Dec. 4, 1962

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3,066,343

ROTARY POWER DRIVEN BROOM

Filed March 31, 1961

2 Sheets-Sheet 1

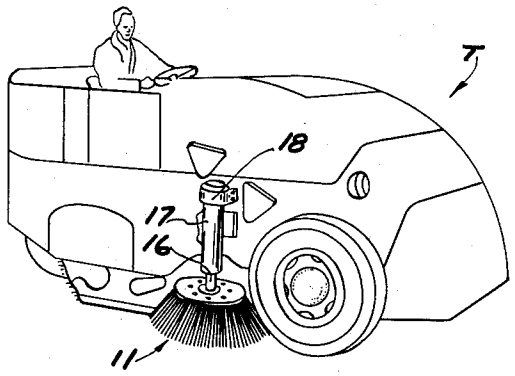


Fig. 1

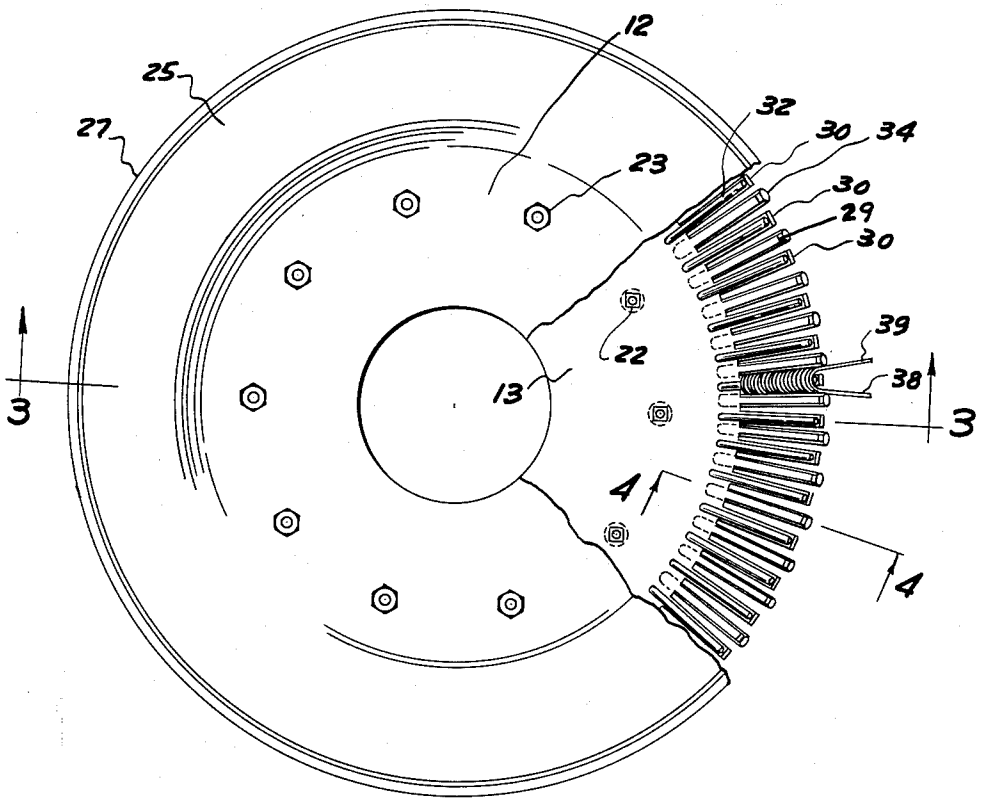


Fig. 2

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2 Sheets-Sheet 2

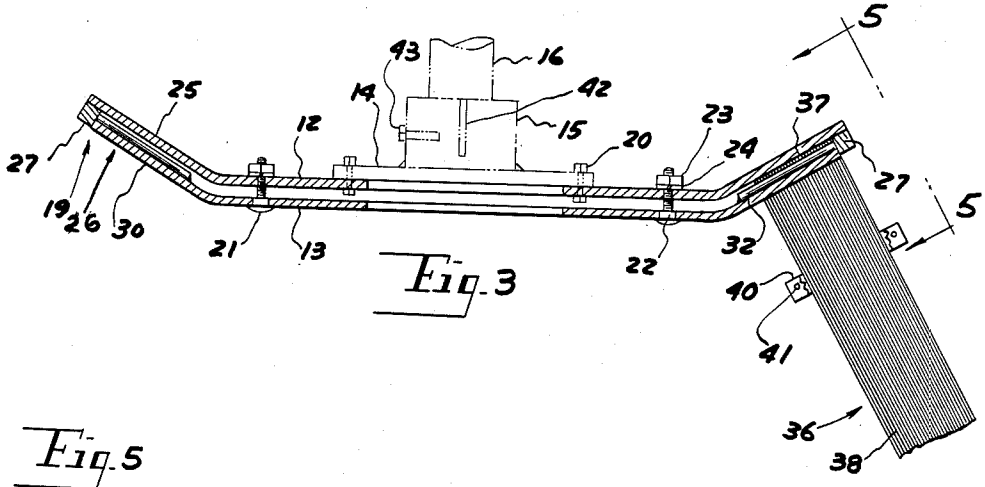
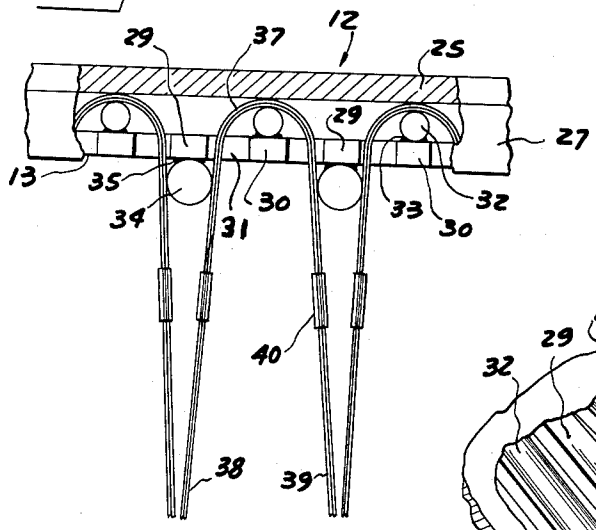


Fig. 3

Fig. 5



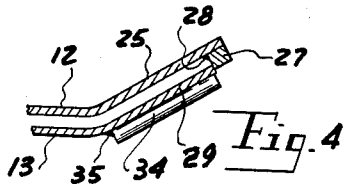


Fig. 4

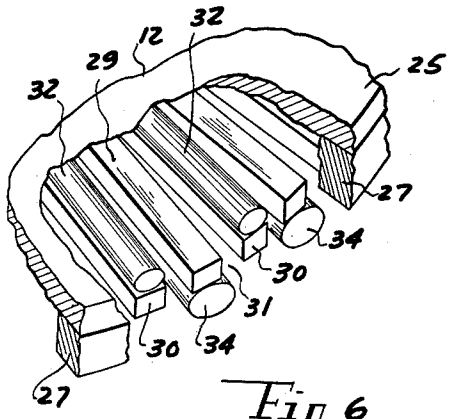


Fig. 6

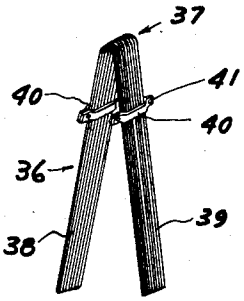


Fig. 7

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3,066,343

ROTARY POWER DRIVEN BROOM

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6 Claims. (Cl. 15—180)

The present invention relates to a rotary broom, and more particularly to a rotary power driven broom adapted for sweeping street gutters or the like.

Heretofore, various brooms of this type have been constructed, the difficulty always being in the method of mounting the bristles therefore and securing them in position and with means for expediting the removal of the bristles when the same are to be replaced.

It is an object of the present invention to provide an improved rotary broom structure with improved means for mounting the brush bristles and for securing the same in position and incorporating an improved assembly by which the bristles may be easily removed and replaced as desired.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawings in which:

FIG. 1 is a perspective view of an illustrative street sweeping truck mounting the present rotary broom and with means for effecting power rotation thereof.

FIG. 2 is a fragmentary plan view of the assembled bristle support disc and fins and retaining drive disc partially broken away for illustration, and on an increased scale with respect to FIG. 1.

FIG. 3 is a section taken on line 3—3 of FIG. 2.

FIG. 4 is a fragmentary section taken on line 4—4 of FIG. 2.

FIG. 5 is a fragmentary section taken on line 5—5 of FIG. 3.

FIG. 6 is a fragmentary perspective view of the bristle support disc with associated angular fins with a portion of the retaining drive disc broken away for illustration.

FIG. 7 is a perspective view of a bundle of bristles forming a part of the broom.

It will be understood that the above drawings illustrate merely a preferred embodiment of the invention, and that other embodiments are contemplated within the scope of the claims hereinafter set forth.

The present rotary broom is generally indicated at **11** in FIG. 1 as mounted upon a portion of a truck indicated at T, which truck includes an engine operated means for supporting and journaling the broom for power rotation in the manner hereinafter described.

The present broom assembly includes a rotatable retaining drive disc **12** and supportably suspended thereunder the bristle support disc **13**, said drive disc including a hub plate **14** secured thereto by fasteners **20**, and including a central apertured hub **15** adapted to receive and being effectively secured to the upright driven shaft **16** suitably keyed thereinto.

