Aug. 15, 1950 A. J. LIEBMAN 2,519,259

BRUSH CLEANING APPARATUS

Filed Feb. 9, 1945

Fig. 1.

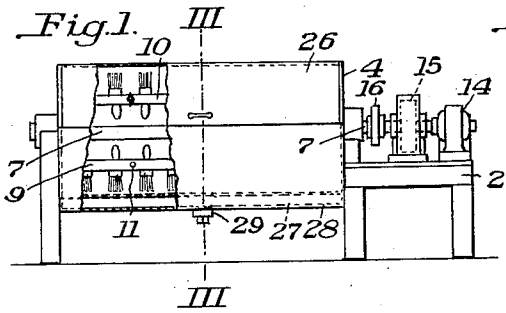


Fig. 2.

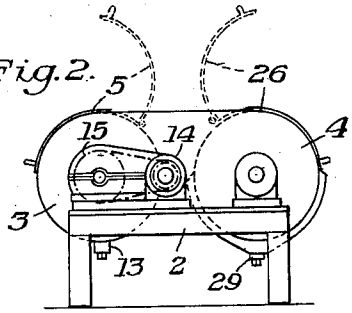


Fig. 3.

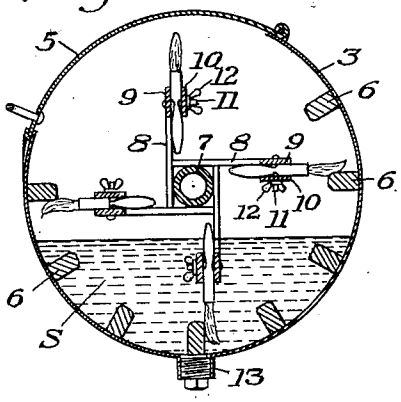


Fig. 4.

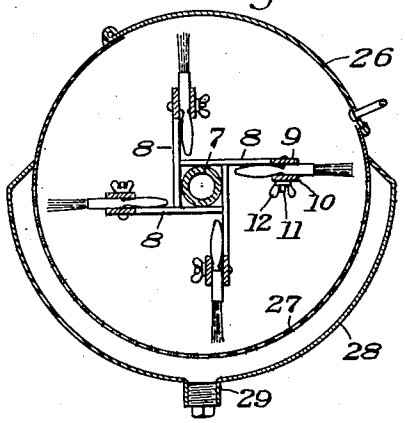


Fig. 5.

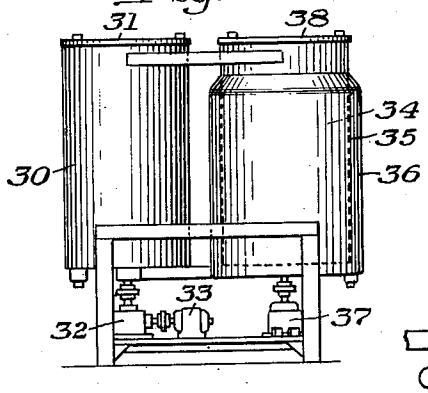


Fig. 6.

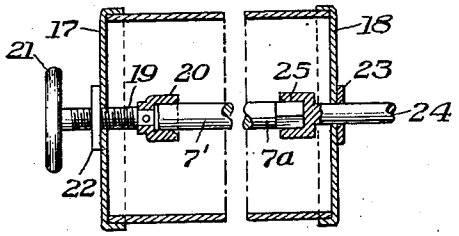
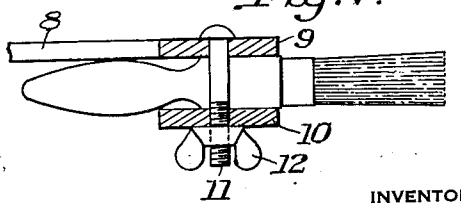


Fig. 7.



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BRUSH CLEANING APPARATUS

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4 Claims. (Cl. 15—89)

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This invention is for washing or cleaning apparatus and relates to an apparatus for the cleaning of brushes, especially paint brushes.

The present invention has for its object to provide a brush cleaning apparatus of relatively simple, inexpensive construction especially useful for cleaning paint brushes, and is designed for use by commercial establishments, shipyards, manufacturing plants and the like where a large number of paint brushes have to be cleaned and reconditioned.

