Oct. 25, 1955 H. L. BLYDENBURGH 2,721,348

ROTARY BRUSH

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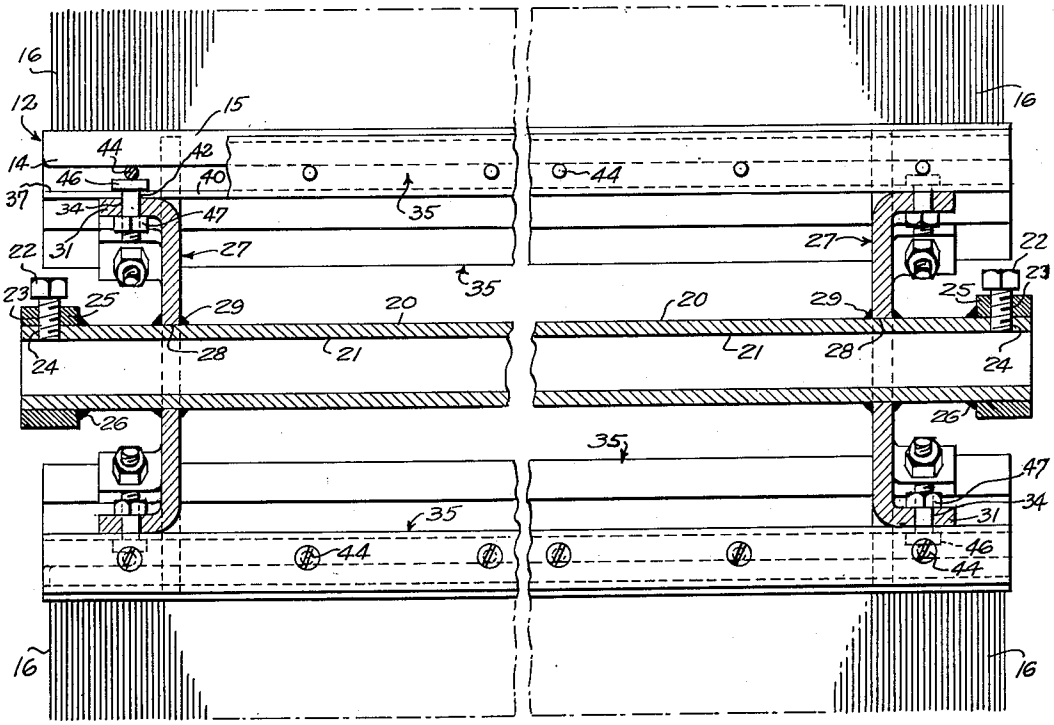


Fig. 2.

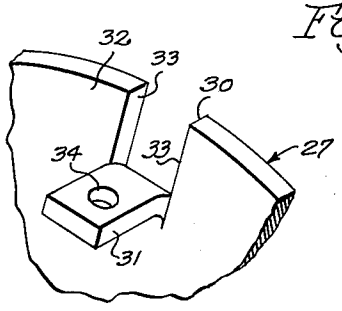


Fig. 3.

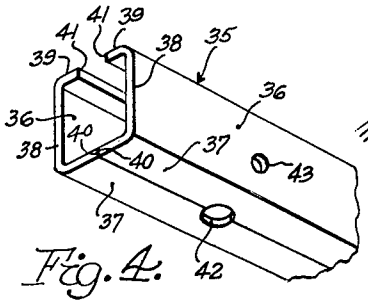


Fig. 4.

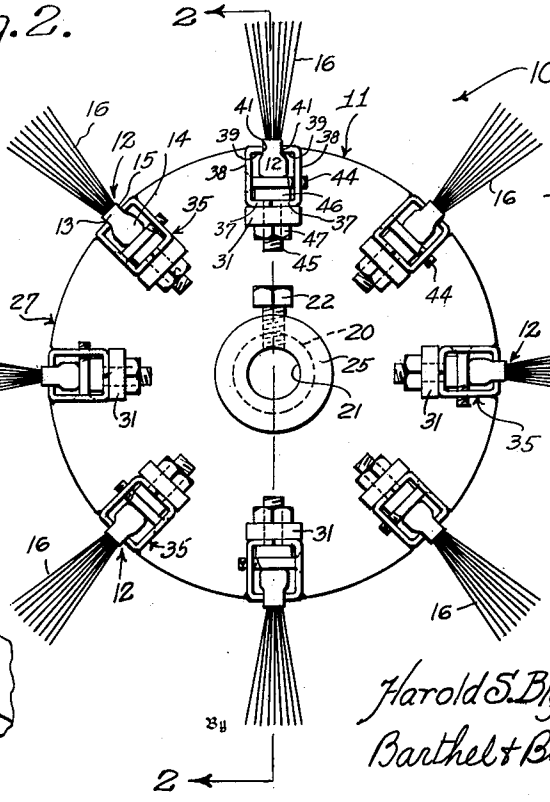


Fig. 1.

