

Aug. 6, 1968

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3,395,415

CLEANING DEVICES HAVING INTERCHANGEABLE HEADS

Filed Sept. 20, 1966

3 Sheets-Sheet 1

FIG. 1.

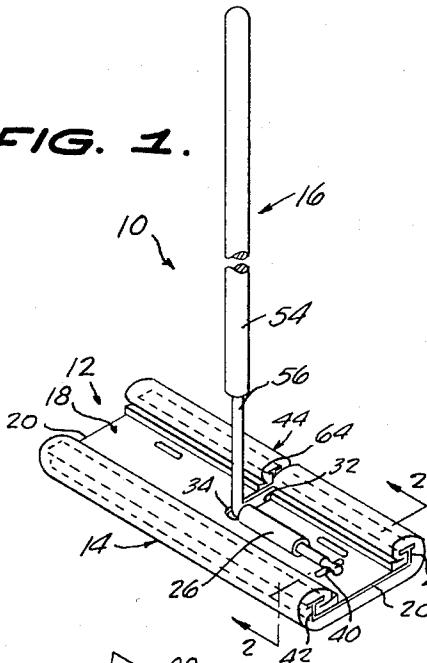


FIG. 2.

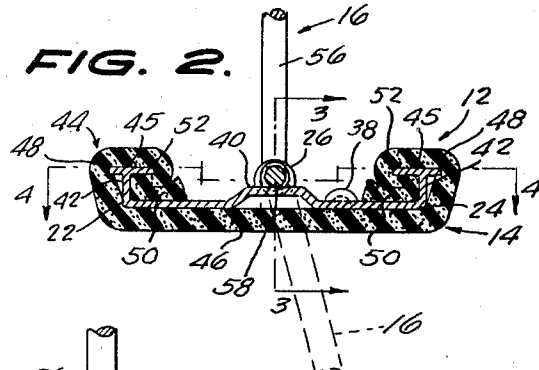


FIG. 3.

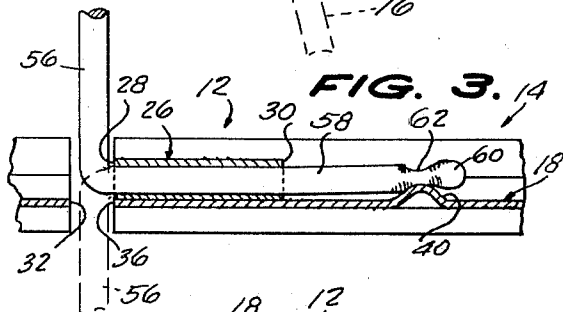


FIG. 5.

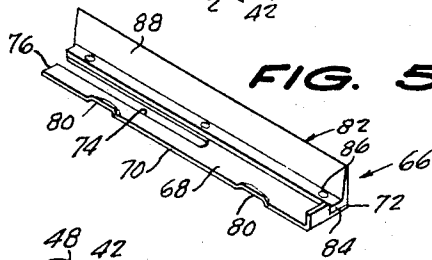


FIG. 4.

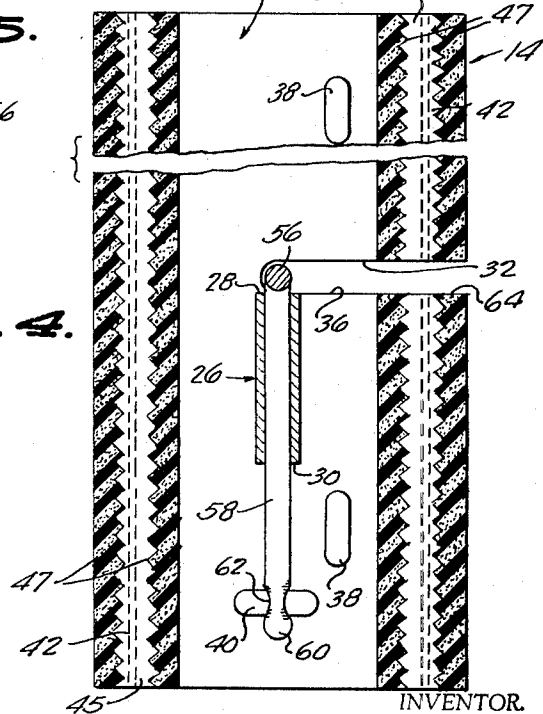
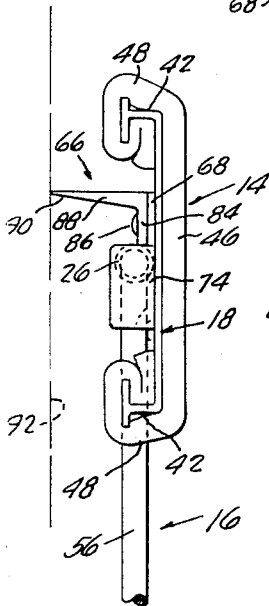


