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ADAPTOR FOR BRUSH SECTIONS

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FIG. 1

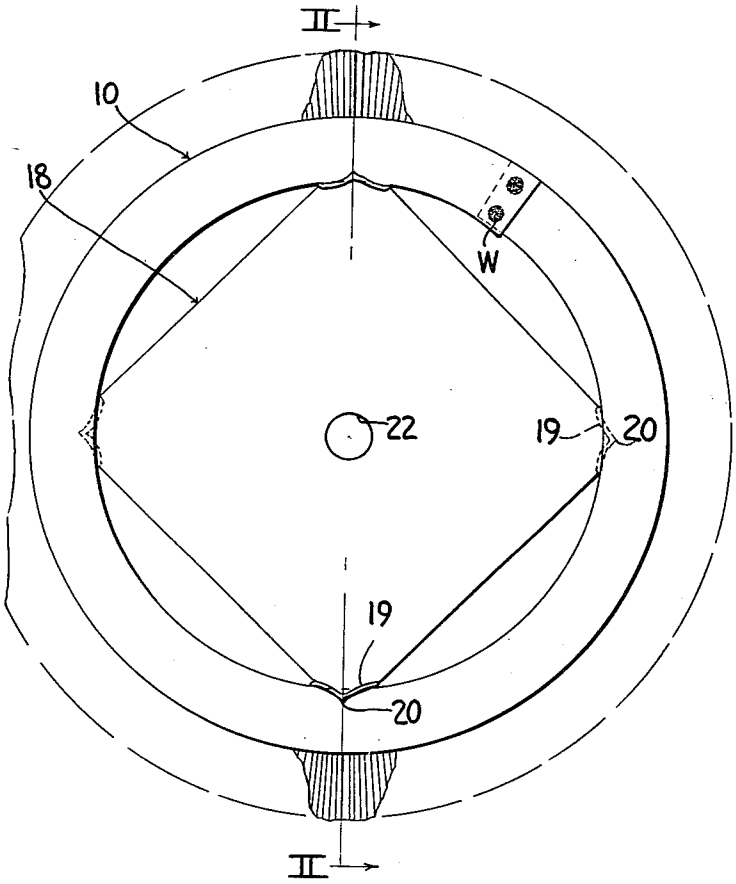
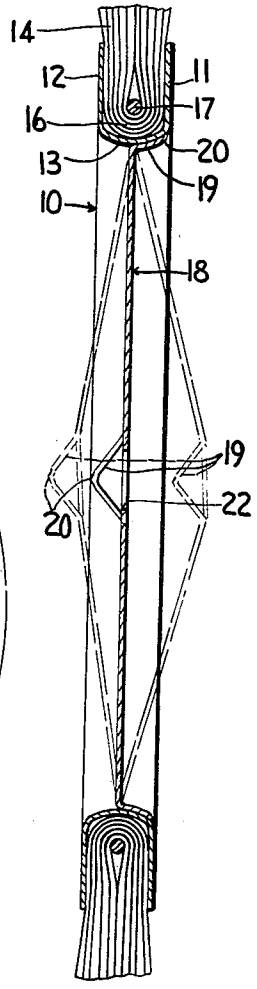


FIG. 2



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ADAPTOR FOR BRUSH SECTIONS

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This invention relates to adapters for centering and mounting rotary brush sections upon an arbor, and it has particular relation to the provision of an adapter which is very simple, yet effective in operation, which can easily be formed of available sheet metal with very simple equipment, and which can easily be caused to conform to fit substantially any size of arbor.

Annular, disc-like brush sections, one or a plurality of which may be strung upon an arbor to provide a driven brush, comprise channel backing rings having doubled fill material secured therein by an appropriate locking ring. One or a plurality of the sections are strung upon an arbor and are driven by a pair of opposed cheek plates threaded upon the arbor. The check plates firmly grip the section or sections to drive the same, but in order accurately to center the section, an appropriate adaptor must be provided.

