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[54] **COLLAPSIBLE MOP HEAD**

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[51] **Int. Cl.** **A47l 13/253**

[58] **Field of Search** ..... 15/116 A, 119 A, 15/120 R, 147 R, 147 A, 149, 228, 229 AP, 229 BP, 233

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[57] **ABSTRACT**

A collapsible mop head for use with a mop swab having two mounting pockets therein, wherein the mop head includes two wings pivotally and longitudinally shiftably interconnected for movement between an extended operative position and a folded position, a keeper fixedly mounted on one of the wings and a latch fixedly mounted on the other of the wings, the latch and the keeper being shiftable longitudinally with the wings between a locking position holding the wings in the operative position thereof and a release position permitting pivotal movement of the wings with respect to each other to the folded position, resilient means interconnecting the wings and continually urging the wings into position wherein the latch is in position to engage the keeper, and a handle mounting structure on at least one of the wings.

14 Claims, 6 Drawing Figures

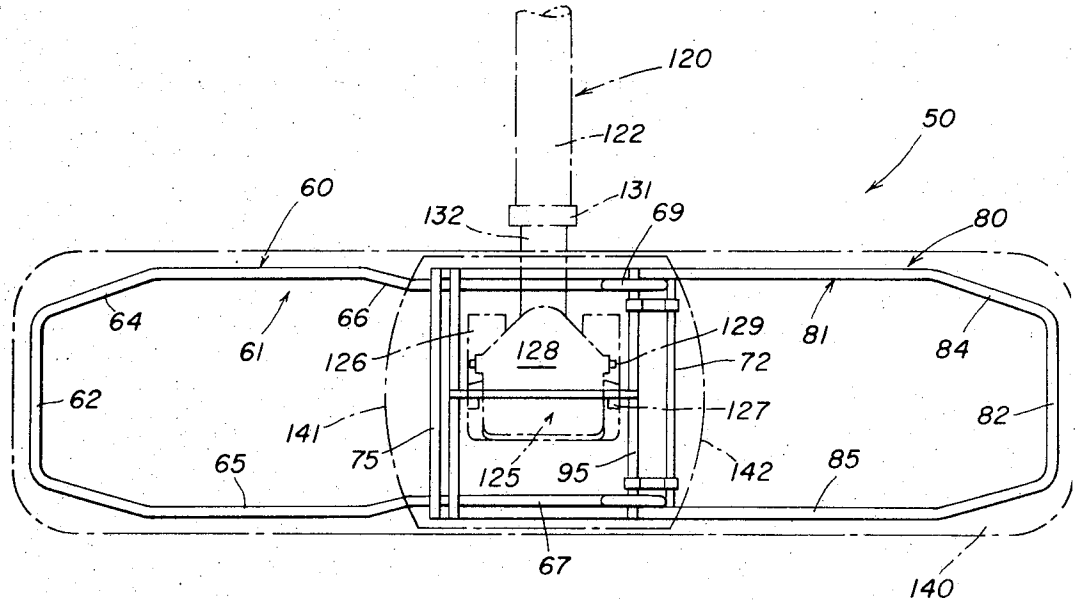


FIG. 1

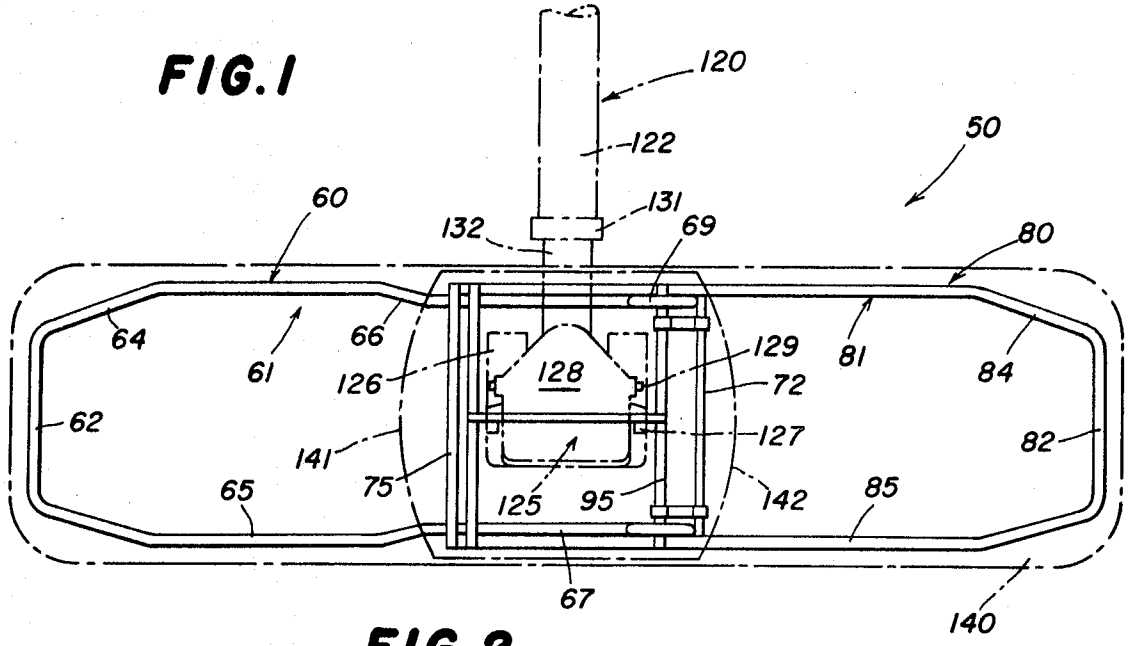
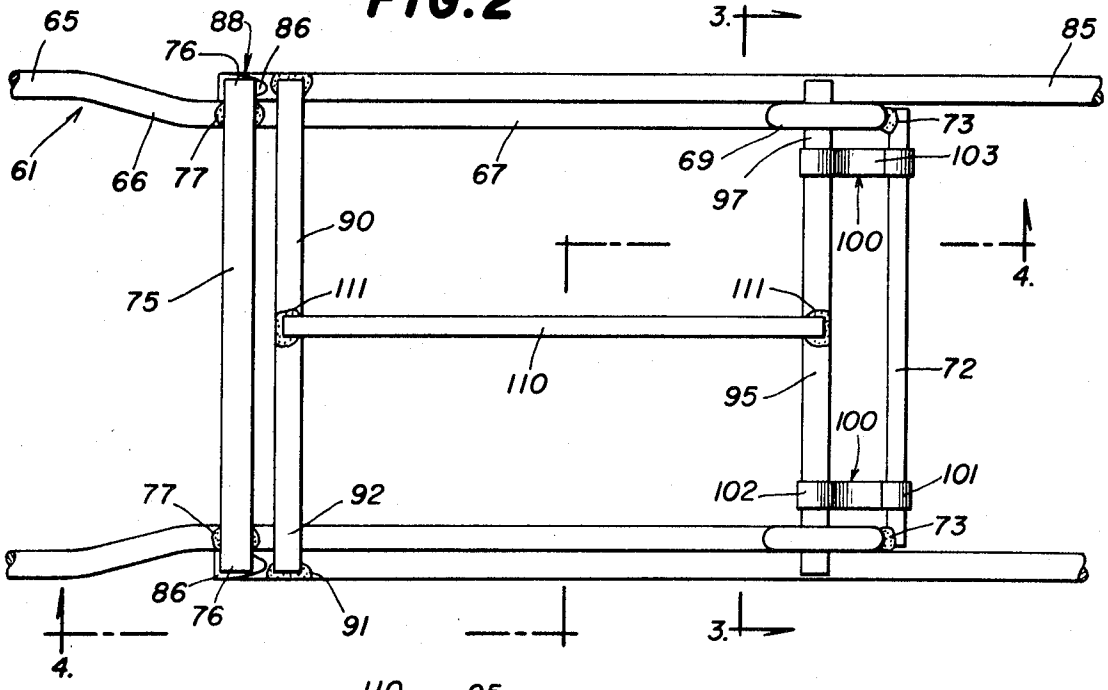


