

①⑫ **EUROPEAN PATENT APPLICATION**

②① Application number: 81304777.6

⑤① Int. Cl.³: **A 47 L 11/22**

②② Date of filing: 14.10.81

③⑩ Priority: 17.10.80 GB 8033738

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④③ Date of publication of application: 28.04.82
Bulletin 82/17

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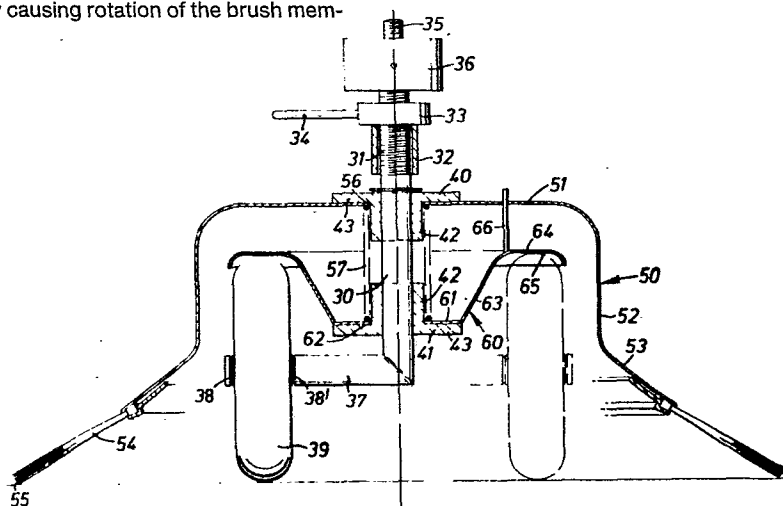
⑧④ Designated Contracting States: **AT BE CH DE FR GB IT**
LI LU NL SE

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⑤④ **Ground sweepers.**

⑤⑦ Side brush assembly (54) for a sweeping machine comprising a generally cup-shaped brush member (50) and a roller (39) associated therewith, a friction drive means (64, 65) between the roller and the cup-shaped brush member whereby on translational movement, across the surface to be swept, rotation of the roller is transmitted via the friction drive means to the brush member thereby causing rotation of the brush member.

The brush assembly is particularly suitable for use in connection with a manual sweeping machine and it may be constructed and arranged so that the side brush assembly can be moved between a sweeping position and a non-sweeping position.



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DESCRIPTION

The present invention relates to ground sweepers and has particular reference to ground sweepers of the kind comprising a wheeled frame for translational movement over surface to be swept, said frame
5 carrying a dust receptical and a brush assembly adapted to be driven by at least one of said wheels on which the frame rides during translational movement.

These devices are generally well known and have been used for sweeping leaves, and the like from
10 ornamental parks as well as for sweeping offices and factory floors.

The problem with such a sweeper is that the presence of the frame and any associated side gearing drive to the brush assembly means that the brushes
15 themselves cannot sweep close to a pillar or wall.

Hitherto, it has been the practice to provide a side brush assembly on one or both of the front sides of the machine; these side brushes have comprised an inverted cup shaped brush member having
20 a generally peripheral bristle assembly, which member is arranged for rotation on a substantially vertical spindle, the brush member being driven by means of a belt from an appropriate drive wheel for the main brush assembly for the sweeper. Forward or rearward
25 movement of the sweeper thus results in rotational drive

being transmitted from one of the wheels upon which the device moves to the cup shaped member itself, so that translational movement of the sweeper results in the driving of the brush in such a way as to sweep dust at the edges of an area to be swept into the path of the main sweeping brush.

This works well enough, but suffers from a number of disadvantages. Because of the permanency of the belt or gear drive to the side sweeping brush assembly carried on the forward part of the appliance, the side brush assembly has to be operational at all times. With large open areas have to be swept this is inconvenient and is unnecessary and further the presence of a drive to a side brush assembly where only a single side brush is being employed, results in an uneven load being on the drive wheels of the sweeper this in turn makes the sweeper more difficult to control particularly where casters are provided for ease of manoeuvrability.

