March 23, 1965 J. M. RONES ETAL 3,174,172

MOP HEAD ASSEMBLY

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FIG.1

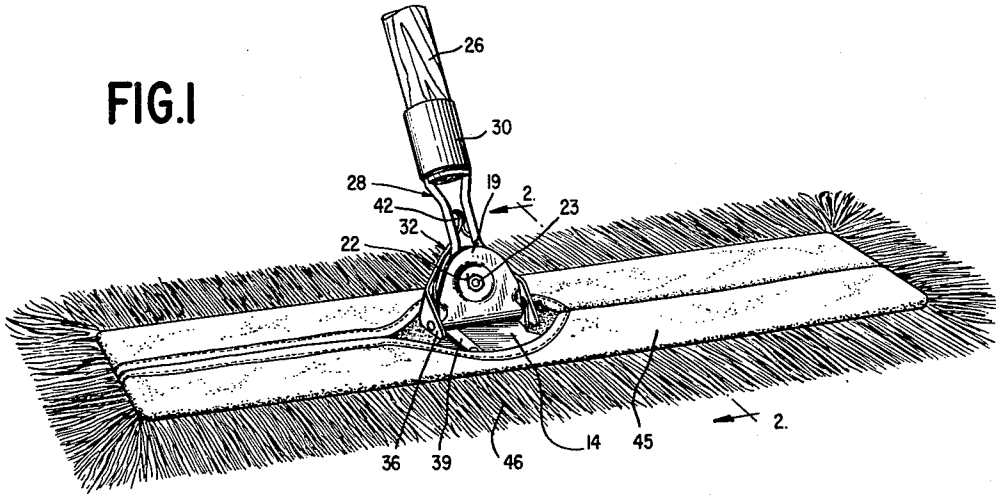


FIG.3

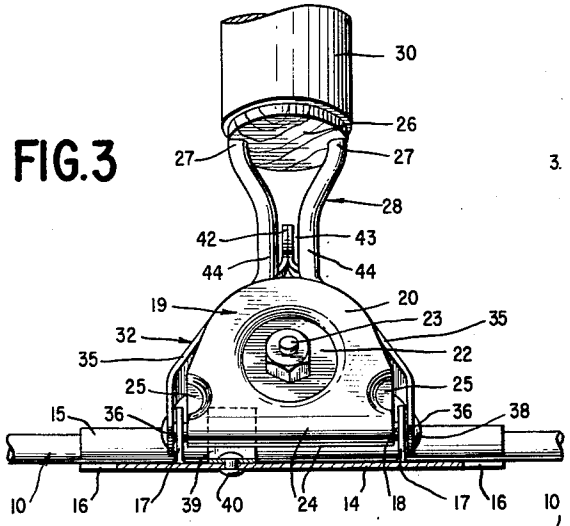
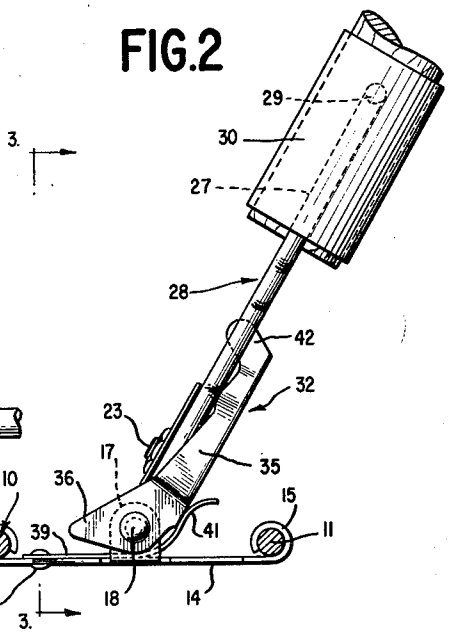