FIG. 2



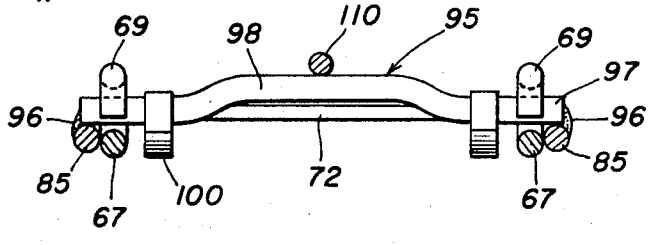


FIG. 3

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FIG. 4

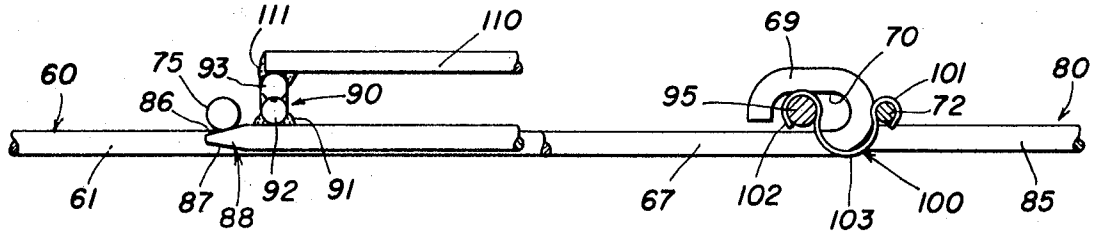


FIG. 5

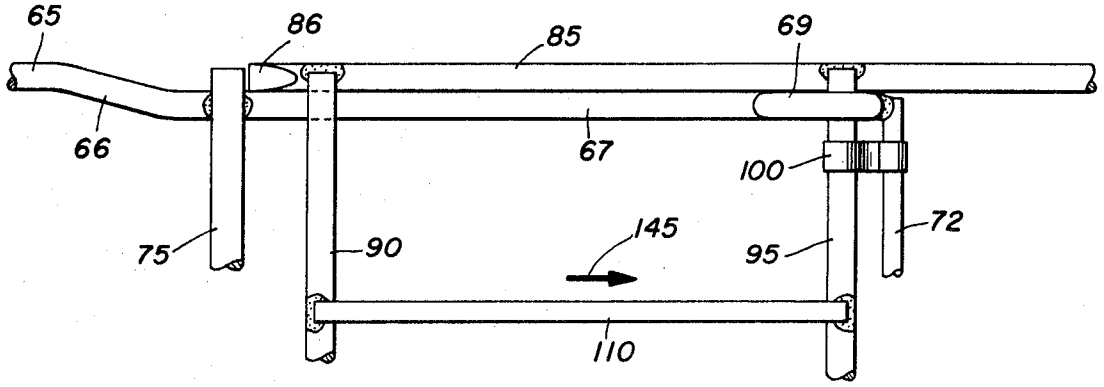
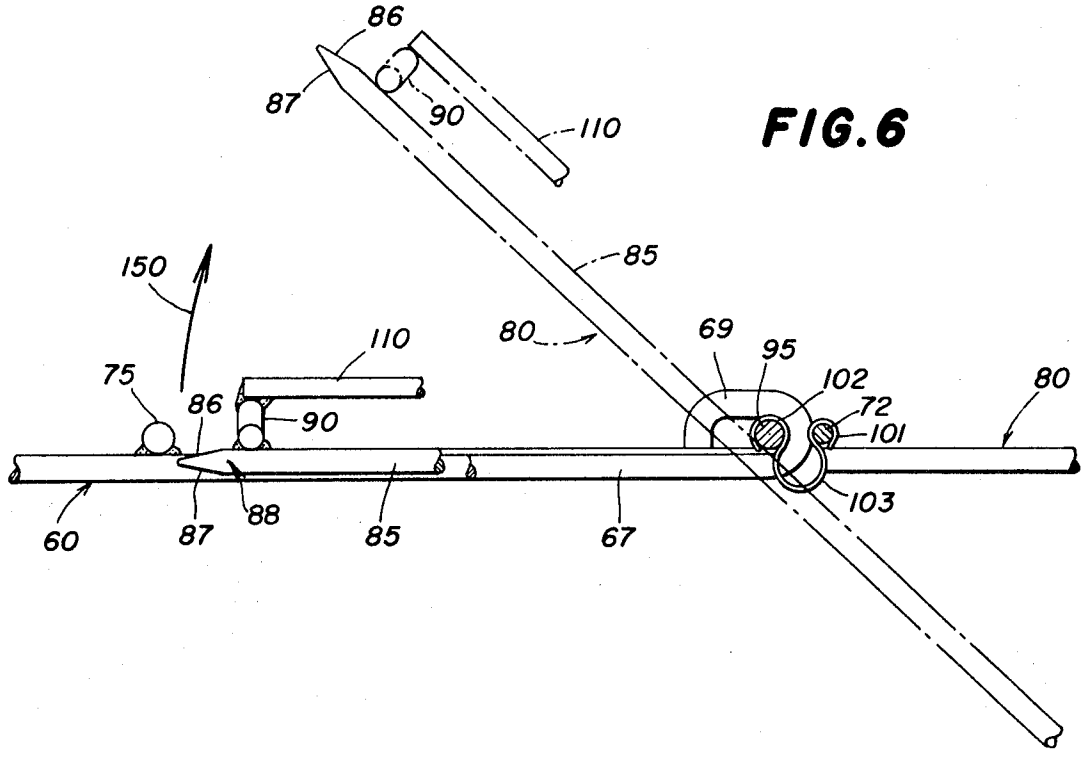