According to the present invention, there is provided a side brush assembly for a sweeper of the kind described which assembly comprises a brush member journalled for rotation about an axis at a substantial transverse angle to a surface to be swept, a bristle assembly disposed about the periphery of said member and arranged for sweeping contact with said surface on rotation of said member,

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roller means contacting said surface to be swept
and friction drive means operative between said roller means
and said brush member, the arrangement being such that
translational movement of the sweeper results in
5 rotation of the roller means and corresponding
rotation of the brush means via said drive means in
order to effect sweeping of the surface on which the
sweeper rides.

In a preferred embodiment of the present invention,
10 the side brush assembly is secured to the main frame
of this sweeper by means of a support arm which is
movable about a substantially horizontal axis. With
the brush in the brushing position, the support arm
is locked to maintain the roller means in rolling
15 contact with the surface to be swept. In a preferred
embodiment of the present invention, the brush member
is generally cup shaped and has a peripheral brush
assembly disposed thereabout. The mounting of the
brush member is preferably adjustable to allow
20 adjustment to take up of wear of the bristle assembly.
The roller means may be biased to contact the surface
to be swept and the drive means may comprise an
intermediate drive plate in contact with the roller means
so that on rotation of the roller the drive means is
25 rotated by virtue of friction drive between the
roller periphery and an annular portion of the drive plate.

A locking pin may be provided between the drive plate and the brush member so that drive to the plate is transmitted to the brush member per se.

5 The brush member may be journalled for rotation on a substantially vertical rod having at its lower end, an axle portion substantially perpendicular to the axis of said rod, said axle portion carrying the roller means. The annular disposition of the axle portion may be selected with respect to the
10 forward-rearward axis of the sweeper so that the appropriate sweeping action is provided depending on which side of the sweeper brush assembly is mounted.

Following is a description by way of example and with reference to the accompanying drawing of
15 method of carrying the invention into effect.

In the drawings:-

Figure 1 is a longitudinal section of a sweeper described in detail in our copending application No. 8013493 filed on 24th April 1980.

20 Figure 2 is a section through a side brush assembly in accordance with the present invention

Figure 1 illustrates the main chassis and brush assemblage of a sweeper in accordance with the present invention. A specific description
25 of this sweeper appears in our copending British Patent Appl. No. 8013493 filed on 24th April 1980. Not shown in Figure 1, is a front cross bar extending perpendicular

to the upper extremity of support 19 which constitutes a cross piece upon which a movable arm is provided. This movable arm is capable of rotational movement in a substantially vertical plane about an axis carried
5 by the support referred to above. The extremity of this arm has a substantially vertical bore adapted to receive an erect rod 30 (see Figure 2). Rod 30 is threaded at its upper end at 31 which threaded portion is adapted to receive a sleeve portion 32 and a
10 threaded adjustment nut 33 having a side arm 34. The rod 30 is further provided with an upper portion 35 of reduced diameter, said portion 35 also being threaded and being adapted to receive a threaded locking member 36 for the purpose of securing rod
15 30 to the forwardly extended arm referred to above.

The rod 30 carries at its lower end an axle portion 37 extending substantially at right angles to the vertical axis of erect rod 30. The axle portion 37 has towards its outer extremity and outer
20 and inner annular grooves 38 and 38'. Grooves 38 and 38' are spaced one from the other, the axle portion disposed between grooves 38 and 38' carrying a wheel 39 which is retained on axle portion 37 by means of circlips located in said grooves.

25 Wheel 39 is freely rotatable upon said axle portion, and has a rubber periphery which in the operative position of the arm carrying erect rod 30 and ^{wheel} 39, is

adapted to abut and be in rolling contact with the surface adapted to be swept. The erect rod carries upper and lower spaced bushes 40, 41 each of bushes 40 and 41 is formed of a plastics material to act as
5 a bearing for erect rod 30. Each bush 40, 41 comprises a cylindrical portion 42 and a radially extending flange 43. The upper bush is disposed with its radial flange 43 disposed uppermost and the lower bush with its radial disposed lowermost, the arrangement
10 being such that the flange 43 of lower bush 41 is arranged to abut a stop.