FIG.2



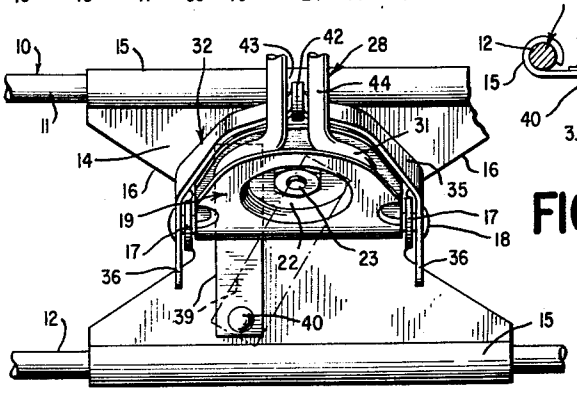


FIG.4

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MOP HEAD ASSEMBLY

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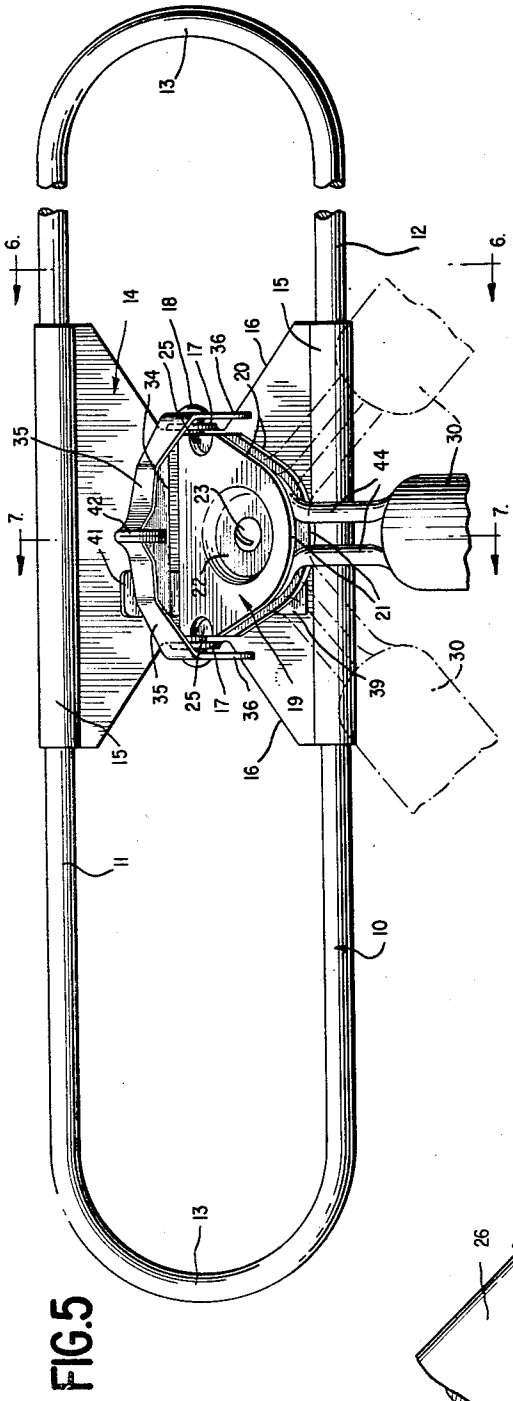


