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(54) Improved brush assembly

(57) The invention concerns a strongly improved brush assembly consisting of a disk (1) with pick-up recesses (2) for the bushes (3) of the separate sweep constructions (4), after which a stopping device (6) is applied with a conical bottom side of the flange, through which the mentioned sweep constructions (4) make an angle a of approximately 30 degrees with the disk (1) of the brush assembly, in which for easy loosening and mounting the mentioned pick-up recesses (2) and the mentioned bushes (3) are constructed conically under an angle β of approximately 2 degrees, through which on a very inventive and surprisingly way a wear-resistant brush assembly is created, that can also easily and very fast be provided with new bushes (3) with sweep constructions (4), which works very pleasantly for users of street sweepers.

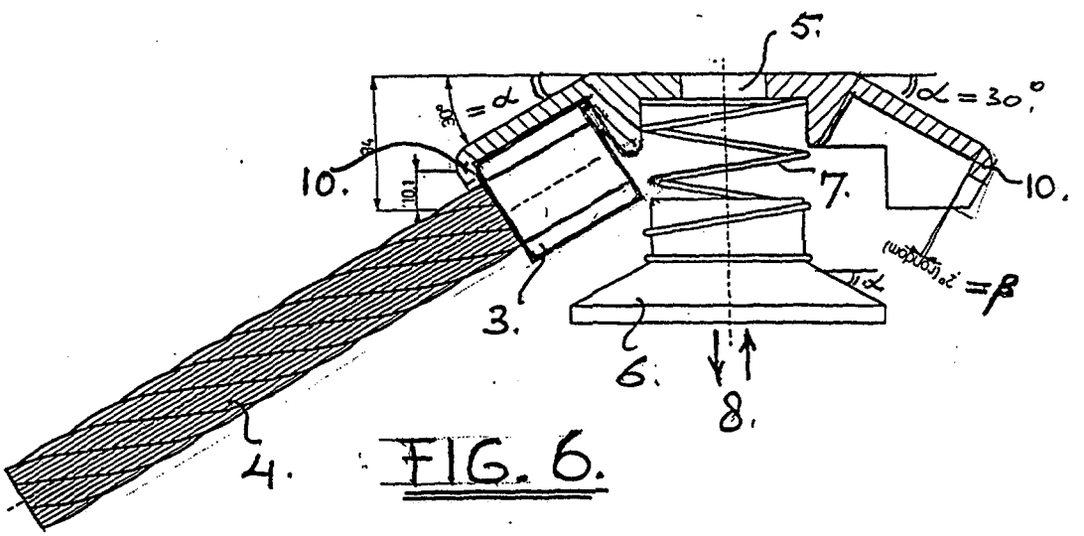

FIG. 6.

EP 1 457 133 A1

Description

[0001] The present invention relates to a device constructed as brush assembly for mounting underneath a street sweeper for mainly cleaning paved surfaces, which brushing assembly consists of a central mounting bore, weight-saving and pick-up recesses, in which in mentioned pick-up recesses a bush with sweep construction can be mounted, in which the mentioned sweep construction is shaped as a bundle of threaded wires or threaded stranded wires, such as, for example, steel wire cable, in which the mentioned bush is moulded or pressed on the end of the mentioned sweep construction.

[0002] A known similar brush device for attachment underneath a street sweeper is described in the Dutch Patent document number 1 000 963, titled: "Brush suitable for attachment on a street sweeper" and is also from the present applicant Van der WURF, Gerardus, Adrianus, Hollansche Rading, The Netherlands.

[0003] Here, the known Patent description number 1 000 963 concerns a brush suitable for mounting on a street sweeper, which brush consists of a disc in an almost horizontal surface, in which pick-up bushes are applied which make a larger angle β with a disc, in which by means of a springy pin the clamped-on cover of a sweeping steel cable is fixed. Each pick-up bush has a socket, against which the mentioned cover is supported and holds this against the centrifugal force with the springy pin, in which the larger angle β is approximately 70 degrees. In practice it is shown, that the described brush device has a number of disadvantages, such as that due to, for this construction necessary large angle β of 70 degrees, the centrifugal force can cause a relative quick breakage/damage of the sweep constructions when clamping in, due to the strong bending forces and also causes the brushes to wear quickly due to the large angle β. Also, this construction with springy pin to hold the cover of the sweep construction in the disc by means of enclosed tools, does not always go without problems in the hands of less skilful public servants or private individuals.