FIG. 6



COLLAPSIBLE MOP HEAD

This invention is directed to a collapsible mop head for use with a mop swab, and particularly to a collapsible mop head in which the two wings thereof are pivotally and shiftably interconnected.

It is an important object of the present invention to provide a collapsible mop head for use with a mop swab having two mounting pockets therein, the mop head comprising two wings pivotally and shiftably interconnected for movement between an extended operative position wherein the wings can be disposed in the pockets of the associated mop swab and a folded position permitting ready removal of the wings from the pockets of an associated mop swab, a keeper fixedly mounted on one of said wings and a latch fixedly mounted on the other of said wings, the latch and the keeper being shiftable with the wings between a locking position holding the wings in the operative position thereof and a release position permitting pivotal movement of the wings with respect to each other to the folded position, resilient means interconnecting the wings and continually urging said wings into position wherein the latch is in position to engage the keeper, and a handle mounting structure on at least one of the wings.

Another object of the present invention is to provide a collapsible mop head of the type set forth in which the keeper has a camming surface thereon and the latch has a camming surface thereon so as to provide easy movement of the wings from the folded position thereof to the extended operative position thereof.

A further object of the present invention is to provide a collapsible mop head of the type set forth in which each of the wings is U-shaped and stop means are provided on the wings cooperating with the keeper and the latch for limiting pivotal movement of the wings in the extended operative position thereof.

The invention both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification taken in connection with the accompanying drawings in which:

FIG. 1 is a top plan view of the collapsible mop head of the present invention in the extended operative position thereof and showing an associated mop swab and the mop handle in phantom;

FIG. 2 is an enlarged top plan view of the central portion of the invention shown in FIG. 1;

FIG. 3 is a side elevational view partly in section of the mop head shown in FIG. 2 taken along line 3—3 thereof;

FIG. 4 is a side elevational view partly in section of the mop head shown in FIG. 2 taken along line 4—4 thereof;

FIG. 5 is a top plan view of a portion of the mop head shown in FIG. 2 showing the mop head in the folded position thereof; and

FIG. 6 is a side elevational view of the mop head frame shown in FIG. 1 illustrating the frame in the folded position thereof.

There is provided a collapsible mop head **50** including a first wing **60** and a second wing **80**. The wings **60** and **80** are shiftably interconnected so as to provide for both longitudinal and pivotal movement with respect to each other. The wings **60** and **80** are movable between an extended operative position thereof in which they are substantially coplanar and a folded position thereof in which they are free to move pivotally with respect

one to the other to accommodate insertion of the mop head **50** into an associated mop swab **140**. Combined with the mop head **50** and the mop swab **140** is a mop handle **120**.

