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J. M. JOHNSON

2,495,846

COMBINED MOP AND WRINGER HEAD

Filed Feb. 5, 1945

3 Sheets-Sheet 1

Fig. 1.

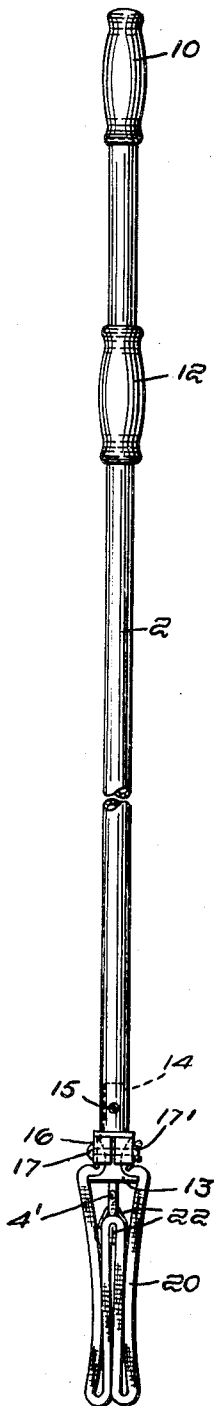


Fig. 2.

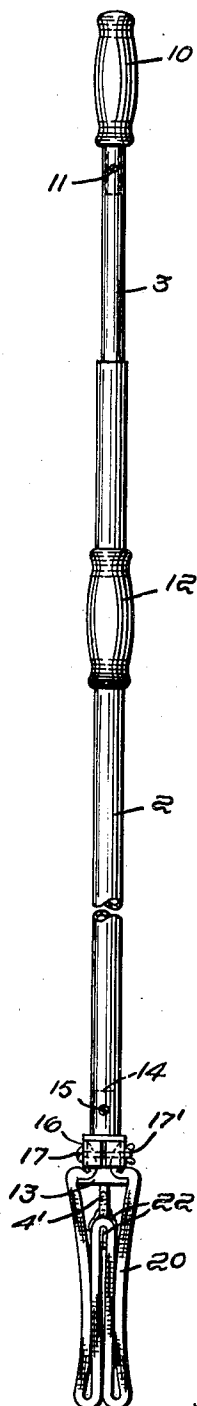
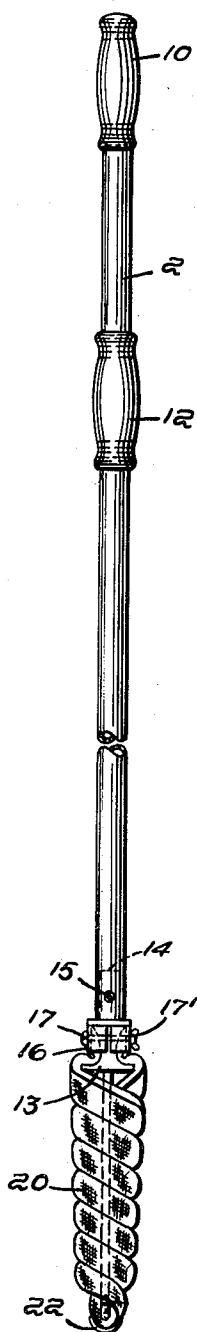


Fig. 3.



