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[54] **BRUSH WITH MOVABLE HEAD**  
5 Claims, 3 Drawing Figs.  
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306/7  
[51] Int. Cl..... A46b 5/00,  
B25g 3/38  
[50] Field of Search..... 15/143 B,  
144 B, 172, 192; 306/7-10; 287/12

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**ABSTRACT:** A paint brush having a ball-and-socket connection between its head and handle. The handle has a ball configuration at one end which fits into a socket in the base of the brush head to form the ball-and-socket connection. The base of the head is fitted with a wing nut having a concave forward end designed to fit congruently against the surface of the ball. The wing nut can be moved into and out of tight contact with the ball by hand. This permits universal adjustment of the head, with respect to the handle, and locking of the head in any position of adjustment.

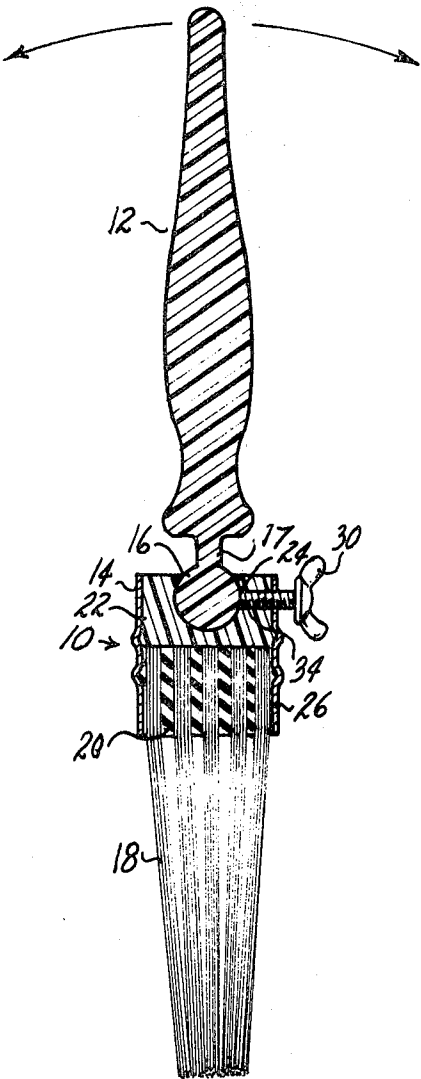


FIG. 1.

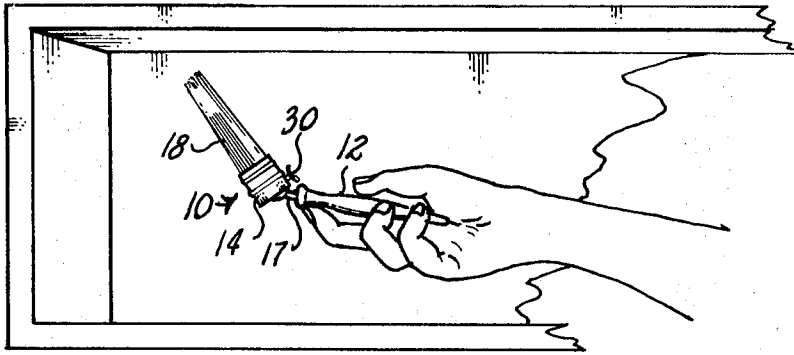


FIG. 2.

