

Sept. 8, 1964

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3,147,502

CLEANING MOPS AND APPLICATORS

Filed Aug. 9, 1963

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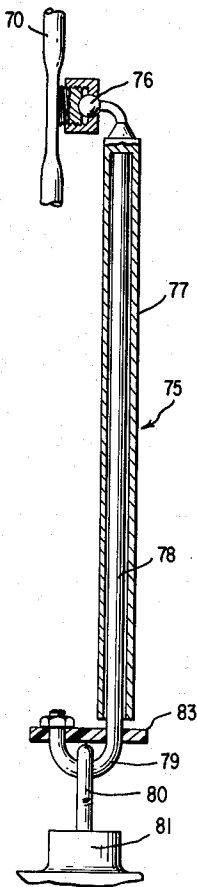
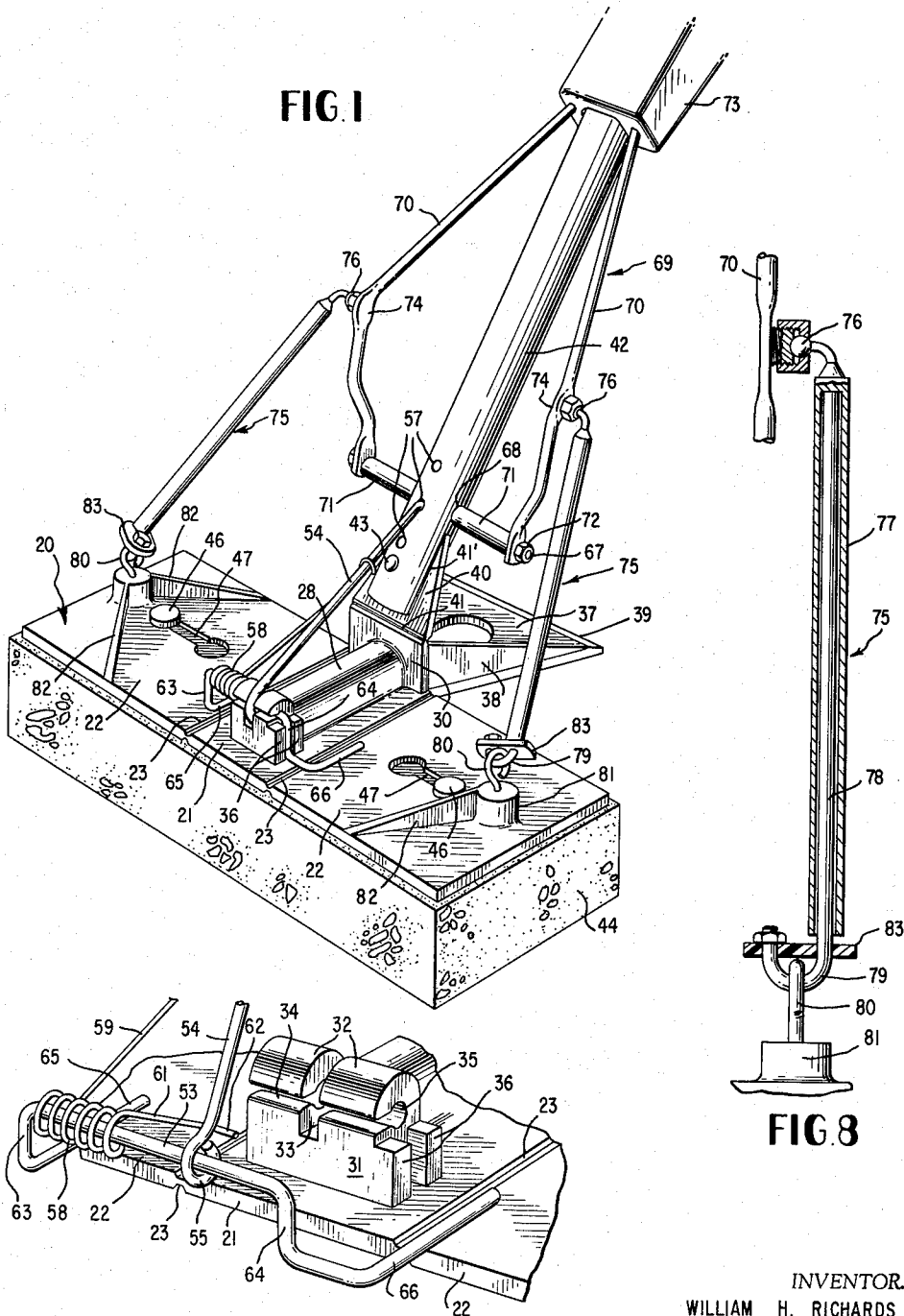


