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SURFACE TREATING APPLIANCE HAVING AN ADJUSTABLE BRUSH HEAD

Filed May 9, 1949

2 SHEETS—SHEET 1

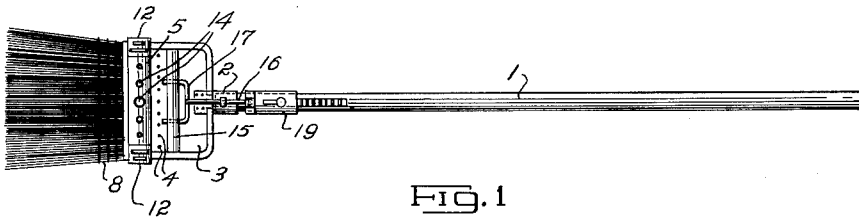


FIG. 1

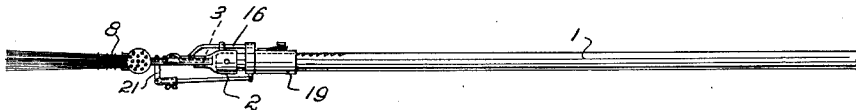


FIG. 2

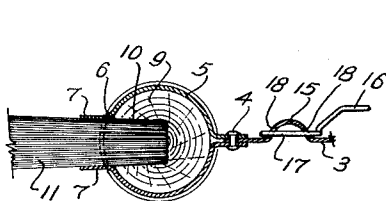


FIG. 4

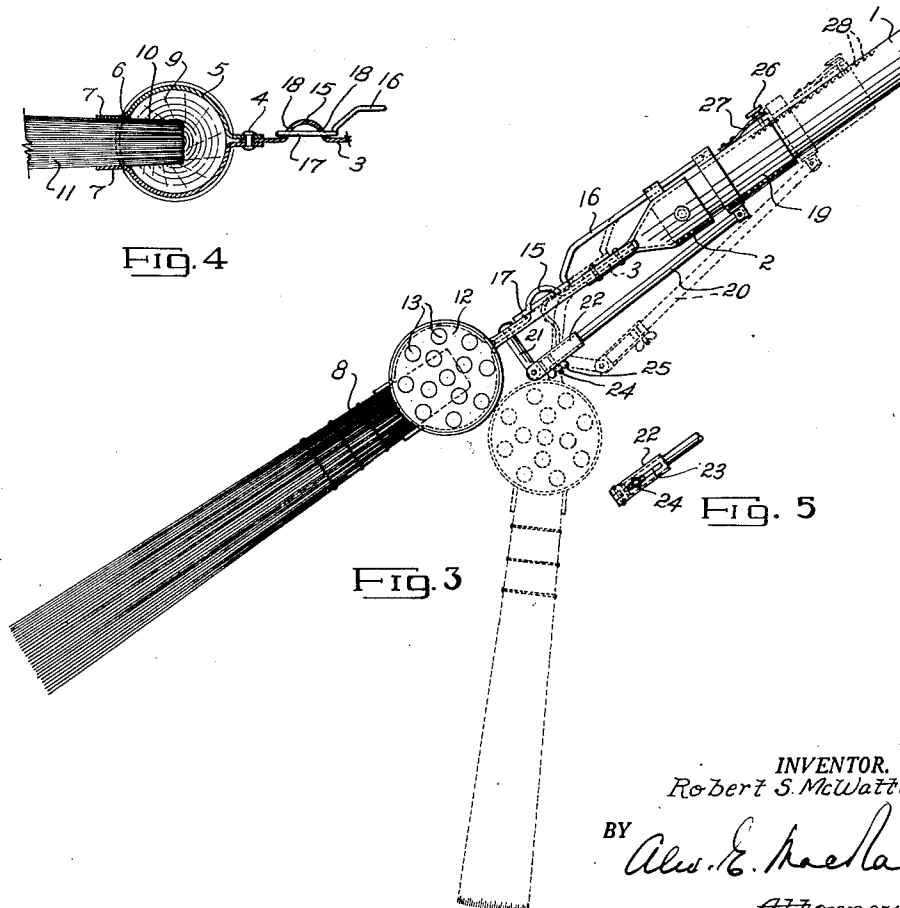


FIG. 3

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2 SHEETS—SHEET 2

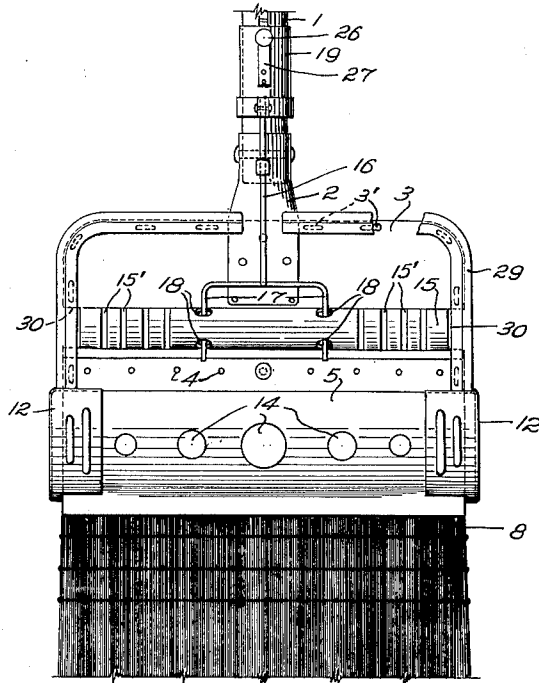


FIG. 6

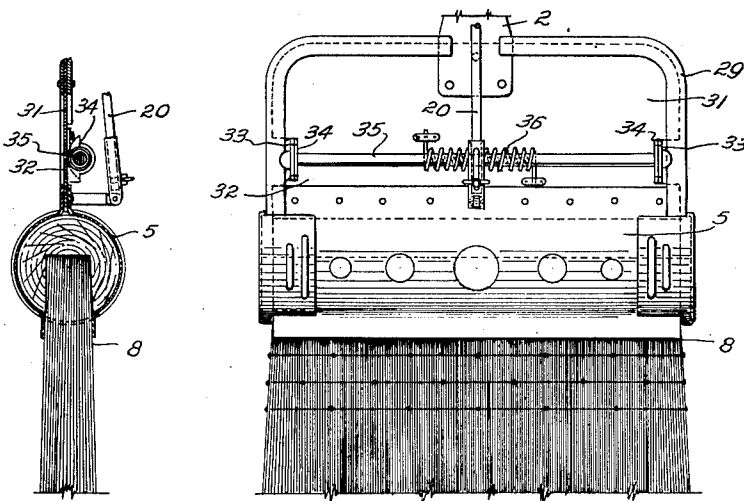


FIG. 8

FIG. 7

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UNITED STATES PATENT OFFICE

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SURFACE TREATING APPLIANCE HAVING
AN ADJUSTABLE BRUSH HEAD

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Application May 9, 1949, Serial No. 92,129

3 Claims. (Cl. 15-172)

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This invention relates to cleaning, brushing or surface treating appliances.

The ordinary sweeping or brushing broom is usually constructed with a permanently installed and fixed sweeping head. Various types of brooms or brushes having replaceable and/or adjustable sweeping heads have heretofore been proposed, but have not achieved commercial success principally because, it is believed, of their complicated and costly construction and because the means provided for adjustment and replacement has been inconvenient and unsatisfactory.

It is an object of this invention to provide a relatively simple and inexpensive surface treating appliance or tool having a readily removable and replaceable sweeping head and including means for quickly and readily adjusting the angular relation of the sweeping head with respect to the handle of the device.

The invention will be described with reference to the accompanying drawings, in which:

Figure 1 is a plan view of an appliance in accordance with the invention.

