

J. H. ABBOTT.
MOUNT FOR TUBULAR DEVICES.
APPLICATION FILED JUNE 16, 1911.

1,054,160.

Patented Feb. 25, 1913.

FIG. 1.

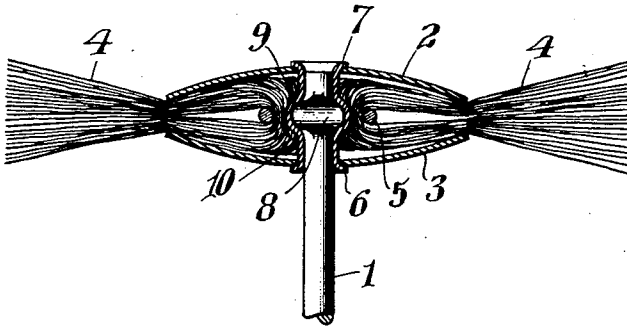


FIG. 10.

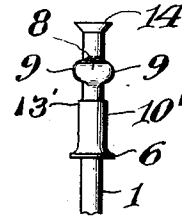


FIG. 3.

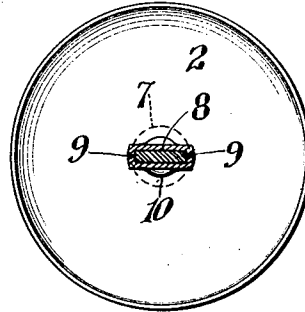


FIG. 8.

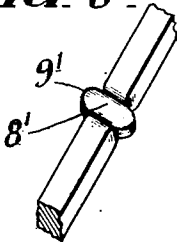


FIG. 9.

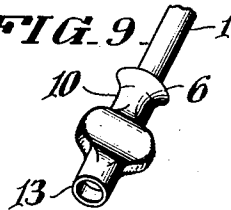


FIG. 2.

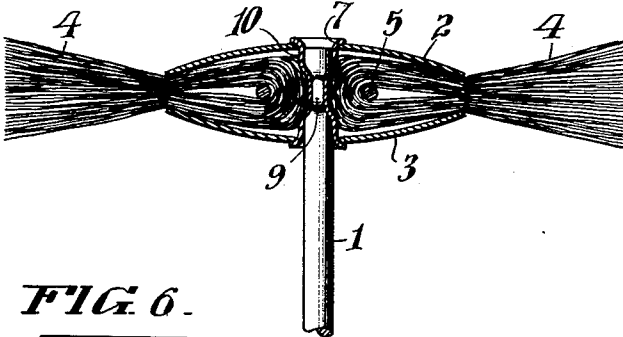


FIG. 6.

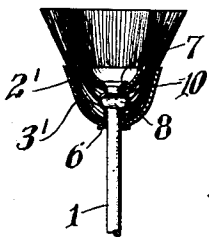


FIG. 5.

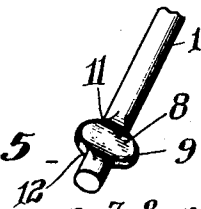
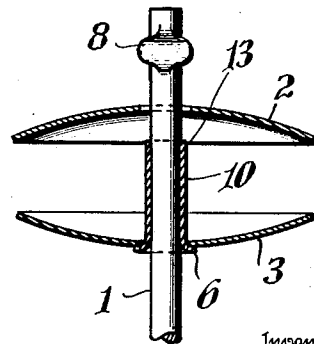


FIG. 4.

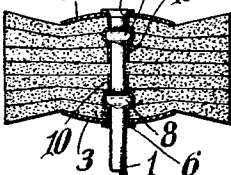


Inventor

Witnesses

A. Helen Abplanalp
Thos. D. Mowbray

FIG. 7.



By James Herman Abbott,
William Steel Jackson.
Attorney

UNITED STATES PATENT OFFICE.

JAMES HERMAN ABBOTT, OF PHILADELPHIA, PENNSYLVANIA.

MOUNT FOR TUBULAR DEVICES.

1,054,160.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES HERMAN ABBOTT, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented a certain new and useful Mount for Tubular Devices, of which the following is a specification.

The purpose of my invention is to afford effective and simple concealed means for retaining tubular parts upon a support or spindle at any point thereon.

