Sept. 2, 1941. B. FESTINI 2,254,677

ROTARY BRUSH

Filed April 25, 1939 2 Sheets-Sheet 1

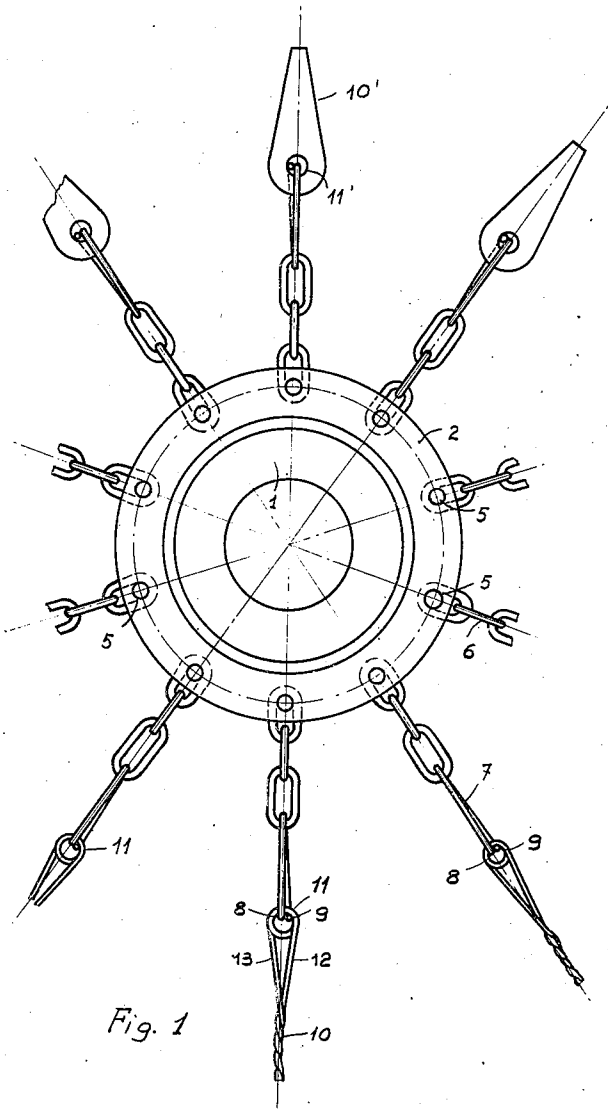


Fig. 1

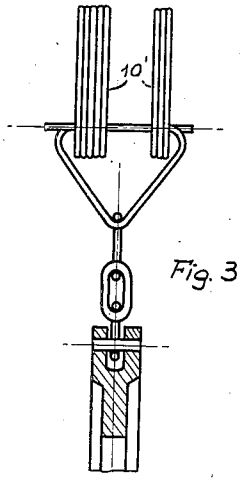


Fig. 3

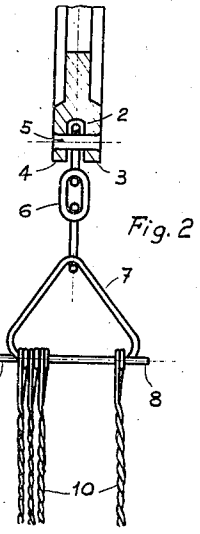


Fig. 2

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ROTARY BRUSH

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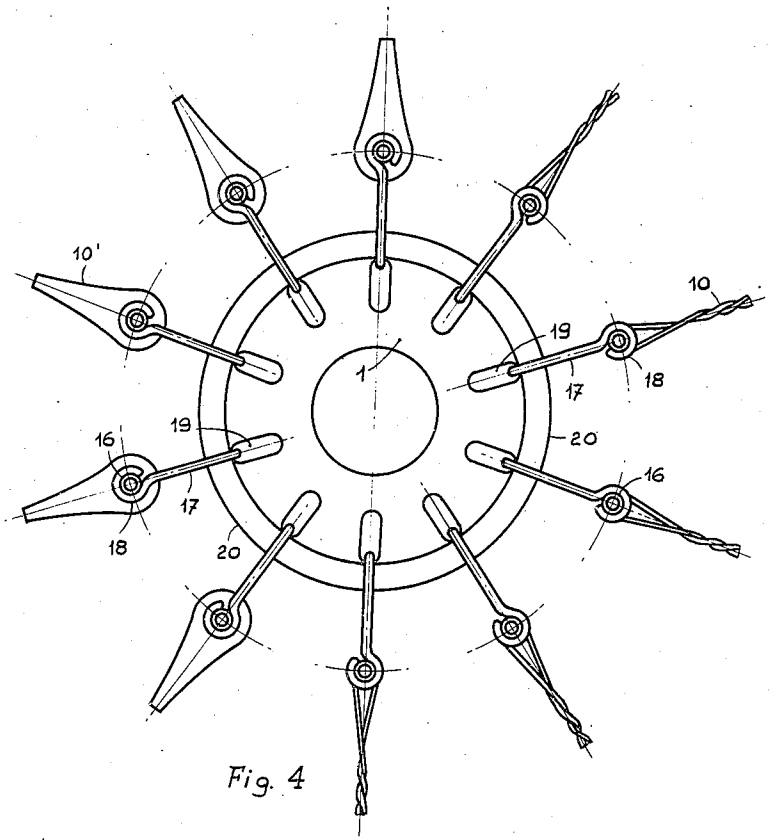


