Sept. 30, 1958 C. T. LINK 2,853,729

STREET SWEEPER SIDE BROOM ASSEMBLY

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Fig. 1

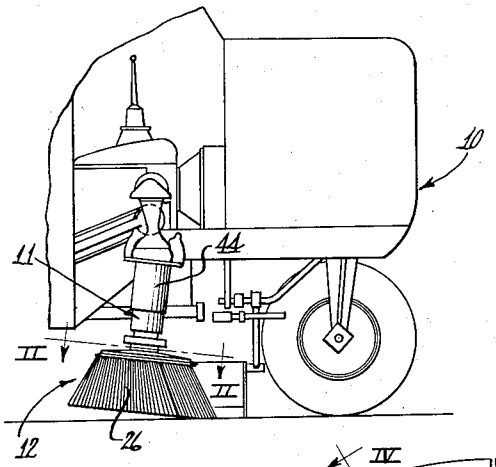
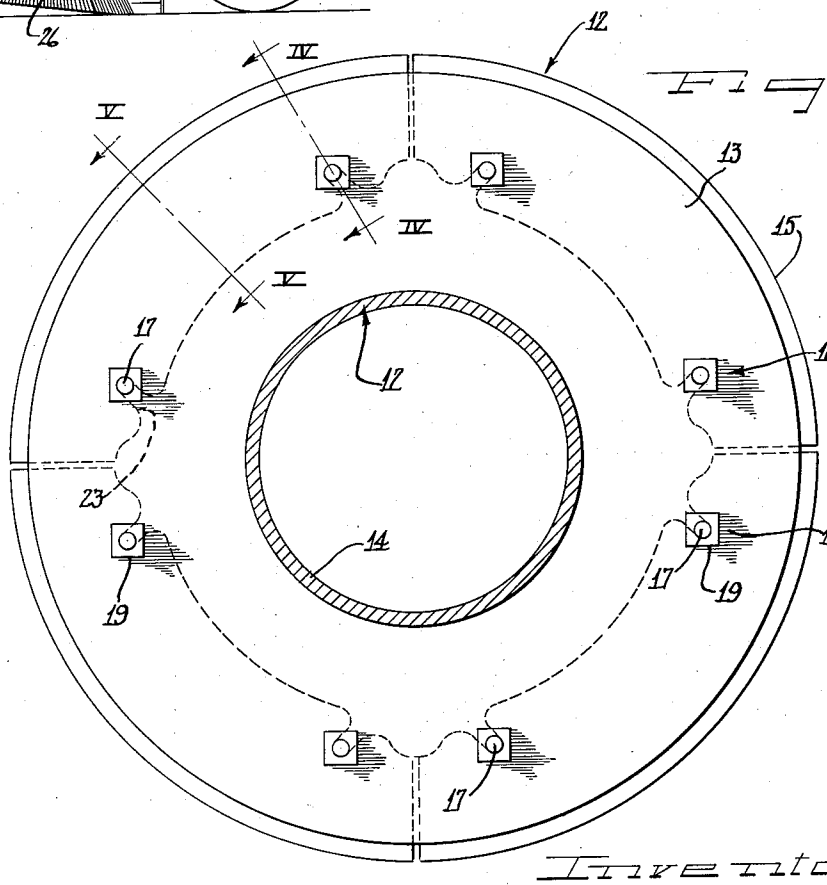


