March 9, 1926. 1,576,450

L. H. NIELSEN

MOUNTING FOR CYLINDRICAL BRUSHES

Filed April 18, 1921 2 Sheets-Sheet 1

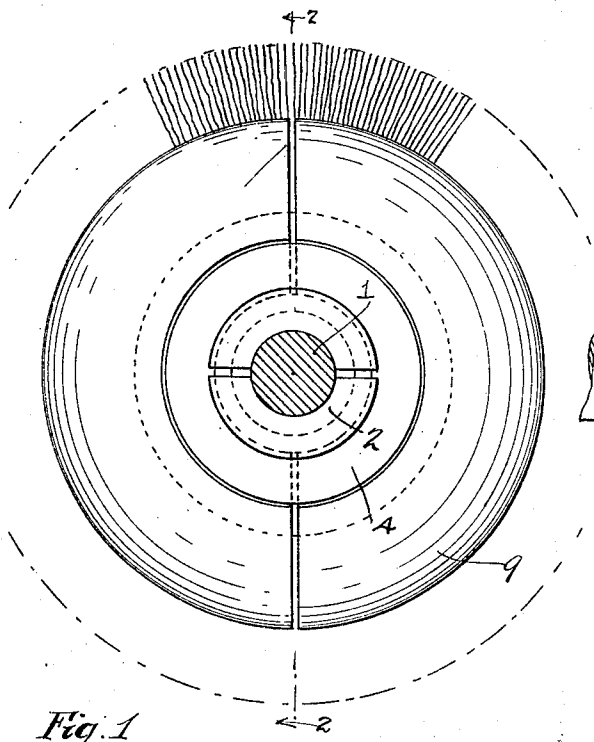



Fig. 1

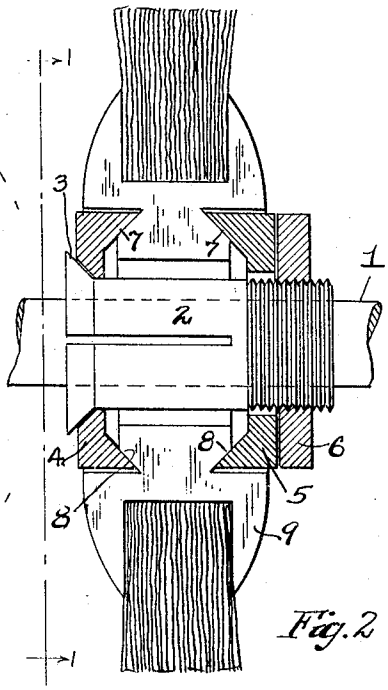



Fig. 2

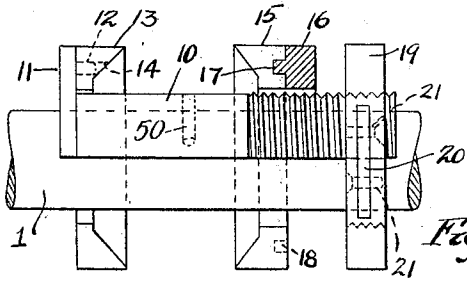



Fig. 3

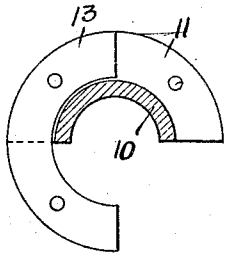
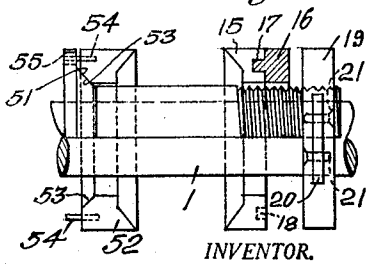



Fig. 4.

Fig. 9.




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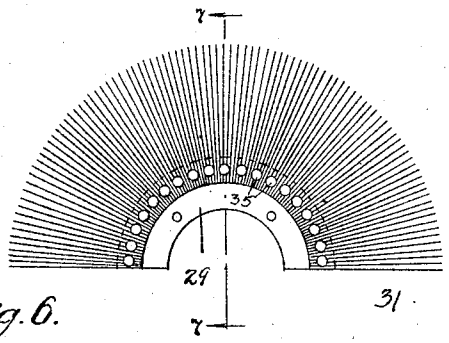



Fig. 6.

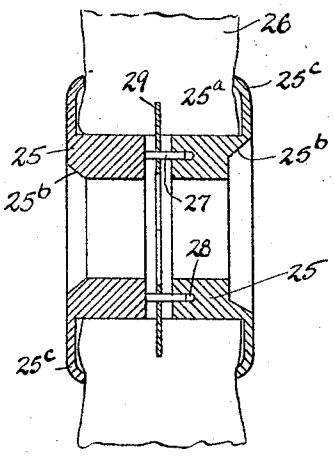



Fig. 5

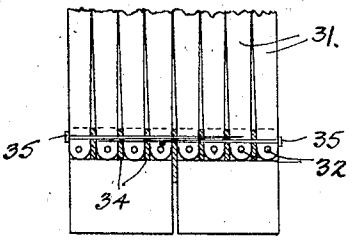



Fig. 7

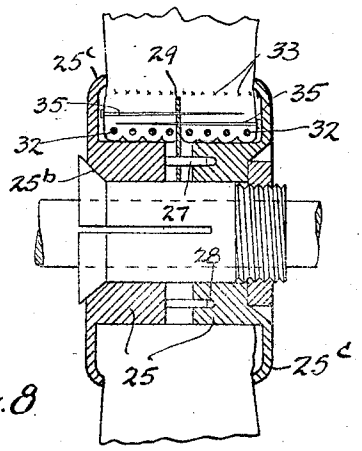



Fig. 8

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# UNITED STATES PATENT OFFICE.