FIG. 6.



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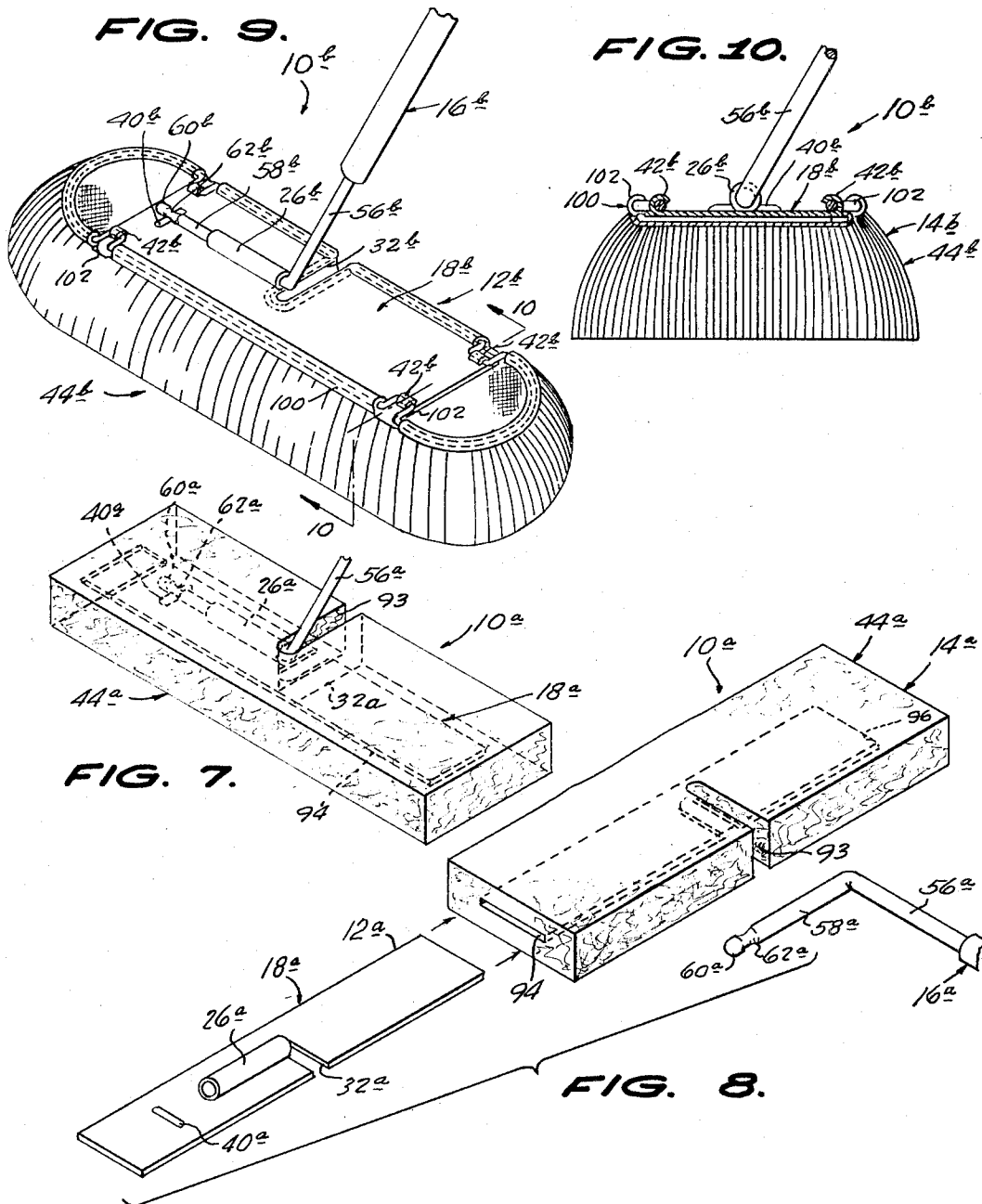
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3 Sheets-Sheet 2



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FIG. 11.