Referring to FIG. **1** of the drawings, there is disclosed the collapsible mop head **50** including the first wing **60** comprised of two spaced apart arms **61** interconnected by a bight **62**. From the bight **62** each of the arms **61** includes a diverging portion **64** leading into a parallel portion **65** and then into a converging portion **66** and into another parallel portion **67**. At the end of the parallel portion **67**, each of the arms **61** terminates in an eyelet **69** having an elongated slot **70** formed therein. As may be seen therefore, the first wing **60** is in the form of a substantially rectangular U-shaped member with the ends of the legs **61** of the U-shaped member being formed of the eyelets **69**.

The first wing **60** is further provided with an end bar **72** extending transversely of the arms **61** and interconnecting the eyelets **69**, the end bar **72** being connected to the eyelets **69** as by welds **73**. The first wing **60** is also provided with a keeper **75** extending transversely of the arms **61** and positioned intermediate the end bar **72** and the bight **62**, the keeper **75** having abutment ends **76** extending beyond the respective ones of the parallel portions **67** of the arms **61**. The keeper **75** is connected to the arms **61** as by welds **77**.

There is also shown in FIG. **1**, the second wing **80** including two spaced apart arms **81** interconnected by a bight **82**. Each of the arms **81** is comprised of a diverging portion **84** extending from the bight **82** and a parallel portion **85** extending from the diverging portion **84**. At the end of the parallel portions **85** away from the diverging portions **84**, there is provided on each arm **81**, a latch **88** having a camming surface **86** on one side thereof and a camming surface **87** on the other side thereof, all for a purpose hereinafter set forth.

Near the camming surfaces **86** and **87** of each of the latches **88** there is provided a stop bar **90** extending transversely of the arms **81** and connected thereto as by welds **91**, the stop bar **90** being intermediate the latches **88** and the bight **82** of the second wing **80**. As seen in FIG. **4**, the stop bar **90** is comprised of end portions **92** which form a plane slightly above the plane formed by the arms **81** and a raised portion **93** intermediate the end portions **92** and forming a plane somewhat above the plane formed by the end portions **92**, the particular shape of the stop bar **90** to be hereinafter explained.

There is further provided a pivot bar **95** extending transversely of the arms **81** through the slots **70** of the eyelets **69**. The pivot bar **95** is connected to each of the arms **81** as by welds **96**. As particularly shown in FIG. **3**, the pivot bar **95**, like the stop bar **90**, is formed of end portions **96** resting on the parallel portions **85** of the arms **81** and a raised portion **98** intermediate the end portions **97** and forming a plane somewhat elevated with respect to the plane formed by the end portions **97**. The stop bar **90** is substantially identical in shape to the pivot bar **95**.

There is further provided two spaced apart springs **100** shiftably interconnecting the first wing **60** with the second wing **80**. Each of the springs **100** has a portion **101** thereof looped around the end bar **72** of the first wing **60** and another portion **102** thereof looped around the pivot bar **95** which forms a part of the second wing **80** thereby shiftably to interconnect the first wing **60** with the second wing **80**. Each spring **100** has

a loop 103 interconnecting the portions 101 and 102, and each spring 100 normally biases the wings 60 and 80 into position wherein the latches 88 are in position to engage the keeper 75, as shown in FIGS. 2 and 4 of the drawings.

There is further provided a clamping bar 110 extending parallel to the arms 61 and the arms 81 and disposed centrally thereof. The clamping bar 110 interconnects the stop bar 90 with the pivot bar 95, the clamping bar 110 being connected to the stop bar 90 and the pivot bar 95 as by welds 111. The clamping bar 110 receives the mop handle 120, which mop handle 120 includes a wooden post 122 leading to a mop clamp 125, the mop handle 120 and the mop clamp 125 being shown in phantom in FIG. 1 of the drawings. The mop clamp 125 includes a base plate 126 which is generally U-shaped and has clamping fingers 127 extending outwardly and downwardly to fit in use over the clamping bar 110. A clamping plate 128 is pivotally mounted to the base plate 126 on a shaft 129 and is spring biased (by a spring not shown) to abut the base plate 126 so as firmly to clamp the clamp 125 to the clamping bar 110 and thereby to allow pivotal movement of the handle 120 into and out of the plane of the paper as shown in FIG. 1. Interconnecting the wooden post 122 of the mop handle 120 with the mop clamp 125 is a neck 132 which may be rectangular in cross-section and carries thereon a slidable collar 131, which collar 131 is of a dimension to fit within the legs of the U-shaped base plate 126. The neck 132 is pivotally mounted on the base plate 126 so as to pivot toward and away from each of the wings 60 and 80; however, movement of the collar 131 downwardly between the legs of the U-shaped base plate 126 effectively prevents pivotal movement of the mop handle 120 toward and away from the wings 60 and 80.