Shaft **16** is journaled through the upright fixed sleeve **17** which depends from the power transmission means **18** upon the truck T and with suitable connections not shown by which the shaft **16** journaled within the sleeve **17** is operatively connected to the vehicle engine for power rotation of shaft **16**.

As the present invention is primarily directed to the structure of the rotary broom, further description of the power driven means is omitted inasmuch as the power takeoff from the truck engine is conventional.

The drive disc **12** is adjustably secured to the bristle supporting disc **13** by a series of spaced fasteners such as the upwardly extending bolts **21** which are retained against rotation wtihin the disc **13** as at **22**, FIG. 3, and which extend up through corresponding apertures in drive

disc **12**, being effectively secured by the series of nuts **23** and associated lock washers **24**.

The bristle support disc includes around its periphery a series of spaced radially extending fins **30**, which are formed from the annular plate or flange **26**, which extends around the disc **13** and is inclined upwardly and outwardly with respect thereto at an obtuse angle, as best shown in FIGS. 3 and 4.

The rotary drive disc **12** includes an annular bristle hold-down flange **25** which extends around the said hold-down disc and is inclined upwardly and outwardly thereof corresponding to the inclination of the fins **30**, which in turn correspond to the inclination of the flange or plate **26** from which the said fins **30** are formed.

As hereafter described, and in the preferred embodiment of the invention, the bundle **36** of metal wire bristles, such as shown in FIG. 7 is mounted over each of the fins **30** and in the assembled relationship shown in FIG. 3 retained thereon by the annular retaining ring **27**. This ring depends from the undersurface or peripheral edge of the hold-down flange **25** and abuts as at **19** the outer ends of the respective fins **30** for the purpose of securing said bristles against radial outward displacement.

The retaining ring **27** secured to the undersurface of the hold-down flange **25** as by the weld indicated at **28** is the preferred means of assembly. A radial outwardly extending and similarly inclined spacer **29** is arranged between each pair of fins **30**, as best illustrated in FIGS. 5 and 6, thus providing the series of outwardly opening radially extending slots **31**, by which the bundles of bristles are assembled over the said fins **30**.

A rod **32** longitudinally overlies each of the said fins **30** respectively and is secured thereto as by the welds **33**.

Additional spacer rods **34** with slightly increased diameter with respect to rods **32** longitudinally underlie each of the above described spacers **29** along their length and are effectively secured thereto as by the welds **35**. The rods **34** cooperate with the spacers **29** and are respectively registerable with the leg portions of the adjacent bristles forming a part of the bundle of bristles **36** mounted over each of the above described fins **30** and associated rod **32**, as best shown in FIG. 5.

The bundle of bristles above described is specifically shown in perspective in FIG. 7. Each of the above described fins **30** and associated rod **32** serve as a means for supporting one or more bundles of bristles. In the preferred embodiment of the invention, the bristles of a single bundle may be so constructed as to occupy the full length of the fins **30**, if desired.

Such a single bundle is shown in FIG. 7 and consists of a plurality of thin bank-like strips of spring-like steel or other metal of similar quality. While the illustration in the drawing, FIG. 5 and FIG. 7 shows, or appears to be a series of bristle elements forming a single layer, it is contemplated that the bristles may be arranged in a series of layers, such as one or two layers, for illustration.

Strips of stock, all of the same length are first laid laterally in a row, with each bristle element, including a looped portion **37** and a pair of depending legs **38** and **39** of the same length. An individual strip formed into a bristle may have thereover a plurality of additional strips to form the multiple layer as a unit. A number of these units are assembled in side by side relation so that each of the legs of one unit lie in a plane substantially corresponding to all the other like legs of the other units. Thereafter all the legs corresponding to one plane in one unit to one side of the assembly are clamped together by the cross strips **40** arranged upon opposite sides of leg portions of the adjacent units with their ends respectively secured together as at **41**, as by welding or

by bolts, to thus keep the units in a proper alignment, as shown in FIG. 7.

Accordingly with such an assembly, it is relatively simple matter to mount the whole assembly **36** over a particular fin **30** and associated rod **32**. If the bundle is of sufficient width, a single bundle only is employed over the fin **30—32**. On the other hand, it is contemplated that the bundles may be mounted on the fins in a series so as to straddle the fin throughout its length with the looped portions **37** of each of the units of the bundle fitting over the upper surface of the rod **32**, which overlies the particular fin **30**, as best shown in FIG. 5.

In the preferred embodiment of the invention, the bundles **36** are shown as being constructed of spring steel or like resilient metal.

It is contemplated as a part of the present invention that the bundles may be constructed of a plastic material or may be of straw or other equivalent bristle material, depending upon the desired purpose for which the broom is to be used.