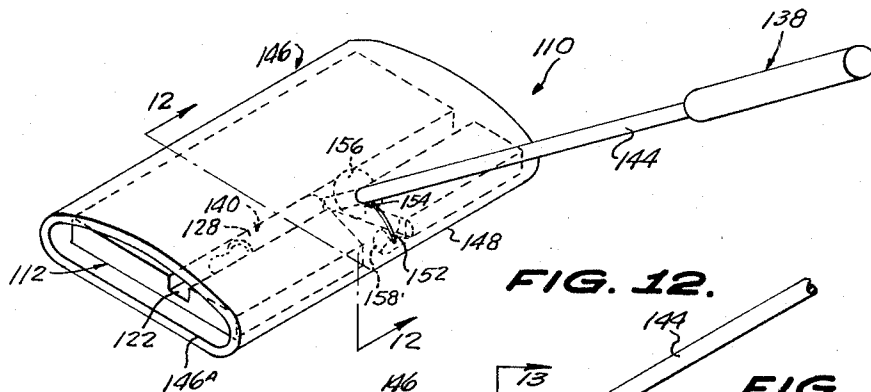


FIG. 12.

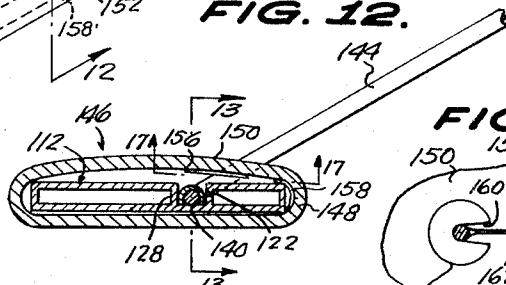


FIG. 13.

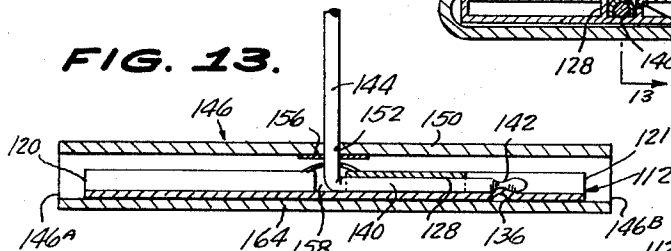


FIG. 17.

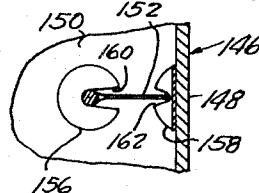


FIG. 15.

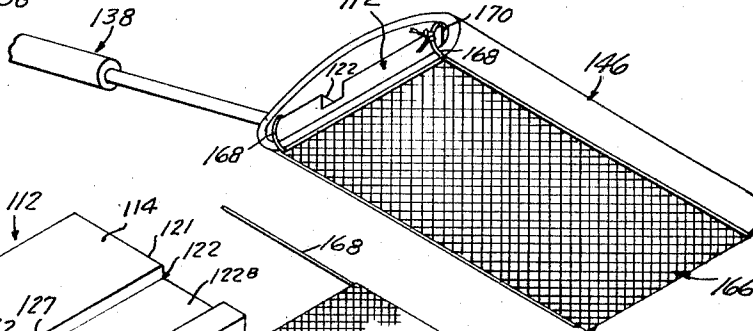


FIG. 14.

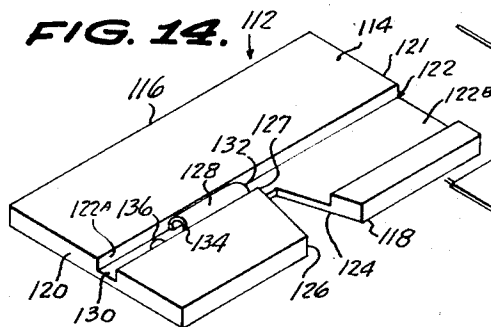


FIG. 16.