Fig. 2



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Fig. 3

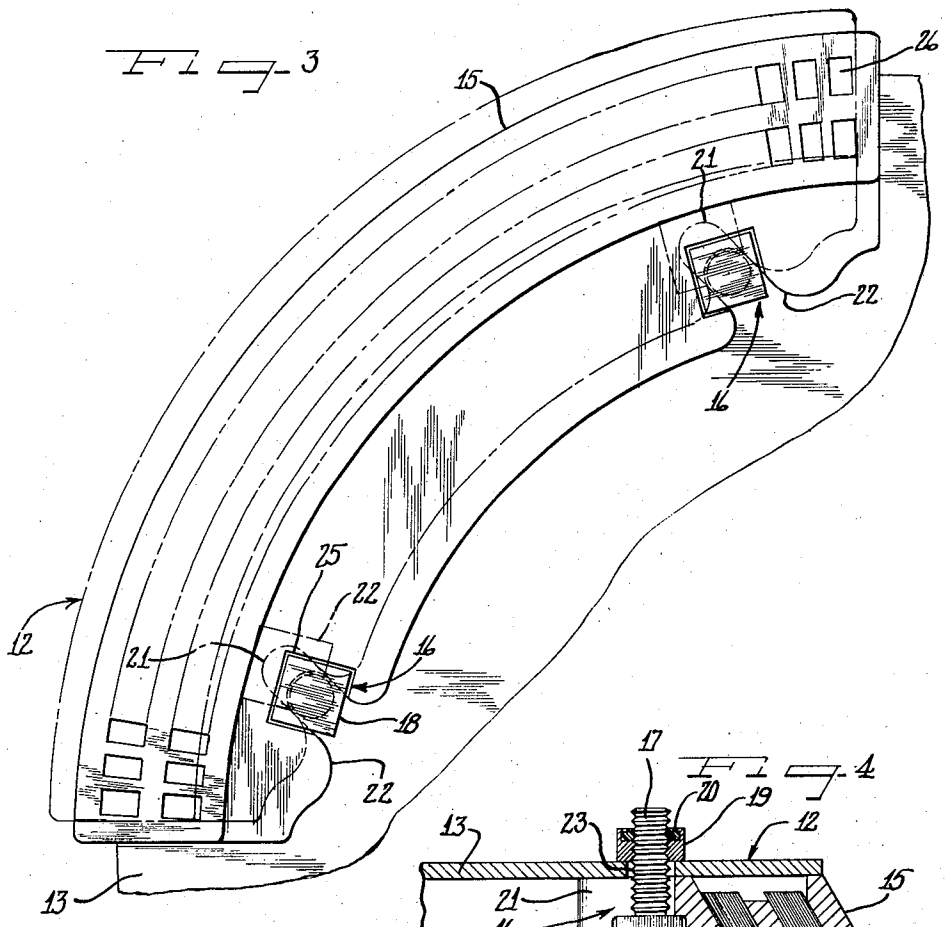
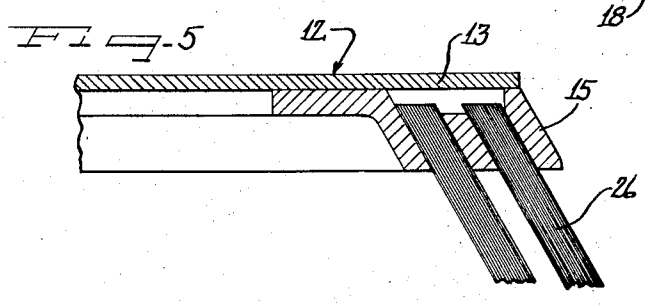


Fig. 4

Fig. 5



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STREET SWEEPER SIDE BROOM ASSEMBLY

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Application April 20, 1953, Serial No. 349,780

3 Claims. (Cl. 15—180)

This invention relates to a brush structure and more particularly to a street sweeper side broom assembly.

In the past, in the use of segmental type brushes wherein arcuate segments are movable radially inwardly on a common supporting member and then fastened thereto, considerable difficulty has been experienced in manipulating the fastening means. Usually the fastening means or bolts extend transverely of the broom and the supporting member and have detachable nuts accessible from the underside of the brush through the bristles of the segments. It will be appreciated that with such a construction it is difficult to get to the nuts and bolts through the bristles for turning the same and this is especially true after long usage and clogging of the bristles of the brush segments.

Accordingly, it is the aim of this invention to provide an improved form of fastening means which not only serves the purpose of securing the brush segments to the supporting member but more important in addition constitutes guide studs for guiding each segment radially into proper circular aligned position with the adjoining segments going to make up a circular brush.

I also propose to provide a combination guide and fastening means for broom brush segments accessible from the top of the broom segments rather than from the underside and through the bristles so that the assembly and disassembly of the segments on a common supporting member is greatly facilitated.

It is, of course, to be understood that while my invention is especially adapted for use in conjunction with brooms, such as the side brooms of a street sweeper, it may be used advantageously in any segmental type of brushing, polishing or abrading element and for that reason when I use the term "brush" hereinafter and in the claims I am using it in a broad sense inclusive of such applications.

In accordance with the general features of this invention, there is provided in a brush construction adapted for use in a street sweeper and the like a supporting member having a series of transversely extending guide studs arranged generally in a common circle, a series of arcuate brush segments, each being movable on the member generally radially with respect to the circle and each having at least two circularly spaced apertures into each of which a portion of the stud is received when the segment is moved generally radially and at right angles to the studs for guiding the segment into position on the supporting member and means for securing the segment in engaged position with the stud and to the supporting member.