There is further disclosed in FIG. 1 the mop swab 140 for use with the collapsible mop head 50 disclosed herein, which mop swab 140 has a first pocket 141 designed to accommodate therein the first wing 60 and a second pocket 142 designed to accommodate therein the second wing 80. The combination of the mop handle 120 and the mop pad 140 and the collapsible mop head 50 providing a useful dust mop for home or industrial use.

Operation of the collapsible mop head frame 50 is hereinafter set forth. The mop head 50 is shiftable between an extended operative position thereof, wherein said latches 88 and said keeper 75 are in a locked position as shown in FIGS. 1, 2 and 4, wherein the first wing 60 and the second wing 80 are substantially coplanar and a folded position thereof wherein the first wing 60 and the second wing 80 are free for pivotal movement with respect one to the other and said latches 88 and said keeper 75 are in a release position thereof. In the extended operative position of the mop head 50, the second wing 80 overlies the first wing 60 with the parallel portions 85 of the arms 81 substantially coplanar with the parallel portions 67 of the arms 61. The camming surfaces 86 of the latches 88 abut one side of the abutment ends 76 of the keeper 75, which abutment ends 76 extend beyond the parallel portions 67 of the arms 61 to prevent movement of the first wing 60 in a counterclockwise direction, and movement of the second wing 80 in a clockwise direction, as shown in FIG. 4. The stop bar 90 abuts the parallel portions 67 of the arms 61 so as to prevent pivotal movement of the first wing 60 in a clockwise direction and to prevent pivotal movement of the second wing 80 in a counterclockwise direction, as shown in FIG. 4 of the drawings. In the extended operative position of the mop head 50, the wings 60 and 80 effectively are prevented from pivotal movement with respect to each other by means of the cooperation between abutment ends 76 of the keeper 75 and the abutment surfaces 86 of the latches 88 and the stop bar 90 and the parallel portions 67 of the arms 61.

When it is desired to effect movement of the mop head 50 from the extended operative position thereof to the folded position thereof, a force must be provided against the biasing means or springs 100 which normally bias the second wing 80 toward the first wing 60 to a position wherein the latches 88 are in position to engage the keeper 75, as shown in FIGS. 2 and 4. When a force is provided in the direction as illustrated by the arrow 145 in FIG. 5, the camming surfaces 86 of the latches 88 are moved easily from abutting the keeper 75 as the pivot bar 95 is moved from the left-hand portion of the slot 70 (as shown in FIG. 4) toward the right-hand portion of the slot 70 (as shown in FIG. 6) while the springs 100 are compressed. Subsequent pivotal movement of the second wing 80 with respect to the first wing 60 in a clockwise direction, as shown by the directional arrow 150 in FIG. 6, allows the wings 60 and 80 to be positioned at any desired angle with each other for subsequent insertion thereof into the pockets 141 and 142 of the mop swab 140.

Once the arms 81 of the second wing 80 have been pivoted so as to position the camming surfaces 87 of the latches 88 away from and out of the plane formed by the first wing 60 and keeper 75, the force applied against the springs 100 may be released with the resulting movement of the pivot bar 95 from the right-hand end of the slots 70 toward the left-hand end of the slots 70, as shown in FIGS. 4 and 6 of the drawings. Release of the pressure against the springs 100 does not effect the pivotal movement of the wings 60 and 80 with respect to each other but does prevent movement of the wings 60 and 80 from the folded position thereof to the extended operative position thereof without the application thereto of a force, which force again acts against the springs 100 so as to move the pivot bar 95 from the left-hand end of the slots 70 to the right-hand end of the slots 70 as illustrated in FIGS. 4 and 6.