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CLEANING DEVICES HAVING INTER- CHANGEABLE HEADS

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Continuation-in-part of application Ser. No. 522,192,
Jan. 21, 1966. This application Sept. 20, 1966, Ser.
No. 580,701

13 Claims. (Cl. 15—121)

ABSTRACT OF THE DISCLOSURE

A mop-like device having interchangeable heads, an applicator element mounted on the head and a handle pivoted to the head, said head including a head plate, said handle having a lateral arm extending along the head plate, the head plate having a journal tube in which said arm is removably engaged, the head plate having an upstanding button-like detent adjacent one end of the journal tube, the lateral arm of the handle having a rounded cam knob and an annular groove behind said knob engaged with the upstanding button detent, an edge of the head plate and an edge of the applicator element being formed with registered transverse slots extending toward the entering end of the journal tube and through which the handle can move when the lateral arm is turned in the journal. The head plate can be made in various forms, one including a squeegee plate, and the applicator element may also be formed in various configurations to receive the head plate.

This application is a continuation-in-part of my co-pending application Ser. No. 522,192, filed Jan. 21, 1966, now abandoned.

This invention relates to handle-equipped implements designed for floor, wall, window, and general dry and wet cleaning of surfaces, and particularly to implements of this kind which are composed of heads, to which cleaning or applicator elements are adapted to be applied and removed, and handles to which the heads are interchangeably connectible.

The primary object of the invention is the provision of efficient, simple, versatile, and easily used devices of the kind indicated above, each of which is composed of a single handle component, and one or more head components, the head components being interchangeably applicable to the single handle, for the performance of a variety of different cleaning or allied operations, whereby the expense of providing, storing and handling a similar number of specialized handle-equipped implements is eliminated.

Another object of the invention is the provision of devices of the character indicated above, wherein the cleaning or applicator heads are composed of single plates formed with lengthwise tubes, and with a detent member at one end of the tubes, and the single handle is provided, at its distal end, with a lateral arm adapted to be engaged endwise through the tube of any of the heads, this lateral arm terminating in a detent knob adapted to be engaged over the detent member to lock the arm securely and rotatably in place in the tubes.

A further object of the invention is the provision of devices of the character indicated above, wherein the heads are formed, through one edge thereof, with transverse slots which enable the handle to be rotated, relative to the heads, through wide angles, in order to enable and to facilitate the reaching to and the proper application of the heads to surfaces in otherwise difficult to reach locations.

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In the drawings:

FIGURE 1 is a contracted perspective view of one device of the invention;

FIGURE 2 is an enlarged fragmentary vertical transverse section, taken on the line 2—2 of FIGURE 1;

FIGURE 3 is a further enlarged and fragmentary vertical section, taken on the line 3—3 of FIGURE 2;

FIGURE 4 is a contracted and still further enlarged horizontal section, taken on the line 4—4 of FIGURE 2;

FIGURE 5 is a perspective view, on the scale of FIGURE 1, of a squeegee;

FIGURE 6 is an end elevation, on the scale of FIGURE 2, showing the squeegee of FIGURE 5 applied to the device of FIGURES 1 to 4, the squeegee being in contact with a vertical surface, and the handle of the device being positioned in the plane of the head of the device;

FIGURE 7 is a fragmentary perspective view of another device of the invention;

FIGURE 8 is an exploded perspective view of FIGURE 7;

FIGURE 9 is a fragmentary perspective view of a further device of the invention;

FIGURE 10 is an enlarged vertical section taken on the line 10—10 of FIGURE 9;

FIGURE 11 is a fragmentary perspective view of a still further device of the invention;

FIGURE 12 is a vertical transverse section, taken on the line 12—12 of FIGURE 11;

FIGURE 13 is a vertical longitudinal section, taken on the line 13—13 of FIGURE 12;

FIGURE 14 is a perspective view of the head, per se;

FIGURE 15 is a fragmentary bottom perspective view, of the device of FIGURE 11, showing a scouring sheet applied thereto;

FIGURE 16 is a perspective view of the scouring sheet; and

FIG. 17 is an enlarged fragmentary horizontal section, taken on the line 17—17 of FIGURE 12.

