Jan. 31, 1967 E. B. BENJAMIN 3,300,804

MOP HEAD

Filed Aug. 2, 1965

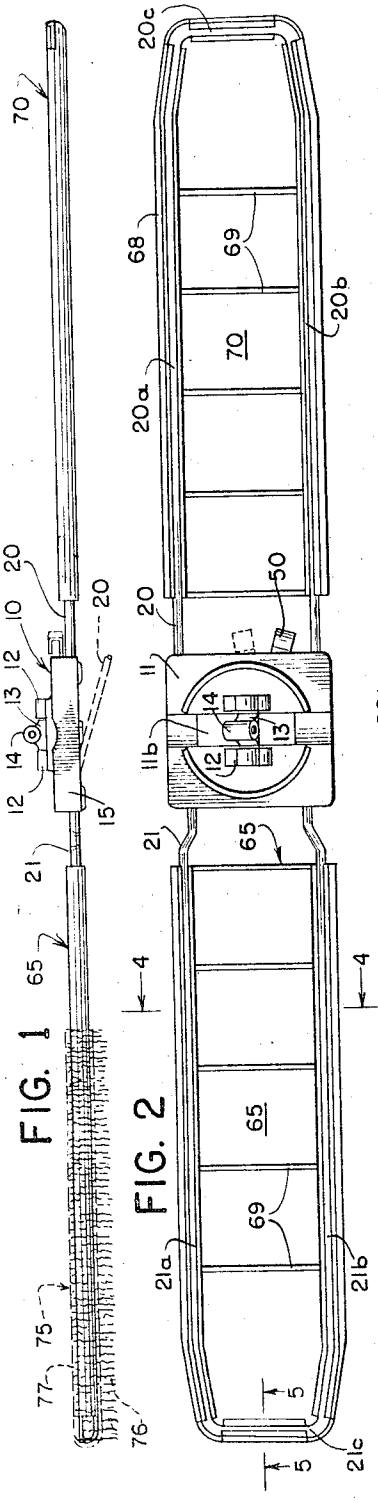


FIG. 1

FIG. 2

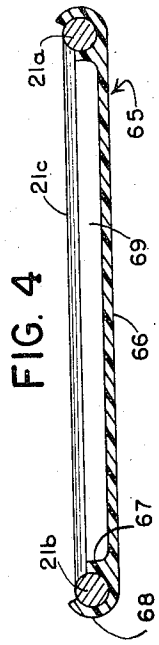


FIG. 4

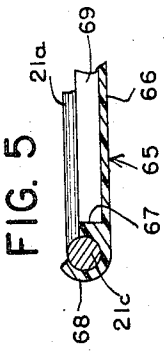


FIG. 5

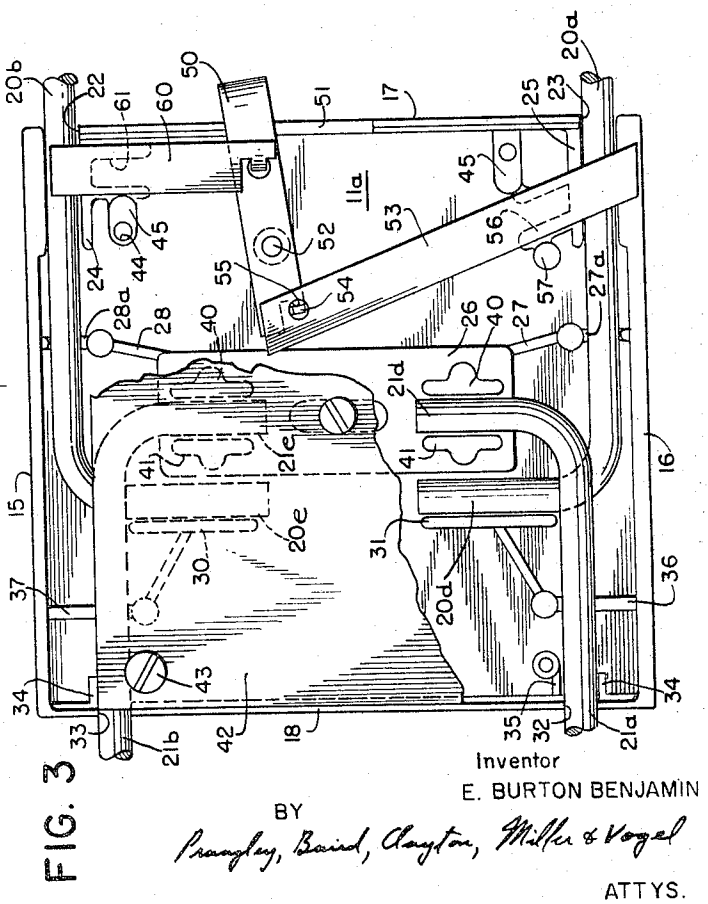


FIG. 3

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United States Patent Office 3,300,804 Patented Jan. 31, 1967

3,300,804
MOP HEAD

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Filed Aug. 2, 1965, Ser. No. 476,511
2 Claims. (Cl. 15—147)

The present invention relates to floor mops and the like, and particularly to improvements in mop heads of a character especially well-adapted for use in mops for the dusting or swabbing of floors and other surfaces in commercial and public buildings.

It is well known that mops that are to be used in commercial and public buildings should be sturdy and durable. At the same time, however, it is highly desirable that the mop heads which carry the swab portions of the mops be reasonably inexpensive to make and yet relatively heavy in weight, and that they be provided with suitable means by which the soiled swabs may be readily replaced with clean swabs. Manufacturers, in the past, have had difficulty in devising mop heads, and particularly dust mop heads of a commercial type, in which these desirable characteristics are suitably correlated. There is a definite relationship in dust mops and the like between the weight or downward pressure exerted and the soil pick-up ability of the mop. As the weight or downward pressure increases, the soil pick-up efficiency tends also to increase. However, because of the overriding importance that the mop heads be relatively inexpensive, manufacturers have heretofore found it necessary to sacrifice both weight, efficiency, and, to some extent, durability in order to produce mop heads at satisfactorily competitive prices.

One of the important objects of the present invention is to provide a highly-improved mop head which ideally embodies all of the desirable characteristics of durability, strength, weight, and interchangeability of swabs, and yet which is relatively simple and inexpensive to manufacture.

Still another object of the present invention is to provide a mop head having all of the foregoing qualities, and which also provides greater efficiency in its soil pick-up properties than previously-known mop heads.