When the wings 60 and 80 are in the folded position thereof they may be conveniently inserted into the pockets 141 and 142 of the mop swab 140. If the mop swab 140 is positioned on a support surface such as the floor and the wings 60 and 80 allowed to come to a neutral rest position, the abutment surface 87 of the latches 88 will rest on top of the keeper 75 but the wings 60 and 80 will still be in the folded position thereof. Placement of the mop clamp 125 on the clamping bar 110 followed by a downward movement will result in movement of the wings 60 and 80 from the folded position thereof to the extended operative position thereof. Due to the camming surface 87 on the latches 88 and the rod-like shape of the keeper 75 which acts as a camming surface, a vertically directed force against the clamping bar 110 will be at least partially transformed into a laterally directed force working against the springs 100 so as to compress the same and move the pivot bar 95 to the right as shown in FIG. 6, thereby resulting in the position there illustrated in

full line. Subsequent release of the downward pressure against the clamping bar **110** will result in movement of the springs **100** to their normally biased position in which the pivot bar **95** is positioned in the left-hand ends of the slots **70** and the camming surfaces **86** of the latches **88** abut the abutment ends **76** of the keeper **75**, so to position the wings **60** and **80** in the extended operative position thereof.

The particular shape of the stop bar **90** and the pivot bar **95** provides for clearance between the mop handle **120** and the mop swab **140**. Additionally, pivotal movement of the mop handle **120** with respect to the mop head **50** is assured by means of the shape of the stop bar **90** and the pivot bar **95**.

Removal of the mop head **50** from the mop swab **140** is also easily effected when the mop handle **120** is in place. By moving the collar **131** intermediate the legs of the U-shaped base plate **126** pivotal movement of the mop handle **120** toward and away from the bights **62** and **82** of the first wing **60** and the second wing **80** is effectively prevented. By the simple expedient of standing on the first wing **60** it is not difficult to apply a force through the mop handle **120**, the clamping bar **110**, and the pivot bar **95** against the springs **100** so as to compress the same and move the pivot bar **95** from the left-hand end of the slots **70** toward the right-hand end of the slots **70** and simultaneously move the camming surface **86** of the latches **88** away from the keeper **75**. Subsequent lifting of the mop handle **120** pivots the second wing **80** with respect to the first wing **60** and assures easy removal of the mop head **50** from the mop swab **140**.

From the foregoing it is seen that there has been provided a collapsible mop head in which the wings thereof are shiftably interconnected and may be moved from a folded position thereof in which they are easily introduced into and removed from an associated mop pad to an extended operative position thereof in which they may be securely positioned within the mop pad to form a useful combination.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein and it is intended to cover in the appended claims all such modifications as seen within the true spirit and scope of the invention.

What is claimed is:

1. A collapsible mop head for use with a mop swab having two mounting pockets therein, said mop head comprising two wings pivotally and longitudinally shiftably interconnected one to the other for movement between an extended operative position wherein said wings can be disposed in the pockets of the associated mop swab and a folded position permitting ready removal of said wings from the pockets of the associated mop swab, a keeper fixedly mounted on one of said wings and a latch fixedly mounted on the other of said wings, said latch and said keeper being shiftable longitudinally with said wings between a locking position holding said wings in the operative position thereof and a release position permitting pivotal movement of said wings with respect to each other to said folded position, resilient means interconnecting said wings and continually urging said wings into position wherein said latch is in position to engage said keeper, and a handle mounting structure on at least one of said wings.

2. The collapsible mop head set forth in claim **1**, wherein each of said wings is substantially rectangular in shape and is tapered at the end thereof.

3. The collapsible mop head set forth in claim **1**, wherein a stop means is mounted on said wings cooperating with said keeper and said latch for limiting pivotal movement of said wings in the extended operative position thereof.

4. The collapsible mop head set forth in claim **1**, wherein said resilient means comprises two spaced apart springs.

5. A collapsible mop head for use with a mop swab having two mounting pockets therein, said mop head comprising two wings pivotally and longitudinally shiftably interconnected for movement between an extended operative position wherein said wings can be disposed in the pockets of the associated mop swab and a folded position permitting ready removal of said wings from the pockets of the associated mop swab, a keeper having a camming surface thereon fixedly mounted on one of said wings and a latch having a chamfered camming surface thereon fixedly mounted on the other of said wings, said latch having said camming surface thereon and said keeper having said camming surface thereon being longitudinally shiftable with said wings between a locking position holding said wings in the operative position thereof and a release position permitting pivotal movement of said wings with respect to each other to said folded position, resilient means interconnecting said wings and continually urging said wings into position wherein said latch is in position to engage said keeper, and a handle mounting structure on at least one of said wings, whereby placement of said wings on a support surface followed by pushing said wings against said support surface results in said camming surfaces on said latch and on said keeper cooperating to provide easy movement of said wings from the folded position thereof to the extended operative position thereof.