Conventionally, such adaptors have comprised disc members of sheet metal or of fiberboard having openings formed therein and engaging the inner diameter of the channel backing element of the brush section or sections being held. Examples of such conventional constructions are contained in United States Patents 2,316,185 and 2,409,309. The fiberboard adaptors are relatively expensive to produce and do not hold the brush sections very securely during storage or shipment unless the backing rings are provided with stakes or tabs adapted to bite into or to grip the fiberboard.

The sheet metal adaptors are more effective, but are expensive to make and use. As conventionally constructed, they comprise a disc formed with a flanged center opening and peripheral tabs or lugs that can be bent radially outwardly to grip the channel backing ring of a brush section. Disadvantages of this sheet metal adaptor construction as heretofore employed reside in the fact that large amounts of expensive metal must be sheared away from a sheet in order to round the same and to provide the tabs or tangs engaging the channel backing ring of a brush section. Also, special dies must be provided in order to cut out the adaptor and these special dies must be duplicated for each size of brush section and each size of arbor. Still another disadvantage of the conventional sheet metal adaptor resides in the fact that only those tabs or tangs for one side of an adaptor can be prebent or shaped to conform to the diameter of a brush section. The tabs or tangs on the other side must be left incompletely bent so that the adaptor can be inserted in the section to be supported. Subsequently, those incompletely bent must be bent radially outwardly to engage the channel backing ring. This involves added operations and expense. Also, it would appear likely that the adaptors when once mounted would be thrown away with the worn-out brush section because of the impracticality of unbending the tabs to remove a used adaptor and then replacing the latter in a new section.

This invention comprises the provision of an adaptor for a brush section which can be cut from a strip or sheet of metal with little or substantially no waste, using a single set of standard shears for all sizes of adaptor and using simple bending equipment for shaping the adaptors to conform to the channel backing rings. As a further feature, the invention comprises the provision of an adaptor which, with simple shop equipment, can be made to conform in internal diameter to substantially any size of

arbor. As a still further feature, the invention comprises the provision of an adaptor which can be completely preformed and quickly and easily inserted in a brush section. Fundamentally, these effects are obtained by the provision of an adaptor which is formed as a simple rectangle, preferably a square of sheet metal which has its four corners angularly bent to conform to and seat within the inner perimeter of the channel backing ring of a brush section.

For a better understanding of the invention, reference may now be had to the accompanying drawings, wherein—

FIGURE 1 is a side elevational view of a brush section constructed in accordance with the provisions of the present invention.

FIGURE 2 is an edge elevational view of the brush section shown in FIGURE 1.

In the construction as shown, the brush section may be of conventional design and comprises a channel backing ring **10** having side walls **11** and **12** in substantially parallel relationship with respect to each other, the walls being connected at their inner perimeters by an intermediate or bottom portion **13**. Conventional doubled fill material, which may be of Tampico, synthetic fiber, wire, or any other appropriate material, as indicated at **14**, may be used. The bight portions **16** of the fill material are disposed within the channel and are held in place by a locking ring **17** formed of wire or other appropriate material.

The adaptor **18**, as shown in FIGURE 1, is rectangular and preferably is equilateral or square. It is formed of sheet material, usually metal such as aluminum, iron or steel, but it may be of plastic, plastic-impregnated fiberboard, plastic-impregnated glass fibers, and others. It may be sheared from a ribbon or tape of sheet metal, one stroke of the shear being sufficient to sever a given unit.

The corners of the unit are bent laterally, as indicated at **19**, substantially to conform to the connecting portion **13** of the channel backing ring. As will be observed, the tip portion **20** is slightly upwardly bent in order to engage the side wall portion **11**. The corners of the adaptor may readily be bent with conventional metal shaping equipment without the necessity of providing special dies for the operation. It is an advantage of this construction that by increasing or decreasing the amounts of the corners bent over, an adaptor formed of a rectangle of a given size may be made to fit a range of brush sections having different internal diameters. It will be observed in FIGURE 1 that the diagonally opposed corners are bent in the same direction and that the pairs of corners are bent oppositely so that the adaptor when seated in place is held from reasonable accidental forces tending to displace the same.