Yet another object of the invention is to provide a mop head of the foregoing character wherein the swab to be carried by the head is backed up and is fully supported in a manner to promote and improve its soil pick-up efficiency.

Still another object of the invention is to provide a mop head having all of the previously-mentioned desirable qualities and wherein, despite its inexpensive and easily-manufactured nature, provides adequate weight that is substantially evenly distributed throughout the mop head when the mop is supported upon a floor or the like, so as to provide maximum soil pick-up efficiency in all parts of the swab carried by the head.

These and other objects and advantages of the present invention will be understood from the following description of a preferred embodiment of the invention, taken with the accompanying drawing, wherein:

FIGURE 1 is a side elevational view of a mop head assembly constructed in accordance with the present invention, a fragmentary portion of a swab being shown in broken lines on the mop head at the left-hand portion of the figure;

FIG. 2 is a top plan view of the mop head with the representation of the swab omitted;

FIG. 3 is an enlarged plan view of the under side of the central frame portion of the mop head, with a bottom plate being cut away so as to better illustrate the parts in the interior of the central frame portion;

FIG. 4 is an enlarged cross-sectional view taken substantially along the line 4—4 in FIG. 2; and

FIG. 5 is an enlarged fragmentary cross-sectional view taken substantially along the line 5—5 in FIG. 2.

Referring to the drawing, the mop head there shown is comprised of a central frame portion **10**, to which a mop handle may be pivotally mounted. In its preferred form this central frame portion is comprised of a cast metal box having a substantially-flat upper surface **11** upon which there are integrally formed a pair of upwardly-extending spaced-apart trunnions **12**, the trunnions pivotally carrying therebetween a link **13** which itself has a further transverse trunnion **14** formed thereon. It will be thus understood that the trunnions **12**, the link **13**, and the transverse trunnion **14** provide a universal joint by which a mop handle may be attached to the central frame portion **10** of the mop head. The mop handle, in a well-known manner, may be provided with a shaft (not shown), which will pivotally ride in the bore of the trunnion **14**.