FIG.5

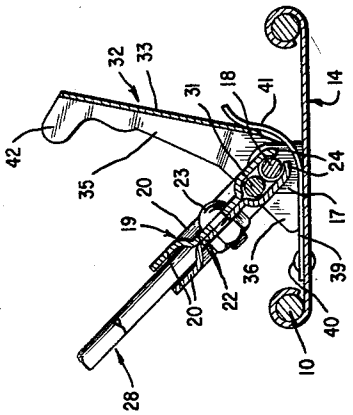


FIG.7

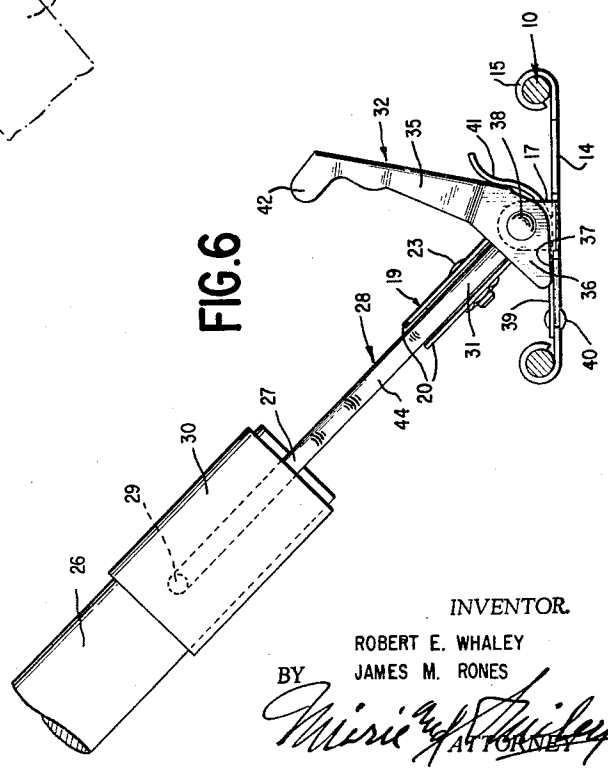


FIG.6

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MOP HEAD ASSEMBLY

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This invention relates to improvements in dusting or sweeping mops.

An object of the invention is to provide an improved mop of the type commonly employed for sweeping the rooms and corridors of office buildings and the like, and characterized by simplicity of design and construction, ruggedness and durability, efficiency of operation, and economy of manufacture.

More specifically, an object of the invention is to provide a mop of the mentioned character having a novel and simplified universal connection between the mop head plate and handle, and means for releasably locking the handle against swinging in one plane relative to the head plate to greatly facilitate sweeping long corridors or other large areas.

Still another object is to provide a mop for dusting and sweeping including handle locking means which is spring-urged toward active locking engagement with the handle when the handle is held in one active position and which automatically releases the handle for free pivotal movement relative to the head plate when the handle is shifted to a second active position remote from the locking means.

Another object of the invention is to provide a dusting or sweeping mop having a mop head which is free to swivel relative to the handle for easy passage around the legs of furniture and like obstructions when the handle is disengaged from the locking means.

The novel features that the considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawings, wherein like reference characters indicate like parts throughout the several figures and in which:

FIG. 1 is a perspective view of a dusting or sweeping mop constructed in accordance with the invention and showing the mop handle locked against pivoting in one plane relative to the head plate;

FIG. 2 is an enlarged fragmentary transverse vertical section taken on line 2—2 of FIG. 1 and omitting the mop head fibers and fabric;

FIG. 3 is a fragmentary vertical section taken on line 3—3 of FIG. 2;

FIG. 4 is a fragmentary plan view of the mop with the fabric mop body portion removed and illustrating the manner of adjusting the tensioning spring for the mop handle locking means in full lines and in broken lines;

FIG. 5 is a fragmentary plan view of the mop showing the mop handle released from the handle locking means and illustrating in broken lines the free pivotal movement of the handle relative to the head plate;

FIG. 6 is a fragmentary transverse vertical section taken on line 6—6 of FIG. 5, and

FIG. 7 is a similar section taken on line 7—7 of FIG. 5.

Referring to the drawings in detail, the numeral 10 designates a heavy wire frame which is transversely elongated and horizontal during use and including spaced

parallel sides 11 and 12 and preferably rounded ends 13 integral therewith.

Disposed beneath the frame 10 at the transverse center of the same is a flat head plate 14 having upwardly rolled knuckles 15 at the opposite ends thereof receiving the frame sides 11 and 12 and rigidly secured thereto by clinching the knuckles upon the frame sides or by any other suitable means. The frame 10 is immovable relative to the head plate 14 after assembly with the latter in the described manner, and the frame 10 extends equidistantly on opposite sides of the head plate.