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ROTARY BRUSH

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1 Claim. (Cl. 15—183)

This invention relates to brushes and, in particular, to rotary brushes.

One object of this invention is to provide a rotary brush of easily manufactured parts which can be inexpensively made and assembled, yet which will, in assembly, be strong and rigid.

Another object is to provide a rotary brush having a brush carrier which is adapted to receive brush units and clamp them in position, the brush units being removable from the brush carrier so as to permit renewal and replacement of worn brushes.

Another object is to provide a rotary brush which is quickly and easily assembled in a power sweeper or other brush-utilizing machine and which has a brush carrier with a tubular hub through which a shaft may easily be pushed and inserted in a bearing bore on the opposite side of the machine without loss of time in lining up the parts.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawing, wherein:

Figure 1 is an end elevation of a rotary brush according to one form of the invention;

Figure 2 is a central vertical section taken along the line 2—2 in Figure 1;

Figure 3 is an enlarged fragmentary perspective view of a brush-holder-receiving notch and lug employed in the rotary brush of Figures 1 and 2; and

Figure 4 is a fragmentary perspective view of one end of the brush holder which is adapted to be employed with the construction shown in Figure 3.

Referring to the drawing in detail, Figures 1 and 2 show a rotary brush, generally designated **10**, consisting generally of a brush carrier, generally designated **11**, in which are inserted and clamped replaceable brush units **12**. Each brush unit **12** consists of an elongated bar-like back **13** having a wide base portion **14** and a comparatively narrow neck portion **15**, the back **13** having bristles **16** inserted and secured therein in an elongated row or series of rows.

The brush carrier **11** consists of an elongated tubular hub **20** having a central bore **21** for receiving a shaft (not shown) upon which the rotary brush **10** is supported and driven. A driving connection is established with the shaft by one or more set screws **22** threaded through aligned threaded holes **23**, **24** in a collar **25**, and the end of the tubular hub respectively, the collar **25** being welded or otherwise suitably secured to the hub **20**, as at **26**. As shown in Figure 2, the tubular hub **20** is provided with a collar **25** and set screw **22** at each end but more or fewer set screws may be employed, as desired.

Also mounted upon the tubular hub **20** near the opposite ends thereof, but spaced inwardly from the ends of the hub **20**, are discs or spiders **27** having central holes **28** for the passage of the tubular hub **20**, to which the discs **27** are secured as at **29** by welding or other suitable means. Each disc **27** is provided with a number of circumferentially-spaced peripheral notches **30** (Figure 3)

formed by cutting or stamping and bending a lug or tab **31** out of the rim portion **32**, leaving the side walls **33** of the notch **30** spaced apart from one another and with the lug or tab **31** disposed substantially at right angles to the plane of the disc **27**. A hole **34** for a bolt or other fastener is provided in each lug **31** and the lugs **31** of the two discs or spiders **27** face outwardly in opposite directions toward the ends of the brush carrier **11**.

Mounted upon the tabs or lugs **31** and held in the notches **30** are approximately channel-shaped brush holders, generally designated **35** (Figure 4), each brush holder consisting of a pair of elongated channel half members **36** facing toward one another. Each channel half member **36** has a high flange **37** along one edge of each web **38** and a low flange **39** along the other edge of the web **38**. The channel half members **36** are assembled with the opposite edges **40** of their high flanges **37** placed edge to edge so that a space separates the opposite edges **41** of the low flanges **39** through which the neck portion **15** the brush unit **12** may project. A fastener hole **42** is placed in the bottom formed by the brush holder **35** which is, according to the foregoing construction, approximately C-shaped in cross-section. The fastener holes **42** are placed at such distances apart as to align themselves with the fastener holes **34** in the lugs or tabs **31** of the discs **27**, thereby enabling the assembly and mounting of the brush holders **35** in the notches **30** of the discs **27**. The side walls **33** of the notches **30** are of such separations as to snugly receive the brush holders **35** and prevent them from separating. The channel members **36** of the brush holders **35** are provided with fastener holes **43** for receiving transverse fasteners, such as screws **44** (Figure 1) disposed at intervals lengthwise along the brush holders **35**.