The box-like central frame portion **10** of the mop head is recessed on its under side, thereby providing downwardly-extending front and rear walls **15** and **16** and opposite end walls **17** and **18**. These walls are best illustrated in FIG. 3 wherein the inner or under surface of the top wall **11** of the central frame element is designated by the numeral **11***a*

Extending laterally from opposite sides of the central frame element **10**, there is a pair of looplike wings **20** and **21**, preferably fabricated of steel wire or the like, so that they are capable of rapid and inexpensive manufacture and, at the same time, are sturdy and durable. The wing **20**, it will be seen in FIG. 2, includes a pair of outwardly-projecting arms **20***a* and **20***b* which are turned slightly in a converging direction adjacent their outer ends, their outer ends being joined by an integral transverse portion **20***c*. The wing **21** is of similar shape and configuration, the wing **21** having a pair of outwardly-extending arms **21***a* and **21***b* joined at their outer ends by an integral transverse portion **21***c*. These wings **20** and **21** are secured to the central frame portion **10** in a manner which will now be described.

In the central frame portion **10** of the mop head, it will be observed from FIG. 3 that the end wall **17** has a pair of slots **22** and **23** formed therein. Inwardly of these slots the central frame element has a pair of downwardly-extending bosses **24** and **25** integrally formed thereon and respectively spaced from the inner surfaces of the front and rear walls **15** and **16** a distance substantially equal to the widths of the slots **22** and **23**, thereby providing, in conjunction with the inner surfaces of the walls **15** and **16**, longitudinally-extending recesses for receiving the inner end portions of the legs **20***a* and **20***b* of the wing **20**. The central portion of the upper wall **11** of the central frame element **10** is recessed, as at **11***b* (FIG. 2), thereby forming a large downwardly-extending lug **26** in the interior of the box-like frame element **10** (FIG. 3). The lower right-hand corner of this large downwardly-extending lug **26**, as viewed in FIG. 3, is joined to the inner surface of the wall **16** by a web **27**, and the upper right-hand corner of the lug **26**, as viewed in FIG. 3, is joined to the inner surface of the front wall **15**, by a similar web **28**, these two webs being integral with the casing which preferably comprises the body of the central frame element. The web **27** is recessed at **27***a*, and the web **28** is similarly recessed at **28***a* to provide seats for the legs **20***a* and **20***b* of the wing **20** adjacent their inner ends. The innermost ends **20***d* and **20***e* of the respective legs **20***a* and **20***b* of the wing **20** are turned inwardly, as illustrated in FIG. 3 and are pivotally received between a downwardly-extending edge of the large boss **26** and secondary bosses **30** and **31** integrally formed

on the under surface **11***a* of the top wall **11** of the central frame element.

The wall **18** of the central frame element **10** (FIG. 3) is slotted at **32** and **33** to receive the inner ends of the legs **21***a* and **21***b* of the wing **21**, and immediately inwardly of these slots there are formed spaced-apart bosses **34** and **35** for receiving therebetween the legs **21***a* and **21***b*, as illustrated in FIG. 3. Inwardly of the opening between the bosses **34** and **35** there are provided downwardly-extending webs **36** and **37**, which correspond to the recessed portions **27***a* and **28***a* of the webs **27** and **28**, the outer edges of the webs **36** and **37** serving to receive and act as stops for the legs **21***a* and **21***b* of the wing element **21** adjacent their inner ends. It will be noted, however, that the slots **32** and **33** are not as deep as the slots **22** and **23** formed in the wall **17**, and the outer edges of the webs **36** and **37** are not disposed as deeply within the recessed interior of the central frame element **10** as are the recessed portions **27***a* and **28***a* of the webs **27** and **28**. Thus, the inner ends of the legs **21***a* and **21***b* of the wing **21** are permitted to overlie the end portions of the legs **20***a* and **20***b* of the wing **20**, as illustrated in FIG. 3.

The innermost ends **21***d* and **21***e* of the legs **21***a* and **21***b* of the wing **21** are inturned, as shown in FIG. 3, and reside between pairs of bosses **40** and **41** formed on the under surface of the large boss **26**.