According to the present invention a holder is provided for rotation within a casing or shell, with the brushes projecting radially from the holder. On the interior of the shell are a succession of vanes or baffles, so that as the holder is rotated, the bristles strike the vanes and are flexed, thereby loosening or "working-out" paint and solid or other foreign matter. During this operation the brushes are preferably entirely or partially immersed in solvent or cleaning fluid. A dryer may also be provided in which the same holder, or one like it, is rotated at relatively high speed to remove residual fluid contained in the cleaned brushes, centrifugally.

This invention may be readily understood by reference to the accompanying drawings, in which:

Fig. 1 is a side elevation of one form of apparatus embodying my invention;

Fig. 2 is an end view thereof;

Fig. 3 is a transverse section on a somewhat larger scale through one part of the apparatus designated the washer, the section being in approximately the plane of line III—III of Fig. 1;

Fig. 4 is a similar view through the dryer, the view being in the same plane as Fig. 3;

Fig. 5 is a side elevation of a slightly modified form of apparatus;

Fig. 6 is a fragmentary longitudinal sectional view showing one manner of removably mounting the brush holder in the washer or dryer unit; and

Fig. 7 is a fragmentary view showing on a larger scale the clamp of the brush holder.

Referring first to Figs. 1 to 4, the machine comprises a supporting frame 2 on which are two fixed drums or shells 3 and 4 of cylindrical or other appropriate shape. One drum, which is the washer, is designated 3. It is provided with a hinged cover 5, affording access to its interior. Carried on the inner wall of the drum 3 are a series of longitudinally extending vanes, ribs, corrugations or like inwardly-projecting means 6.

Inside the drum or housing 3 is a brush holder

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comprising a central supporting shaft 7 having a plurality of radially-extending arms 8. These arms support longitudinally-extending strips 9 at their outer ends. Carried on one face of each strip 9 is another strip 10 which is adjustable toward and away from its strip 9; there being bolts 11 for supporting the strip 10, and wing nuts 12 are provided on these bolts (see Fig. 7). The brushes to be cleaned, designated B in Fig. 3, are clamped in the manner indicated between the strips 9 and 10, the wing nuts 12 enabling the clamping of the brushes to be easily accomplished. The brushes are clamped so that the handles turn toward the hub or center of the rotor and the bristles project outwardly in a generally radial direction. The diameter of the drum and the position of the clamping means is such that when the rotor is turned about its axis, the bristles of the brush will strike the vanes or baffles 6 to flex the bristles and thereby any paint or solid or other foreign matter in the bristles may be worked out. The drum is fluid-tight so that a body of appropriate solvent or cleaning solution, designated S in Fig. 3 may be retained in the lower part of the drum. The level of the solvent S is preferably below the axis of the rotor. There may be a drain plug at 13.

One end of the rotor may project through one end of the drum and be provided with either manual or motor-driven operating means for driving the rotor either continuously in one direction, or alternately in one direction and then the other. In the drawings I have shown a motor 14 for turning the drum through an appropriate driving gear 15 which is coupled at 16 to the projecting end of the shaft 7. It will be understood that for washing the brushes the rotor is driven at a relatively low speed.

For convenience, and also for drying the brushes, it may be desirable to have the rotor assembly removable from the drum, and in Fig. 6 there is illustrated one way of providing such a removable rotor. In Fig. 6 one end of the drum is designated 17, and the other end is designated 18. Passing through the end 17 is a screw 19 having a socket 20 on its inner end and having a hand wheel 21 at its outer end, this screw being threaded through a bushing 22 on the drum head 17. On the opposite end of the drum 18 is a bearing 23 which supports a shaft 24 having a non-circular socket 25 at its inner end, this socket being fast on the shaft 24 while the outer end of the shaft 24 may be connected to any appropriate driving means such as that previously described, or merely provided with a crank for

manual operation. In Fig. 6 the entire rotor is not shown, it being of the general construction herein described, and only the shaft ends have been illustrated. One end designated 7' is mounted to rotate in the socket 20 while the other end 7a is non-circular so that it may be fitted into and driven by the socket 25. In operation the end 7a of the rotor shaft is engaged in the socket 25 and the screw 19 is operated so that its socket 20 will engage the end 7'. To remove the rotor, the screw 19 may be backed off a distance sufficient to enable the ends of the rotor shaft to be disengaged from the two sockets whereupon the rotor may be removed through the opening in the drum for which the cover 5 is provided. It will be understood that various other ways of removably supporting the rotor may be provided.