FIG. 7

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FIG. 2

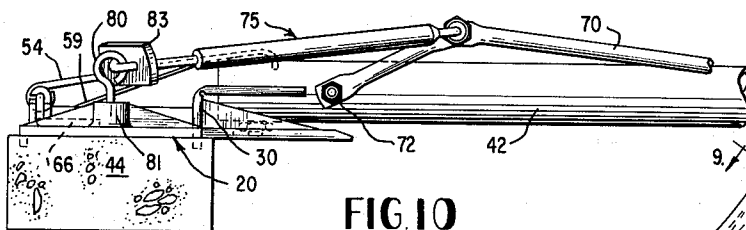
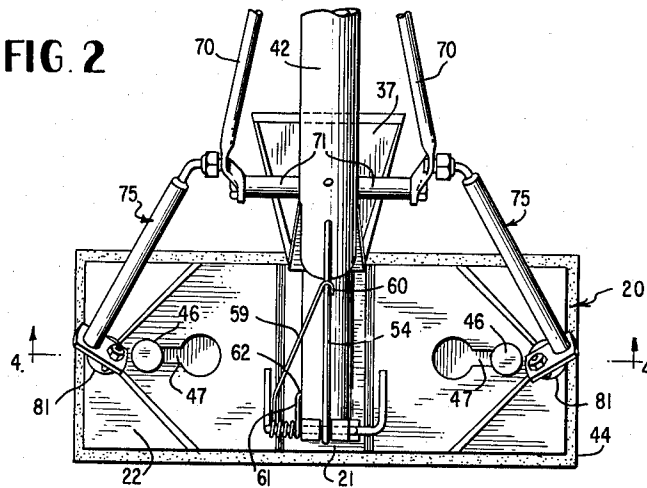


FIG. 10

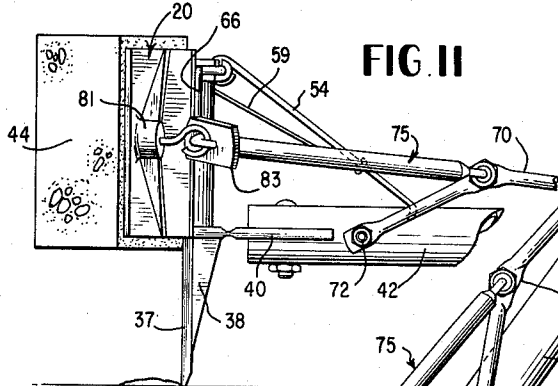


FIG. 11

FIG. 6

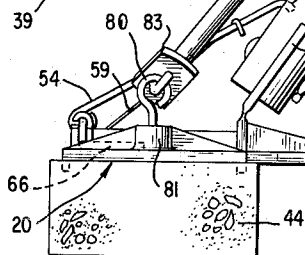
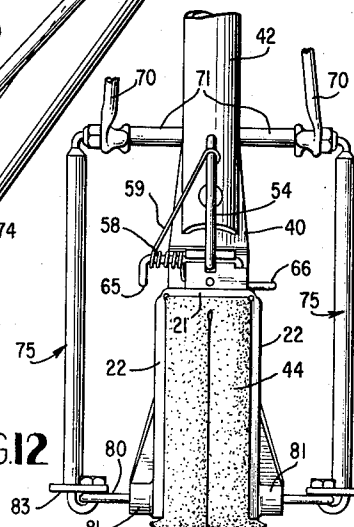


