April 13, 1943. R. O. PETERSON 2,316,185

ROTARY BRUSH

Filed May 14, 1940

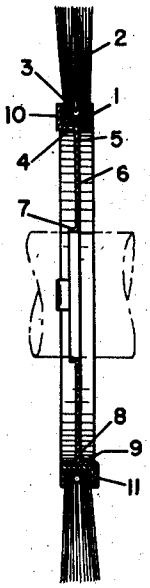


Fig.1

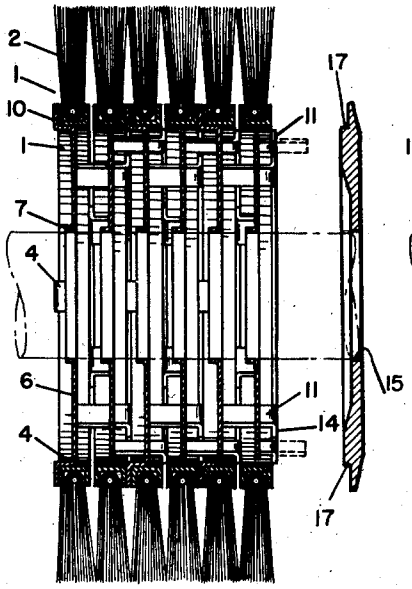


Fig.2

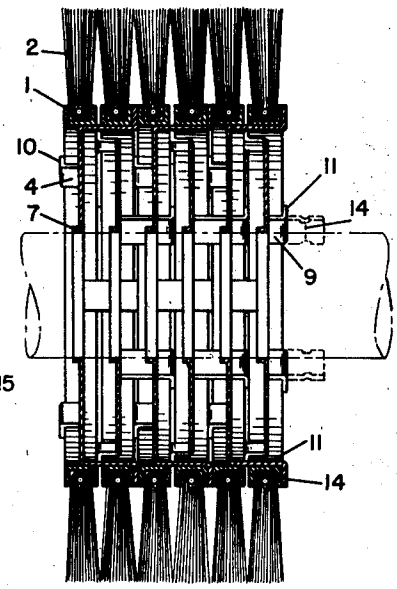


Fig 3

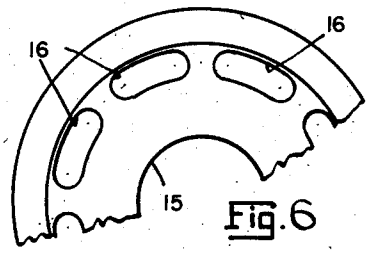


Fig.6

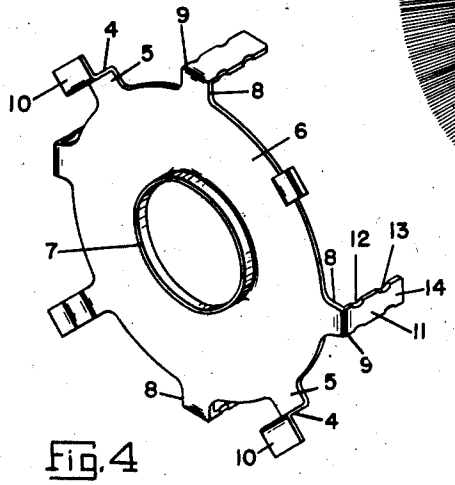


Fig.4

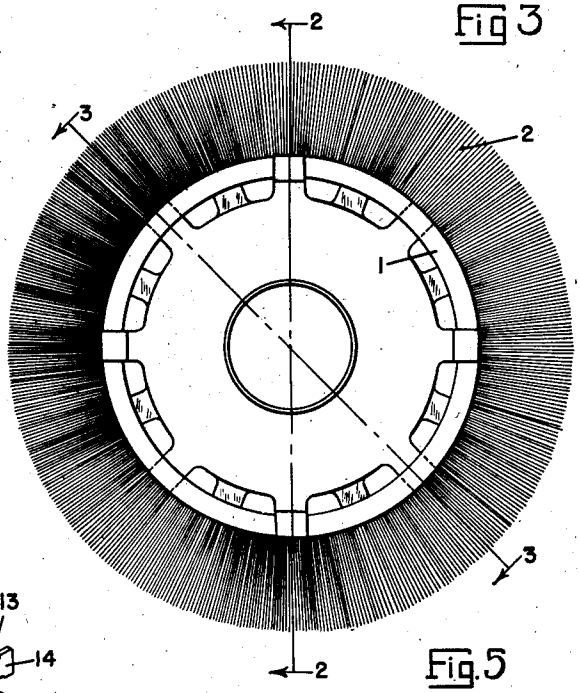


Fig.5

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Patented Apr. 13, 1943 2,316,185

UNITED STATES PATENT OFFICE

2,316,185

ROTARY BRUSH

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Application May 14, 1940, Serial No. 335,068

14 Claims. (Cl. 15—181)

This invention relates, as indicated, to brushes and more particularly to rotary brushes of the type in which several sections are assembled on a mandrel into a cylindrical brush which for all substantial purposes is unitary.