In assembling the brush carrier **11**, the discs **27** are mounted at their desired separations on the tubular hub **20** and welded in position, after which the collars **25** are likewise welded in position outwardly of the discs or spiders **27**. The brush holders **35** are then inserted in the notches **30** of the two discs **27**, which are aligned with one another so that the brush holders **35** lie parallel to the axis of the hub bore **21**. Bolts **45** are inserted through the holes **42** and **34** (Figures 1 and 2) with their heads **46** lodged in the space between the webs **38**. Square-headed bolts are preferably used, and of widths substantially equal to the space between the inner walls of the web **38**, so that the bolt **45** is prevented from rotating by this means. A nut **47** is then threaded upon the shank of each bolt **45** to secure the brush holders **35** in assembly with the discs or spiders **27**.

The fastener holes **43** are so positioned above the bottom of the brush holder **35** that the fasteners **44** will pass immediately above the heads **46** of the bolts **45** and immediately beneath the backs **13** of the brush units **12**, with the neck portions **15** projecting through the gap between the channel flange edges **41**. The dimensions of the brush holder **35** are so chosen that the enlarged portion **14** of each brush back **13** fits snugly into the space above each transverse fastener **44** (Figure 1) without permitting the brush unit **12** to wobble or shift. The brush units **12** are inserted lengthwise within the brush holders **35** and clamped in position by the fasteners **44**, which pull the channel half members **36** and their flange edges **41** toward one another into tight clamping engagement with the neck portion **15** of the brush back **13**.

In assembling the brush **10** in the machine in which it is to be used, the brush carrier **11** is lined up so that the axis of the bore **21** corresponds approximately with the axis of the aligned bearing bores which are to support the shaft on which it is to be mounted and the shaft is then pushed through one bearing bore and through the hub bore **21** into the opposite bearing bore, after which

the set screws 22 are tightened to establish a driving connection. If desired, the shaft can be provided with the usual flat spots or recesses for receiving the ends of the set screws 22 in order to make a more perfect driving connection. The drive sprockets, gears, pulleys or other driving mechanism may then be connected to the projecting ends of the shaft.

In operation, the rotation of the shaft and the consequent rotation of the tubular hub 20 rotates the brush carrier 11 and causes the bristles 16 of the brush unit 12 to perform their brushing or sweeping functions by moving them through a cylindrical path. When the bristles 16 become worn, the brush units 12 may be removed by loosening the transverse fasteners 44, causing the edges 41 of the low flanges 39 of the brush holders 35 to disengage themselves from the neck portions 15 of the brush backs 14. The worn brush units 12 can then be slid out of the brush holders 35 and new brushes inserted in the manner previously described, and clamped in position by tightening the fasteners 44.

The brush unit 12 and brush holder 35 may also be inserted or removed bodily as a unit from the brush carrier 11. They may be removed merely by removing the nuts 47 from the square-headed bolts 45 and then lifting this assembly out of the slots 33 in the discs 27. A replacement assembly containing a new brush unit 12 in a brush holder 35 with its fasteners 44 and bolts 45 may then be inserted in place of the worn assembly by passing the shanks of the bolts 45 through the holes 34 (Figures 2 and 3) while guiding the assembly into the slots 33 in the discs 27, after which the nuts 47 are replaced upon the bolts 45. The positions of the fasteners 44 immediately above the heads 46 of the bolts 45 prevent the bolts 45 from being pushed upward while the operator is inserting the brush holder 35 into the slots 33 of the disc 27, and the square shape of the heads 46 prevents the bolts 45 from being rotated while tightening or removing the nuts 47.

What I claim is:

In a rotary brush, a carrier comprising an elongated hub having a pair of axially-spaced discs secured thereto, each disc having a plurality of circumferentially-spaced notches extending radially inwardly from the periphery thereof, the struck-out portions forming said notches being bent normal to the discs to form lugs, the corresponding notches in the spaced discs being disposed in alignment axially of the carrier, a channel-shaped brush holder disposed in each set of aligned notches and secured to said lugs by means of radially disposed fasteners, a brush having an elongated back disposed in each brush holder with the bristles thereof projecting radially outwardly, said brush holders being provided with inturned flanges along the edges of their channels, and fasteners disposed in said brush holders radially inwardly of said backs whereby said fasteners support said backs and when tightened draw said flanges into gripping engagement with said backs.

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