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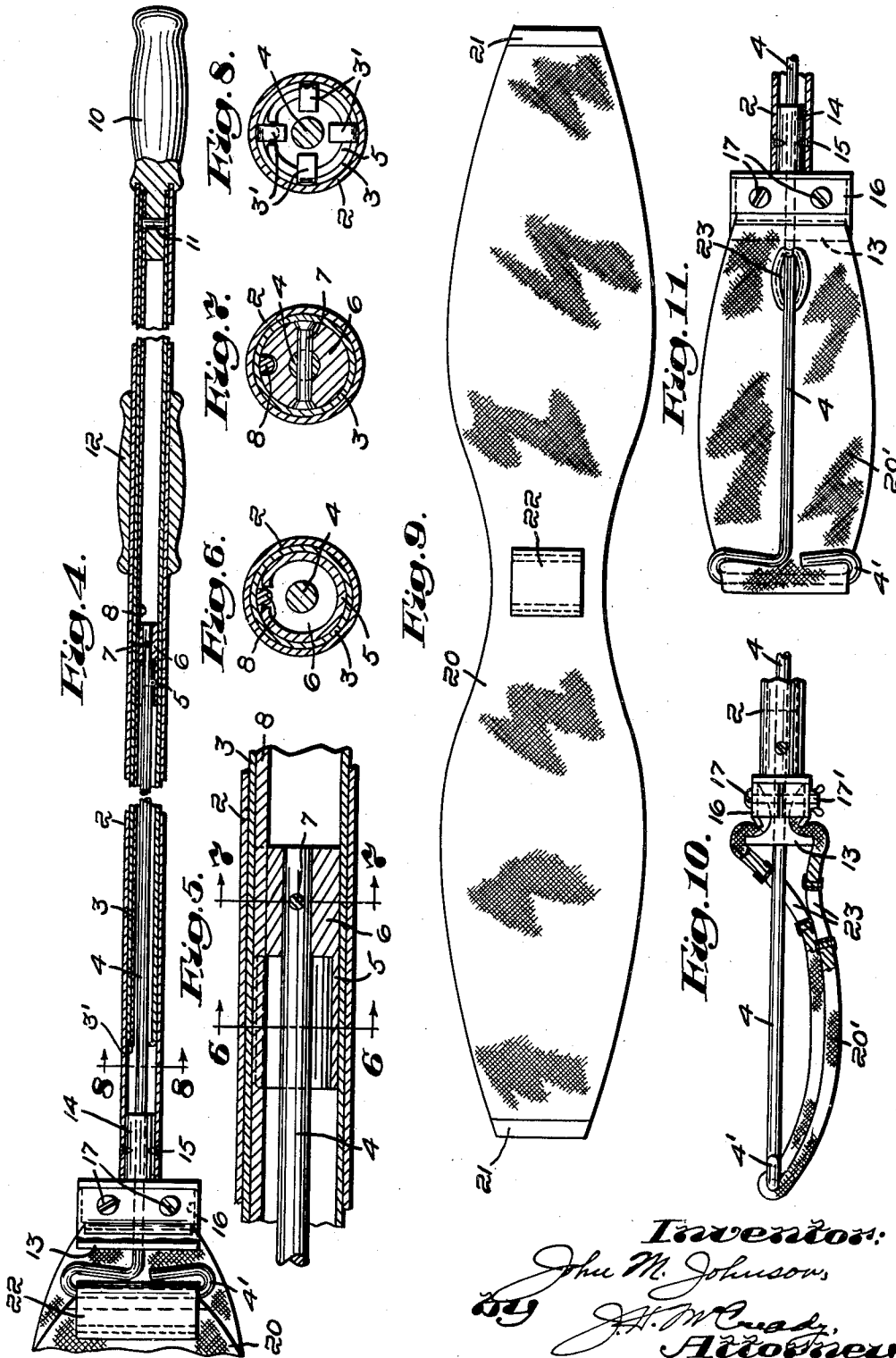
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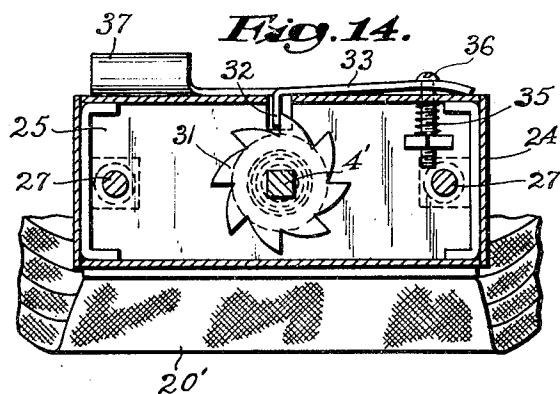
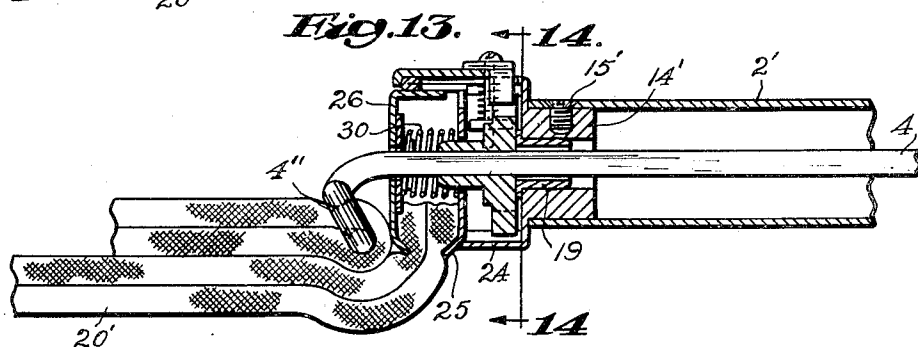
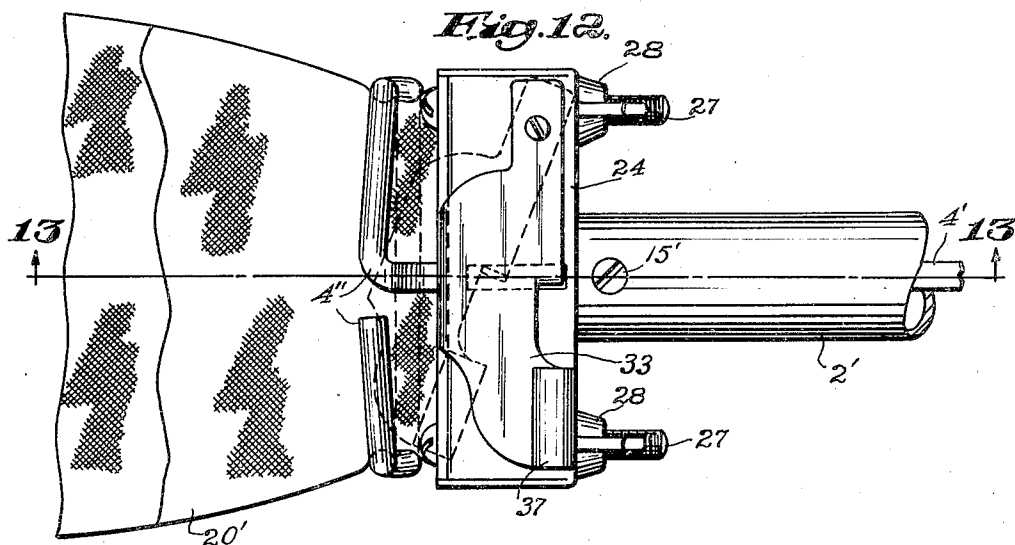
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COMBINED MOP AND WRINGER HEAD