Figure 2 is a side elevation,

Figure 3 is an enlarged side elevation of the sweeping head and associated parts,

Figure 4 is an enlarged side elevation of a portion of the sweeping head,

Figure 5 is a side elevation of a detail of the adjusting mechanism,

Figure 6 is an enlarged plan view of the sweeping head and related parts,

Figure 7 is a partial plan view of a somewhat modified form of appliance and

Figure 8 is a side elevation, partly in section of the appliance shown in Figure 7.

Referring to Figures 1 to 6, 1 is a handle of light tubular metal or like construction. Fixed to the lower end of the handle, as by a bracket 2, is a flat plate 3 of spring steel or like metal. While the thickness of the plate may vary, a thickness of $\frac{25}{1000}$ of an inch may be employed. Fixed to the lower edge of plate 3, as by rivets 4, is a tubular metal casing 5, open at the ends and having a longitudinally extending slot or opening 6 therein in aligned relation to the plate 3. The edges of the casing defining the opening 6 are outwardly flared as indicated at 7. The casing 5 is arranged to receive a sweeping or like surface treating head 8, which may comprise a cylindrical member 9, of wood or the like, having a longitudinally extending groove 10 therein and in which is fixed a brush or like sweeping body 11. It will be observed that the member 9 may be readily inserted through the end of casing 5

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with the brush 11 extending through the opening 6. Removable retaining caps 12 are preferably placed over the ends of the casing when the sweeping head is in position therein. Openings 13 in the caps and openings 14 in the casing may be provided to facilitate evaporation of an accumulated moisture within the casing. It will be appreciated that the sweeping head 8 may be easily removed and replaced, as desired.