LAURITS HENRIK NIELSEN, OF KOLDING, DENMARK, ASSIGNOR TO THE OSBORN MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## MOUNTING FOR CYLINDRICAL BRUSHES.

Application filed April 18, 1921. Serial No. 462,433.

*To all whom it may concern:*

Be it known that I, LAURITS HENRIK NIELSEN, a subject of the King of Denmark, and a resident of Kolding, Denmark, have invented a new and useful Improvement in Mountings for Cylindrical Brushes, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements, relating, as indicated, to brush mountings have more particular regard to the provision of a mounting for so-called cylindrical or rotary brushes whereby the latter may be directly secured onto a shaft or arbor without requiring to be slipped on endwise over such shaft or arbor. In polishing machines there are frequently mounted a series of brushes between the bearings wherein the supporting arbor is journaled, and in order to replace or exchange any one of these brushes the entire shaft has to be taken down and frequently a number of brushes removed in order to get at the particular one it is desired thus to replace. The principal object of the present invention, as stated, is to do away with this necessity, this being accomplished by a special construction of hub and co-operating parts. My improved mounting is also of more general utility in that it permits of the ready shifting of the location of the brush along the shaft on which it may be mounted. In connection with the foregoing I provide a novel construction of brush or brush section.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of the various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Fig. 1 is a side elevation of my improved brush mounting showing a brush secured thereon; Fig. 2 is an exial section thereof, taken on the plane indicated by the line 2—2, Fig. 1; Fig. 3 is partly a side elevation and partly a section of a modified form of such mounting, showing the shaft or arbor to which it is secured, but omitting the brush; Fig. 4 is partly an end elevation and partly a transverse section of such modified mounting; Fig. 5 is an axial section showing a modified form of brush base or hub adapted for use with my improved mounting, a special construction of brush, or rather brush section, being likewise shown; Fig. 6 is a side elevation of such brush section showing detail construction thereof; Fig. 7 is a transverse section of such brush section taken on the plane indicated by line 7—7, Fig. 6; Fig. 8 is a view similar to Fig. 5, but showing the complete assembly of brush, hub and mounting therefor with shaft or arbor, the brush being of the special construction shown in Figs. 6 and 7; and Figure 9 is a view similar to Figure 3 but showing a modified form of mounting which is a combination of the forms used in Figures 2 and 3.

In the relatively simple form of construction, as shown in Figs. 1 and 2, a broken section of a shaft or arbor 1 is illustrated. Upon this is fitted a sleeve 2 that is formed with a beveled flange 3 at its one end, such sleeve being exteriorly threaded at its other end and formed with a plurality of longitudinal slots extending from such flanged end approximately to such threads on the other end. Rings 4 and 5 surround said sleeve, such ring 4 co-operating with flange 3, and said ring 5 being held in place by a suitable nut 6. Both rings are formed with similarly inwardly directed beveled flanges 7 that are adapted to engage with complementary annular recesses 8 in the sides of the brush base 9. This base, and thus the brush as a whole, is formed in a plurality of segmental sections, (2 semi-circular sections as shown), so that when the rings 4 are sufficiently retracted so as to disengage flanges 7 from recesses 8 in the brush base or hub, the sections of the brush may be separated and entirely removed. Similarly by bringing such sections together about the sleeve and forcing the flanges 4 and 5 together through the medium of the nut 6, said sections will be firmly locked in place upon the sleeve and present the effect of a continuous circle or cylindrical brush. At the same time that rings 4 and 5 are thus forced together it will be seen that such first-named ring, by virtue of its engagement with the

beveled flange 3 on the sleeve will cause the portions of the latter between the slots therein to press inwardly against the shaft 1, and thus firmly secure the mounting, together with the brush, in selected position upon such shaft.

The modified form of mounting shown in Figs. 3 and 4 in general resembles that just described, but is in addition designed itself to be removable from the shaft or arbor 1. To this end the sleeve consists of two or more longitudinally split sections 10. The flange 11 at the one end of such sectional sleeve is correspondingly split and formed with inwardly projecting pins 12, and the co-operating ring 13 is likewise split and formed with apertures 14 disposed to register with said pins 12. As shown in said Fig. 4 the sections of the ring 13 are angularly displaced about the sleeve sections so as to overlap the split in the latter. A transversely split ring 15 is likewise provided, said ring corresponding with ring 5 of the previous construction, and co-operating with such ring is a second split ring 16, the sections of which are staggered with respect to the sections of said ring 15, and are formed with laterally projecting pins 17 disposed to enter apertures 18 in the sections of said ring 15. The nut 19, whereby the sectional rings just described, are drawn together in assembling a brush on the mounting in question, is likewise of sectional construction, the parts being secured together by means of inserted plates 20 that are secured in place by screws 21.