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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COMBINED MOP AND WRINGER HEAD

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6 Claims. (Cl. 15—120)

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This invention relates to household equipment of the type comprising a mop and a handle structure to which the mop proper is secured.

The invention aims to improve structures of this type with a view to reducing the labor involved in using them, more especially that in connection with the wringing operation. While it has been proposed heretofore to accomplish this object by devising a construction in which the wringing operation can be performed by relatively rotating elements of the handle structure and thereby twisting the mop without taking it in the hands, none of these prior constructions, so far as I have been able to learn, has proved practical. At the same time it is obvious that the work of the housewife or the maid could be reduced very materially by a thoroughly satisfactory appliance of this character. To devise such a piece of apparatus which, in addition, will be simple in construction, economical to manufacture, and not liable to get out of order, constitutes the chief object of this invention.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Figs. 1, 2 and 3 are side views of a mop embodying this invention and illustrating different steps in the operation of using it;

Fig. 4 is a longitudinal, sectional view of the mop structure shown in Fig. 1;

Fig. 5 is a similar view on a larger scale of a short section of the construction shown in Fig. 4, the portion illustrated being that in which a friction element, later to be described, is included;

Figs 6 and 7 are sectional views on the line 6—6 and 7—7, respectively, of Fig. 5;

Fig. 8 is a similar view on the line 8—8, Fig. 4;

Fig. 9 is a plan view of a novel form of mop;

Figs. 10 and 11 are side and front views, respectively, of another form of mop adapted for use with the handle structure shown in Figs. 1 to 3;

Fig. 12 is a side elevation showing a modified form of the lower end construction for the mop which may be used in place of that shown at the lower end of the tubular handle in Figs. 1, 2 and 3;

Fig. 13 is a longitudinal, sectional view on the line 13—13, Fig. 12; and

Fig. 14 is a transverse, sectional view on the line 14—14, Fig. 13.

Referring first to Figs. 1 and 4, the construc-

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tion there illustrated comprises a tubular handle 2 and a plunger, telescoped in and substantially enclosed within said handle. The plunger comprises a tube 3 and a rod 4, the latter being telescoped within the former. These members 3 and 4 are slidable, both bodily and in unison, or independently, inside the handle 2, but they are connected together by a friction device comprising a split sleeve 5, fitting tightly within the tube 3, and a solid or plug section 6 rigid with the sleeve 5. The upper end of the rod 4 is secured to this friction device as by a pin 7, Figs. 5 and 7, and the split in the sleeve 5 is made wide enough to take the internal seam, spline or bead 8 which runs lengthwise of the tube 3 and is rigid with it, so that the rod 4 and the tube 3, while being slidably connected together, cannot have any relative rotative movement.

