to speed up the cleaning operation by spinning the brushes in solvent, but such attempts have been only partially successful.

Accordingly, an object of the invention is to provide an improved cleaning device for rotary brushes which will be easier to use and will be more effective.

Such a device includes an arrangement for spinning the brush in a cup of solvent and also, in accordance with features of the invention, includes a support for improved brush supporting and driving means in the use of which one or more annular brushes is raised and readily slipped over the lower end of a depending shaft where it is secured. A container is then brought up over said brushes and clamped in spatter proof relation to the support.

In the device illustrated, the brushes are carried on a headed sleeve which has a cam slot at its upper end for locking engagement with a pin projecting radially from the driven shaft, this pin cooperating with the head of the sleeve to grip the brushes against the head of the sleeve, thereby facilitating the removal and replacement of brushes on the shaft.

These and other features of the invention will best be understood from a consideration of the

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following specification taken in connection with the accompanying drawings, in which

Fig. 1 is an angular view of a brush cleaning and drying device applied to a cementing machine such as is shown in the patent mentioned above;

Fig. 2 is a vertical section through the brush cleaning mechanism, on a larger scale; and

Fig. 3 is a horizontal section on the line III—III of Fig. 2.

A cement-applying machine of the type shown in the previously mentioned patent includes a driven cement-applying annular brush 10 to which cement is delivered by a transfer roll 12 from a receptacle 14 and the latter is supplied with cement from an inverted receptacle 16 carried on a frame 17. This machine is illustrated as supported on an adjustable column 18, and there has been interposed between the base of the machine and the top of the column a bracket 20 carrying gears 22 for the rotation of a vertical shaft 24 on which the brushes to be cleaned may be supported. Power for driving the cleaning mechanism is derived from a motor 26 connected to the cleaning device at will by means of a belt 28 which is controlled by a belt shifter 29.

An open-topped solvent retaining receptacle 30 is detachably secured in non-spattering tight relation to the under side of the supporting bracket 20 by means of a series of bayonet joints 32 supplemented by spring latches, not shown. A cup 34 mounted on the column 18 is provided for the convenient support of the container 30 when brushes are to be applied to or to be removed from the lower end of the shaft 24. Inside the container there is positioned a cage 36 (Figs. 2 and 3) comprising a triode of vertical strips 40, 42 and 44 joined at top and bottom by rings 46 and 48 and evenly spaced thereon. The design of the cage is such that the sides of the strips engage the inner side of the cylindrical receptacle 30 and the ends of them rest on the bottom thereof. Rotation of this cage is prevented by pins 50 secured to the side of the receptacle and engaging the strips. On the strip 40 there is adjustably secured a comb 52 having teeth 54 and a back 56 in which are slots 58 for the reception of clamping screws 59. As can be seen in Fig. 3, the teeth of the comb are not radial to the brushes but are arranged at an acute angle to the radius such that they pass freely through the bristles and lift the cement therefrom. On the strips 42 and 44 of the cage are scrapers 60 and 62 which are adjustably attached to the cage in the same manner as is the comb and are brought into position to engage

lightly the ends of the bristles 64 of a series of rotary brushes 66 secured to the driven shaft 24. By reason of the symmetrical arrangement of the strips, there is no tendency for the brush-engaging devices to deflect or cause vibration of the shaft.

Passing through and projecting from this shaft is a transverse pin 68 adapted to be received in cam slots 70 of a brush-carrying sleeve 72 and having a greater radius so that it projects beyond the outer surface of the sleeve. This sleeve is provided with a head 74 at its lower end, and the one or more annular brushes 66 are stacked on or are circumposed about the sleeve until they come into engagement with the head. Depending upon the number of brushes to be cleaned, a spacing collar 76 may also, if needed, be mounted on the sleeve and the sleeve applied to the free lower end of the shaft by raising it thereon. As the cross pin 68 engages the cam slots 70, it cooperates with the head 74 tightly to clamp the brushes on the shaft and against the head 74 of the sleeve. This provides a readily releasable mechanism by means of which the brushes are secured to a driven shaft so that they can be spun in the solvent container 30 and brought successively into engagement with the teeth 54 of the comb and with the scrapers 60 and 62. The slots 70, as well as those of the bayonet joint 32, are so positioned that rotation of the shaft 24 in the direction indicated by the arrow in Fig. 3, tends to lock the brushes on the shaft and to lock the container 30 on the bracket 20. As the brushes are spun in the solvent, the comb will drag out the coagulated particles of cement which have been loosened by the solvent and, then, as these particles are thrown out by centrifugal force, they will be removed from the brush by the successive action of the scrapers 60 and 62.