FIG. 12



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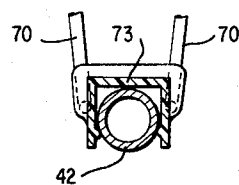
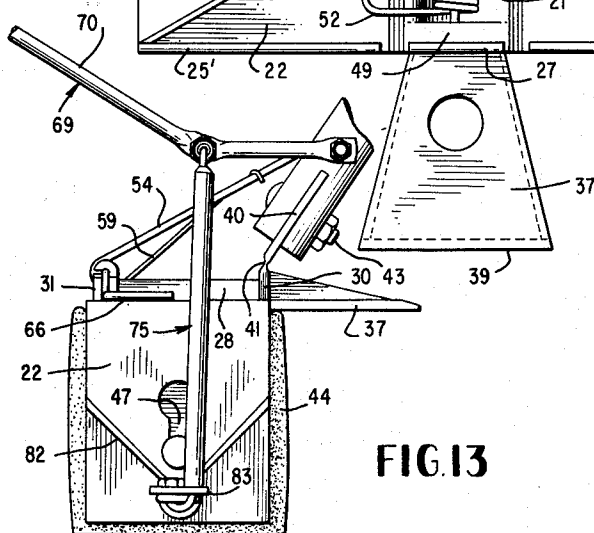
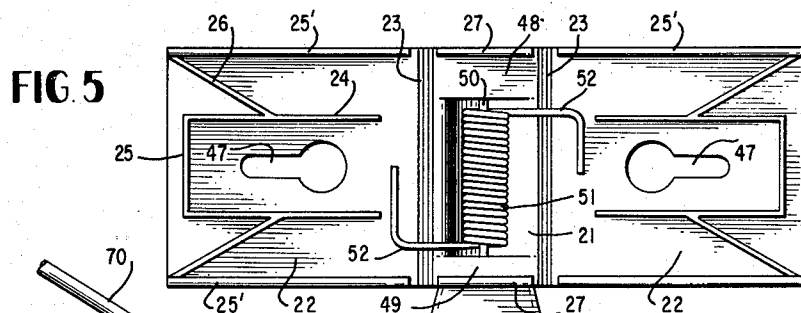
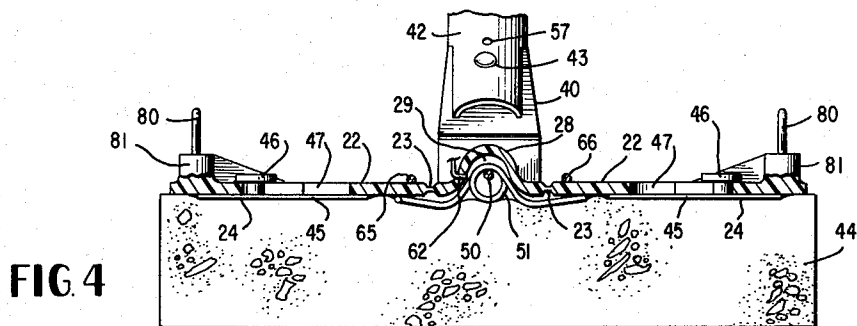
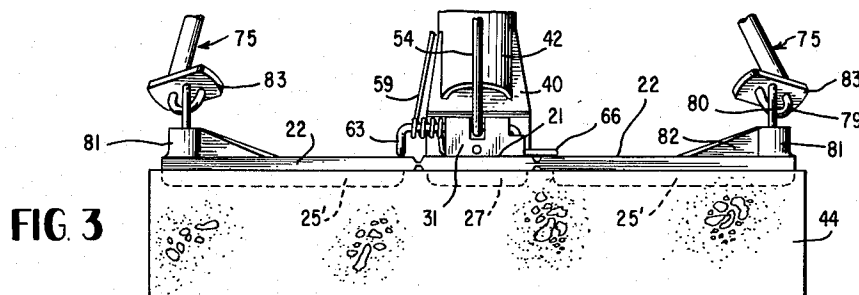
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CLEANING MOPS AND APPLICATORS

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3 Sheets-Sheet 3



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3,147,502
CLEANING MOPS AND APPLICATORS
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 Filed Aug. 9, 1963, Ser. No. 301,091
 8 Claims. (Cl. 15—118)

This invention relates to cleaning mops.

