

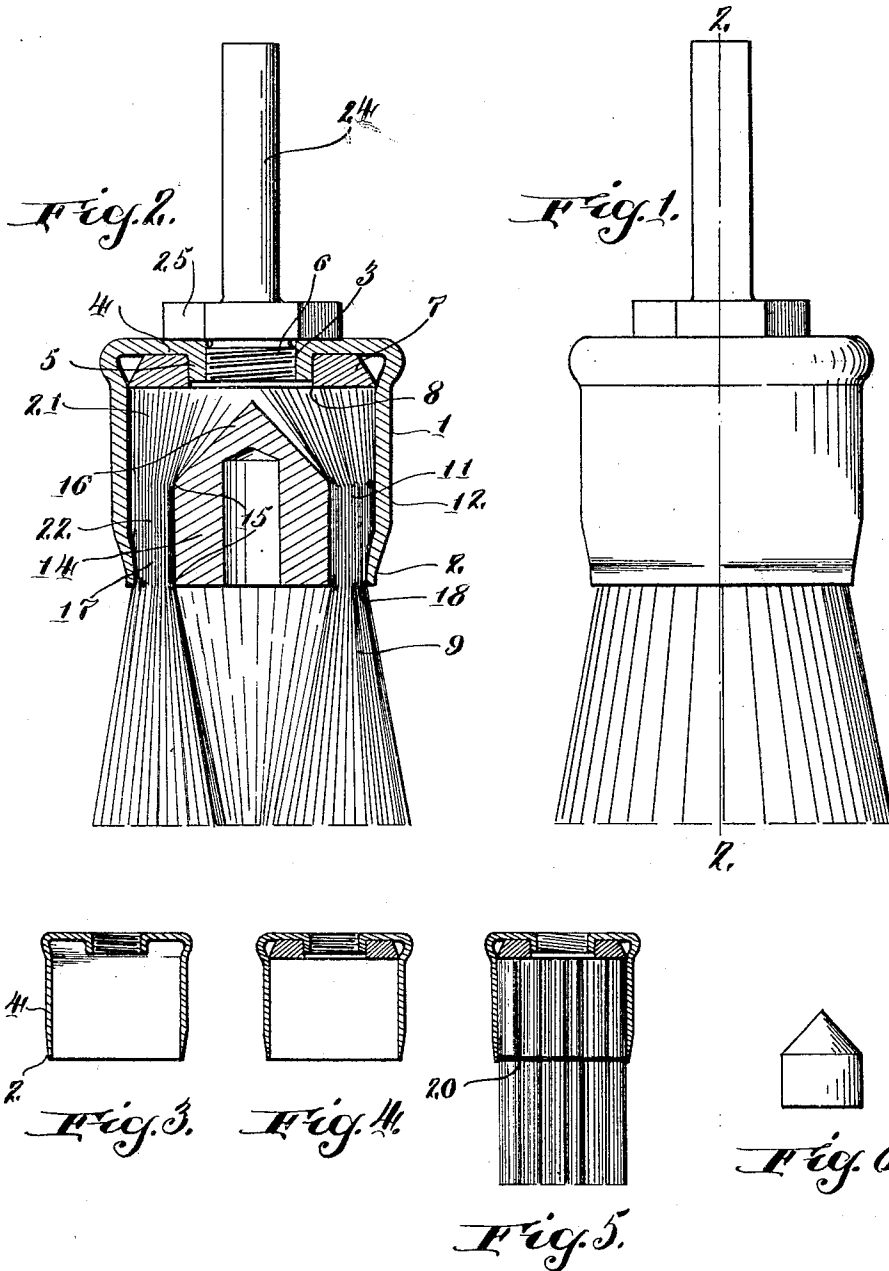
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METHOD OF MAKING A CARBON CLEANING BRUSH

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WITNESSES
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METHOD OF MAKING A CARBON CLEANING BRUSH

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The invention relates to a wire or similar brush particularly adapted for use in cleaning carbon from internal combustion motors and for other purposes. This brush has a very solid and rigid construction as to the base or body which holds the wires and is provided with a shank which is easily removed so that the brush portion can be replaced. This shank can be conveniently clamped in the chuck of a portable power driven tool as an electric drill whereby the brush is given a high speed rotary motion causing it to operate with the maximum of efficiency for the accomplishment of the purpose in hand.

Brushes used for this purpose are subjected to exceedingly hard and destructive wear, and up to the present time, in order to have them sufficiently substantial to resist for a reasonable length of time the wear to which they are subjected, it has been found necessary to make them of very substantial and expensive construction.

The object of the present invention is to devise a brush for this purpose which is sufficiently rigid and substantial to resist the wear to which it will be subjected in use, and which can be produced in large quantities at a very moderate cost.

While the improved structure is an important feature of the invention, the method of making the brushes is of equal interest. A brush embodying the features of the invention and the various parts thereof illustrating the different stages of manufacture in the practice of the method of the invention is shown in the accompanying drawing.

In the drawing:

Figure 1 is an elevation of the brush shown on an enlarged scale.

Figure 2 is a vertical central section on the line 2—2 of Figure 1 on the same scale.

Figure 3 is a section corresponding to Figure 2 showing the cup on a smaller scale and in an initial stage of construction.