The casing or housing 4 which is alongside the drum 3 may be provided with fittings similar to those described in Fig. 6 for also removably receiving the brush holder or it may be permanently equipped with a brush holder which is in all respects similar to that provided in the washer. The drum or housing 4 is provided with a cover 26 which affords access to the interior of the drum. The drum is provided around a portion of its periphery with a perforated area 27 with a jacket 28 spaced beyond the perforated portion 27, and there may be a drain plug 29 in this jacket. The brush holding rotor is, as previously indicated, the same as that previously described, and the same reference numerals have been used to designate the corresponding parts. In the dryer unit comprising the drum 4, the rotor is operated at a sufficient speed to cause liquid or solvent retained in the bristles to be thrown off centrifugally against the interior of the drum. The fluid thus drawn off passes through the perforations 27 and is collected in the jacket 28.

In the modification shown in Fig. 5 the two drums are shown as having their axes vertical instead of horizontal, but the general construction and operation is substantially the same. In Fig. 5 the drum 30 constitutes the washer. The interior thereof may be similar to the interior illustrated in Fig. 3, and there may be a rotor similar to the rotor hereinbefore described. There is a cover 31 on the top of the drum, and at the bottom of the drum there is a drive 32 and a motor 33 for operating the brush holder inside the drum. In the vertical washer the brushes will preferably be immersed in the cleaning liquid all of the time. The drum or casing 34 has an inner perforate wall 35 and an exterior jacket 36, the space between the perforated wall 35 in the jacket 36 facilitating the removing of the liquid which is thrown off by the brushes. There is a separate drive 37 for the rotor, and 38 indicates the cover for the dryer.

The present invention provides a simple form of apparatus in which a number of brushes of varying size may be easily clamped in place in the rotor and then by revolving the brushes through an appropriate body of liquid while causing the bristles to strike the baffles or vanes on the interior of the apparatus, the paint or other matter contained within the bristles can be worked out. After the brushes have been cleaned by this washing operation, they may be transferred to the dryer where, by the process of spinning the liquid or cleaning fluid in the bristles can be removed and collected.

While I have illustrated and described certain specific embodiments of my invention, it will be understood that this is by way of illustration, and that various changes and modifications may be made within the contemplation of my invention and under the scope of the following claims.

I claim:

1. A paint brush cleaner comprising a substantially cylindrical housing for holding a body of liquid, a brush holder including a shaft removeably mounted for rotation concentric with the axis of said housing and within said housing, brush clamps secured to said shaft and adapted to support brushes extending radially outwardly from said shaft, a series of abutment members mounted on the inner surface of the housing and projecting into the path of the brushes, an access opening in one wall of said housing to permit removal of said brush holder, and means to rotate said brush holder whereby said brushes are caused to move through said liquid and slap said abutment.

2. A paint brush cleaner as claimed in claim 1 wherein the means to rotate the shaft comprises a drive shaft extending through one end of the housing, a non-circular female socket formed on the inner end of the drive shaft an adjustable shaft extending through the opposite end of the housing, a circular female socket formed on the inner end of the adjustable shaft, and the brush holder shaft having one end formed non-circular and positioned in the non-circular female socket with the other end formed circular and positioned in the circular female socket said brush holder shaft being removeable from said sockets by retracting said adjustable shaft, and means for driving the drive shaft.

3. A device as claimed in claim 1 wherein each brush clamp is of sufficient longitudinal extent along said brush holder shaft to hold a plurality of brushes.

4. A device as claimed in claim 1 wherein said brush holder, said brush holder shaft and said brush clamps form a unit which may be removed from the housing, whereby the brushes may be clamped into it before it is placed in the housing and the brushes remain in it for further processing after it has been removed from the housing.

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