The upper bush is juxtaposed the inverted cup shaped member 50 having a generally upper disc portion 51 and a depending side wall portion 52
15 which terminates towards its lower end in a flared portion 53 which later carries a peripheral bristle assembly 54 the lower extremity 55 of which is disposed in brushing contact with a surface upon which the device moves.

20 The disc portion 51 is provided with a central bore 56 and is adapted to be disposed over the cylindrical outer surface of the cylindrical portion 42 of upper bush 40. The disc portion 51 is further provided with an intermediate drilling disposed outwardly of
25 the radial flange 43 of upper bush 40. The bush assembly 40 and its associated brush assembly 50 is biased upwardly against the lower extremity of sleeve 32 by means of a compression spring 57, the arrangement being such that

the relative position of disc portion 51 from the surface on which the device moves may be adjusted by means of adjustment nut 33.

5 The lower bush 41 is associates with friction drive plate 60 comprising a central disc portion 61 having a central bore 62 adapted to accommodate the cylindrical portion of bush 41 said disc being retained in position thereon by means of the bias of spring 57. The outer extremity of disc 61 is
10 formed as a frustoconical portion 63 the walls of which extend upwardly and outwardly from disc 61 and terminate in an annular portion 64 which is adapted to be in contact with the upper surface 65 of wheel 39 and is biased into abutment therewith
15 by means of compression spring 57. A drive peg 66 extends upwardly of annular portion 64 at the junction thereof with frustoconical portion 63 and extends upwardly to engage with the intermediate drilling in disc portion 51.

20 In operation, translational movement of the device across the surface results in rotation of the wheel 39 which rotation is in turn transmitted to drive plate 60. The plate 60 rotates about erect rod 30 and the drive therefrom is transmitted via
25 upstanding peg 66 to inverted cup shaped member 50 which serves to rotate the same thereby providing rotation of the bristle assembly 54 about the vertical axis.

The advantage of the device is that the drive for the brush assembly is independent of the drive of the sweeper per se and that when not required, the device can be hinged upwardly and with the wheel
5 39 out of contact with the floor and the sweeper used in the ordinary way.

CLAIMS

1. A side brush assembly for a sweeper of the kind described which assembly comprises a brush member journaled for rotation about an axis at a substantial transverse angle to a surface to be swept,

a bristle assembly disposed about the periphery of said member
5 and arranged for sweeping contact with said surface on rotation of said member,

roller means contacting said surface to be swept and friction drive means operative between said roller means and said brush member, the arrangement being such that translational movement of the sweeper results
10 in rotation of the roller means and corresponding rotation of the brush means via said drive means in order to effect sweeping of the surface on which the sweeper rides.

2. An assembly as claimed in claim 1 including a support arm adapted
15 to be secured to a sweeper, which arm is movable relative to said sweeper between an operative position in which said bristle assembly is in sweeping contact with said floor and an inoperative position.

3. An assembly as claimed in claim 2 wherein a locking means is
20 associated with said arm so that with said support arm in an operative position the roller means is maintained in rolling contact with the surface to be swept.

4. An assembly as claimed in any preceding claim wherein the brush
25 member is generally cup-shaped and the roller means is disposed within said member.

5. An assembly as claimed in any preceding claim wherein the brush member is journalled for rotation by mounting means including an adjustment to permit take-up of bristle wear.

5 6. An assembly as claimed in any preceding claim wherein the roller means is biased to contact the surface to be swept and wherein the drive means comprises a drive plate coupled for rotation with said brush member in at least one direction and in friction contact with said roller.

10

7. An assembly as claimed in any preceding claim wherein the brush member is journalled for rotation about a rod having at its lower end an axle portion substantially perpendicular to said rod axis, which axle carries said roller means.

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8. A sweeper of the kind described including at least one side brush assembly as claimed in any preceding claim.