Referring in detail to the drawings, and first to FIGURES 1 to 4 thereof, the device 10 shown comprises a head 12, to which a cleaning or applicator element 14 is attached, and a handle 16.

The head 12 comprises a flat, longitudinally-elongated plate 18, having squared ends 20, and parallel forward and rear edges 22, 24. Centered on the top of the plate 18, between the edges 22, 24, is a longitudinal journal tube 26, having an inner end 28 located at the mid-length point of the plate, and an outer end 30 spaced at a substantial distance from the related end edge 20 of the plate.

The plate 18 is formed with a transverse slot 32 which extends forwardly from the rear edge 24 of the plate, and has a closed forward end 34 located at the inner end 28 of the journal tube 26, the adjacent edge 36 of the slot 32 being preferably in line with the inner end of the tube. The slot 32 provides clearance for the handle 16, as hereinafter set forth.

The plate 18 is formed, as by out-pressing the material of the plate, with a pair of longitudinally-elongated, longitudinally-spaced, rounded detent buttons 38. The buttons 38 are located midway between the journal tube 26 and the rear edge 24 of the plate 18, and adjacent to and equally-spaced from the ends of the plate 18. The detent buttons 38 serve to position and retain, on the plate 18, a squeegee member, as hereinafter detailed.

The plate 18 is further formed, at a location in line with and spaced outwardly from the outer end 30 of the journal tube 26, with a single transversely-elongated detent button 40. The button 40, like the detent buttons 38, is preferably formed by out-pressing of the material of the plate 18.

The plate 18 is further formed, along its edges 22, 24, with preferably integral upstanding T-rails 42 which serve to efficiently and securely retain, as to the plate 18, related portions of a work element, such as a foam rubber cleaner pad 44. The opposed edges of the heads 45 of the T-rails are formed with retaining teeth 47.

The element 44, which can be supplanted by other appropriate elements, comprises a sheet having a main working portion 46 engaged with the underside of the head plate 18, and edge portions 48. As shown in FIGURES 2 and 6, the edge portions 48, with the main portion 46 stretched, are simply brought up and around and over the T-rails 42, the free edge portions 50, of the element then being manually-convoluted and compressed and jammed between the top of the plate 18 and the underside of the inner flanges 52 of the T-rails. Release of the element 44 from the head plate 18 involves merely pulling the free edge portions 50 free, instead of involving the removal of screws, clamps, or other bothersome retaining means.

The handle 16 comprises a rigid bar 54 of suitable diameter and suitable material having fixed to and extending from its distal end a rigid, reduced diameter, preferably metal rod 56. The rod 56 has, at its outer end, a right-angular lateral arm 58, of the same material as the rod, and of a length to engage through the journal tube 26 and reach beyond the single transverse detent button 40.

The lateral arm 58 is of a diameter to slide and turn snugly through the journal tube 26, and terminates at its outer end in a rounded knob 60, designed to cam over the button 40 in either direction. The arms 58 and/or the button 40 have limited resilience which provides for their being somewhat distorted as the knob 60 is cammed over the button 40, and for the frictional holding engagement with the button 40, of an annular groove 62 formed in the arm 58 behind the knob 60, as shown in FIGURE 2. With the groove 62 engaged over the button 40, the rod 56 of the handle 16 is close to and can bear against the adjacent end of the journal tube 26; and the rod 56 is positioned to work freely through the slot 32 of the plate 18.

As shown in FIGURES 1, 3 and 4, the element 44 is formed in its main portion 46, and in its adjacent edge portion 48 and free edge portion 50, with a slot 64 which is registered with the plate slot 32, and provides for the free movement of the handle rod 56 through both slots.

The above-described connection of the handle 16 to the plate 18 not only provides for quick and easy connection and disconnection of the handle from the plate by endwise movements of the handle arm 58, relative to the journal tube 26 and the detent button 40, but also provides for swinging the handle 16, relative to the head plate 18, through a wide angle relative to the plate, in order to reach and manipulate and apply the head to work in difficult to reach places. As shown in FIGURE 6, the handle 16 can be positioned in the plane of the head 12 as for reaching between closely-spaced surfaces to be cleaned, such as the opposed glass panes of related window sashes, and the like.