[0004] Further, the total construction is laborious due to the springy pin construction and the welded pick-up bushes in the disc and therefore does not contribute to an optimally economical producible brush assembly. In short, the known brush assembly has several disadvantages.

[0005] The aim of the present invention concerns to provide such an improved brush assembly, of which the above described disadvantages are eliminated and which has a longer life (less wear and breakage) and which brush assembly can quickly and easily be changed of bush and sweep construction and which can be produced in an economical way.

[0006] For this purpose a device, constructed as brushing assembly consisting of a disc with matching bushes with sweep construction, is further developed in a very inventive way, characterized in that the concerned bush with sweep construction makes a sharp angle α with the bottom surface of the disc in the mentioned pick-up recesses in the disc in mounted state, in which the mentioned disc can contain at least two pick-up recesses, which are divided in equal angles at the centre around the circumference of the disc, in order to, in this way, form a better brush construction, in which the mentioned pick-up recesses and bushes have a conical outward tapered cross-section with rounded corners with an angle β, in which the wall thickness of the mentioned bush is relatively large and rests radially with the mentioned wall thickness against the shoulder of the outer edge of the disc for absorbing the centrifugal force in mounted state, in which fastening or locking the mentioned bushes with sweep construction is done by means of a compression spring load, with a nut fastening stopping device with flange, of which the bottom side is also conical under mentioned angle α and which stopping device with its central mounting bore with a stud with a left threaded wire by means of mentioned nut is fixable against the mentioned disc to the street sweeper, in which the material of the mentioned disc is flexurally strong, has a high tensile strength and is easy to process.

[0007] The advantage is a very handy, fast and economic mountable brush assembly, that due to a more flat position, so with a small value of the angle α of the sweep construction, sweeps more flatly over the pavement, through which much less wear and breakage occurs, which has been proven in practice.

[0008] Further the device according to the invention has been further developed in such a way, that the mentioned pick-up recesses and the bushes with rounded corners for the sweep construction have a cross-section of approximately 22 x 22mm, which tappers outwardly under the mentioned angle β of approximately 2 degrees and that the mentioned disc has an outer diameter of approximately 129 mm, in which the height or the thickness of the disc is approximately 34 mm, in which the mentioned shoulder of the edge part of the outer edge of the disc has a bended opening in order to suitably let through or lead the sweep construction constructed as a wire bundle or steel wire cable.

[0009] The advantages are a solid disc which contains divided over the circumference maximum six pick-up recesses for bushes with sweep constructions and that the threaded wire bundle is bent as less as possible, so that it is not under strain of bending.

[0010] Further the device according to the invention is further developed in such a way, that the mentioned spring loaded compression, with stopping device with flange fixable by a nut, of which the bottom side is conically tapered under an angle α, and which has a central bore which fits the threaded wire end with left wire M12 of the street sweeper can be mounted by a nut.

[0011] The advantage is a handy, fast and especially thorough fixing of the bushes with sweep construction

to the mentioned disc.

[0012] Furthermore the device according to the invention is further developed in such a way, that the mentioned material of the disc, the stopping device and the bush is a metal, such as aluminium.

[0013] The advantage is a disc, stopping device and bush with sweep construction which are easily and accurately to process, in which the material aluminium is flexibly stiff and strong.

[0014] The preferred construction of the invention will be described by way of example, and with reference to the accompanying drawing.

[0015] In which:

Fig. 1 shows a bottom view of a preferred embodiment of the invention of the disc with pick-up recesses for the bushes with sweep construction;

Fig. 2 shows a cross-section over the line II-II in figure 1;

Fig. 3 shows a cross-section over the line III-III in figure 1;

Fig. 4 shows a cross-section over the line IV-IV in figure 2;

Fig. 5 shows a cross-section over the line V-V in figure 1;

Fig. 6 shows a cross-section over the line II-II in figure 1, in which a pick-up recess is provided with the special bush with sweep construction according to the invention, after which the bush with sweep construction is fixable by pushing down and screwing down the stopping device;

Fig. 7 shows a side view of the special bush with sweep construction according to the invention and the preferred embodiment; and

Fig. 8 shows a cross-section over the line VIII of figure 7.