The mounting just described, it will be obvious, can be secured on a shaft without removing the same from its bearings, or disturbing other parts mounted thereon. In use, the brush is of course secured between the rings 13 and 15 just as it is between rings 4 and 5 in the previously described construction. The sleeve made up of the split sections 10 is secured against rotation on the shaft by means of a pin 50 which is received in a suitable aperture in the body of the shaft as best shown in dotted lines in Fig. 3.

In the form shown in Figure 9 the same sectional sleeve is employed as in Figure 3 but the end of the sleeve is provided with a flange 50 having a beveled face 51. The inner ring 52 is sectional as in Figure 3 but is provided with a beveled face 53 adapted to ride on the face 51 of the sleeve to lock the sleeve in place on the shaft. To secure the sections of ring together they are provided with pins 54 adapted to enter apertures 55 in the flange 50, these apertures being slightly larger than the pins to permit the movement of the sleeve sections due to the cam action adjacent the faces 51 and 53.

The form of mounting shown in Figs. 5 and 8 is designed to do away with the necessity of any base or hub, such as hub 9, on the brush, by substituting for rings 4 and 5 or 13 and 15 as the case may be, two specially formed rings 25 that are adapted to receive and directly support the brush 26. In other words, while such brush 26, is split transversely into segmental sections, so as to be removably mounted between rings 25, such sections are adapted to seat directly on the cylindrical faces $25^a$ of said rings. The respective outwardly directed faces $25^b$ of the latter are beveled to co-operate with the flange 3 and nut 6 of the mounting proper, while on their inner faces said rings are provided with complementary retaining pins 27 and apertures 28, which serve to interlock the sections against relative radial movement. These pins serve the further purpose of securing the sections of brush 26 in place by passing through suitably disposed apertures in segmental inwardly directed plates 29 secured in the bases of such brush sections, as will presently be described. The rings 25 are furthermore provided with outwardly directed flanges $25^c$ that are formed to bear against and laterally support the material composing the brush sections 26.

The detail construction of such brush sections, as shown in Figs. 6 and 7, involves the superposition of a plurality of segmental layers of brush material 31, looped about circularly curved wires 32, with or without other filling elements. A line of stitching 33 serves to hold the material in place upon such wires 32 pending the assembly of the layers to form a section of desired thickness. In such assembly, as best shown in Fig. 7, segmental spacing members 34 of pasteboard or equivalent material are preferably interposed between the successive layers adjacent their inner edges, these rings being first dipped in glue and then pressed together so that a unitary structure is provided after such glue is dried. In place of one of the rings 34, the segmental plate 29, previously referred to, is inserted at approximately the midpoint between the sides of the assembled section, and in order particularly to firmly secure this plate in place, as well as more firmly to bind together the component layers and rings 34, one or more circular rows of broad-headed nails 35 are driven through the assembled body of brush sections, such nails being thus driven from opposite sides, adjacent the wire rings 32, so as to penetrate more or less completely the successive spacing rings 34. These nails serve to strengthen the base of the brush and more firmly secure the brush material to such base, as will be readily understood.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the fol-

lowing claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A mounting for a segmental cylindrical brush comprising a longitudinally split sleeve provided with a beveled flange adjacent one end and exteriorly threaded at the other end, a nut on said threaded sleeve-end, and annular members surrounding said sleeve between said flange and nut and adapted to engage the bases of brush sections.

2. A mounting for a segmental cylindrical brush comprising a shaft, a longitudinally split sleeve provided with a beveled flange adjacent one end and exteriorly threaded at the other end, a nut on said threaded end, and annular members surrounding said sleeve between said flange and nut and provided with inwardly directed flanges adapted to engage with the bases of the segmental brush sections, one of said members being adapted to ride up said beveled flange on said sleeve to clamp said sleeve to said shaft.

3. A mounting for a cylindrical brush comprising a longitudinally split sleeve provided with a flange adjacent one end and exteriorly threaded at the other end, a sectional nut on said threaded sleeve end, and sectional annular members surrounding said sleeve between said flange and nut and adapted to engage the base of the brush.

4. The combination of a cylindrical brush consisting of a plurality of segmental sections, and a mounting therefor comprising a longitudinally split sleeve provided with a beveled flange adjacent one end and exteriorly threaded at the other end, a nut on said threaded sleeve-end, and annular members surrounding said sleeve between said flange and nut and adapted to engage the base of the brush.

5. The combination of a cylindrical brush consisting of a plurality of segmental sections, and a mounting therefor comprising a longitudinally split sleeve provided with a beveled flange adjacent one end and exteriorly threaded at the other end, a sectional nut on said threaded sleeve end, and sectional annular members surrounding said sleeve between said flange and nut and adapted to engage the base of the brush.

Signed by me this 13th day of April, 1921.

LAURITS HENRIK NIELSEN.