Figure 4 is a section in the same plane as Figure 3 showing the cup complete and ready to receive the wires.

Figure 5 is a similar section showing the

cup with the wires in place but prior to securing them.

Figure 6 is an elevation of the plug which holds the wires.

Referring to the drawing by numerals, each of which is used to indicate the same or similar parts in the different figures, the carbon cleaning rotary brush structure as shown particularly in Figures 1 and 2 consists of a metallic cup 1, having the peripheral edges 2 surrounding the opening depending. This cup thus placed has a threaded hole 3 in the wall 4 which may be termed the bottom of the cup and which in the inverted position of the cup is the top wall, the opening being surrounded by a depending cylindrical flange 5, which extends into the inside of the cup and is internally threaded at 6. The depending cylindrical flange 5 is in the preferred form supported and enclosed by a flat washer 7 having a central opening at 8, surrounding and enclosing the cylindrical flange 5, the washer being of a thickness substantially equal to the width of the flange 5. This washer 7 fills the end of the cup surrounding the flange and serves as a stiffener for this portion of the brush body 16, the washer 7 fitting snugly in place. The brush fibres 9 which are preferably of spring wire are located with their ends 11 comprising almost half the length of the wires in the cup 1, parallel to the axis and arranged along the peripheral walls 12 of the cup. The wires are held in position in the cup in the preferred form of the invention by means of a plug 14, having a body portion 15, which is preferably of circular cross section and substantially cylindrical, and a tapered end portion 16, which serves to lead the plug as it is introduced into the cup in the center of the bristles which are forced outwardly by the plug, the latter being preferably hollow as shown. In the finished brush the wires or bristles are contained in the annular portion 17 between the outer surface of the body portion 15 of the plug and the wall portion 12 of the cup, and to hold the bristles in position the peripheral edge 2 of the cup is turned inward slightly at 18 to assist in holding the bristles in position.

In the production of the brush in accordance with the method of the invention, the cup 1 is formed of sheet metal with the hole 3 punched therein whereby the cylindrical flange 5 is turned up inside the cup. The hole including the inside of the flange is then threaded at 6. The flat washer C is next inserted in the cup and forced into the upper end, the opening in the washer at 8 fitting closely around the cylindrical flanged portion 5. The washer itself preferably fits the inside of the closed end of the cup so that it acts as a stiffener. Then the wire fibres or wires 9 are inserted in the cup which is deep enough to receive their ends for almost half the length of these members 9. The wires are preferably tied in bundles (see at 20 in Figure 5), and arranged along the inside of the cylindrical walls of the cup, providing for the entrance of the plug 14, which is then forced up in the cup at the center inside of the wires pressing them outward tightly against the cylindrical wall of the cup. The peripheral edge 2 of the cup is then preferably spun inwardly as indicated at 18, whereby the wires are held tightly between the plug and the cup, the upper ends of the wires 9 at 21 being deflected and spread over the pointed end of the plug, and thereby tightly retained, the spread of the wires above the plug contributing to the effect of the pressure at the periphery of the cup at 2, and to the holding action resulting from the confinement of the wires or wire bristles 9 between the walls of the cup and the cylindrical portion 15 of the plug at 22.

The spindle or shank 24 which is threaded at its lower end and provided with a flange or shoulder 25 above the thread is then screwed into the threaded hole 3 in the cup, affording a rigid connection whereby the brush may be mounted in the chuck of a portable drill or other power driven rotary tool, providing an exceedingly efficient method of operating the brush at a high speed for the removal of carbon and for similar purposes.

This method of construction gives an extremely rigid brush which can be produced in large quantities at a very moderate cost, and the brush thus manufactured resists for a long period the exceedingly hard wear to which it is subjected in operation. This use has, among other things, a strong tendency to pull out and remove the wires, and this tendency is most efficiently resisted in the construction shown and described. Also, the driving spindle or shank is easily replaced or transferred from one brush body to another, being at the same time rigidly mounted. I have thus described specifically and in detail a brush for carbon cleaning and for similar purposes, and the method of producing the same—the description being specific and in detail in order that the manner of constructing, operating and applying

the invention in the preferred form may be fully understood. However, the specific terms herein are used in a descriptive, rather than in a limiting sense—the scope of the invention being defined in the claims.

I claim:

1. The method of making a wire or similar brush which consists in forming a metal cup, punching a hole in the center of the bottom of the cup and then forming an inwardly projecting flange around the hole, forcing a washer into the inside of the cup surrounding the projecting portion, cutting a thread in the hole and setting the brush fibres in the cup, arranging them along the walls of the cup, forcing a plug having a tapered end into the center of the cup, whereby the brush fibres are pressed against the walls of the cup, and turning the peripheral edges of the cup inwardly against the bristles.

2. The method of making a wire brush for removing carbon and for similar purposes which consist in forming a metal cup with a hole in the center of the bottom, inserting a reinforcing member in the bottom of the cup surrounding the hole, placing brush fibres in the cup arranging them along the walls of the cup, and forcing a plug into the center of the cup whereby the fibres are pressed against the walls of the cup, and turning the peripheral edges of the cup inwardly against the bristles and securing a spindle in said hole.

Signed by me at Worcester, Mass., this 25th day of April, 1930.

ROBERT W. ELLINGHAM.