[0016] Figure 1 shows a bottom view of the preferred embodiment of the invention of the disc 1 with pick-up recesses 2 for the bushes 3 with sweep construction 4. Mounting of the bushes 3 with sweep construction 4 is shown in figures 6, 7 and 8. The pick-up recesses 2 are equally divided over the circular surface and form an angle α of approximately 30 degrees with the bottom surface of the disc 1, so that the bushes 3 with sweep construction 4 also make an angle of 30 degrees. Further, the disc 1 has a central bore 5 for fixing the stopping device 6 against the bushes 3 with sweep construction 4 to the stud (not indicated) with left threaded wire of the street sweeper (also not indicated). See also figures 2 and 6.

[0017] Figure 5 shows the conicity under an angle β of approximately 2 degrees of the pick-up recess 4. This conicity under angle β is also indicated in figure 2 and 6, through which the bush 3 with the sweep construction 4 loosens easily when replaced, without sticking due to sweep dirt.

[0018] The compression spring 7 is for pushing up the stopping device 6, through which mounting new bushes 3 with sweep construction 4 takes place fast and handy. The movements of the stopping device 6 are indicated with arrows 8 in figure 6. For a better locking in the pick-up recesses 2 the bushes 3 with sweep construction 4 are constructed also conically according to an angle β = 2 degrees. See figure 8.

[0019] In figure 1 the disc 1 is also provided with recesses 9 for weight-saving. See also figure 3.

[0020] Figure 4 again shows the stopping device 6 with preferred dimensions. As mentioned in one of the claims, the material of disc 1, stopping device 6 and the bushes 3 are of well processable material.

[0021] During the operation of the sweep assembly the bushes 3 will be stopped in a handy way by the excavated edge 10 by the centrifugal force. See figures 1, 2 and 6.

[0022] With the above mentioned construction a surprisingly fast and handy to operate improved brush assembly is created for street sweepers, which in use provides a lot gain in time.

[0023] Finally it has to be emphasized, that the above description constitutes a preferred embodiment of the present invention and that further variations and modifications are still possible without departing the scope of this patent description.

Claims

1. Device constructed as brush assembly for mounting underneath a street sweeper for mainly cleaning paved surfaces, which brush assembly consist of a central mounting bore, weight-saving and pick-up recesses, in which in mentioned pick-up recesses a bush with sweep construction can be mounted, in which the mentioned sweep construction is shaped as a bundle of wires or stranded wires, such as, for example, steel wire cable, in which the mentioned bush is moulded or pressed on the end of the mentioned sweep construction, **characterized in that**, the concerned bush (3) with sweep construction (4) makes a sharp angle α with the bottom surface of the disc (1) in the mentioned pick-up recesses (2) in the disc (1) in mounted state, in which the mentioned disc (1) can contain at least two pick-up recesses (2), which are divided in equal angles at the centre around the circumference of the disc (1), in order to, in this way, form a better brushing construction, in which the mentioned pick-up recesses (2) and bushes (3) have a conical outward tapered cross-section with rounded corners under an angle β, in which the wall thickness of the mentioned bush (3) is relatively large and rests radially with the mentioned wall thickness against the shoulder (10) of the outer edge (11) of the disc (1) for absorbing the

centrifugal force in mounted state, in which fastening or locking the mentioned bushes (3) with sweep construction (4) is done by means of a compression spring load (7), with a nut fastening stopping device (6) with flange, of which the bottom side is also conical under mentioned angle α and which stopping device (6) with its central mounting bore (5) with a stud with left thread by means of mentioned nut is fixable against the mentioned disc (1) to the street sweeper, in which the material of the mentioned disc (1) is flexural strong, has a high tensile strength and is easy to process.

2. Device as claimed in claim 1, **characterized in that**, the mentioned pick-up recesses (2) and the bushes (3) with rounded corners for the sweep construction (4) have a cross-section of approximately 22 x 22 mm, which tappers outwardly under the mentioned angle β of approximately 2 degrees and that the mentioned disc (1) has an outer diameter of approximately 129 mm, in which the height or the thickness of the disc (1) is approximately 34 mm.

3. Device as claimed in claims 1 and 2, **characterized in that**, the mentioned shoulder of the edge part (10) of the outer edge (11) of the disc (1) has a bended opening in order to suitably let through or lead the sweep construction (4) constructed as a wire bundle or steel wire cable.

4. Device as claimed in claims 1 to 3, **characterized in that**, the mentioned angle α is preferably approximately 30 degrees.