An object of the invention is to provide an improved mop which is durable in construction, lightweight, easy to manipulate and adjust, very efficient in operation, and economical to manufacture.

More particularly, an object of the invention is to provide a mop having a novel and improved extractor mechanism which is operable to squeeze fluid out of the compressible scrubbing pad in any angularly adjusted position of the mop handle relative to the head of the mop.

Another object is to provide means to facilitate the quick attachment or detachment of the scrubbing pad from the mop head plate means.

Still another object of the invention is to provide a mop of the above-mentioned character having a body portion or head plate adapted to be formed in a unitary manner from plastic or like material, thereby eliminating a substantial amount of metal hardware commonly employed in mops of this general character.

Other objects and advantages of the invention will be apparent during the course of the following detailed description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

FIGURE 1 is a perspective view of a mop embodying the invention,

FIGURE 2 is a top plan view of the same on a reduced scale, with parts broken away,

FIGURE 3 is a fragmentary front elevational view of the mop,

FIGURE 4 is a transverse vertical section taken on line 4—4 of FIGURE 2,

FIGURE 5 is a bottom plan view of the mop as shown in FIGURE 3 with the scrubbing pad removed,

FIGURE 6 is a side elevational view of the mop,

FIGURE 7 is an enlarged fragmentary exploded perspective view of the head plate means and associated elements,

FIGURE 8 is an enlarged fragmentary vertical section through a telescoping extractor link and associated parts,

FIGURE 9 is a transverse cross section taken on line 9—9 of FIGURE 6,

FIGURE 10 is a side elevation of the mop showing the mop handle and associated parts in a fully lowered position,

FIGURE 11 is a similar view of the mop showing the mop handle arranged substantially perpendicular to the head of the mop,

FIGURE 12 is a fragmentary front elevational view of the mop with the extractor means in the active position for folding the mop head to expel fluid therefrom, and

FIGURE 13 is a side elevational view of the mop during the extraction operation as depicted in FIGURE 12, parts broken away.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 20 designates a body portion or head plate in its entirety, adapted to be formed by molding from plastic, such as polypropylene, or from other suitable material. The body portion 20 is unitary in construction and comprises an intermediate relatively narrow head plate section 21 and a pair of relatively wide rectangular identical head plate sections 22 on opposite sides of the

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intermediate section 21 and integrally hinged to the intermediate section by longitudinal parallel hinges 23. The integral hinges 23 constitute narrow reduced thickness portions between and interconnecting the sections 21 and 22, and these hinges are formed in a manner known in the art and they allow the side head plate sections 22 to hinge or swing freely relative to the intermediate section 21 during the use of the mop as will be described in detail. The integral hinges 23 are extremely durable and will not fail after continuous flexing over a long period of time and during the entire life of the mop.

As shown in FIGURE 5, the hinged head plate sections 22 are suitably ribbed on their bottom faces, longitudinally, transversely and diagonally at 24, 25 and 26 to render the same adequately rigid. The arrangement of this ribbing may be varied somewhat as deemed desirable. Each section 22 is further provided along its forward and rear edges with depending flanges 25' to further stiffen the same and to aid in positioning the sponge cleaning pad upon the bottom of the head plate structure. The intermediate head plate section 21 has similar depending flanges 27 formed thereon at its forward and rear ends. As depicted in FIGURES 3 and 6, for example, the flanges 25' and 27 embed themselves in the top face of the cleaning pad during use and this stabilizes the assembly.