The head plate 14 is provided upon opposite sides thereof and midway betwen the knuckles 15 with large V-shaped notches 16. At the inner ends of the notches 16, the head plate has a pair of laterally spaced opposed parallel vertical upstanding apertured lugs 17 formed integral therewith and projecting thereabove for a relatively slight distance.

A transverse horizontal hinge pin 18 is journaled for rotation within the aligned apertures of the lugs 17 and is spaced somewhat above the flat head plate 14 and spans the distance between the upstanding lugs 17. A two-part handle adapter 19 is provided including identical adapter plate sections 20 which preferably taper toward their free ends remote from the hinge pin 18 and are rounded at such ends as shown at 21. The plate sections 20 have opposed contacting dished portions 22 formed therein centrally with registering openings to receive a bolt 23, FIG. 7, serving to rigidly secure the plate sections of the handle adapter together in assembly. The leading transverse ends 24 of the plate sections 20 are rolled to form cylindrically curved knuckles clampingly embracing the hinge pin 18, whereby the adapter 19 is rigid therewith and swings vertically with the hinge pin about the axis of the latter relative to the head plate 14. The plate sections 20 are preferably clinched together at opposite sides thereof as indicated at 25 to assure tight frictional gripping of the rolled ends 24 with the hinge pin 18.

The mop handle 26 formed of wood or the like has its forward end grooved on opposite sides for the reception of parallel arm portions 27 of a forwardly projecting heavy wire loop 28 to be further described. The upper ends of the arm portions 27 have integral opposed transverse extensions 29 engaging within side openings of the handle 26 in a conventional manner. A ferrule 30 on the handle 26 engages over the arm portions 27 to lock the same to the handle 26 and this construction is conventional. The loop 28 has a forward annular loop portion 31 integral therewith engaging slidably and rotatably between the spaced plate sections 20, outwardly of and in surrounding relation to the contacting dished portions 22. At its forward side, the annular loop portion 31 engages movably between the hinge pin 18 and the dished portions 22 as best shown in FIG. 7. The handle 26 and wire loop 28 are thus swingable vertically as a unit with the adapter 19 and hinge pin 18 about the longitudinal axis of the latter, and the handle 26 is also swingable for a full 180 degrees with the annular loop portion 31 around the circular dished portions 22 to provide a universal action for the mop handle relative to the head plate 14.

A handle locking plate 32 is provided including an upwardly tapering plate body portion 33 having a lower transverse edge 34 spaced above the head plate 14 and side marginal upstanding flanges 35 integral therewith. Lower tapered flange extensions 36 constituting extensions of the flanges 35 are carried by opposite sides of the locking plate 32 and these extensions have aligned openings pivotally receiving the hinge pin 18 outwardly of the upstanding lugs 17. Lower horizontal edges 37 of the tapered extensions 36 are adapted to engage upon the top of the head plate 14 near corresponding sides of the

notches 16 to positively limit pivotal movement of the locking plate 32 in one direction upon the axis of the hinge pin 18. The hinge pin 18 has heads 38 provided thereon outwardly of the extensions 36 to maintain the parts in assembled relation. The locking plate 32 is freely swingable in a vertical plane upon the hinge pin 18 and relative to the head plate 14 and mop handle.

A leaf spring 39 is mounted upon the head plate 14 and extends transversely thereof. The forward end of the leaf spring is anchored to the head plate near and inwardly of one of the knuckles 15 by a rivet 40 or the like. This rivet allows some pivoting of the leaf spring 39 horizontally upon the head plate 14 to adjust the tension of the spring as will be more fully described. The leaf spring 39 extends transversely beneath the pivot pin 18 and associated elements, FIG. 7, and has its free end portion 41 curved upwardly and engaging the under surface of the locking plate body portion 33 near and above the lower edge 34 thereof. The leaf spring serves normally to maintain the locking plate 32 in an upstanding position at approximately 30 degrees to the vertical, when the leaf spring is extending at right angles to the hinge pin 18. The tension of the leaf spring upon the locking plate 32 may be increased somewhat by swinging the leaf spring horizontally toward the center of the head plate 14 on the axis of the rivet 40. The leaf spring is secured to the head plate in offset relation to the mop handle as clearly shown in the drawings. The handle locking plate 32 is swingable in the clockwise direction, FIG. 7, against the force of leaf spring 39 and the leaf spring serves to automatically return the locking plate to approximately the position shown in the drawings. As previously explained, the tapered extensions 36 limit the counter-clockwise movement of the locking plate to the position shown in FIG. 6 by engagement of the extensions 36 with the top of the head plate 14.