If desired, the brushes may be removed from the shaft 24, after they have been cleaned by this mechanism, and assembled on a similar vertical driven shaft 80 provided at one side of the cementing machine, the lower end of said shaft being positioned within a housing 82. This housing has a hinged door 84 which is normally held closed by a latch 86, and the manner of supporting the housing is such that, when the door is opened, the housing tends to swing away from the brushes and may readily be pushed to the rear. To this end, a hanger 88 attached at its lower end to the rear side of the housing is mounted on a horizontal pivot 90 positioned well above the housing. A bearing for the lower end of the brush-carrying shaft 80 is mounted in a bracket 94 which is bolted to a portion 96 of the frame 17. Consequently, when the door is shut, the housing is retained in vertical position around the brush shaft. When, however, the door is opened, the center of gravity of the housing is so changed that it may readily be swung clear of the brushes 66 to facilitate their removal and replacement.

In the use of the machine, the container 30 will be partially filled with solvent and rested in the cup 34. The brushes 66 will then be assembled on the headed sleeve 72 and the assembly including the collar 76 raised into engagement with the lower free end of the shaft 24 and clamped tightly together thereon by bringing the slots 70 in the sleeve into engagement with the transverse pin 68 on the shaft 24 and turning the sleeve with respect to the shaft. The solvent container 30 is then raised and tightly engaged with the bracket 20 by means of bayonet slots 32

after which the shaft 24 is set in motion by operating the belt shifter 29 and is driven for so long as is found necessary.

After the brushes 66 have been cleaned by rotating them in the solvent container 30, they are removed and placed on the shaft 80 within the housing 82. By closing the door of the housing, the latter will be retained firmly in position surrounding the bearing bracket 94 and the brushes spun at a high speed. This will remove from them all the remaining solvent and will throw out small particles of loose cement. When this part of the operation is finished, the latch 86 is released and the cover 84 opened. The housing 82 is then swung away from the brushes so that they may be removed.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a brush-cleaning device, a support, a bracket extending laterally from the support, a container the upper end of which removably engages and is closed by said bracket, a shaft journaled in said bracket and depending therefrom within the container, said shaft having a free lower end to receive an annular brush, a pin projecting radially from the shaft above said free lower end, a sleeve having a brush supporting head at its lower end slidable over the lower part of said shaft and substantially filling the space between the inside of said brush and the outside of said shaft, the upper end of said sleeve having a cam slot for engagement with said pin, said pin projecting radially beyond the outside diameter of the sleeve and cooperating with the head of the sleeve when the sleeve is cammed over said pin to press a brush against the head as the sleeve is rotated on the shaft.

2. In a brush-cleaning device, a support, a container removably mounted thereon, a shaft terminating within the container and having a fixed cross member, a brush-supporting sleeve fitting the inner periphery of an annular brush hub and having an enlarged head at one end, said sleeve being slidable on said shaft, and means on the unheaded end of said sleeve cooperating with said cross member detachably to clamp said sleeve to said shaft and to grip the brush hub against the head of the sleeve.

3. In a brush-cleaning device, a support for a depending removable container for a cleaning element, a brush-carrying shaft journaled in the support terminating within the container, a headed sleeve on the shaft for supporting an annular brush circumposed about said sleeve, a pin projecting from a mid portion of said shaft, and a cam slot at the top of said sleeve cooperating with said pin to hold the sleeve against rotation with respect to the shaft, said pin projecting beyond the periphery of the sleeve to serve as an abutment cooperating with the head on the sleeve to clamp a brush therebetween.

WILBUR L. MACKENZIE.

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