Another feature of the invention relates to providing each of the foregoing studs with a shouldered section and each of the apertures in the arcuate brush segment with a shouldered area for engaging the shouldered section on one side of the supporting member.

Still another feature of the invention relates to providing the fastening means in the form of a series of

elastic stop nuts, one for each stud, and each of which is in threaded engagement with an end of the stud on the top side of the supporting member and which upon turning also turns the stud to bring the shouldered stud section in alignment and register with the shouldered area of the adjoining segment aperture whereby upon entry of the section in the area further turning of the stud is arrested and continued turning of the stop nut tightens the segment laterally against the supporting member.

Other objects and features of this invention will more fully appear from the following detailed description taken in connection with the accompanying drawings which illustrate a single embodiment thereof and in which:

Figure 1 is a fragmentary side view of a portion of a street sweeper having a side broom equipped with the features of this invention;

Figure 2 is a sectional view taken generally on the line II—II of Figure 1 looking downwardly and showing the segments circularly aligned with each other and fastened to the supporting member;

Figure 3 is an enlarged fragmentary view looking upwardly from the bottom of the broom at one of the segments and showing by dotted lines the position of the segment prior to its being moved radially into engagement with the guide and retaining studs;

Figure 4 is an enlarged fragmentary cross-sectional view taken on substantially the line IV—IV of Figure 2 at one of the guiding and retaining studs; and

Figure 5 is a fragmentary cross-sectional view similar to Figure 4 but taken generally on the line V—V of Figure 2 between spaced guide studs of the segment.

As shown on the drawings:

The reference character **10** designates generally one end of a street sweeper which includes the customary side broom assembly **11** rotatably carried by the vehicle. This side broom includes a brush assembly **12** embodying the features of this invention.

This brush assembly **12** is of the so-called segmental type and includes a supporting member or plate **13** suitably secured to the rotating drive tube **14** of the side broom **11**. On the underside of this plate **13** is disposed a series of arcuate or circular brush fiber supporting segments **15**. Any desired number of segments may be used, such, for example, as four here illustrated, and since the segments are identical a description of one will suffice for all.

The segments **15** are secured in circular or annular alignment on the underside of the member **13** by means of a series of identical bolt and nut assemblies designated generally by the reference character **16**. I preferably use at least two of said assemblies for each segment spaced apart circularly from each other as is clearly evident from Figure 3.

Each of these assemblies embodies a threaded guide stud **17** having a squared section or head **18** at one end and a so-called elastic type stop nut **19** which comprises the actual retaining or fastening means. The stud extends transversely of the plate **13** and depends therefrom with its squared head **18** lowermost. The stop nut **19** is on the upper or top side of the plate and is of a conventional elastic type in that it includes a rubber ring **20** for frictionally engaging the thread of the guide or bolt stud **17**.

The segment **15** is in the form of an annulus and is provided with a pair of circularly aligned apertures **21** opening radially inwardly through a flared mouth **22** (Fig. 3). This flared mouth is in the radially inner edge of the segment and is adapted to assist in guiding the segment to the studs. Also, the plate or member **13** must be provided with a series of circularly spaced trans-

verse holes 23 (Fig. 4) and adapted to have the studs 17 extend therethrough. A portion of the aperture or opening 21 is enlarged and shouldered or squared as best indicated at 25 in Figure 3. In other words, this squared area or shouldered socket portion 25 is generally complemental to the shouldered or squared section or head 18 of the guide stud 17. As a consequence, when the head 18 is in the squared area 25, turning of the bolt is arrested.

It will also be perceived that the ring has embedded in it, in a conventional manner, bristles or abrading elements 26 which may be of any suitable number or construction.

It will also be noted that the studs 17 for all of the segments, as best shown in Figure 2, are arranged generally in a common circle so that when all of the segments are in retained cooperation therewith the segments will be generally arranged in the form of an annulus.

In the assembling of my broom 12, each segment is first positioned in the dotted line position shown in Figure 3. Upon manual movement of this segment from the dotted line position radially inwardly toward the common circle of the studs 17, the openings or apertures 21 in the segment will receive portions of the studs 17, which studs are generally at right angles to the segment. Then, by turning the elastic stop nuts 19, the studs 17, by reason of the frictional action of the rubber rings 20 of the nuts, will turn with the nuts. In this manner, the lower head end 18 of the stud can be brought into register with the squared area 25 of the aperture and received therein. When this engagement occurs, further turning of the stud 17, upon turning of the stop nut 19, is arrested so that thereafter continued turning of the stop nut 19 tightens the segment 15 against the supporting plate 13.