At its upper end, the flanges 35 of the locking plate 32 are pressed together to form a forwardly projecting upwardly inclined locking dog 42 integral with the locking plate 32 and adapted to enter a narrow passage 43 formed between inwardly offset parallel arm portions 44 of the wire loop 28. The arm portions 44 are intermediate the annular loop portion 31 and the handle engaging arms 27 as shown.

A fabric mop body portion 45 including fringe 46 and being of conventional construction is detachably engageable over the wire frame 10 as shown in FIG. 1. This mop body portion is readily removable from the mop frame for washing or for replacement with a new body portion when required.

In use, the mop handle 26 may be swung toward the side of the frame 10 nearest to the locking dog 42, FIGURE 2, and the locking dog enters the passage 43 between the arm portions 44. In such position, the mop handle is securely locked against pivoting on the axis of the loop portion 31 but is free to pivot in either direction upon the axis of the hinge pin 18 which is at right angles to the axis of the loop portion 31. The handle 26 may be depressed or swung downwardly, FIG. 2, against the force of the spring 39 to a relatively low position to meet the needs of a particular user and to facilitate pushing the mop under relatively low objects. While locked against lateral swinging by the dog 42, the mop handle is utilized to push the mop along corridors or over large floor surfaces to sweep or dust the same and the mop frame 10 will remain at right angles to the handle and will not swivel upon the axis of the loop portion 31, thus rendering the mop easy to control during straight line sweeping operations. The locking dog 42 will follow the up and down movements of the handle about the hinge pin 18 and maintain locked engagement with the handle under influence of the spring 39, until forward movement of the locking plate 32 is arrested by engagement of the tapered extensions 36 with the head plate 14. At this point, the mop handle 26 would be approximately vertical and continued swinging of the handle away from the locking plate 32 will cause disengagement of the locking dog 42 from the passage 43.

When the mop is utilized for cleaning an office or the like containing furniture and it is desired to allow the mop frame 10 to swivel freely in two planes or in a universal fashion on the handle, the latter is merely swung in the counter-clockwise direction, FIG. 6, toward the opposite side of the frame 10 and entirely clear of the locking plate 32. In such position, the mop frame 10 may pivot freely relative to the handle on the axis of the pivot pin 18 and may also pivot freely upon the axis of the loop portion 31 at right angles to the pin 18 to provide a universal movement between the handle and mop frame. At such time, the handle 26 may be lowered to a horizontal position for passage under low furniture and the handle is swingable with the loop portion 31 substantially a full 180 degrees relative to the mop frame 10, thus allowing the mop frame to swing around the legs of tables and chairs and like obstructions while in a horizontal plane and sliding over the floor.

It may now be seen that a mop structure is provided which allows the user to maintain the mop handle in locked relation to the mop head or frame to prevent relative pivoting of these parts in one plane and allowing the handle to swing freely vertically in another plane while sweeping long corridors or the like. By a simple movement of the handle toward the opposite side of the mop head, the locking means is released and a universal joint between the handle and mop head is achieved for sweeping around furniture, etc. The locking plate 32, while active, FIG. 2, allows the mop handle to be lowered and the spring 39 yields to permit this. The locking plate 32 automatically follows the handle until the same is elevated to a nearly vertical position, where the upward swinging movement of the locking plate is arrested by the extensions 36, and the locking plate and dog 42 then automatically releases the handle for pivoting upon the axis of the loop portion 31 as explained above.