Fig. 4

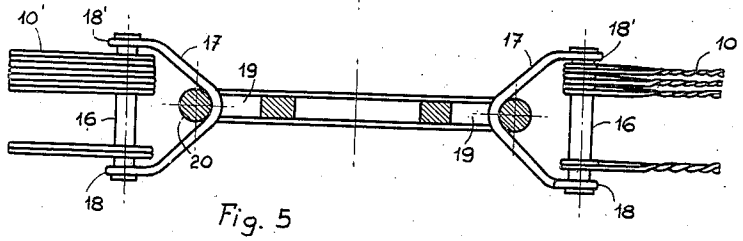


Fig. 5

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ROTARY BRUSH

Bortolo Festini, Bergamo, Italy

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In Italy May 4, 1938

8 Claims. (Cl. 15—179)

The present invention relates to rotary brushes mechanically driven, provided with metallic brush elements, said brushes being employed for many operations of different kinds, for instance mechanically brushing fabrics, carding fibres and fabrics, scraping leather, polishing metal and stone surfaces, roughening surfaces of wood, plasters and the like; deposition of thin metal layers on hard surfaces and the like.

It has been proposed in brushes of this kind to provide operative brush elements in the form of scraper elements articulated singly or in groups around the periphery of a rotary drum. Such arrangements, however, do not in practice overcome the disadvantages of tufts of brush elements rigidly fixed to the drum, such as deformation and lateral wear of the elements, rubbing friction instead of a proper scraping action, and frequent breakage of the elements.

An object of the present invention is to eliminate such disadvantages and to provide a rotary brush in which the active brush elements are subjected to uniform wear limited to their ends. Another object of the invention is to provide a rotary brush in which the active brush elements will retain their scraping capacity and will ensure a highly efficient brushing action without requiring increase in operating speed which would diminish the useful life of the brush.

According to the present invention these objects are achieved by giving the operative brush elements the form of metallic wires or plates of shape imparting to them considerable rigidity in their longitudinal direction, that is in the plane of rotation; also by making such elements of substantial weight and arranging them in rows on stirrup members which can move radially to permit the brush elements to effect considerable movements towards and away from the center of the drum; for this purpose the supporting stirrup elements are connected to the drum by retractable means, the weight of which and their dimensions in the axial direction of the drum are comparatively small relatively to the weight and corresponding dimensions of each row of active brush elements.

Owing to the above mentioned characteristics, the active brush elements operate on the work only at their ends, which therefore wear in a uniform manner and exert a very powerful scraping action. Furthermore, as a result of the substantial weight of the active elements relatively to their connecting means, there is a high scraping pressure on the work. Finally the radial movability of the elements enables the latter to assume an accurate working position even when the workpiece is located close to the drum, and without having an excessive resistance to overcome. The rotary brush according to the present invention also enables uniform operation on workpieces of very irregular surface without danger of deformation or breakage of the active elements.

Of course the connection of the brush elements to the rotatable drum allow a satisfactory operation of their linkage, afford the possibility of interchanging the same, and prevent their lateral displacement with respect to the brushing plane. Some embodiments of the invention are herein described by way of illustration, it being understood, however that such embodiments do not constitute a limitation of the invention which can be realised according to many other embodiments, all of which are comprised within the field of the invention. In the attached drawings:

Fig. 1 is a side view of a brush according to the invention, wherein the lower half is provided with operative members consisting of twisted metal wires, and the upper half with operating members consisting of flat blades;

Fig. 2 is axial cross section of the upper half;

Fig. 3 is a similar representation of the lower half.

Fig. 4 is a representation similar to that of Fig. 1 wherein the devices for connecting the operative members to the rotatable drum are modified;

Fig. 5 is an axial cross section of the same.