Inasmuch as the stop nuts 19 are accessible from the top of the brush rather than from the bottom, it is, of course, very easy to manipulate the same which was not true in the past when the nuts were disposed on the lower end of the fastening means inside of the bristles 26.

Now, when it is desired to remove a segment 15 from the plate 13, the same may be easily effected by loosening the stop nuts 19 and by thereafter moving the segment radially out of engagement therewith and from underneath the plate 13. In this arrangement, the studs not only assist in the fastening of the segments to the plate 13, but also serve to guide the segment into position and into proper circular alignment with the adjoining segments. In previous constructions, this has not been possible since the segments had to be positioned manually and aligned with the apertures in the plate 13 before the bolts could be inserted.

It will be noted that all that is required to disassemble the plate 13 from the brush segment 15 is to loosen lock nut 19 whereupon the stud head drops out or may be disengaged from the squared area 25, and thereafter, the brush segment may be moved radially outwardly out of assembly with the plate. When out of assembly, the bolt 17 and nut 19 assembly merely rests on top of the plate 13. To assemble either an old or a new brush segment 15 with the plate 13 all that need be done is to move the segment radially inward with the open mouths of the openings 21 allowing the bolt shanks to enter freely therein. At this point the brush segment is loosely carried on the plates. Then upon turning of the lock nut the plate and brush segment are progressively tightened together. Then when locking means of the lock nut engages end threads of the bolt it causes the bolt to turn therewith.

After the bolt has turned so that the squared head is in alignment with the socket in the segment, the segment of course drops down to the position in which the socket engages the squared head of the bolt and prevents further turning of the squared head bolt. The lock nut may then be tightened with the aid of a wrench to the proper degree of tightness. Commonly, such a nut would have to be held rigid by a wrench going up underneath and through the wire brush which is most awkward.

If an ordinary hexagon or square nut is used in place of the lock nut it is usually necessary to move the bolt around a bit by hand in order to cause the square head to engage the socket. Sometimes this is quite easily done but sometimes it is extremely difficult. When a lock nut is used however, this inconvenience and annoyance is avoided and the operation of attaching brush segments to the plate or disk becomes extremely simple and convenient.

I claim as my invention:

1. In a brush assembly adaptable for use in a street sweeper, a circular supporting member supportable for rotation about its axis by a shaft extending from one side of the member, a series of arcuate segmental brush fiber supporting elements supportingly engageable in annular coaxial relation with the opposite side of said member, and means for removably attaching said elements to the member including headed bolts carried by said member with the heads on said opposite side and radially inwardly opening apertures in said elements and having mouths opening from the inner edges of the elements and receptive of said bolts by radially inward assembly movement of the elements toward said axis, said bolts having nuts thereon accessible on said one side of said member for drawing up the bolts and said heads to secure said elements in place on the member, said elements having means adjacent to said apertures engageable with the bolt heads to hold the bolts against turning during said drawing up.

2. In a brush assembly adaptable for use in a street sweeper, a circular supporting member supportable for rotation about its axis by a shaft extending from one side of the member, a series of arcuate segmental brush fiber supporting elements supportingly engageable in annular coaxial relation with the opposite side of said member, and means for removably attaching said elements to the member including angularly headed bolts carried by said member with the heads on said opposite side and radially inwardly opening apertures in said elements and having mouths opening from the inner edges of the elements and receptive of said bolts by radially inward assembly movement of the elements toward said axis, said bolts having nuts thereon accessible on said one side of said member for drawing up the bolts and said heads to secure said elements in place on the member, said elements having generally aligned with said apertures angular shouldered sockets generally complementary to the angular shape of the bolt heads and within which sockets the bolt heads are engageable to hold the bolts against turning during said drawing up.

3. In a brush assembly adaptable for use in a street sweeper, a circular supporting member supportable for rotation about its axis by a shaft extending from one side of the member, a series of arcuate segmental brush fiber supporting elements supportingly engageable in annular coaxial relation with the opposite side of said member, and means for removably attaching said elements to the member including headed bolts carried by said member with the heads on said opposite side and radially inwardly opening apertures in said elements and having mouths opening from the inner edges of the elements and receptive of said bolts by radially inward assembly movement of the elements toward said axis, said bolts having friction lock nuts thereon accessible on said one side of said member for drawing up the bolts and said heads to secure said elements in place on the member, said elements having means adjacent to said apertures engageable with the bolt heads to hold the bolts against turning during said drawing up, and thereby enabling turning of the friction lock nuts relative to the bolts until tightening has been completed.

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