At the upper end of the plunger a grip 10 is secured to the tube 3 by a pin 11, Fig. 4, and the lower end of this member and the upper end of the tube 2 have a short telescoping connection with each other, as shown in Fig. 4. Preferably, also, another grip 12 is fastened rigidly on the tubular handle 2.

Secured to the lower end of the handle 2 by short screws 15 is a clamp comprising an elongated T-shaped head 13, Fig. 1, provided with an integral bushing 14, best shown in Fig. 4, in to which the screws are threaded. Two U-shaped side plates 16—16 cooperate with the head 13 to clamp the upper ends of the mop fabric in place. For this purpose screws 17—17 extend entirely through the head and are equipped with thumb nuts or wing nuts 17' by means of which the clamp may be tightened up to lock one end of the fabric of the mop securely against slipping.

Also at the lower end of the mop, the rod 4 is shaped as shown at 4' in Fig. 4 to provide a T-shaped head portion which is adapted to be fastened to the other end of the mop fabric.

It should be observed that the bushing 14 forms a bearing for the rod 4 in which the latter both slides and rotates at certain times in the use of the device. As best shown in Figs. 1, 2 and 3, the head of the plunger is provided with oppositely extending narrow flanges having parallel edges over which the mop fabric is initially drawn when the clamping plates 16—16 are loosened. Then, when the wing nuts are tightened up, the plates 16—16 cooperate with the flanges just mentioned to clamp the upper ends of the mop fabric very securely to the head of the device.

While various forms of mops may be used with this construction, the preferred form has some

such shape as that shown at 20 in Fig. 9. It may be made of any suitable absorbent fabric, such as a coarsely fabricated cotton material, preferably with the ends bound, as indicated at 21—21. Also, a short section of fabric 22 is stitched at its opposite transverse edges to the middle of the mop so as to form a loop at this point between the fabrics 20 and 22 through which the outer section of the plunger head 4' can be inserted, as shown in Fig. 4. Assuming that the device has been assembled in this manner, the mop fabric will be disposed in a double loop formation, substantially as illustrated in Figs. 1 and 2.

Normally the device is as shown in Fig. 1 with the grip 10 slightly telescoped upon the upper end of the tubular handle 2. When it is desired to wring the mop, the tubular section 3 of the plunger is first pulled upwardly by means of handle 10 until the extension of the handle structure produced in this manner is substantially arrested by the short fingers 3', Figs. 4 and 8, which project inwardly from the lower end of the tube 3. During this operation the rod 4 does not move, but the tube 3 slides up on it, against the resistance offered by the friction device 5—6, until stopped by the engagement of said fingers with the end of the tubular section 5 of the plug 6. Next the operator grasps the grip 12 and forces the entire plunger downward through the handle 2. At this time the rod 4 moves down with the tube 3 until the grip 10 strikes the upper end of the tube 2, as shown in Fig. 3. This movement stretches the mop 20 to its limit. Then by grasping the grips 12 and 10 and revolving the latter with one hand, while holding the tubular handle 2 against rotation with the other grip 12, the mop is twisted up into some such form as that shown in Fig. 3. This wrings it, after which it can be untwisted by a reversal of the operations just described. Then by resting the head 4' of the plunger on the floor and pushing downward on the grip 10, the entire rod 4 can be forced back into its normal position inside the handle, as shown in Fig. 4. The mop then is ready to be used again.

It will be evident, however, that these operations are easily performed without much effort. Also, that the entire construction is compact, is sturdy and substantial, and is not liable to get out of order.

If the housewife, or other user of this appliance, prefers to fold the mop fabric in the manner shown at 20' in Figs. 10 and 11, then the mop may be provided with apertures 23 for the passage of the rod 4 therethrough, whether the fold is made entirely at the left-hand side of the rod, as shown in Fig. 10, or at the opposite side. Preferably these apertures are bound to prevent ravelling.

A modification of the construction at the lower end of the handle, which has some advantages over that above described, is illustrated in Figs. 12, 13 and 14, in which the parts corresponding to those shown in Figs. 1 to 10 are indicated by the same, but primed, numerals. Here the bushing 14 is replaced by one having a box-like sheet metal head 24 made integral with it, or secured rigidly thereto. The plunger 4' slides through a sleeve 19 rotatable in said bushing and is provided with a head 4'' offset laterally with reference to the plunger head, and the central portion of the mop 20' is looped over this head, as in the construction previously described. In the head is a plate 25 having a down-turned edge, as best shown in Fig. 13, and this plate cooperates with a bottom plate 26 having an up-turned edge,

opposed to that of the plate 25, to grip the lapped free ends of the mop between them. Two bolts 27—27 passing through all of these plates and through the top plate of the head 24 are equipped with thumb nuts 28—28 by means of which the plate 26 may be drawn upwardly to clamp the mop. When the nuts 28—28 are revolved to loosen the grip of the plates on the mop, they are forced apart by a spring 30, Fig. 13, interposed between the plates.