The construction is highly simplified, compact, and extremely sturdy and durable and the arrangement is such that the mop may be utilized in a very efficient manner and with a minimum of effort for various sweeping or dusting operations in corridors and in furnished rooms.

Although a certain specific embodiment of the invention has been shown and described, it is obvious that many modifications thereof are possible. The invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

What is claimed is:

1. A mop holder comprising a mop head plate, a frame carried by the head plate and adapted to carry a fabric mop body portion, a handle adapter pivoted to the head plate for swinging movement in a first plane relative thereto, a handle pivoted to the adapter for swinging movement relative thereto and relative to the head plate in planes substantially at right angles to the first-named plane, a locking member pivoted to the head plate abutting said adapter for swinging movement with said adapter and handle in the first-named plane only, said locking member engaging said handle to prevent movement thereof in certain of the second-named planes, a spring abutting the locking member and causing it to follow the handle and adapter during movement thereof in one direction in said first plane, and means to arrest the movement of the locking member in said one direction and to allow separation of the handle therefrom during continued movement of the handle in said one direction in the first plane, said spring yielding to allow movement of the locking member and said handle in unison in the opposite direction in said one plane.

2. The invention as defined by claim 1, and wherein said means to arrest the movement of the locking member is an extension on the locking member engageable with

the head plate during movement of the locking member in said one direction.

3. The invention as defined by claim 1, and wherein said spring is a leaf spring secured to the head plate and engaging one side of the locking member and urging it in said one direction upon its pivot.

4. The invention as defined by claim 3, and wherein said leaf spring is pivoted to the head plate and may have its tension adjusted by being swung in one direction upon its pivot.

5. A mop holder comprising a mop head plate, a handle adapter pivoted to the head plate for vertical swinging movement in one plane relative thereto, a handle including a bifurcated part pivoted to the adapter for swinging movement in planes substantially at right angles to the plane of movement of the adapter, a locking plate pivoted to the head plate on the pivot of the adapter and swingable therewith in the plane of movement of the adapter and including a locking dog engageable between the sides of the bifurcated part to lock the latter against swinging movement in certain of the second-named planes, resilient means resisting movement of the locking plate upon its pivot in one direction and causing the locking plate and dog to follow the movement of the bifurcated part in the opposite direction upon the common pivot of the locking plate and adapter, and stop means to limit the movement of the locking plate only during its movement in said opposite direction to thereby automatically disengage the locking dog from the bifurcated part and render the handle free to pivot universally.

6. The invention as defined by claim 5, and wherein the common pivot for the adapter and locking plate is a single hinge pin, and a pair of upstanding apertured lugs on said head plate receiving said hinge pin rotatably.

7. The invention as defined by claim 5, and wherein said adapter is a pair of opposed adapter plates, a hinge pin journaled upon the head plate for rotation, knuckle parts on the adapter plates adapted to clampingly engage the hinge pin, and bolt means securing the adapter plates together in opposed relation in clamping engagement with the hinge pin.

8. The invention as defined by claim 5, and wherein said adapter comprises a pair of opposed plates having central depressed portions which abut in assembly and defining an open annular passage therearound, bolt means clampingly securing said plates together as a unit, said bifurcated handle part including an annular loop extremity disposed within said annular passage movably and in surrounding relation to said depressed portions to form a swiveled connection between the adapter and handle.

9. A mop holder comprising a mop head, a handle adapter pivoted to the head for vertical swinging movement in a first plane relative thereto, a handle support pivoted to the adapter for swinging movement relative thereto and relative to the head in planes substantially at right angles to the first-named plane, a locking member pivoted to the head abutting said adapter for swinging movement with said adapter and handle support in the first-named plane only, said locking member lockingly engaging said handle support to prevent movement thereof in certain of the second-named planes, resilient means abutting the locking member and causing it to follow the handle support and adapter during movement thereof in one direction in said first plane, and means to arrest the movement of the locking member in said one direction and to allow unlocking and separation of the handle support therefrom during continued movement of the handle support in said one direction in the first plane.

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