It will be observed that the sweeping head 8, plate 3, and handle 1 are normally in longitudinal alignment but, in accordance with the invention, means are provided for positioning the head 8 in a plurality of angular positions with respect to the handle 1. Such means may comprise a transversely extending corrugation 15 in plate 3 and extending from edge to edge thereof. The corrugation 15 is of semi-circular cross section and defines a transverse line or band about which the plate may hinge, bend or flex when force is applied to the lower edge portion of the plate. Means for preventing flexing of the plate about such transverse line in the normal aligned position of the plate comprises a rod 16 slidably mounted on handle 1 and having a forked lower end 17 adapted to extend through two pairs of aligned openings 18 in the opposed faces of corrugation 15. The upper end of rod 16 is fixed to a tubular collar 19 slidably mounted on handle 1. To facilitate bending or flexing of the corrugation 15, the latter may be weakened by providing transverse slits 15' or other openings therein.

Means for swinging the lower portion of plate 3 about the transverse corrugation 15 comprises a link 20, the upper end of which is pivotally connected to the collar 19 and the lower end of which is pivotally connected to the outer end of a post 21 fixed to the lower edge portion of plate 3 and extending laterally from its lower face. Link 20 has a lost motion connection therein comprising a tubular portion 22 in which the link slides and having a slot 23 through which a pin 24 on the link extends. The pin may be provided with a wing nut 25 to lock it in position at the upper end of the slot.

It will be observed that, when the collar 19 is upwardly reciprocated, the initial portion of such movement will move the forked end of rod 16 out of the lower pair of openings 18 but, due to the lost motion connection of the pin 24 and slot 23, will not exert a pulling force on the lower portion of the plate 3. As, however, the collar 19 is moved further upwardly the link 20 will exert a pulling force on the lower portion of the plate

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and swing it about the corrugation 15 to a position such as illustrated in dotted lines in Figure 3. It is desirable that the forked end of rod 16 remain within, or partly within, the upper pair of openings 18 to facilitate re-entry into the lower pair of aligned openings 18. Means for locking the collar in a plurality of positions on the handle and, consequently, locking the sweeping head 8 in any one of a plurality of angular positions, comprises a pin 26 carried by a flat spring 27 fixed to the collar and engageable in one of a series of ratchet teeth 28 on the handle.

Preferably, a rubber edge guard 29 is adhesively or otherwise secured to the edge of plate 3. Preferably, also, the edge of the plate is recessed at the two ends of the corrugation 15, as indicated at 30. The rubber guard 29 may extend freely across such recesses. The edge portion of the plate 3 may be provided with a plurality of openings 3', underlying the rubber guard 29, whereby opposing faces of the rubber guard may be adhesively bonded together through such openings and thus provide a more secure mounting means for the guard.

The modification illustrated in Figures 7 and 8 is similar in general respect to that previously described but employs a mechanical hinge mechanism instead of a flexing corrugation. As shown, a plate, corresponding to plate 3, comprises upper and lower portions 31 and 32 each having complementary upstanding ears 33 and 34 in overlapping relation at opposite ends of their meeting edges. A rod 35 extends through the ears to provide the hinge connection. A spring 36 surrounding the mid portion of the rod has one end bearing on plate 31 and the other end bearing on plate 32. The spring normally maintains the plate portions 31 and 32 in aligned relation. Means may be provided for suitably adjusting the tension of the spring 36, as desired. The remaining mechanism is similar to that described with respect to Figures 1 to 6.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a sweeping appliance having a handle and a sweeping head, a flat plate of spring metal fixed to the lower end of the handle, said sweeping head being removably mounted in fixed re-

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lation on the lower portion of said plate, said plate having a transversely extending corrugation therein about which the lower portion of the plate may swing with respect to the upper portion of the plate, said corrugation having two pairs of aligned openings therein in opposed faces thereof, a member reciprocatingly carried by the handle, a rod carried by the member and having a forked end normally extending through said pairs of openings to prevent said swinging movement of the lower portion of the plate, and a link connected to said lower portion and to said member for swinging said lower portion in response to reciprocating movement of the member.

2. A sweeping appliance as defined in claim 1, said link having a lost motion connection therein, said lost motion connection rendering said link extensible during initial movement of said member to retract said fork from the openings and inextensible during subsequent movement of said member to exert a pulling force on said lower portion.

3. A sweeping appliance as defined in claim 1, including means for locking said member in a plurality of positions relative to the handle.

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