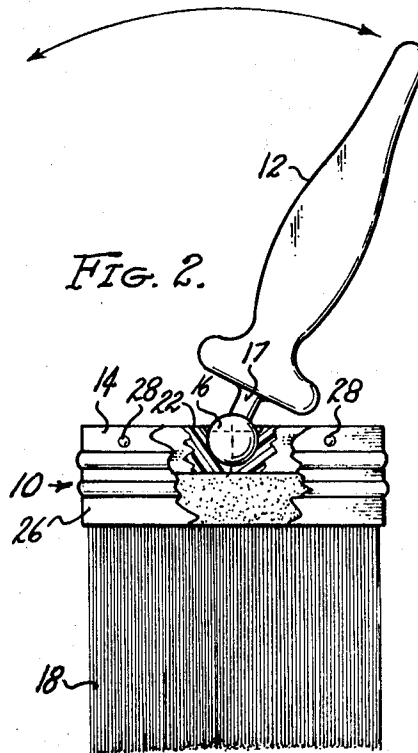
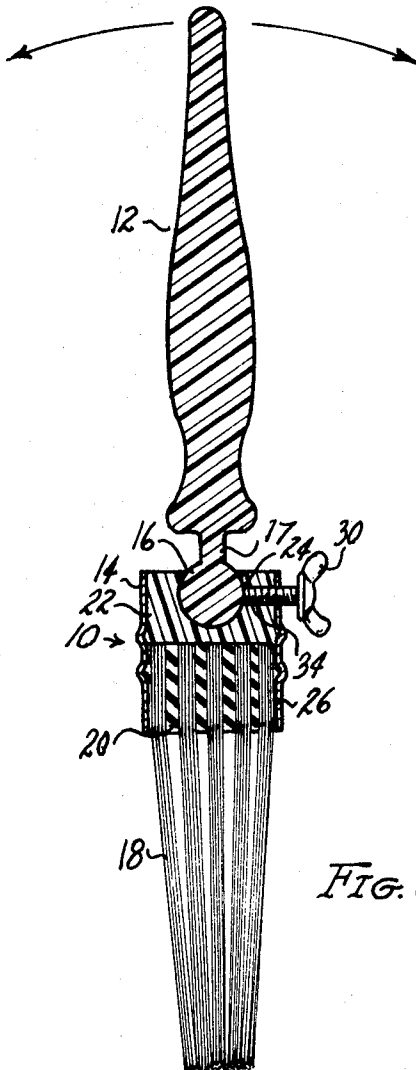


FIG. 3.



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## BRUSH WITH MOVABLE HEAD

## BACKGROUND OF THE INVENTION

This invention relates generally to paint brushes, and the like, and more particularly to such brushes with universally adjustable heads which can be made to fit into narrow, and other, spaces for use in areas inaccessible to conventional brushes.

Although much commercial house painting is presently carried out with spray guns and paint rollers, the professional painter still does a great deal of painting (interior and exterior trim, etc.) with that commonplace symbol of his trade, the ordinary paint brush. Moreover, do-it-yourself painting is perhaps more prevalent today, especially among homeowners, than at any time in the past, and a larger proportion of this work is done with paint brushes than would be true if the work were performed by professional painters. While paint brushes have been in widespread use for generations, they have changed little in structure or appearance from their earliest forerunners. While it is true that materials of construction, and methods of manufacture, have improved greatly over the years, the present-day paint brush is of essentially the same character as always, comprising a brush head and handle fastened rigidly together by means of a metal ferrule or the equivalent. The rigid relationship between the head and handle of the brush poses no problem where there is adequate space in which to maneuver the latter, but is a distinct disadvantage in cramped quarters, sometimes making use of the brush in such places impossible.

I am aware that paint brushes with movable heads, allegedly suitable for use in hard-to-reach places, have been described in the prior art. All such brushes of which I am aware, however, have been of rather complex construction, with working parts of generally unconventional character, and limited, for the most part, in their freedom of head movement, some, for example, permitting only flatwise movement (tilting movement with respect to the handle axis), and others edgewise movement (fanlike movement in a plane inclusive of the handle axis), of the brush head. U.S. Pat. No. 2,395,245 to Booharin discloses a paint brush with a universally movable handle, intended primarily for "painting various parts of a ship." Booharin's brush has an articulated telescoping handle which can be greatly extended, and bent into various shapes (somewhat in the manner of a carpenter's folding rule), to permit use of the brush head in spaces behind obstructing barriers and the like. There is a universal joint between Booharin's brush head and the brush handle, formed from a ball at the end of a narrow neck extending from a shoulder at the base of the "brush element," and a two-piece clamp socket at the forward end of the handle, of said brush.

The Booharin paint brush handle comprises a plurality of sections which are enclosed, with freedom to slide, in a "keeper," and an arrangement of threaded pivots and tightening nuts to permit extension of the sections and rigid interlocking of these sections at various angular positions to provide the above-indicated brush capability for use on "surfaces which are partially hidden behind other parts, equipment and appliances." It should now be apparent that Booharin's main purpose was to provide a brush adapted to reach behind obstructing shipboard structure to make painting contact with otherwise inaccessible surfaces. The problem with which Booharin dealt thus involved the inaccessibility of surfaces periodically in need of painting as a result of their location behind obstructing fixtures, or the like, rather than because of their location in spaces too limited to admit conventional paint brushes for use therein. Consistent with this, Booharin provided his paint brush with a universal joint adequate for his purpose of painting "around corners," but inadequate for maximum utility of the brush in cramped spaces because of the relatively long turning radius of the brush head as a result of the offset distance of the ball extension of the brush head (pivot point of the latter) from the base of the head proper.