5. Device as claimed in aforementioned claims, **characterized in that**, the mentioned spring loaded compression, with a stopping device (6) with flange fixable by a nut, of which the bottom side is conically tapered under an angle α, and which has a central bore which fits the wired end with left threaded wire M12 of the street sweeper is mountable with a nut.

6. Device as claimed in aforementioned claims, **characterized in that**, the mentioned sweep construction (4) consists of a twisted steel cable with an adjustable length of approximately 140 mm for the sweep work.

7. Device as claimed in claims 1 to 5, **characterized in that**, the mentioned sweep construction (4) consists of a bundle of loose threaded wires of a very wear-resistant plastic.

8. Device as claimed in aforementioned claims, **characterized in that,** the quantity of pick-up recesses (2) is preferably 2, 4 or 6.

9. Device as claimed in aforementioned claims, **characterized in that**, the mentioned material of the disc (1), the stopping device (6) and the bush (3) is a metal, such as aluminium.

10. Device as claimed in claims 1 to 8, **characterized in that**, the mentioned material of the disc (1) is a strong, well workable plastic, such as polypropylene.

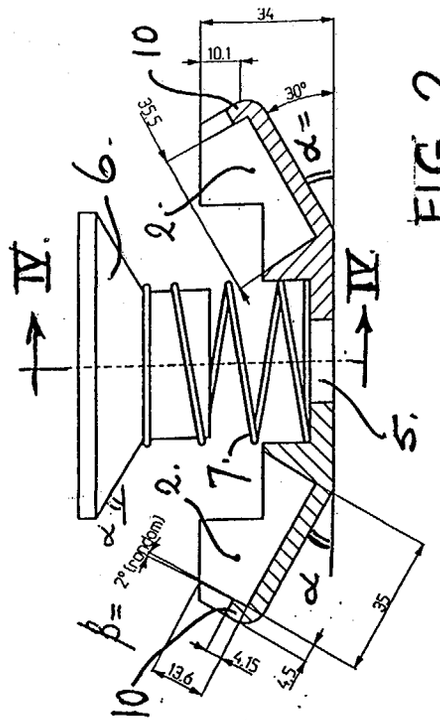

FIG. 2.

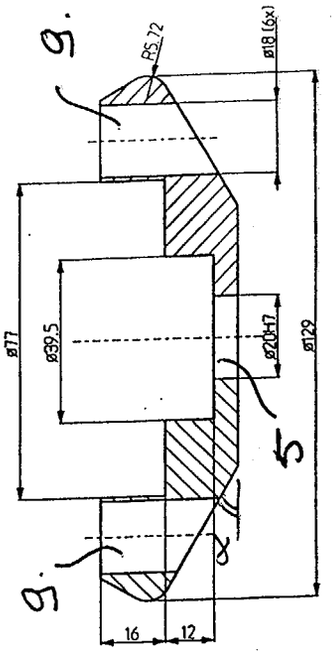

FIG.3.

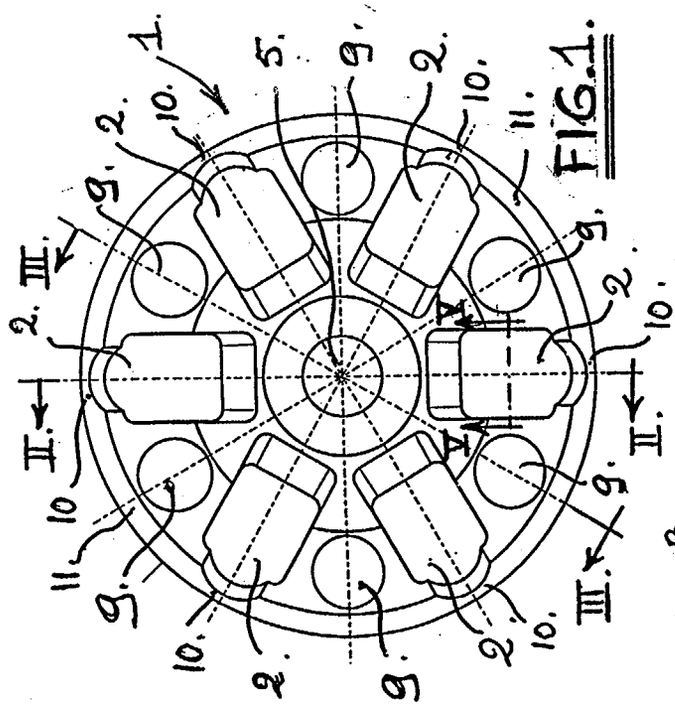

FIG.1.