The previously-described parts of the interior portion of the central frame element **10** are largely enclosed by a bottom plate **42** which may be secured in place by a plurality of screws **43** appropriately threaded in openings **44** provided in a plurality of bosses **45** formed on the interior of the central frame element **10**. The front and rear edges of the plate **42** are arranged to overlie that portion of the inner ends of the legs **21***a* and **21***b* which are disposed within the central frame element **10**, but these edges are arranged to clear the inner end portions of the legs **20***a* and **20***b* of the wing **20**, so that the wing **20** may be pivoted about the axis defined by the innermost ends **20***d* and **20***e* of the wing **20**. The normal position of the wing **20** with respect to the central frame element **10** and the wing **21** is illustrated by solid lines in FIG. 1, broken lines being used in FIG. 1 to illustrate how the wing **20** may be pivoted.

The wing **20** may be retained in its normal position by a latch arrangement such as the one illustrated in FIG. 3. This latch arrangement, or assembly, is comprised of a manually-operated lever **50** which may extend outwardly through a recess **51** provided along the lowermost edge of the wall **17**, the outermost end of the lever **50** being curved or having some other suitable configuration, so that it may easily be gripped by the fingers. The lever **50** is pivotally mounted on a stud **52** which may be integrally formed upon and extended downwardly from the inner surface **11***a* of the top wall **11** of the frame element **10**. The innermost end of the lever **50** pivotally receives an inner end of a latch member **53**. Any suitable pivotal connection between the inner end of the lever **50** and the latch member **53** may be employed. In the present instance, the pivotal connection is comprised of a downwardly-extending lug **54** formed on the lever **50** which resides in an opening **55** formed in the latch member **53**. The latch member **53** is adapted to slide upon a flat surface **56** and between the lug **45** and another lug **57**, the latch member **53** being held against vertical displacement by the surface **56** and the inner surface of the plate **42**. The outermost end of the latch member **53**, when the latching assembly is in its normal locked condition, as illustrated in FIG. 3, underlies the leg **20***a* of the wing **20**, thereby retaining that leg in its normal position shown in FIG. 1. A corresponding and somewhat similar latch member **60** is employed for retaining the leg **20***b* of the wing **20** in place. This latch member **60** is pivotally attached at its inner end to the lever **50** outwardly of the stud **52**, and the latch member **60** is arranged to ride on a surface **61** between the boss **45** and the inner surface of the wall **17**, the latch member **60** being prevented from displacement vertically by the surface **61** and the inner surface of the plate **42**. The plate **42** retains the inner ends of the legs **21***a* and **21***b* in place on the webs **36** and **37** and between the lugs **40** and **41**, and these inner ends, in turn, retain the inner ends **20***d* and **20***e* in pivotal position between the lugs **30** and **31** and the large lug **26**.

With the latch assembly illustrated and described above, it will be appreciated that, although the parts of the latch assembly are shown in FIG. 3 in position to retain the wing **20** in its normal condition, the wing **20** may be permitted to pivot about the axis defined by its innermost ends **20***d* and **20***e* simply by first pivoting the lever **50** in a clockwise direction about the stud **52**, as viewed in FIG. 3. This may be accomplished manually by gripping and moving the outermost exposed end of the lever **50**, thereby causing the outermost ends of the latch members **53** and **60** to be retracted from their underlying positions with respect to the legs **20***a* and **20***b* of the wing **20**.

The wing **21** which, as previously indicated, is preferably formed of wire, is provided with a board element **65** having a substantially-planar under surface **66** and which has a periphery substantially corresponding in size and shape to the peripheral configuration of the wing element. The board element **65** is preferably formed of resilient plastic, such as polypropylene, and the board element has formed along its opposite side edges and along its end, upwardly-extending, spaced-apart, longitudinally-directed projections **67** and **68** for receiving therebetween the respective legs **21***a* and **21***b* of the wing, and for also receiving the end element **21***c* of the wing. The bottom of the slot or slots defined by the upwardly-directed projections **67** and **68** is rounded, as seen in FIGS. 4 and 5, and the inner surface of the upwardly-directed projection **68** is curved so as to conform substantially to the radius of the wire from which the wing **21** is fabricated. It will also be noted from FIGS. 4 and 5 that the uppermost end of the upwardly-directed projection **68** is curved slightly over the slot so as to partially close the same. The board **65** is thus applied to the wing **21** by pressing the slots provided by the projections **67** and **68** onto the legs **21***a* and **21***b* and onto the transverse portion **21***c* of the wing, the uppermost end of the projection **68** being cammed outwardly during this operation, so that the legs **21***a* and **21***b* and the transverse section **21***c* snap downwardly into the slots provided between the projections. The board **65** is thus removably secured upon the wing **21** in the position shown in FIGS. 4 and 5, with the inner surfaces of the projections **67** and **68** resiliently gripping the wire or rod from which the wing **21** is fabricated. It will be observed in FIGS. 4 and 5 that the plane of the under surface **66** of the board **65** is disposed slightly below the plane defined by the under side of the wing **21**. For rigidifying purposes, the board **65** is provided with a plurality of transverse upstanding ribs **69** which extend from the upwardly-directed projection **67**, on one side of the board, to the corresponding projection on the opposite side of the board.