The intermediate head plate section 21 is formed to provide a raised approximately semi-circular upstanding projection 28 thereon extending longitudinally thereof at the transverse center of the section 21 throughout the major portion of its length. The projection 28 is hollow and downwardly opening and generally inverted U-shaped in cross section, as shown in FIGURE 4. The projection 28 materially stiffens the head plate section 21 and also provides a longitudinal passage or tunnel 29 beneath the same. An integral upstanding wall 30 covers the rear end of the hollow projection 28 and is rigid therewith and with the head plate section 21 and perpendicular to the latter.

With reference to FIGURE 7, a block element 31 is formed integrally upon the section 21 at the forward end of the projection 28 is covering relation with the latter and rigid therewith. This block element includes a pair of top somewhat resilient curved knuckles 32, separated by a central vertical slot 33 at the transverse center of the intermediate section 21. A transverse horizontal slot 34 is formed through the fronts of the knuckles 32 and communicates with a somewhat enlarged bore 35 which extends through the two knuckles 32 transversely of the section 21. A pair of stops or lugs 36 are formed integral with one end of the block element 31 below the slot 34 and bore 35 and on opposite sides of the latter, for a purpose to be fully described. The entire block element 31 is integral and rigid with the intermediate head plate section 21. The block element 31 is set inwardly of and between the integral hinges 23 so as not to interfere with the operation of the same.

A rearwardly projecting floor scraper extension 37 is formed integral with the intermediate section 21 and projects a substantial distance rearwardly of the entire mop head. The scraper extension has integral side braces 38 which are joined to the wall 30, as shown. This materially strengthens and stiffens the scraper extension. The forward end of the scraper extension 37 is arranged between the hinges 23 and the scraper extension flares rearwardly as shown to provide a relatively broad rear scraping edge 39.

An extension or tongue 40 is hinged to the top of the wall 30 by an integral transverse hinge 41 similar to the hinges 23. This tongue 40 is adapted to enter a transverse slot 41' in the forward end of a mop handle 42 and is rigidly anchored therein by suitable fastener means 43,

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such as a rivet or bolt or a pair of such fastener elements, if preferred. The integral hinge 41 renders the handle 42 freely swingable relative to the mop head.

A rectangular sponge scrubbing pad 44 is provided for mounting upon the bottom faces of the head plate sections 21 and 22 and completely covers such faces in assembly. Means are provided to facilitate the quick attachment or detachment of the pad 44 from the head of the mop. This means is substantially the same as the similar means shown in my prior Patent 2,967,317 and comprises a pair of thin backing plates 45, cemented or otherwise firmly secured to the top face of the pad 44. A pair of upstanding rigid headed studs 46 are rigidly secured to the plates 45 and project thereabove. The studs 46 are received within keyhole slots 47 formed through the head plate sections 22, centrally thereof. This means forms the sole connection between the pad 44 and the head plate structure and renders the pad free floating and quickly attachable and detachable, as explained in my mentioned prior patent.

The bottom of the intermediate section 21 is provided near its ends with bosses 48 and 49, see FIGURE 5, within which are anchored the ends of a metal pin 50, such pin extending longitudinally and centrally through the before-mentioned passage 29 beneath the projection 28. A torsional coil spring 51 surrounds and is held captive on the pin 50 and projects into the passage 29. This spring has radial arms 52 at its opposite ends which are tensioned to bear upon the bottoms of head plate sections 22 for automatically returning these head plate sections into coplanar relation with the intermediate section 21 after each extracting operation. The spring of course yields to allow folding of the head plate sections during the extracting operation shown in FIGURES 12 and 13.

