Mounting hardware for attaching a mop handle to a mop head including a mop head frame having a horizontal transverse cross bar, said hardware including a cylindrical barrel having a side outlet and having rotatably mounted therein a cylindrical spool with a groove formed in one side thereof, whereby when the groove and barrel outlet are angularly aligned, the cross bar may be inserted into said groove for rotation therein, and whereby when the spool is rotated out of alignment with the outlet, the barrel secures the cross bar in the groove, a manual lever for turning said spool in the barrel, a ferrule which may be fixed to the handle pivoted to said barrel on an axis at right angles to the spool, whereby the mop head can pivot universally relative to the handle, and means operable by the manual lever for selectively freeing or securing the ferrule against pivoting relative to the barrel, when the lever is in position to lock the cross bar in the spool groove.

8 Claims, 5 Drawing Figures
MOP HANDLE MOUNTING

This invention relates to new and useful improvements in floor mops, or other similar devices, and has particular reference to improved hardware by means of which a mop head is attached to a mop handle.

An important object of the present invention is the provision of mop head mounting hardware whereby a mop head may be mounted on a mop handle with positive security limited only by the structural strength of the parts and in no way dependent on springs or other resilient means for holding power, but which nevertheless provides for easy and instant detachment of the mop head from the handle when desired, as for example in interchanging, cleaning, or servicing the mop head.

Another object is the provision of mop hardware of the character described which holds the mop head for pivotal movement about a horizontal axis transverse to the mop handle, whereby the mop head, which is most commonly generally planar in shape, will rest flat on the floor despite the constantly varying angle of the mop handle relative to the floor which occurs in normal usage. This pivotal movement is virtually always desired.

Another object is the provision of mop hardware of the character described which provides not only for pivoting of the mop head about a horizontal axis as already mentioned, but also for pivoting of the mop head about a second axis also transverse to the handle, but disposed at right angles to the horizontal axis. The resulting universal pivoting of the head is useful in guiding the mop head around and between obstructions which may be encountered on the floor during use of the mop.

A still further object is the provision of mop hardware of the character described providing universal pivoting of the mop head, in which pivoting about the non-horizontal axis may be selectively used or not used, as desired.

Other objects are extreme simplicity and economy of construction, efficiency and dependability of operation, and adaptability for use with mops of many different types and styles.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the accompanying drawing, wherein:

FIG. 1 is a top plan view of a mop head and handle, shown operatively connected by a mounting embodying the present invention,

FIG. 2 is an enlarged, fragmentary sectional view taken on line II-II of FIG. 1, with the mop head omitted,

FIG. 3 is a view similar to FIG. 2, with the spool lock released for detachment of the mop head,

FIG. 4 is a fragmentary sectional view taken on line IV—IV of FIG. 2, and

FIG. 5 is a laid-out view of a blank from which the barrel may be formed.

Like reference numerals apply to similar parts throughout the several views, and the numeral 2 applies generally to a mop head of a common type, consisting of a backing 4, usually formed of cloth or the like, to which the mop yarn 6 is stitched or otherwise attached. The backing, as shown, is generally ovate in shape, and forms a pair of pockets 8 confronting, in opposed relation, a window 10 formed therein centrally of its length.

A mop head frame includes a generally oval loop 12 of heavy wire stock, the ends of which are adapted to be inserted respectively into pockets 8 through window 10. The backing 4 may be elastic, or the top layer thereof may be detachably connected to its lower layers, or the loop 12 itself could be constructed so as to be foldable transversely to its plane, in order to permit this insertion. A pair of bars 14 extend in parallel relation across loop 12, extending fore-and-aft in symmetrical disposition to the longitudinal midpoint of said loop, and are welded at their ends to the front and rear reaches of said loop. The central portions of bars 14 are offset upwardly to project upwardly through window 10, and a horizontal cross bar 16 extends between and is welded to the midpoints of bars 14, cross bar 16 being parallel to the major axis of loop 12. The structure of the mop head and its frame may take many forms, and the specific structure thereof is not particularly pertinent to the present invention. The only essential feature thereof, in order that it may be used with the hardware forming the subject matter of the present invention, is that it include a cross bar similar in disposition to that of cross bar 16.

The mop handle mounting hardware as contemplated by the present invention includes a spool 18 constituting a cylindrical bar having a diameter larger than that of cross bar 16 and having formed longitudinally in one side thereof a groove 20 of sufficient dimension to admit cross bar 16 transversely thereinto. Said cross bar is axially rotatable in said groove. The length of said spool is slightly less than the free length of cross bar 16 between bars 14. At the midpoint of the spool, a pin 22 is fixed therein and extends radially outwardly therefrom in angularly opposite relation from groove 20, said pin being provided at its outer end with an enlarged head 23.