As shown in FIGURES 5 and 6, a squeegee 66 is adapted to be applied to the head plate 18, in the space between the journal tube 26 and the rear edge of the plate 18. The squeegee 66 comprises an elongated flat base plate 68 having forward and rear edges 70, 72. A longitudinally-elongated slot 74 is formed in the base plate 68, from its leading end edge 76. The slot 74 is narrower than the full diameter of the journal tube 26, so that, as shown in FIGURE 6, when the squeegee base plate 68 is slid endwise along the top of the head plate 18, with the slot 74 aligned with the tube 26, the edges of the slot 74 engage beneath related side cheeks of the tube, whereby the squeegee is accurately positioned in place. For yieldable retention of the squeegee in place, the forward edge 70 of the base plate 68 is formed with a pair of longitudinally-spaced detent seats 80 which are formed and located to retain-

ably-snap over the longitudinal buttons 38, of the head plate 18.

A resilient squeegee element 82 is composed of a horizontal flange 84, which is suitably-secured, as indicated at 86, upon the squeegee base plate 68, along its other edge 70, and an upstanding, right-angular flange 88 having a thin working edge 90, which reaches sufficiently beyond the edge components of the element 44, as shown in FIGURE 6, for efficient squeegee action upon a surface 92, with the head 12 held parallel thereto.

The form of device 10a shown in FIGURES 7 and 8, is composed of a head 12a devoid of T-rails, and handle 16a, otherwise similar to those of FIGURES 1 to 6, but a different applicator element 14a. Comparable parts of head 12a and handle 16a are given the same reference numerals followed by a as applied in the FIGURES 1-6 embodiment.

The element 14a comprises a solid block 44a such as sponge rubber, which is longer and wider than the head 12a, and is of substantially larger cross-section. Midway between its ends the block 44a is formed from its rear edge, with a slot 93, which is registered with the head plate slot 32a. From one end of the block 44a the same is formed with a centered longitudinal slot 94, of the cross-section of the head plate 18a, which has a closed end 96, near the other end of the block 44a. Application of the block 44a to the head plate 18a is done by sliding the block endwise thereon, by means of the longitudinal slot 94, until the slots 93 and 32a coincide. The block 44a is then deformed by passing the knob end of the arm 58a of the handle 16a through the block slot 93 and into the journal tube 26a.

The form of device 10b, shown in FIGURES 9 and 10, involves a handle 16b similar to the handles of FIGURES 1 to 8, but has a head 12b and an applicator element 14b of differing forms. Comparable parts of head 12b, applicator 14b and handle 16b are given the same reference numerals followed by b as applied in the FIGURES 1-6 embodiment.

The head 12b comprises a head plate 18b similar to the above-described head plates, except for the provision thereon, at the ends thereof, and at related edges thereof, of opposed, inwardly-directed hooks 42b.

The cleaning element 44b is in the form of a string mop, having an open wire frame 100 surrounding the plate 18b, affording opposed and laterally inwardly-extending loops 102, which are adapted to be snapped into place between the top of the head plate 18b and the hooks 42b.

The device 110, shown in FIGURES 11 to 17, comprises a flat, elongated rectangular head plate 112, preferably hollow, as shown in FIGURES 12 and 13, having an upper surface 114, a forward edge 116, a rear edge 118, and end edges 120, 121.

A longitudinal, squared groove 122 is formed in the top of the plate 112 and opens to the end edges 120, 121 thereof. The groove 122 is slightly offset to the rear center line of the plate 112 and includes the slot portions 122A, 122B having adjacent confronting and communicating ends. A transverse slot 124 opens to the rear edge 118 and to the groove 122 of the plate 112 substantially at the junction of the slot portions 122A, 122B and has forwardly-converging sides 126, which have spaced forward ends 127.

The slot portion 122B is wider than the slot portion 122A which serves to permit the connecting end of a mop handle to move into connecting engagement with the plate 112 at substantially a flat angle rather than at a substantially upright angle had the widened slot portion 122B not have been provided.