Means are provided to releasably lock the handle 42 in a plurality of angularly adjusted positions relative to the mop head, such positions being shown in FIGURES 6, 10 and 11. This means comprises, as shown in FIGURE 7, a metal rod 53 of a diameter to engage snugly within the bore 35 after being forced laterally through the somewhat narrower slot 34. The knuckles 32 yield to allow the rod 53 to be snapped into the bore 35. A latch bar 54 has an eye 55 at its lower end loosely pivotally mounted upon the rod 53 and adapted to enter the slot 33 of block element 31 in assembly. The free end of latch bar 54 has a lateral locking extension 56, selectively engageable within longitudinally spaced openings 57 in the handle 42 near the lower end thereof. As best shown in FIGURES 6, 10 and 11, the latch bar 54 is adapted to hold the handle 42 releasably in preferably three selected adjusted positions. If preferred, additional openings 57 may be provided to facilitate adjusting the handle 42 to other angular positions. FIGURE 6 shows the handle 42 inclined relative to the mop head as during the scrubbing of a floor, and the extension 56 is engaged within the intermediate opening 57. FIGURE 10 shows the handle 42 fully lowered or horizontal as when the mop is used to clean under a low object. The extension 56 is now in the lowermost opening 57. FIGURE 11 shows the handle 42 perpendicular to the mop head and lowered parallel to the floor as when the scraper extension 37 is in use for scraping the floor.

A light torsional coil spring 58 surrounds the rod 53 at one side of the block element 31 and outwardly thereof, FIGURES 1 and 2. The outer end of this spring carries an arm 59 having a hook extremity 60 engaging over the latch bar 54 and tensioning the same downwardly toward engagement with the handle 42. The other end of the spring carries an arm 61 having a lateral extension 62 anchored within a small side opening of the hollow projection 28. The spring 58 therefore serves to bias the latch bar 54 toward latching engagement with the handle 42 but allows the latch bar to be easily raised for releasing the handle so that the latter may swing on the integral hinge 41.

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The rod 53 is formed to provide depending legs 63 and 64 at the ends thereof, the leg 63 having a horizontal foot 65 and the leg 64 having an L-shaped horizontal foot 66. In assembly, FIGURE 1, the feet 65 and 66 engage upon the head plate sections 22 near and outwardly of the hinges 23 to positively limit upward swinging movement of the sections 22. That is to say, the feet 65 and 66 constitute rigid stops, preventing the head plate sections 22 from swinging upwardly above the horizontal or above the plane of the floor. This allows adequate downward pressure to be placed on the mop with the assurance that such pressure will be transmitted through the pad 44 to the floor or wall over the entire surface area of the pad.

The leg 64 in assembly is located within the space between the lugs 36 so as to lock the rod 53 against rotation in the bore 35. The spring 58 is under compression, FIGURE 1, and engages one end of the block element 31 and holds the leg 64 in the space between the lugs 36 and against the other end of the block element 31. When assembling the rod 53 with the block element 31, the rod 53, FIGURE 7, is forced to the right compressing the spring 58 and allowing the leg 64 to clear the adjacent lug 36. The rod is then released and the spring 58 will shift the leg 64 into the space between the lugs 36. The means shown in FIGURE 7 therefore serves the dual function of adjusting the handle 42 and preventing the head plate sections 22 from swinging above the horizontal at any time.

The extractor or folding mechanism for the mop is unique in that it allows extracting by folding the head plate sections 22 on the hinges 23, as depicted in FIGURE 12, regardless of the angularly adjusted relationship of the handle 42 relative to the mop head. The extractor mechanism includes a cross pin 67 on the handle 42 near and above the tongue 40 and engaging rotatably through a transverse opening 68 of the handle. An extractor handle 69 including spaced stretches 70 have their lower ends secured to the rotatable cross pin 67 between spacer elements 71 and nuts 72 on the cross pin. The upper portions of the stretches 70 are securely anchored within a preferably plastic handle piece 73 which is U-shaped in cross section, FIGURE 9, and adapted to straddle and frictionally engage the mop handle 40 so as to releasably hold the extractor handle 69 in the inactive position, FIGURE 6 and FIGURE 1, generally parallel to the mop handle.