Spool 18 is disposed rotatably in a cylindrical barrel 24 formed of sheet metal and being of slightly less axial length than said spool. Said barrel is angularly interrupted to form a slot 26 extending longitudinally along one side thereof, said slot being of sufficient width to admit cross bar 16 laterally therethrough into groove 20 of spool 18, when said slot and groove are angularly aligned by rotation of the spool in the barrel. Pin 22 extends through a peripherally elongated slot 28 formed in the barrel. Slidably mounted on the extended portion of said pin is an operating button 30, said button being resiliently biased inwardly toward the spool by a spring 32 disposed thereabout in a socket of said button, and bearing between the base of said socket and the enlarged head 23 of said pin. Said button is also rotatable on said pin, and is provided at its inner end with a neck 34 of reduced diameter. Barrel slot 28 is of sufficient width to admit pin 22 but not neck 34 of the button, except that at one end said slot is enlarged, as indicated at 36 (see FIG. 5) to a diameter sufficient to admit neck 34. When button 30 is urged inwardly by spring 32 to engage neck 34 thereof in slot enlargement 36, as shown in FIG. 2, said engagement locks spool 18 against rotation in the barrel, this being the locked position of the mounting. Spool groove 20 is then out of alignment with barrel slot 26, so that cross bar 16 of the mop head frame is securely locked into groove 20, although it is of course still rotatable therein. When button 30 is pulled outwardly against spring 32 by
manual force, neck 34 thereof is freed from barrel slot enlargement 36, freeing spool 18 for rotation in the barrel. Said spool may then be turned in the barrel by lateral pressure on the button to move pin 22 through slot 28 to the opposite end thereof as shown in FIG. 3. This position is the unlocked position of the mounting. Groove 20 of the spool is then angularly aligned with slot 26 of the barrel, and cross bar 16 of the mop head frame may then be moved transversely therefrom as indicated by arrow 38 in FIG. 3 to detach the mop head from the handle. The cross bar of a new mop head may then be inserted through slot 26 into groove 20, and button 30 moved in a clockwise direction, as viewed in FIGS. 2 and 3, until button neck 34 is snapped into enlargement 36 of slot 28 by spring 32, whereupon the mop head is again locked in assembly with the mop handle.

The sheet metal barrel 24 is provided with a radially projecting ear 40 for attachment to handle ferrule 42. Said ferrule is formed of tubular stock, the handle 44, which may of course be of any desired length, being inserted into one end thereof and secured therein by rivet 46 or any other suitable fastener, while the other end portion of said ferrule is flattened to form a flat tongue overlying ear 40, and pivoted thereto by a shouldered bolt 48, said bolt extending through matching holes 50 and 52 formed respectively therefor in the ferrule and ear and being secured by nut 54. Said bolt is sufficiently loose to permit free relative pivotal movement of the mop handle and head about its axis, and is disposed at right angles to, though transversely offset from, the axis of spool 18.

Intermediate bolt 48 and barrel 24, a pair of corresponding holes 56 and 58 are formed respectively in ferrule 42 and barrel ear 40. Said holes are so disposed as to be accurately registered with each other only when handle 44 is disposed in normal or right-angled relation to spool 18. Integral with or fixed to lock button 30 is an arcuate finger 60 concentric with barrel 24. When said locking button is moved to its locking position as shown in FIGS. 1 and 2, with neck 34 thereof engaged in enlargement 36 of slot 28, finger 60 may enter and extend through holes 56 and 58, thereby locking the mop head and handle against relative pivotal movement on bolt 48. Said finger is withdrawn from said holes whenever button 38 is moved to its unlocked position as shown in FIG. 3. Furthermore, in this position, button 30 may be rotated manually on pin 22 so that finger 60 is angularly displaced out of alignment with holes 56 and 58, as shown in dotted lines in FIG. 3, so that when the button is returned to its locking position, finger 60 will not enter holes 56 and 58, and the pivotal connection provided by bolt 48 will remain free.

The operation of the device is believed to have been adequately described in connection with the above description of its construction. It is considered to have several novel advantages. The mounting is extremely simple, durable and economical in construction. Its operation in connecting or disconnecting a mop head to or from the handle is extremely rapid, simple and convenient. The holding power of the mounting is great, being effective up to the structural failure strength of the parts themselves, and being in no way dependent for holding power on springs or other yieldable elements. It provides at all times for relative pivoting of the mop head and handle on a horizontal axis, this being a movement which is virtually always desired. It also provides for pivotal movement of the mop head relative to the handle about an axis at right angles to and in addition to movement on said first-named horizontal axis. The resulting universal pivotability of the mop head relative to the handle is highly desirable when mopping between and around obstructions with a horizontally elongated mop head, but is usually considered to be objectionable when mopping unobstructed floors. Therefore, the universal pivotability may be used or not used, selectively, as the user may desire.