The wing **20** is provided with a board **70** which is, in every respect, identical to the board **65**. Accordingly, the description heretofore given of the board **65** and its application to the wing **21** applies equally with respect to the board **70** and its application to the wing **20**.

The mop head hereinabove described is adapted to receive a swab **75** of well-known construction which has an over-all length corresponding to the total width of the present mop head and is provided on its under side with a plurality of shaggy yarn-like elements **76**. At its opposite end portions, the swab **75** is provided on its upper surface with pockets **77** for receiving the wings **20** and **21** with the boards **65** and **70** thereon, the pockets **77** opening toward each other. Accordingly, the swab **77**, which need not be described in greater detail, inasmuch as it is an item well-known in the trade, is applied to

the present mop head by slipping the pockets **77** over the outer end portions of the wings **20** and **21** while the wing **20** is pivoted out of its normal position, that is, in a clockwise direction with respect to the normal position thereof shown in solid lines in FIG. 1. After the pockets **77** of the swab **75** have been slipped onto the wings **20** and **20***a*, the wing **20** is pivoted back to its normal position, and the latch assembly, previously described, is moved to its latching condition illustrated in FIG. 3. This locks the parts of the mop head in place and causes the swab **75** to be retained on the mop head.

It will be observed that the boards **65** and **70** add weight to the simple and inexpensive wings **20** and **21**, and they also, in effect, occupy all of the area encompassed by the loop-like wire wings **20** and **21**. The under surface **66** of the two boards **65** and **70**, therefore, back up and provide substantially-solid backing surfaces for the under side or soil-receiving portion of the swab, thereby very materially increasing the soil pick-up efficiency of the swab. The boards **65** and **70** also evenly distribute the weight of the entire mop head assembly over most of the area of the swab, so that this area has a substantially-uniform soil pick-up efficiency.

Although only one embodiment of the present invention has been shown and illustrated, it will be appreciated by those skilled in the art that various modifications may be made in the mop head without departing from the spirit and scope of the invention defined in the appended claims.

I claim:

1. A mop head comprising, a frame to which a mop handle may be secured, a wire wing element secured to said frame and having a loop-like configuration, a resilient plastic board element having a substantially planar underside and having a periphery substantially corresponding in size and shape to the peripheral configuration of said wing element, and means integral with said board element providing an upwardly facting peripheral groove thereon having resilient walls for grippingly receiving therebetween said wing element and for thereby securing said board element to the underside of said wing element,

said wing element with said board element secured thereto being adapted for effecting connection with a floor swab or the like, the substantially planar underside of said board serving as a flat back-up surface for said swab to increase the cleaning efficiency thereof.

2. A mop head comprising, a frame to which a mop handle may be secured, a wire wing element secured to said frame and having a loop-like configuration, a relatively thin, resilient plastic board element having a substantially planar underside and having a periphery substantially corresponding in size and shape to the peripheral configuration of said wing element, upwardly extending means integrally formed on said board element providing an upwardly facing peripheral groove thereon having resilient walls for grippingly receiving therebetween the wire of said wing element and for thereby securing said board element to the underside of said wing element, and ribs integrally formed on the upper side of said board element for rigidifying the same, said wing element with said board element secured thereto being adapted for effecting connection with a floor swab or the like, the substantially planar underside of said board serving as a flat back-up surface for said swab to increase the cleaning efficiency thereof.

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