A further purpose of my invention is to stretch a tubular member sideways by lugs or extensions upon the support, to draw the intermediate tube portions into a groove, recess or depression in the support and to restore the initial shape of the tube in the rear of the stretched part.

I have illustrated my invention by that form thereof which has in practice proved simplest, cheapest and most effective.

Figure 1 is a longitudinal section of a structure embodying my invention. Fig. 2 is a longitudinal section of the structure of Fig. 1 taken at right angles thereto. Fig. 3 is a transverse section of Fig. 1 omitting the bristles thereof. Fig. 4 is a longitudinal section of the parts shown in Fig. 3 prior to their assemblage. Fig. 5 is a perspective of the form of support, here a spindle, preferred by me. Fig. 6 is a longitudinal section of a spindle supporting parts of different shape from those in Figs. 1 and 2. Fig. 7 is a longitudinal section of a mount in which the part mounted is retained by two embodiments of my invention. Fig. 8 is a side elevation of a support of different cross section and adapted for a mount between its ends. Fig. 9 is a perspective view of a spindle similar to that shown in Fig. 5 but with a tube in place. Fig. 10 is a longitudinal section of a structure corresponding to Fig. 1 but making use of a head on the spindle with a shorter tube.

While I have illustrated my invention as applied to the mounting of rotatable parts upon spindles of circular section for dental brush uses, it will be evident that its use is not confined to rotatable parts and that it will be suitable for mounting disks, felt buffers and other parts, most of them rotatable, of wide variety in this art, as well as a great variety of structures, whether rotatable or not, in other arts wherever the parts can be held about or upon a support, pin, spindle

or shaft by means of a tubular member laterally distorted locally by a part of the support.

Similar numerals of reference indicate like parts in the drawings.

1 designates a support, rotatable in the form shown in Figs. 1, 2 and 6, at whose end a dental brush is mounted. The brush, in the forms illustrated, comprises retaining disks 2 or 2' and 3 or 3' which are pressed against bristles 4. The bristles may be looped about a ring 5 and the disks are retained in gripping position by the outwardly turned or flared ends 6, 7 of a tubular member which my invention secures to the shaft 1. The tubular member could itself carry or support any parts to be retained in other relations and not necessarily detached therefrom, but has been conveniently here shown as supporting other separate members, rather than integral with them.

In the form of my invention shown, I compress the spindle, pin or support transversely all the way across, preferably on both sides, to form flattened portions or grooves as at 8, thus forcing the metal outwardly laterally at the ends of the grooves in the form of lugs, ears, humps, swellings or projections 9 so that the width in the direction of the flattened portion or groove at this point shall exceed the normal width of the support in this direction or the diameter of the spindle.

I prefer to maintain a contour having a length as nearly equal as possible to the circumference of the spindle or support in order that the tubular member may not be permanently stretched in girth. I force the spindle or support, 1, longitudinally into a tubular member 10 having a contour initially the same as that of the spindle or support, in either direction and either end forward, causing local stretching of the tube laterally at the point of the flattening of the support. The stretching is caused by the lugs or projections and results in the adjoining material of the tube being drawn within the grooves.

Continued movement of the spindle or support into or through the tube results in the material of the tube being progressively bulged at the point corresponding to the lugs or ears and drawn into the groove between at the same time that the portion thus previously drawn into the groove is progres-

sively pressed outwardly to its original diameter by the succeeding cylindrical part of the spindle or support. The outward pressing of the tube along the sides, restoring the width, in Fig. 1 the diameter, of the tube in this direction, results in a corresponding drawing in of the tube along the sides where it has been bulged previously by the lugs or ears 9, substantially restoring the initial contour, whatever the previous shape.

The extent of initial distortion of the tube and the approximation to restoration will depend upon the size of the lugs or ears and groove or flat portion, *i. e.*, the deviation from the initial shape, upon the tightness of fit of the tubular member and the thickness, elasticity and malleability of the tube itself, and should be selected and proportioned to secure as little distortion and as complete restoration to shape as the requirements of the use intended permit. The distortion desirable for dental brush purposes has been exaggerated for purpose of clearness of illustration of this use as it has been found not to require nearly the change of contour represented. The length of spindle or support represented by the lugs or ears from the point 11 to the point 12 Fig. 5 is also to be selected and proportioned with reference to the length of the tubular member mounted thereon so that the restoration of the tube to shape may be complete if possible, and the hold as well as the neatness of appearance, may be thus enhanced.