A longitudinal journal tube 128, shorter than the distance between an end edge 120 of the plate 112 and the adjacent slot end 127, is suitably-formed or fixed upon the bottom 130 of the groove 122, and has an inner end 132 even with the adjacent slot side end 127. In the space

between the outer end 134 of the tube, and the adjacent plate and edge, the material of the plate is deformed to provide an upwardly-bowed spring detent 136.

A removable handle 138, similar to the handles of FIGURES 1 to 10, has a lateral arm 140 longer than the tube 128, which is rotatably and slidably-engaged through the tube and is formed, adjacent to its free end, with an annular detent groove 142 which is adapted to engage over the detent 136. When so engaged, the rod 144 of the handle is in line with the V-shaped slot 124.

The above arrangement frees the top of the mop head plate of any upward projections, other than the handle 138, and the handle can be pivoted to a position within the slot 124, wherein the handle does not project above the top of the plate. This condition enables the plate 112 to accept freely thereover a removable tubular pad 146.

The length of the pad 146 is somewhat longer, preferably, than the length of the head plate 112, as indicated at 146A, 146B, and its girth is proportioned so that it fits loosely around the plate 112, as shown in FIGURES 12 and 13. The pad can be of real or artificial lamb's wool, or of a foam rubber composition. The pad is formed in its rear side 148 and through its top flight 150 with a central transverse slit 152 which is substantially narrower than the width of the handle rod 144, and which reaches forwardly, only to a point 154 spaced rearwardly from the head plate groove 122.

As reinforcement for the area of the slit 152, the underside of the top flight 150 and the inner side of the rear side 148, of the pad 146, have suitably-secured thereto a single circular reinforcing patch 156, 158, respectively. As shown in FIGURE 17, the patch 156 is formed in its rear edge with a forwardly-tapered slot 160. The slot 160 is shorter than the V-shaped head plate slot 124, but is registered with the forward end thereof to provide for passage of the handle rod 144 therethrough. A similar tapered slot 162 is formed in the upper edge of the patch 158.

With the above-described arrangements, the pad 146 rotates relative to the mop head plate 112, as the handle 138 is pivoted relative to the plate, so that different areas of the bottom flight 164 of the pad can be presented to the work.

In installing the pad 146 on the head plate 112, the operator first inserts the handle arm 140 into the loose pad 146 through slit 152 and then slides the pad 146 endwise over an end of the plate 112 toward the other end of the plate to partially insert the arm 140 in journal tube 128. The sliding of the pad over the plate 112 is continued until the handle arm 140 passes completely through the tube 128 and its groove 142 engages over the detent 136. The handle rod 144 may then be turned into slot 124 of the head plate.

Swinging the handle 138 downwardly, to the position shown in FIGURE 11, serves to loosen the bottom flight 164 of the pad 146 relative to the underside of the head plate 112. With the handle in an erect position, the bottom flight 164 of the pad is held flat against the underside of the plate 112.

Where additional scouring action is indicated or desired, a flexible open-work scouring sheet 166 is provided to cover the underside of the bottom flight 164 of the pad 146. The scouring sheet 166 is of substantially the same dimensions as the underside of the head plate 112, and is removably-secured in place by suitable means, such as strings 168 attached to the corners of the sheet. As shown in FIGURE 15, the strings 168, at related sides of the sheet 164, are adapted to be passed toward each other between the upper flight 150 of the pad 146, and the top of the head plate 112, and tied together at either end of the plate, as indicated at 170.

Having described and illustrated several embodiments of this invention, it will be understood that the same are offered merely by way of example, and that this invention is to be limited only by the scope of the appended claims.

What is claimed is:

1. A device of the character described, comprising an applicator head, an applicator element mounted on the head, and a handle pivoted to the head, said applicator head including a head plate, said handle having a lateral arm extending along the head plate, the head plate having a journal tube in which said arm is removably engaged, said journal tube having an entering end for the arm and another end, the head plate having a detent member in the form of an upstanding transverse button adjacent to said other end of the journal tube, said lateral arm having a terminal end in the form of a rounded cam knob positioned beyond said other end of the journal tube, and a detent element on said arm in the form of an annular groove behind said knob engaged with said upstanding transverse button, an edge of the head plate and an edge of the applicator element being formed with registered transverse slots extending toward said entering end of the journal tube and through which the handle can work.