In the case of Figs. 1–3 there is a rotatable drum 1 with a peripheral groove 2 in the sides 3—4 of which are held pins 5, each of which passes through one of the terminal links of a piece of chain 6, the other terminal link engaging the vertex of a triangular stirrup 7. The two ends of the arms of each of these triangular stirrups are bent and approached to one another so as to form the base of the triangle, having two stub ends projecting laterally with respect to the two sides. This arrangement allows the stirrup to be opened in order to engage on the two adjacent arms 8—9 the operative members 10 (Fig. 2) or 10' (Fig. 3) which for this purpose are provided with eyes 11 and 11'. The operative members of the brush may consist of wires (Figs. 1 and 2) bent in the middle so as to form the eye 11 and whereof the arms 12—13 are twisted together starting from a certain distance from the middle of the eye so as to ensure a good mechanical resistance of said member.

The operative members of the brush may also

consist of blades 10' (Figs. 1 and 3) widened at one of their ends where is an eye 11' to allow engagement thereof with the pin 5.

In the case of Figs. 4, 5 the operative members 10, 10' are similar to the foregoing, but they are attached to the rotatable drum in a different manner. Their eyes are connected to pins 16 each being the transverse member of a V-shape stirrup the arms 17 whereof have eyes 18, 18' retaining removable pins 16. The stirrup 16—17 operates as a hinge connection equivalent to the stirrup 7 of the foregoing case.

The vertex of each stirrup is hinged in an aperture 19 in the drum 1, which apertures are preferably in the form of radial slots and are reinforced at the periphery of the drum by a thickened rim 20 against which the stirrups 17 rest during rotation of the brush.

In all the embodiments represented displacement of the operating members out of the brushing plane is prevented by the inclination of the lateral arms of the stirrups 7 combined with the obstacle afforded by the stubs 8—9 in the case of Fig. 1 or the eyes 18—18' in the case of Fig. 4.

The components described and represented, however, may be made in different manners without exceeding the limits of the invention.

What I claim is:

1. In a rotary mechanical brush comprising several transverse radial rows of operative members articulated on the periphery of a rotating drum; stirrups forming hinge connections for each row of members to the rotating drum, each stirrup consisting of a rod bent in the form of a triangle whereof the base is formed by the two contiguous end portions of the rod and forms the hinge for the operative members of each row, said portions extending beyond the sides of the triangle to form projecting stubs, while the vertex of the triangle is rounded to allow oscillation of the stirrup with respect to the rotating drum.

2. In a rotary mechanical brush comprising a plurality of transverse radial rows of operative members articulated on the periphery of a rotating drum, stirrups forming hinge connections for each row of members to the rotating drums, each stirrup consisting of a rod bent in the middle with a rounded angle to permit oscillation of said stirrup with respect to the rotating drum, the ends of the rod portions enclosing the angle being formed with eyes capable of holding a transverse rod acting as a common hinge for a row of operative members composing each row.

3. In a rotary mechanical brush comprising several transverse radial rows of operative members articulated on the periphery of a rotating drum; a plurality of triangular stirrups each supporting a row of operative members hingedly engaged on the base thereof, a length of chain associated with each stirrup and having one terminal link engaging the vertex of the triangular stirrup and a pivot pin for each said row passing through the sides of a peripheral groove in the rotating drum, said pin being engaged in the other terminal link of said chain.

4. In a rotary mechanical brush comprising several transverse radial rows of operative members articulated on the periphery of a rotating drum, a plurality of triangular stirrups each supporting a row of operative members hingedly engaged on the base thereof, the vertex of each such stirrup engaging a radial slot in the drum, and a peripheral rim member on said drum adjacent the outer ends of the slots to support the said stirrups at their vertices.

5. In a rotary mechanical brush comprising several transverse radial rows of brush elements articulated to the periphery of a drum; a series of intermediate members between said rows of brush elements and the drum each intermediate member having a pivot for the row of brush elements and means confining said elements against axial movement on the pivot, and each intermediate member being articulated to the drum with provision for limited radial movement relatively thereto.

6. In a rotary mechanical brush comprising several transverse radial rows of brush elements articulated to the periphery of a drum; a series of intermediate triangular stirrups between said brush elements and the drum each such stirrup having its base acting as a pivot for the row of brush elements and its sides confining said elements against axial movement on the pivot, and the vertex of each triangular stirrup being articulated to the drum with provision for limited radial movement relatively thereto.

7. In a rotary mechanical brush comprising several transverse radial rows of brush elements articulated to the periphery of a drum; a series of intermediate members between said rows of brush elements and the drum, each intermediate member having a pivot for the row of brush elements and means confining said elements against axial movement on the pivot, and each intermediate member being articulated to the drum with provision for limited radial movement relatively thereto, each brush element consisting of a rigid flat plate having a hole in the inner end whereby it is articulated to the intermediate member, the sides of said plate converging from the perforated end to the outer end.

8. A rotary mechanical brush according to claim 6 in which each brush element is a rigid flat plate having a hole in the inner end whereby it is articulated to the intermediate member, the sides of said plate converging from the perforated end to the outer end.

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