While I have shown and described a specific embodiment of my invention, it will be readily apparent that many minor changes of structure and operation could be made without departing from the spirit of the invention.

What I claim as new and desire to protect by Letters Patent is:

1. A mounting for detachably connecting a mop head to a mop handle, said mop head having a frame including a horizontal transverse cross bar with enlargements at each end thereof, said mounting comprising:
   a. a cylindrical spool having a groove formed longitudinally therein into which the portion of said cross bar between said enlargements may be transversely inserted for axial rotation therein, target
   b. a hollow cylindrical barrel in which said spool is coaxially disposed for rotation therein, said barrel being angularly interrupted to form a longitudinal slot through which said cross bar may be transversely inserted,
   c. means for rotating said spool in said barrel whereby the groove of the former may be selectively angularly aligned or misaligned with the slot of the latter, and
   d. means for connecting said barrel to said handle.

2. A mounting as recited in claim 1 wherein said means for rotating said spool in said barrel comprises a pin fixed in said spool and projecting outwardly therefrom through a peripherally elongated slot formed in said barrel, whereby said spool is secured against longitudinal movement in said barrel.

3. A mounting as recited in claim 1 with the addition of locking means operable to secure said spool releasably against rotation in said barrel at a position in which the groove of the former is misaligned with the slot of the latter.

4. A mounting as recited in claim 3 wherein said rotating and locking means comprise:
   a. a pin fixed in said spool and projecting outwardly therefrom through a peripherally elongated slot formed in said barrel, said slot having an enlarged portion at which said pin is positioned when said spool groove is out of alignment with said longitudinal barrel slot,
   b. a locking button carried for longitudinal sliding movement on said pin, and
   c. resilient means biasing said button inwardly along said pin, said button being small enough to enter the enlarged portion of said peripheral slot, whereby to lock said spool against rotation in said barrel, but too large to enter the non-enlarged portion of said peripheral slot.
5. A mounting as recited in claim 1 wherein said means connecting said barrel to said handle comprises:
   a. an ear rigidly connected to said barrel and extending outwardly therefrom,
   b. a ferrule adapted to be rigidly affixed to said handle, and
   c. means connecting said ferrule and said ear for relative pivotal movement about an axis transverse to the axis of said spool groove.

6. A mounting as recited in claim 5 with the addition of locking means for releasably securing said ferrule and said barrel ear against relative pivotal movement at a position in which said handle is disposed normally to the axis of said barrel.

7. A mounting as recited in claim 6 wherein said ferrule and said ear are generally planar and overlie each other for relative sliding movement as said members are relatively pivoted, and have cooperating holes formed therethrough which are disposed in registered relation when said handle is disposed normally to the axis of said barrel, said holes being disposed in spaced relation from the pivotal axis of said ear and ferrule, said locking means comprising a finger carried by said spool and operable when said spool is turned to misalign its groove with the longitudinal barrel slot to enter through the cooperating holes of said ear and said ferrule.

8. A mounting as recited in claim 1 wherein said rotating means consists of a pin fixed in said spool and projecting outwardly therefrom through a peripherally elongated slot formed therefor in said barrel, said peripheral slot having an enlarged portion wherein said pin is disposed when said spool groove is out of angular alignment with said longitudinal barrel slot, wherein said means connecting said barrel to said handle consists of a planar ear integral with said barrel and projecting generally radially therefrom, a ferrule adapted to be affixed to said handle and having a planar portion overlying said barrel ear, and means connecting said ear and said planar ferrule portion for relative pivotal movement about an axis normal to their planes, and normal to but transversely offset from the axis of said barrel, said ear and said planar ferrule portion having matching holes formed therethrough in spaced relation from the pivotal axis thereof and from said barrel, said holes being disposed in registered relation when said handle is disposed normally to said barrel, and with the addition of:
   a. a locking button carried slidably and rotatably on the extended portion of said pin,
   b. resilient means biasing said button inwardly along said pin, said button being small enough to enter the enlarged portion of said peripheral barrel slot, this being the locked position of said button and pin, but too large to enter the non-enlarged portion of said peripheral barrel slot, and
   c. a finger fixed to said button and extending therefrom, said finger being operable as said pin is turned to its locking position to enter the holes of said ear and planar ferrule portion to secure said members against relative pivoting, the rotatability of said button on said pin permitting said finger to be misaligned with said holes whereby said pin may be moved to its locking position without engaging said finger in said holes.

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