Intermediate the ends of the stretches 70 and relatively near their lower ends, the same are elbowed at 74 to provide upper and lower angled portions arranged at a wide angle to each other, FIGURE 6. At the elbows 74 and outwardly thereof, the tops of extensible telescoping pressure links 75 are swiveled to the stretches 70 by a ball and socket connection as indicated at 76 in FIGURE 8. This ball connection or joint interconnects the adjacent stretch 70 and the outer tubular member 77 of the extensible link 75. The inner rod member 78 of each link 75 has a hook 79 at its lower end having a swiveled connection with an eye 80, anchored within a boss 81 integrally formed upon the head plate section 22 near the outer end thereof. Diagonal ribs 82 are provided to strengthen the bosses 81 and the head plate sections 22, as shown in FIGURE 1. In order to eliminate any possibility of binding between the elements 79 and 80 which constitute a form of universal joint, pressure plates 83 of molded nylon, plastic or the like are mounted between the eye 80 and the bottom of tubular member 77 as shown in FIGURE 8. When downward pressure is exerted through the links 75 in the extracting operation, such pressure is borne by the plates 83 engaging between the elements 77 and 80, thus eliminating direct frictional engagement of the metal hook 79 in the bottom of the eye 80 where some binding might occur.

As shown in the drawings, the extensible links 75 converge upwardly and their lower ends are near the outer ends of the mop head to facilitate applying maxi-

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imum folding pressure on the mop head. When the extractor mechanism is inactive, FIGURE 6, the links 75 are substantially aligned longitudinally with the stretches 70 and also lie close to the handle 42 and generally parallel thereto. When the extractor mechanism is active and the pad 44 is folded upon itself, FIGURES 12 and 13, the links 75 assume positions substantially at right angles to the extractor handle 69 and the links 75 are then approximately parallel, FIGURES 12 and 13. During the extracting operation, the links 75 have a compound movement imparted thereto due to their swiveled connections with the hinged head plate sections 22 and the swingable handle 69. The links 75 are solid or unextended during the extracting operation, FIGURE 12, so as to be capable of transmitting direct pressure from the handle 69 to the head plate sections 22. The links 75 extend automatically when the handle 42 is lowered as depicted in FIGURE 10. When the handle 42 is arranged perpendicular to the mop head, FIGURE 11, the links 75 are solid or unextended and cause a slight folding of the mop head which is entirely unobjectionable while the scraper 37 is in use. The geometry of the extractor mechanism is such that the same operates smoothly to fold and compress the pad 44 for extracting fluid therefrom in any adjusted position of the handle 42 relative to the mop head and without twisting or excessively straining the head plate sections 22 or the hinges 23. The resiliency of the pad 44 and the torsion spring 51 tends always to return the mop head to the normal condition shown in FIGURE 1 after the extracting or folding operation. As stated, the elements 65 and 66 prevent the head plate sections 22 from swinging above the horizontal.

The use or operation of the mop in general will be apparent to those skilled in the art without the necessity for a further description.

A preferred embodiment of the mop structure has been illustrated and described and minor modifications of the structure and the materials used may be employed within the scope of the invention.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

Having thus described my invention, I claim:

1. A mop comprising a head plate including hinged sections adapted to be folded into substantially parallel opposed relation, a pliable pad substantially covering the bottom surface of said head plate and being foldable with and between said sections to compress the pad and extract fluid therefrom, a mop handle hingedly connected with said head plate and swingable relative thereto to vary the angle between the handle and head plate, an extractor handle pivotally mounted upon the mop handle and swingable toward and away from the mop handle, extensible compression links having corresponding ends swiveled to the extractor handle intermediate the ends of the latter, and means forming swiveled connections between the opposite ends of said links and said hinged head plate sections near the outer free ends of the latter, and means to releasably secure the mop handle in a plurality of angularly adjusted positions relative to said head plate.