Since, as indicated above, various types of paint brushes with movable heads have been proposed, yet no such brush has achieved widespread acceptance among professional or amateur painters today (at least to my knowledge), it seems clear that no such brush has to date met the rigid requirements of commercial acceptability in a highly competitive world. Thus, for whatever reason, inconvenience of use due to complexity of structure, relatively high cost as a result of special design requirements, or the like, no one has yet met the pressing need for a simplified, low-cost paint brush capable of use in the many out-of-the-way places of restricted area requiring periodic painting in homes, apartments, etc., unreachable by paint brushes of conventional type. Examples of such hard-to-reach areas are spaces between close-set shelves, areas behind heaters, surfaces in and around the eaves and rain gutters of family residences, etc.

Finally, conventional paint brushes of the rigid handle type seem to provide a perfect conduit for the channeling of paint downwardly onto the hands and arms of painters, particularly amateur ones, during the painting of horizontal surfaces, such as ceilings, the undersurfaces of built-in cabinets, and the like. While attempts have no doubt been made to somehow avoid the consequences of this annoying manifestation of the law of gravity, no one has yet, to my knowledge, provided a commercially acceptable paint brush which meets this goal.

## SUMMARY OF THE INVENTION

The unique brush of the present invention has a universally movable head so mounted as to move about a pivot point with minimal radial sweep, and thereby permit maximal usage of the brush in cramped spaces. To make this possible, the brush has a handle with a ball configuration (hereinafter ball) at one end and a brush head in the base of which is a mating socket for the ball. The brush is assembled with the aforesaid ball disposed in the socket of the brush head, the fit between the ball and socket being sufficiently snug to provide frictional contact therebetween, yet not so tight as to prevent manual adjustment of the position of the brush head on the handle. A setscrew, preferably of a manually adjustable type, such as a wing nut, is mounted in threaded engagement with a tapped opening running into the base of the brush head to the aforesaid socket therein. The inner end of the set screw is concave and designed to fit congruently against the ball on the brush handle, so that tightening of the screw brings this concave end firmly against the ball, to lock the brush head in position at any of a variety of angles relative to the handle.

As will be seen, the number of working parts of the adjustable brush of the present invention is minimal, and the manner of use and functioning of the brush the ultimate in simplicity. Furthermore, the brush can be easily made from conventional materials, utilizing conventional manufacturing techniques and methods of assembly. For these reasons, the brush can be made and sold at costs competitive with those of conventional (non adjustable) brushes. Because of its far greater versatility of use (soon to be discussed), however, my novel brush will, it is believed, have superior sales appeal to such conventional brushes.

By virtue of a relatively wide latitude of permissible head movement, the novel brush of the present invention can be adjusted to numerous head positions, including that of a conventional brush, in which form it can be used in the same way, and for the same purposes, as the latter. Where a cramped area, with insufficient room to permit usage of the brush in such conventional form, is encountered, the head of the brush can be loosened, adjusted to a suitable angle, then locked in place, through manipulation of the setscrew in the above-indicated fashion, to permit insertion, and use, of the brush therein. The brush, by virtue of the location of its ball-and-socket joint (pivot point) in the base of the brush head, and minimal head turning radius thereby achievable, is capable of adjustment so as to fit into the smallest possible space, far smaller, for example, than that into which an otherwise equivalently sized brush

with a ball-and-socket joint similar to that taught in the above-mentioned Booharin patent would fit.

The head of my novel brush, being universally joined to the brush handle, can be tilted in any direction from its pivot point, to permit an infinite number of angular relationships between the brush head and handle suitable, for example, to permit use of the brush for the painting of peculiarly shaped, and/or positioned, surfaces. The brush head can, for instance, be bent into a position of tilt from the axis of the handle, to permit normal usage of the brush (as on flat surfaces), bent in a plane coexistent with the handle axis to permit use of the brush for edging purposes, or bent at any angle intermediate these extremes.

The unique brush of the present invention, characterized, as it is, by the above-noted simplicity and low cost of manufacture, ease of adjustment and use, and full range of adjustment to positions permitting its insertion and use in spaces heretofore inaccessible to conventional brushes, or otherwise equivalently sized brushes of the ball-and-socket type heretofore known, is believed the fulfillment of a longfelt need in a field where all previous attempts at such fulfillment have failed. Furthermore, judicious angling of the head of my novel brush prior to using it for the painting of horizontal surfaces, will, it is believed, go far to eliminate the problem of paint run-down onto hands and arms commonly encountered in the painting of such surfaces with conventional brushes. It will be, of course, appreciated that the horizontal surfaces under present consideration are those which must be approached from the underside, such as the bottoms of shelves, cabinets, and the like.