When an adaptor is to be inserted in a brush section, two of the diagonally opposed corners, for example, the upper and lower corners as illustrated in FIGURE 1, are pressed into position and provide pivots about which the other corners are swung. One of the other corners, for example, the one nearest the observer, projects outwardly from the plane of the brush section. The opposed corner, for example, the one to the right (in FIGURE 1), projects in the opposite direction to the plane of the channel backing ring. In order to seat the latter two horizontally opposed corners within the channel backing ring, the adaptor is merely rotated to bring the horizontally opposed corners into the median plane of the channel backing ring. The initial position is indicated by dot and dash line in FIGURE 2, the final position being indicated by the solid lines in the median plane.

In the operation, it will be apparent that one corner must pass within the inner perimeter of the backing ring. This requires a degree of pressure upon the corner of the adaptor. The pressure will stretch the channel backing

ring to slightly oval shape and allow the corner to snap into position. Also, there may be a certain degree of spring or bend in the bent corner. Furthermore, the body of the adaptor may be flexed slightly and this assists the snap action. Therefore, the corner will be caused to pass through the ring to the opposite side (the one nearest the observer) and will snap into position to hold the adaptor in place. If preferred, the corner passing through from one side to the other may be disposed just beyond the weld W. At this point, the radius is greatest and the corner will pass very easily. Then, if the adaptor is rotated slightly about its central axis, the corner will be brought closer to the inner perimeter of the ring.

The spaces between the edges of the adaptors and the inner perimeter of the backing ring allow cooling air to circulate within the unit when it is performing work, and thus helps to keep it cool.

It will be observed that the adaptor is provided with a central bore or hole **22** for an arbor. Preferably, this hole is simply punched or bored, and no peripheral flanges are provided thereabout. The hole may be bored to a relatively small diameter, for instance, to correspond to the smallest diameter of arbor to which the construction is likely to be applied. The hole **22** can subsequently easily be bored or reamed in order to conform to the diameter of any arbor to which the construction may be applied.

Friction of the corner portions **19** is usually sufficient adequately to maintain the adaptor in place in the brush section. However, if desired, the corners can be further secured by soldering, brazing, or welding. They may also be secured by a cement, such as an epoxy resin cement, or any other bonding agent.

The adaptors, in addition to being so easy to construct without waste of material, can be mounted in the sections with negligible loss of time. However, they still effectively center the units upon an arbor. If desired, an adaptor may readily be removed from a brush section and replaced by a new one. This is advantageous should it be desired to move the sections to arbors of different size. If a brush section becomes worn, or if another type of section is required, the adaptor can be removed and used with the replacement unit.

Although specific examples of the invention have been set forth hereinabove, it is not intended that the invention be limited solely thereto, but to include all of the variations and modifications falling within the scope of the appended claims.

I claim:

1. An adaptor for a brush section comprising a rectangular sheet of metal having preformed bent tabs on the diagonally opposed corners thereof, the tabs on diagonally opposed corners being bent in the same direction and one of the pairs of tabs extending in the opposite direction from the other pair, said tabs being resiliently constructed to permit the adaptor to snap into place within the inner perimeter of the channel backing ring of a brush section.

2. An adaptor for a brush section comprising a rectangular sheet of metal having preformed bent tabs on the diagonally opposed corners thereof, the tabs on diagonally opposed corners being bent in the same direction and one of the pairs of tabs extending in the opposite direction from the other pair, said tabs and sheet having sufficient spring action to permit the adaptor to snap into place within the inner perimeter of the channel backing ring of a brush section.

3. The adaptor of claim 2 wherein the rectangular sheet is an equilateral rectangle.

4. A brush section comprising a channel backing ring and fill material disposed within the ring and projecting radially therefrom, and an adaptor disposed within the channel backing ring and comprising a rectangular sheet of metal having preformed bent tabs on the diagonally opposed corners thereof, the tabs on diagonally opposed corners being bent in the same direction and one of the pairs of tabs extending in the opposite direction from the other pair, said tabs being resiliently constructed to permit the adaptor to snap into place within the inner perimeter of the channel backing ring of a brush section.

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