Mounted between the upper plate 25 and the top plate of the housing 24, is a ratchet wheel 31 fitting snugly, but slidably, on the rod 4' which, in this case, is made of square, cross-sectional form. A pawl 32, Fig. 14, integral with a pawl plate 33, is arranged to engage the teeth of the ratchet wheel 31, and a spring 35, Fig. 14, is connected with the plate 33 to hold the pawl normally in its operative relationship to the ratchet wheel. A bolt 36 passes through the spring 35 and supports the plate 33 for pivotal movement from its operative position, as shown in Fig. 12, into the dotted line position there illustrated, where the pawl 32 is moved out of engagement with the ratchet 31. Formed on the plate 33 is a finger grip 37 for convenience in swinging it.

The mop, as modified in accordance with Figs. 12 to 14, is operated in exactly the manner above described, but during the rotation of the handle 10 and the plunger rod 4' to wring the mop, the ratchet wheel revolves in a clockwise direction, Fig. 14, with the handle and therefore prevents any reverse rotation of the plunger during this operation. At the conclusion of the wringing step the pawl plate 33 is swung into the dotted line position shown in Fig. 12, thus releasing the plunger from the control of the pawl and permitting the operator to turn the handle in a counter-clockwise direction sufficiently to straighten out the mop. Then the handle is withdrawn to return the mop to its initial position, the pawl plate 33 is swung back into its full line position, Fig. 12, and the lower end of the mop assembly is rested on the floor while the handle is pushed down into its normal position.

This arrangement eliminates much of the need for the second grip 12, Figs. 1 to 3, on the tubular handle 2.

While I have herein shown and described preferred embodiments of my invention, it will be evident that the invention may be embodied in other forms without departing from the spirit or scope thereof.

Having thus described my invention, what I desire to claim as new is:

1. In a mop structure, the combination of a tubular handle, a plunger slidably mounted in said handle, a member on each lower end portion, respectively, of said tubular handle and said plunger cooperating to support a mop; said plunger including upper and lower members having a telescoping connection with each other and a friction connection between them strongly resisting, but permitting, telescoping action; said members being slidable in unison and also independently inside said tubular handle and being connected together inside said tubular handle to prevent rotative movement of one relatively to the other, whereby said plunger may be extended to elongate the mop for wringing and contracted to return the entire assembly to its normal length, the plunger being supported in said tubular handle for rotative movement relatively thereto to wring the mop.

2. In a mop structure according to preceding

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claim 1, a construction including a grip on the upper end of said plunger, said grip having a telescoping connection with said tubular handle.

3. In a mop structure, the combination of a tubular handle, a plunger slidably mounted in said handle, a member on each lower end portion, respectively, of said tubular handle and said plunger and cooperating to support a mop; said plunger including a tube slidable in said tubular handle, a rod slidable in said tube, and a friction connection between said rod and tube strongly resisting, but permitting, relative slidable movement of said tube and rod; whereby the plunger is extensible to elongate the mop for wringing and is contractible to return the entire structure again to normal length, said plunger being rotatable in said tubular handle to wring the mop, and means inside said tubular handle for holding said rod and the tube telescoping therewith against any substantial relative rotative movement.

4. In a mop structure according to preceding claim 1, a construction including a pawl and ratchet mechanism operable normally to prevent reverse rotation of said lower telescoping member during the wringing operation, the latter member being slidable longitudinally through said mechanism but connected therewith to rotate the ratchet wheel.

5. In a mop structure according to preceding claim 3, a construction including a ratchet wheel through which said rod extends slidably but which is connected with the rod to be rotated thereby, a pawl operatively connected with said wheel to prevent its rotation in one direction, and means for supporting said pawl for adjustment into and out of its operative relationship to said wheel.

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6. In a mop structure, the combination of a tubular handle, a plunger slidably mounted in said handle, a member on each lower end portion, respectively, of said tubular handle and said plunger and cooperating to support a mop; said plunger including a tube slidable in said tubular handle, a rod slidable in said tube, and a friction connection between said rod and tube strongly resisting, but permitting, relative slidable movement of said tube and rod; said friction connection including a plug secured to the upper end of said rod and slidable in said tube, said tube having parts at its lower end cooperating with said plug to limit the degree of extension of the telescoping members, a grip secured to the upper end of said tube, and a splined connection between said plug and said tube preventing relative rotation of the rod and said tube.

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