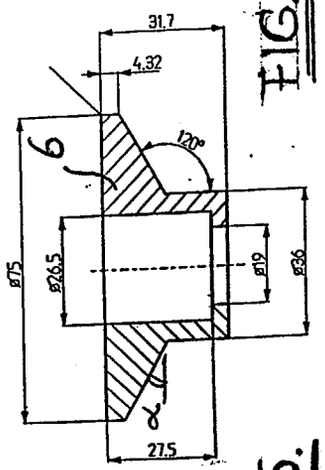

FIG.4.

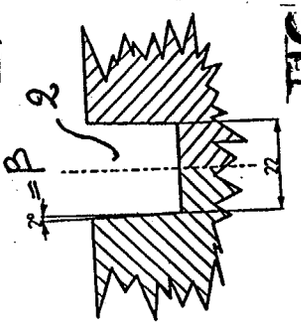

FIG.5.

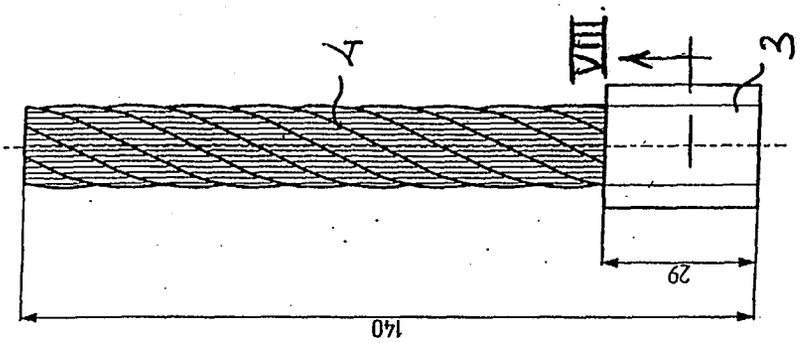

FIG. 7

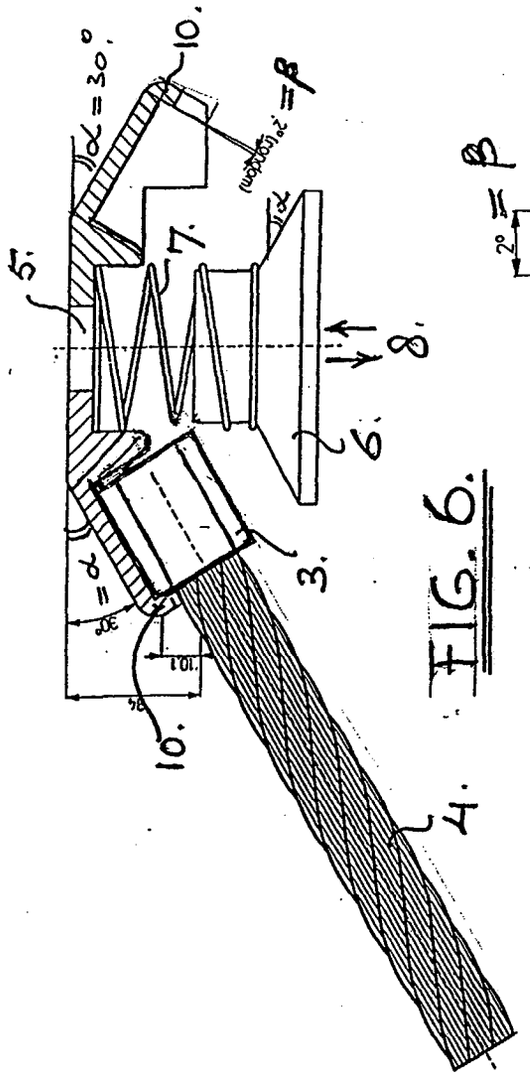

FIG. 6

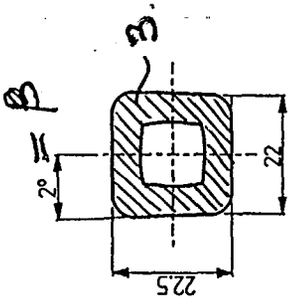

FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 03 07 5730

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A46B
E01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	8 August 2003	Movadat, R

CATEGORY OF CITED DOCUMENTS

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