FIG. 1

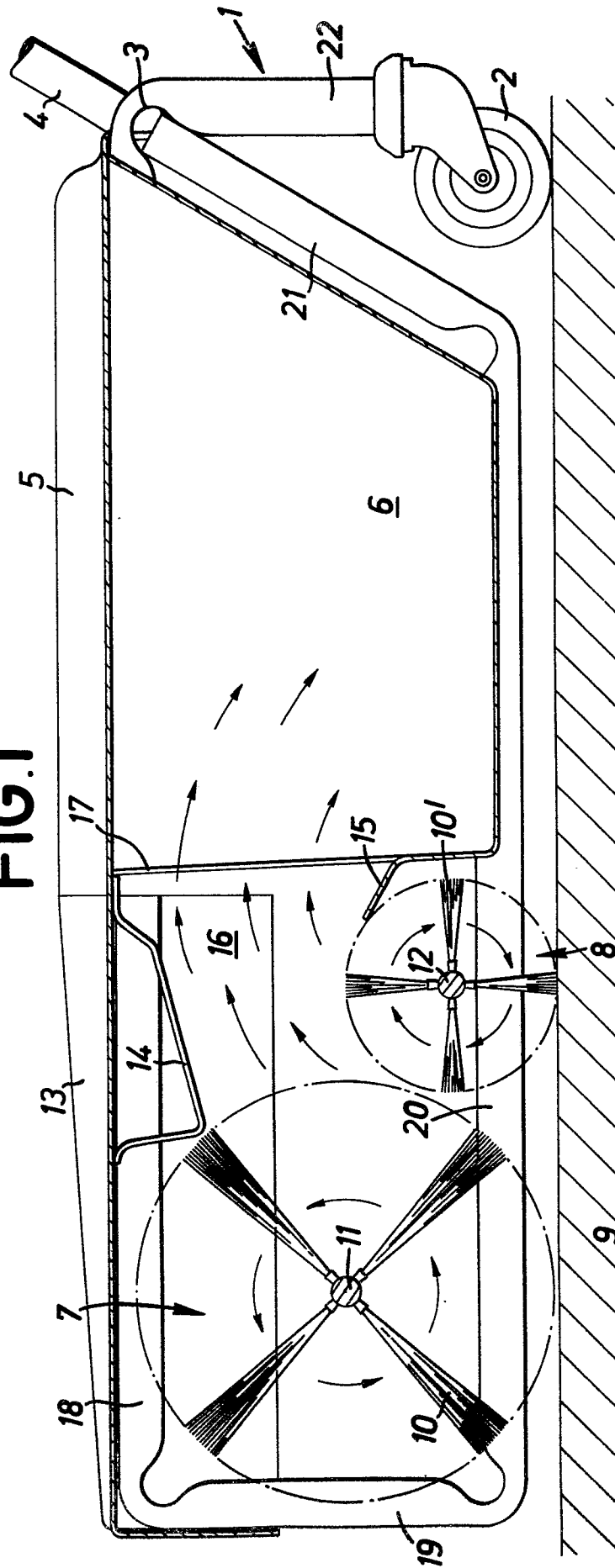
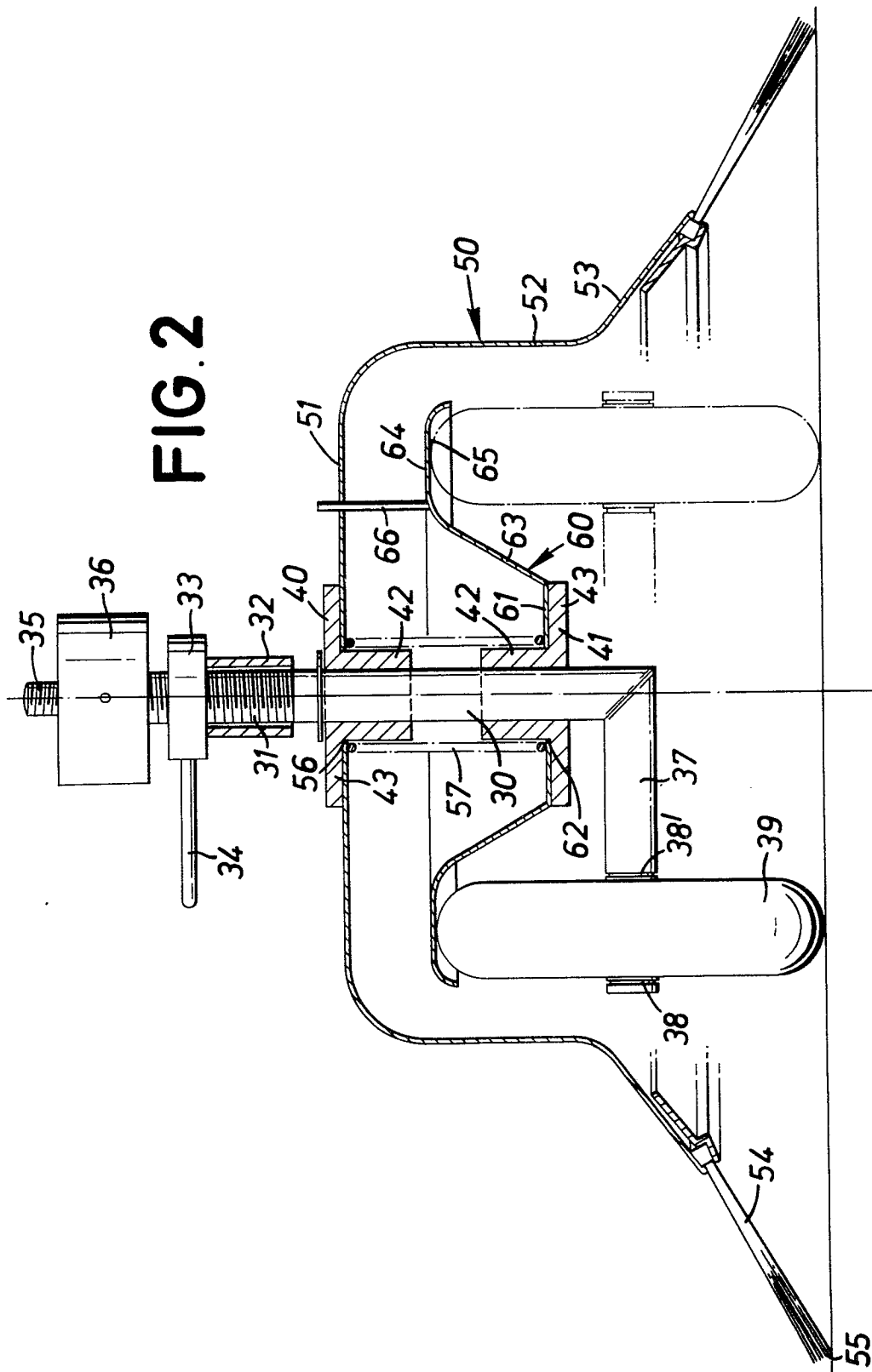


FIG. 2





European Patent
Office

EUROPEAN SEARCH REPORT

0050470
Application number

EP 81 30 4777.6

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	<u>DE - C - 228 557</u> (NASADNIK) ---		A 47 L 11/22
A	<u>DE - B - 2 055 841</u> (BISSELL) ---		
A	<u>DE - B - 2 134 493</u> (LEIFHEIT) ---		
A	<u>GB - A - 1 104 300</u> (OKAMURA) ---		
A	<u>US - A - 3 233 274</u> (KROLL) ---		TECHNICAL FIELDS SEARCHED (Int. Cl.3)
L	<u>EP - A2 - 0 039 558</u> (NUMATIC INTERNATIONAL) -----		A 47 L 11/00
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
<input checked="" type="checkbox"/> The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search Berlin		Date of completion of the search 08-01-1982	Examiner KLITSCH