It is thus a principal object of this invention to provide a paint brush with a universally movable head adjustable for use in cramped spaces.

It is another object of the invention to provide such a paint brush of relatively low cost and simplified construction, which is easily adjustable for use without the need of any tool, or tools, and has a minimum number of moving parts to manipulate or get out of working order.

Yet another object of the invention is to provide such a brush adjustable for use in substantially smaller spaces than any universally adjustable brush of comparable size heretofore known.

Still another object of the invention is to provide a paint brush readily adjustable for minimization of paint run-down onto the hands of its user when employed for the painting of downwardly facing horizontal surfaces.

Other objects, features and advantages of the invention will become apparent in the light of subsequent disclosures herein.

#### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an illustrative view of a preferred embodiment of a paint brush in accordance with this invention being used for the painting of a downwardly facing horizontal surface in a cramped space, the brush being shown in a suitable position of adjustment for this purpose.

FIG. 2 is an enlarged front view of the FIG. 1 paint brush, showing the brush head and handle angularly adjusted in axially coplanar relationship to permit convenient use of the brush for edge trimming purposes.

FIG. 3 is a still further enlarged view of the paint brush with its head and handle axially aligned, taken mostly in section along a longitudinally bisecting plane which cuts the former (head) across its minor (thickness) dimension.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Considering now the drawing in greater detail, there is shown generally at 10 the above-mentioned embodiment of a paint brush in accordance with this invention. Paint brush 10 comprises a handle 12 and brush head 14, fastened together in such fashion as to permit universal movement of the one relative to the other. Handle 12 is of one-piece molded construction, with a ball configuration 16 (hereinafter ball 16) at one

end, separated from the handle proper by means of a reduced neck 17, as illustrated. The handle is preferably made of nylon, to impart tough, long wearing properties to ball 16, but it can be made of any other suitably hard material, such as a hard plastic, metal, hardwood, or the like.

Brush head 14 comprises the necessary bristles 18, embedded in vulcanized rubber or plastic in conventional fashion, as shown at 20; a molded base 22 with an open socket 24, as shown in FIG. 3; and a metal ferrule 26, wrapped tightly around the molded base and mounting or he emedded eds of the bristles (disposed in back-to-back relationship, as illustrated) and fastened in place by means of a plurality of nails 28 driven into said base, two of which can be seen in FIGURE 2. Although ferrule 26 is as indicated above, wrapped around the adjacent bristle mounting and molded base parts of brush head 14, it is also, at least in preferred embodiment of the brush, adherent to the ormer (bristle mounting part of brush). The reason for this is the common paint brush-manufacturing practice of setting paint brush bristles in rubber or plastic in the bristle-encircling portions of metal ferrules, and allowing the rubber or plastic to harden in place therein, contemplated as a preliminary step in the preferred way of fabricating paint brush heads in accordance with the present invention.

Base 22 of brush head 14 is formed from a pair of molded plastic bodies with facing concavities sized and shaped to define the aforesaid socket 24 in the manner illustrated in FIG. 2 of the drawing. The two bodies are positioned in meeting adjacency, and welded together to form base 22 by means of any suitable adhesive familiar to those skilled in the art. As FIG. 3 best shows, handle 12 is disposed with its ball configuration (ball 16) in socket 24 of base 22 of the brush head. The fit of the ball in the socket is such as to provide friction contact therebetween tight enough to prevent the handle from flopping around, but not so tight as to prevent relatively easy movement of the handle, with respect to the head, when it is not locked in place as described below.

Threadedly engaged with a tapped opening in the side of base 22, which runs into socket 24, is a wing nut 30. Wing nut 30 has a concave inner end 34 designed to fit flush against the surface of ball 16 when brought into contact therewith. The concave inner end of the wing nut provides for maximum surface contact between the nut and ball 16, when the former is tightened against the latter, to assure optimum locking effect on the ball when the nut is fully tightened and minimize the possibility of damage to the ball surface such as might occur if there were point, or other, contact between the nut and ball.