Suffice to say, however, that the particular bundle of bristles **36** includes the looped portion **37** and wherein the respective leg portions **38—39** are retained in a unit by means of the clamps **40—41**. Upon assembly of the respective bundles **36** over the fins **30—32**, the rotatable retaining drive disc **12**, and including the annular bristle hold-down flange **25**, is juxtaposed over the bristle supporting disc **13**, and in the assembled relationship shown, it is seen that the annular retaining ring **27** is in registry with the end portions of the respective fins **30**, as particularly shown in FIGS. 3 and 4 for securing the bundles of bristles upon the said fins against radial outward displacement and completing the assembled structure, after which the bolts and nuts **21—23** are fixedly secured together so that the plates maintain the assembled relationship shown, FIG. 3.

The assembled broom, as generally indicated at **11**, in FIG. 1 and including the apertured hub **15**, suitably receives and is keyed to the power driven shaft **16**, as at **42** and is otherwise secured in position to thus establish an effective drive between the power driven shaft **16** and the rotatable drive disc **12**. A suitable set screw or retaining bolt **43** may be employed, as shown in FIG. 3, if desired, for fixedly retaining the hub **15** with respect to shaft **16**.

The present construction, in view of the inclined fins **30**, as an extension of the bristle support plate or disc **13** provides a very effective means for predetermining the outward angularity of the respective bundles of bristles **36**, as shown in FIGS. 1 and 3.

Accordingly, the present assembly, including the similarly inclined hold-down flange **25**, which forms a part of the drive disc **12**, serves the important function of anchoring the respective bundles of bristles **36** and at the same time predetermining the flaring or outward angularity achieved, as particularly shown in FIGS. 1 and 3.

There are additional advantages in the present construction in the ease by which the brush is initially constructed and requiring merely the mounting of the loop portions **37** of the particular bundles of bristles **36** over the respective fins after which the drive and retaining plate **12—25** is juxtaposed and secured by the respective bolts **21** and nuts **23**.

As the bristles wear from time to time and require replacement, it is a relatively simple matter in view of the present construction to accomplish this result. All that is necessary is to merely loosen the nuts **23** around the disc **12**, which permits the bristle mounting disc to drop downwardly to such an extent that the retaining ring **27** no longer blocks the ends of the fins **30**. This means that the bristles in the respective bundle **36** may be easily displaced radially outward for the removal and replacement of new bristles as desired.

It is also contemplated as a part of the present invention that with the assembled plates **12** and **13** loosened by loosening of the nuts **23**, the said plate **13** dropping down sufficiently on the application of power to the top plate **12**, the respective bundle of bristles may be automatically removed from the support disc by centrifugal force, inasmuch as the retaining ring **27** is out of the way when the nuts **23** have been sufficiently loosened.

Having described my invention, reference should now be had to the following claims.

I claim:

1. In a rotary broom, a support disc, a series of spaced radial fins extending therearound inclined upwardly and outwardly thereof, a plurality of bristles, each being bent in a hairpin shape to include a looped portion and legs extending therefrom, said bristles straddling a respective fin and extending downwardly and radially outward, a rotatable retaining drive disc spaced above the support disc and adjustably secured thereto, an annular bristle hold-down flange extending around the drive disc and inclined upwardly and outwardly thereof corresponding to said fins retainingly engaging the looped portions of said bristles, and an annular retaining ring depending from the peripheral edge of the hold-down flange abutting the outer ends of said fins securing said bristles against radial outward displacement.

2. In the rotary broom of claim 1, said fins being inclined at an obtuse angle to said support plate.

3. In a rotary broom as set forth in claim 1, the adjustable securing of said drive disc to said support disc including a series of spaced bolts anchored on said support disc and extending upwardly through said drive disc, and nuts on said bolts whereby on loosening of said nuts said support disc and fins drop below said retaining ring facilitating outward withdrawal of said bristles from said fins.

4. In a rotary broom as set forth in claim 1, the adjustable securing of said drive disc to said support disc including a series of spaced bolts anchored on said support disc and extending upwardly through said drive disc, and nuts on said bolts whereby on loosening of said nuts said support disc and fins drop below said retaining ring facilitating outward withdrawal of said bristles from said fins, power rotation of said support disc effecting centrifugal displacement of said bristles from said fins.

5. In the rotary broom of claim 1, a radial similarly inclined spacer between each pair of fins, a cylindrical rod longitudinally overlying each fin along its length and secured thereto, over which the looped portions of said bristles extend.

6. In the rotary broom of claim 1, a radial similarly inclined spacer between each pair of fins, a cylindrical rod longitudinally overlying each fin along its length secured thereto, over which the looped portions of said bristles extend, and a cylindrical spacer rod longitudinally underlying each spacer along its length and secured thereto, registerable with bristle leg portions on adjacent fins.

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