6. The collapsible mop head as set forth in claim **5**, wherein said keeper is a rod, the peripheral surface thereof acting as said camming surface.

7. The collapsible mop head as set forth in claim **5**, wherein said latch is a rod having the ends thereof chamfered to provide camming surfaces on two sides of the end of said rod.

8. A collapsible mop head for use with a mop swab having two mounting pockets therein, said mop head comprising a first generally U-shaped wing having first spaced-apart legs and a first bight interconnecting said first legs, a keeper fixedly mounted on said first legs positioned intermediate said first bight and the ends of said first legs, a second generally U-shaped wing having second spaced-apart legs and a second bight interconnecting said second legs, a latch mounted on said second legs at the ends thereof, said wings being pivotally and longitudinally shiftably interconnected for movement between an extended operative position wherein said wings can be disposed in the pockets of the associated mop swab and a folded position wherein said wings are free for pivotal movement with respect to one another permitting ready removal of said wings from the pockets of the associated mop swab, stop means mounted on said wings cooperating with said keeper and latch for limiting pivotal movement of said wings in the extended operative position thereof, resilient means interconnecting said wings and continually

urging said wings into position wherein said latch is in position to engage said keeper, and a handle mounting structure on at least one of said wings.

9. The collapsible mop head as set forth in claim **8**, wherein said keeper is a rod extending transversely of said first legs.

10. The collapsible mop head as set forth in claim **8**, wherein said latch is integral with said second legs and formed of the ends thereof.

11. The collapsible mop head as set forth in claim **8**, wherein said stop means is a rod extending transversely of said second wing legs.

12. The collapsible mop head as set forth in claim **8**, wherein said resilient means is a pair of spaced-apart springs.

13. A collapsible mop head for use with a mop swab having two mounting pockets therein, said mop head comprising two wings pivotally and shiftably interconnected for longitudinal movement between an extended operative position wherein said wings can be disposed in the pockets of the associated mop swab and a folded position permitting ready removal of said wings from the pockets of the associated mop swab, a keeper having a camming surface thereon fixedly mounted on one of said wings and a latch having a camming surface thereon fixedly mounted on the other of said wings, said latch having said camming surface thereon and said keeper having said camming surface thereon being shiftable with said wings between a locking position holding said wings in the operative position thereof and a release position permitting pivotal movement of said wings with respect to each other to said folded position, resilient means interconnecting said wings and continually urging said wings into position wherein said latch is in position to engage said keeper, and a handle mounting structure on at least one of said wings, whereby placement of said wings on a support surface followed by pushing said wings against said support surface results in said camming surfaces on said latch and on said keeper cooperating to provide easy movement of said wings from the folded position thereof to the extended operative position thereof.

14. A collapsible mop head for use with a mop swab having two mounting pockets therein, said mop head comprising a first generally U-shaped wing having first spaced-apart legs with each of the ends thereof formed into an elongated eyelet and a first bight interconnecting said first legs, a keeper fixedly mounted on said first legs positioned intermediate said first bight and the ends of said first legs, a second generally U-shaped wing having second spaced-apart legs and a second bight interconnecting said second legs, a latch mounted on said second legs at the ends thereof, means mounted on said second legs extending through each of said eyelets so as to interconnect said first and second wing for longitudinal and pivotal movement with respect to each other between an extended operative position wherein said wings can be disposed in the pockets of the associated mop swab and a folded position wherein said wings are free for pivotal movement with respect to one another permitting ready removal of said wings from the pockets of the associated mop swab, stop means mounted on said wings cooperating with said keeper and latch for limiting pivotal movement of said wings in the extended operative position thereof, resilient means continually urging said wings into position wherein said latch is in position to engage said keeper, and a handle mounting structure on at least one of said wings.

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