It is often desired to assemble rotary brush sections on an arbor or mandrel so as to form brushes of varying lengths to suit the particular use contemplated. As a general practise such sections are held together and prevented from rotating relatively to each other merely by the pressure of locking rings fixed at either end of the assembled brush. Various other clamping means have also been employed but such are usually troublesome, difficult of adjustment, and may require special construction of the brush sections.

It is, therefore, a primary object of this invention to provide an adapter for rotary brush sections and a method of interconnecting brush sections which will not add to the cost of manufacture of the finished brush but will be effective to lock such sections together.

It is also an object of this invention to provide adapters for the sections which will serve to carry, space and lock said sections.

A further object is to provide an adapter having the aforementioned advantages and which may be stamped from a single sheet of metal.

Other objects of the invention will appear as the description proceeds.

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 drawing and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a cross-sectional view of a single rotary brush section mounted upon the adapter of this invention;

Fig. 2 is a cross-sectional view along the line 2—2 of Fig. 5 of a plurality of brush sections mounted on adapters in accordance with this invention and showing an end flange also in section;

Fig. 3 is a cross-sectional view along the line 3—3 on Fig. 5;

Fig. 4 is a perspective view of the adapter of this invention;

Fig. 5 is a side elevational view of two or more rotary brush sections mounted on adapters in accordance with this invention; and

Fig. 6 is a fragmentary side view of a preferred form of end flange adapted to support the brush.

Broadly stated, this invention comprises the method of interlocking rotary brush sections by mounting the same on adapters which also embrace another section. More specifically, this invention contemplates the use of adapters having arms on one side sufficiently long to extend under and embrace the far side of one or more adjacent sections.

Referring now more particularly to the drawing, the typical rotary brush sections there shown comprise channel shaped rings 1 in which bristles 2 are held by a wire 3, or like retaining means. For the purpose of fitting and supporting the sections on an arbor or mandrel, each such section is then mounted on the axially bent portions 4 of the arms 5 of the adapter shown in Fig. 4. Said adapter, as shown, comprises a web 6 having a flanged opening 7 for mounting on an arbor or mandrel (indicated by dotted lines in Figs. 1, 2 and 3) and arms 5 and 8, said arms 8 being bent to form axial portions 9 at a radial point equal to that of portions 4 but extending in an opposite direction. The brush section is prevented from sidewise movement by the upset ends 10 of arms 5. When but a single section is to be mounted as shown in Fig. 1, the portions 11 of arms 8 between notches 12 and 13 are bent outwards to embrace said section and the portion 14 may be cut off. The notches serve merely to render the bending more easy.

When, however, the adapters are employed to support a plurality of sections in interlocked relationship the portions 11 of arms 8 extend beneath the next adjacent section as shown in Figs. 2 and 3 and the ends 14 are upset to embrace said adjacent section.

It will be understood that these arms 11 may extend as far as may be desired to embrace a number of sections, but for most purposes it will be sufficient to engage merely the next section in succession.

As best seen in Figs. 4 and 5, there is ample space between the arms of the adaptor for passage of the axially extended portions of arms 8 of an adjacent adaptor. These same openings greatly aid in ventilating and cooling the brush in use and the web 6 may likewise be perforated or skeletonized to assist in this purpose. It is, of course, obvious that arms 5 and 8 could be bent axially immediately as they leave the web since a space equal to the thickness of the arms is all that is

required to permit the passage of arms 8 to embrace an adjacent section. Generally, however, the ventilating effect is desired and is further enhanced by the fact that the upset ends 10 and 14 of the arms 5 and 8 act as spacers between the sections permitting an outward flow of air drawn in through the spaces between said arms.

A brush may thus be built up of any number of sections, the adapter of the final one having the ends 14 cut off and the portions 11 upset as in the case of the individual section shown in Fig. 1. The completed brush may be secured on the arbor or mandrel by means of nuts, washers and locking-rings.

As illustrated in Figs. 2 and 6, end flanges of novel design are preferably employed in conjunction with the brushes of my invention to support the respective sides of such brushes on the mandrel. Such flanges may comprise unitary castings of a light metal such as an aluminum alloy having a centrally disposed opening 15 adapted to fit a mandrel and a plurality of apertures 16 located in an annular zone lying immediately within the channel base of the brush supported thereby. Such channel bases are supported on annularly disposed seats 17 on said flanges. It will be understood that one or more brush sections may be supported on the mandrel by said flanges, the latter being held tightly in position by means of large nuts threaded on the mandrel.