It will be evident to all familiar with metal working that, in the example chosen, Figs. 1, 2 and 6, the straight end 13 of the tube shown in Fig. 4 may be outwardly turned to any desired extent after the disks 2 or 2' and 3 or 3' have been pressed together upon the bristles. A head, such as is shown in Fig. 10, or other stop may be made to take the place of one end of the tube and may be located at any desired point along the spindle length. While I prefer, in these examples, to press these disks together, turn the end of the tube and force the spindle or pin into place by a single movement of a pair of dies, it will be evident that the outward turning of the end 13, where this is done, to form the flange 6 may be done before or after the placing of the spindle within the tube. This makes it possible to seat the tubular member 10 upon the part of the spindle whose contour has been altered before, after or during the assemblage of the brush parts.

In Figs. 1 to 7 I contemplate the mounting of a tubular member upon the end of a spindle because the parts shown are ordinarily there mounted. In Fig. 8, however, I show the grooves 8' and lugs or ears 9' near the longitudinal center and the mount as square in section in order to here point out that my invention is independent of the

longitudinal position upon the support and of the initial cross-sectional shape of the support and that this support need not be adapted for rotation. In Fig. 6 I show a brush of different shape from that of the brushes in Figs. 1-4, mounted in the same manner as they are mounted. In Fig. 7, I illustrate how two applications of my invention may be used to secure a relatively thick part to a shaft without a continuous tube, preferring to use two tubes in this form to using one long tube with a single variation in section at any desired point in its length. The tubes are here pressed inwardly and are rigidly retained wherever they stop, as in every form, but use but one end of the tube for retaining purposes.

In Fig. 9 I have shown a perspective corresponding generally to Fig. 5, showing a tubular member or sleeve upon a spindle of the type shown in Fig. 5 to illustrate the conformation of the tube to the shape of the spindle. The end of the tube is shown as projecting, but not flared.

In Fig. 10 I have illustrated the use of an enlargement, which, because of the position selected for the illustration, is shown as a head 14 rather than a collar or ring, upon the spindle, *i. e.*, the enlargement forming a stop has been shown as located at the end of the spindle, but could obviously be as easily located at any point along the length of a spindle where it was desirable to place the parts to be mounted. It is used in place of the flare of the end of the tube for coöperation with the tube to retain any structure upon a spindle or support. This is used here for retention of one of the disks of a dental brush. The tubular member in this illustration is provided with a flange 6 but its end 13' is not intended to be flared. The tubular part is forced over the lugs 9 and the disks of the brush are intended to be held between the enlargement upon the spindle and the flared end 6 with the outer parts of the disk faces in compression against the bristles of the brush.

The use of the single tubular member here shown is the same in character as that made of each of the tubular members shown in Fig. 7 and this use would be the same independent of the position along the length of the support or spindle occupied by the coöperating collar, enlargement or ring 14.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a mount for tubular devices, a support having a portion intermediate its length of altered sectional contour but of substantially the same sectional area as the remainder, in combination with a tubular member covering the altered section and extending along the support in both directions therefrom.

2. In a device of the character stated, a support grooved across its width at a point intermediate its length upon opposite sides of the support and laterally extended at the edges of and in line with the groove in combination with a tubular member extending over the flattened portion and conforming substantially to the shape of the support thereabout.

3. In a device of the character stated, a support of generally uniform contour, enlarged in opposite directions at one point and reduced in thickness in a transverse direction, in combination with a tubular member of contour generally conforming to the

support and fitting the enlarged and reduced portions.

4. In a device of the character stated, a support reduced upon two sides and bulged between the reduced portions at one point in its length and of a size and contour adjoining this portion substantially the same in each direction, in combination with a tubular member conforming to the shape of the support and a device retained thereby.

JAMES HERMAN ABBOTT.

Witnesses:

WILLIAM STEELL JACKSON,
HELEN I. KAUFFMAN.