2. The device of claim 1, wherein said handle has a rod on its distal end to which said lateral arm is fixed at right angles thereto, said rod passing through said registered slots in angled relationship of the handle to the head plate.

3. The device of claim 1, wherein the applicator head comprises a head plate having outstanding T-rails along opposed edges thereof, said applicator element being a resilient pad having a main portion underlying the head plate, said pad having edge portions engaged around the T-rails, said T-rails having inner flanges spaced from and overlying the head plate, said pad having free edge portions jammed between the inner flanges of the T-rails and the head plate.

4. The device of claim 3, wherein said flanges are formed with teeth for engaging and clamping the edge portions of said pad.

5. The device of claim 1 in combination with a squeegee comprising a squeegee base plate engaged along said head plate, said squeegee base plate being formed with a longitudinal slot opening to one end thereof, the longitudinal slot being narrower than the journal tube and having edges engaged between the cheeks of the journal tube and the head plate.

6. The device of claim 5, wherein said head plate is formed with outstanding longitudinally spaced longitudinal buttons, and said squeegee base plate has an edge formed with detent recesses snapped over said longitudinal buttons.

7. The device of claim 1, wherein said applicator element is a resilient and deformable block, said block being longer, wider and thicker than the head plate, said block being formed with a centered longitudinal slot opening to one end of the block, the head plate being slidably engaged in said longitudinal slot, the block being formed with a transverse slot opening to a side edge thereof and registered with the transverse slot of the head plate.

8. The device of claim 1, wherein said applicator element is a string mop, said mop head having an open frame surrounding the head plate, said head plate being formed on opposed edges thereof with longitudinally spaced outstanding hooks, the mop frame having loops removably engaged between the said hooks and the head plate.

9. The device of claim 1, wherein said head comprises an elongated rectangular head plate having a forward edge, or rear edge, and end edges, and flat upper and lower surfaces, said plate being formed in its upper surface with a longitudinal groove opening to the end edges of the plate, said groove being offset rearwardly relative to the longitudinal centerline of the plate, said journal tube being fixed to the bottom of said groove and extending lengthwise of the groove, said detent member being an upstanding spring detent on the bottom of the groove at one end of the journal tube, said handle being flexible and comprising a rod having a lateral arm

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on its forward end, said lateral arm being longer than the tube and being slidably and rotatably and removably engaged through the tube, said lateral arm having a free entering end and being formed with said annular detent groove adjacent to said entering end, said detent groove being adapted to be snapped over said detent member, said applicator element comprising a flexible tubular pad, said pad being removably engaged endwise over the head plate.

10. The device of claim 9, wherein the top of said journal tube is substantially level with the upper surface of the head plate, said transverse slot being formed in the rear edge of the head plate and opening to the upper and lower surfaces of the head plate, said transverse slot having forwardly converging sides and opening to the rear side of said longitudinal groove, said journal tube being located in the longitudinal groove at one side of said slot at a point intermediate the ends of the head plate, the handle rod being positioned to enter said slot when pivoted downwardly and rearwardly relative to the head plate from an erect position, said pad having a top flight, a bottom flight, and a rear side, said pad being loose on the head plate and being formed in its top flight and in its rear side with a transverse slit, said slit being narrower than the width of the handle rod in which the rod is engaged.

11. The device of claim 10, wherein said top flight of the pad is underlaid, in the region of the forward end of said slit, with a first reinforcing patch, said first patch being formed in its rear edge with a slot registered with the transverse slot of the head plate, the rear side of the

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pad being underlaid by a second reinforcing patch formed in its upper edge with a slot adapted to accommodate the handle rod in a rearwardly depressed position of the handle.

12. The device of claim 11, wherein is additionally provided a scouring sheet underlying the bottom flight of the pad, and means removably securing the scouring sheet in place.

13. The device of claim 12, wherein said scouring sheet has strings attached at its corners, said strings being adapted to be passed between the top flight of the pad and the upper surface of the head plate, related strings being tied together around the end edges of the head plate.

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30 DANIEL BLUM, *Primary Examiner*.