Among the advantages arising out of my invention are greater ease of brush assembly, low cost, lack of relative movement of brush sections, and continuous ventilation during use. When employing flanges as above described the apertures may desirably be so disposed as to be in alignment with the ventilating openings provided by the adapters.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

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

1. A rotary brush comprising a plurality of annular brush sections mounted on disc-shaped adapters, said adapters having peripheral section-supporting arms on one side serving to embrace adjacent sections, and said arms extending radially beyond the body of the adapter whereby ventilating openings are provided.

2. The combination with a rotary brush comprising a plurality of annular brush sections mounted on disc-shaped adapters, said adapters having peripheral section-supporting arms on one side serving to embrace adjacent sections, and said arms extending radially beyond the body of the adapter whereby ventilating openings are provided; of supporting flanges adapted to engage the respective sides of said brush, said flanges having apertures located in an annular zone aligned with the ventilating openings thus provided.

3. An adapter for mounting annular rotary brush sections on a mandrel or the like, comprising a body portion having a centrally disposed opening, a plurality of arms extending radially from said body portion, offset portions of said arms adapted to seat the inner periphery of an annular brush section, certain of said arms being offset in a direction opposite to the offsets of certain others of said arms, end portions of arms offset in one direction being bent substantially radially to embrace one side of such section, and arms offset in the other direction being of sufficient length to embrace at least one adjacent brush section.

4. An adapter for mounting annular rotary brush sections on a mandrel or the like, comprising a disc-like web portion having a centrally disposed opening therein, and section supporting arms extending radially from said said web portion, adjacent arms being axially bent in opposite directions to seat the inner periphery of an annular rotary brush section and the arms thus bent in one direction being further bent in a radial direction to provide stops for locating a brush section thereon.

5. A rotary brush comprising a plurality of annular brush sections, a plurality of disc-shaped adapters for mounting said sections on a mandrel or the like, offset arms on said adapters adjacent the peripheries thereof seating the inner peripheries of said sections, certain of said offset arms seating and embracing a plurality of sections.

6. An annular brush component suitable for mounting on a mandrel or the like, comprising a plurality of annular brush sections and a plurality of disc-like supporting members provided with extensions engaging the inner peripheries of two or more adjacent sections in staggered succession and embracing the sides of said sections to interlock the same.

7. An adapter for mounting annular rotary brush sections on a mandrel or the like, comprising a web portion, arms extending radially from said web portion adapted to engage one side of a brush section, and other arms extending radially from said web portion and then axially thereof to seat such section.

8. An adapter for mounting annular rotary brush sections on a mandrel or the like, comprising a web portion, arms extending radially from said web portion adapted to engage one side of an annular brush section, and other arms extending radially from said web portion and then axially thereof to seat such section and at least one adjacent section at their inner peripheries, the end portions of said other arms being turned radially to embrace such adjacent section.

9. A rotary brush comprising a web member adapted to be mounted on a mandrel or the like, arms extending radially from said web member adapted to engage one side of an annular brush section, other arms extending radially from said web member and then axially thereof, and a plurality of annular brush sections seated at their inner peripheries on such axial extensions, the end portions of such extensions being turned radially to cooperate with said first named arms to retain said sections therebetween.

10. An annular brush component comprising at least one annular brush section and at least one adapter for mounting said section on a mandrel or the like, said adapter comprising a body portion of sheet material having a centrally disposd opening through which such mandrel or the like is adapted to pass, and arms extending radially from said body portion and provided with axial offsets seating said annular brush section, said axial offsets being radially spaced from said body portion to provide openings between said body portion and said annular brush section for the passage of cooling air.

11. An annular brush component suitable for mounting on a mandrel or the like, comprising a plurality of annular brush sections, at least one

disc-shaped adapter having a centrally disposed opening through which such mandrel or the like is adapted to pass, and arms extending axially from adjacent the periphery of said adapter within the inner peripheries of said annular brush sections and embracing a plurality of said sections.

12. An adapter for mounting annular rotary brush sections on a mandrel or the like, comprising a disc-like body portion having a centrally disposed opening therein, and a plurality of integral arms spaced about the circumference of said body, alternate arms being offset laterally in opposite directions and then extending radially, whereby a clamping seat is provided for one or more such brush sections.

13. An adapter for mounting annular rotary brush sections on a mandrel or the like, comprising a disc-like body portion having a centrally disposed opening therein, and a plurality of integral arms spaced about the circumference of said body, certain of said arms being offset laterally a fixed distance to one side of said body and then extending radially outwardly, and intervening arms being offset laterally to the other side of said body, said last-named arms being formed for outward bending at successively spaced distances, whereby a clamping seat may be provided for one or more such brush sections, as desired.

14. A rotary brush comprising in combination an annular rotary brush section having a channel-form back with brushing material extending substantially radially therefrom, and annular side flanges adapted to be mounted on a mandrel or the like and engage the respective sides of said brush section, said flanges being provided with annularly disposed seats adapted to seat the inner periphery of said section and having apertures located in an annular zone lying immediately radially within said seats.

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