As will now be evident, it is a simple manner to adjust the angular position of brush head 14, relative to handle 12, by merely loosening nut 30 (if necessary), moving the handle (or head) in any direction to a desired angular position of one relative to the other, and then tightening the wing nut flush against ball 16. FIG. 2, indicates, by arcuate arrow means, one plane of movement of handle 12 (in which the axis of the handle remains coplanar with the brush head axis), and FIG. 3 indicates, in the same fashion, a plane of movement of the handle at right angles to that of FIG. 2. The handle is not limited to these particular directions of movement, however, and can be tilted in any direction, throughout a full 360°, relative to its pivotal support in socket 24 of the base of the brush head. brush handle extends, has a beaded rim (as seen in FIGS. 2 and 3 to enhance the tilt adjustability of the brush head on the handle.

The term "sweep radius," as employed above, refers to the perpendicular distance from

FIG. 1 illustrates a particular angular adjustment of the brush for use in a cramped space. This is only one, however, of an infinite number of brush positions possible with paint brush 10. As previously indicated, the brush can be adjusted to axially aligned relationship between its handle and brush head, and employed in the same manner as a conventional paint brush, or angularly adjusted to fit any space which it can be made to enter. As will be apparent from the drawing, the ball

and socket relationship between the brush handle and head is such as to permit turning of the head, relative to the handle, through the shortest possible sweep radius. Furthermore, the access opening of socket 24, through which the brush handle extends, has a beaded rim (as seen in IGS.) the perpendicular employed above, refers to the perpendicular distance from the center of socket 24 to the forward edge of the brush head. If the ball-and-socket relationship between the handle and brush head were reversed, that is, if there were a ball at the end of a shoulder and neck on the underside of the brush head, and a socket at the upper end of the handle, it is apparent that the sweep radius would be greater, thus substantially increasing the size of the space within which the brush could be fitted, and decreasing its usefulness, to a critical extent in some cases, in the type of service for which it was primarily designed that is, in cramped, out-of-the-way places, difficult or impossible to reach with conventional paint brushes.

While I have shown and described in considerable detail what I believe to be a preferred embodiment of my invention, it will be understood by those skilled in the art that the invention is not limited to, and may take various forms other than, that particular embodiment. Also, although I have herein stressed the paint brush applicability of this invention, it will be understood that my brushes are not limited to that particular utility, and can be employed in any capacity to which their unique versatility suits them.

I claim:

1. Universally adjustable brush means primarily suitable for paint brush utility comprising, in combination:
  - a handle with a ball configuration at one end; and
  - brush head means of generally flattened configuration having a base portion with a receptive socket for said ball configuration, said socket serving to receive said ball configuration and thereby form a ball-and-socket joint between said handle and said brush head means; and including
  - adjustable means for fastening the handle and brush head means rigidly together;
  - said brush head means comprising a plurality of bristles fixedly secured at their inner ends in a suitable mounting and said base portion, the mounting for the bristles and the base portion being retained in back-to-back adjacency by means of a metal ferrule, and the receptive socket for said ball configuration in said base portion being ac-

cessible to said handle, to permit the formation of said ball-and-socket joint between the handle and said brush head means, at the center of the bottom of said base portion;

said base portion being formed from two suitably shaped bodies of a material of adequate strength and toughness for the purpose, said bodies being arranged with a surface of each in contact with, and cemented to, a similarly shaped surface of the other, and having facing concavities in said contacting surfaces shaped to form said socket for the ball configuration of said handle;

all parts of said brush head means cooperating to permit universal adjustment of said brush head means relative to said handle so that the brush means can be used in a form similar to that of conventional paint brush means of the straight handle type, or in any of a variety of forms in which the brush head means is tilted to permit usage of the brush means in spaces too cramped for such usage of said conventional paint brush means.

2. Brush means in accordance with claim 1 in which said adjustable means for fastening the handle and brush head means rigidly together comprises a tapped opening running into said brush head means to communication with said socket in its base portion, and restrictive cooperating setscrew with a concave end sized for threaded engagement with the tapped opening, the concave end of said setscrew being shaped for congruent interfit with the surface of said ball configuration, whereby tightening of the screw against the ball configuration serves to rigidly secure said brush head means to said handle.

3. Brush means in accordance with claim 2 in which said setscrew is a wing nut, whereby manual adjustment of said brush head means to various positions of use, and locking of the latter in such positions, is facilitated.

4. Brush means in accordance with claim 3 in which said handle has a relatively thin neck segment separating said ball configuration from its main portion, and the access opening to said socket in said base portion of said brush head means is sufficiently restrictive to prevent the passage of said ball configuration, and has a beaded rim to permit maximum tilting of said brush head means relative to said handle during adjustment of said brush means for use.

5. Brush means in accordance with claim 4 in which said handle of said brush means is made of nylon.

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