2. A mop holder comprising a one-piece head plate including an intermediate section and side sections integrally hinged to the intermediate section and swingable relative thereto toward and away from opposed substantially parallel relation, said side head plate sections adapted for connection with a cleaning pad, resilient means connected with said intermediate head plate section and engaging said side sections to normally urge the latter into coplanar relation with the intermediate section, positive stop means extending on opposite sides of said intermediate section and engaging the tops of said side sec-

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tions to arrest upward swinging movement of the side sections when the side sections are approximately in the same plane as said intermediate section, a tongue element integrally hinged to the intermediate head plate section, a mop handle secured to said tongue and swingable therewith relative to said head plate, adjustable latch means interconnecting the mop handle and said intermediate section for releasably positioning the mop handle in a plurality of selectable angularly adjusted positions, an extractor handle pivotally mounted upon the mop handle and swingable away from and toward the same, a pair of compression links adjacent to opposite sides of the extractor handle and adjacent said side sections of the head plate and above the latter, and means forming substantially universally movable connections between the opposite ends of said links, said extractor handle and said side head plate sections, whereby operation of the extractor handle is effective to fold said side sections into said substantially parallel relation in any angular position of the mop handle relative to said head plate.

3. A mop holder comprising an integral unitary body portion formed of material which may be repeatedly flexed without failure in thin regions thereof and which is substantially rigid in relatively thick sections thereof, said body portion including an intermediate plate section and a pair of side plate sections integrally hinged to the intermediate plate section along narrow regions of reduced thickness compared to the total thickness of said plate sections, an upstanding downwardly open hollow projection on the intermediate plate section lengthwise thereof, a block element upon the intermediate plate section forwardly of said projection, a tongue integrally hinged to the intermediate plate section near the rear end of said projection along a narrow region of reduced thickness in said material, a mop handle secured to said tongue and swingable therewith relative to the intermediate plate section, a separately formed element adapted to be anchored to the block element and having portions bearing upon the tops of the side plate sections near and opposite sides of the intermediate plate section to positively limit upward swinging movement of the side plate sections, a spring anchored beneath said hollow projection and having parts bearing upon the bottoms of the side plate sections and urging them upwardly toward coplanar relation with the intermediate plate section, adjustable latch means interconnecting the mop handle and said block element to releasably lock the mop handle in selected angularly adjusted positions, and manually operable extractor means interconnecting the mop handle and side plate sections to cause swinging of the latter on their integral hinges, said side plate sections adapted for connection with a cleaning pad element.

4. The invention as defined by claim 3, and wherein said block element has a transverse through bore and a restricted slot leading radially into the through bore, said separately formed element including a rod portion insertable into the through bore laterally through said slot.

5. The invention as defined by claim 3, and a rearwardly projecting scraper extension on the intermediate plate section and integral therewith.

6. In a mop, a head plate structure including hinged foldable portions adapted for connection with a scrubbing pad and an intermediate head plate section, mop handle means hingedly secured to the intermediate head plate section, resilient latch means engageable with the mop handle to releasably lock the same in plural angularly adjusted positions, manually operable extractor means pivoted to the mop handle and having swiveled connection with said hinged portions, a block element on said intermediate head plate section and having a transverse bore and a generally horizontal slot of restricted width leading to said bore and having a pair of spaced lugs on one end of the block element defining a passage below said bore, a rod element engageable through said slot into said bore

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and extending axially beyond said bore at the end of the block element remote from said passage, dependent legs on said rod element at the ends thereof, one of said legs engaging within said passage between said lugs, said latch means connected with said rod element, a spring on said projecting portion of the rod element and connected with the latch means and engaging between the block element and one of said legs and serving to maintain the other leg releasably in said passage, and feet on said legs overlying said hinged portions on opposite sides of said intermediate section to positively limit upward movement of the hinged portions.

7. The invention as defined by claim 6, and a trailing floor scraping extension on said intermediate head plate section.

8. The invention as defined by claim 1, and wherein said extensible links comprise interior rods and exterior tube members engaging telescopically over said rods, said means forming swiveled connections between the opposite ends of said links and said hinged head plate sections in-

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cluding interconnected loosely engaged loop elements on said interior rods and hinged head plate sections, and pressure plates on the interior rod loop elements and engaging the loop elements of the hinged head plate sections and preventing binding of the loop elements during swiveled movement thereof.

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