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(54) **Machinery for dedusting, washing and drying carpets**

Vorrichtung zum Entstauben, Waschen und Trocknen von Teppichen

Machines pour dépoussiérer, laver et sécher des tapis

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(73) Proprietor: **Baraut Anell, Ramón**
08830 Sant Boi de Llobregat (ES)

(72) Inventor: **Baraut Anell, Ramón**
08830 Sant Boi de Llobregat (ES)

(74) Representative: **Morgades y Manonelles, Juan Antonio**
C/ Rector Ubach, 37-39, bj. 2a
08021 Barcelona (ES)

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Description

Purpose of the Invention.

[0001] The invention refers to a machine for washing carpets, which includes operations for removing the dust dry, cleaning the carpet with the corresponding liquids and detergents, and centrifuging it after washing, all in the same machine, without the need for auxiliary machines for the first and third operations.

State of the Art.

[0002] On the market there are, and therefore they can be considered as state of the art, a multitude of machines for washing carpets, but they need other machines for the wash to be complete, for before the washing and after, namely the prior shaking of the dust, and centrifuging after washing.

[0003] A good cleaning needs to first remove the dust accumulated between the fibres before washing with liquids and detergents, to avoid the dust adhering to the fibres when receiving the liquids and detergents, when the dust has been removed, the carpet must be moved to the washing machine, for instance, Spanish Invention Patent of the same applicant, No. 9202117 describes and claims a machine for washing carpets, comprising a continuous belt for the longitudinal movement of the carpet and in vertical position and over the continuous belt there is a cleaner head, formed by several circular small-diameter brushes, with the characteristic that they are grouped with selective directions of rotation, one direction or the other, according to the type of carpet, where it is also possible to vary the pressure of the brushes on the carpet, and brushes also have a backward and forward movement in longitudinal direction.

[0004] The brush-holding carriage is held and guided on flat plates placed transversally with regard to the conveyor belt, completed with cross members parallel to the plate for the side guiding rollers of the carriage, moving transversally with regard to the carpet, of forward and backward movement.

[0005] However, this type of machine needs, for the washing process to be complete, in addition to a machine for shaking the carpet, in some instances this is carried out manually, and another machine for centrifuging the carpet, namely a centrifuge, making the users of these machines need large premises and abundant labour to move the carpets from one machine to the next.

[0006] On the other hand, the document GR90100563 teach a washing machine unit for rugs and wall-to-wall carpets that automatically executes the works of shaking, pre-washing, washing, and centrifugal wringing. For these purposes, the machine comprises a line of conveyor belts, water spray arrays, a shaking impeller, an extractor fan, various brushes and a centrifuge.

[0007] However, the limitation of this washing machine is related with the fact that in said machine do not integrate these works in a compact manner in a minimum space, and its design necessarily involve a physical labour.

Scope of the Invention.

[0008] Integrating the operations for removing the dust, washing the carpet, and centrifuging in a single machine, in the minimum space and practically eliminating all physical labour necessary for moving the carpets from one machine to the next, especially important if we consider that some sizes of carpet when dry have a considerable weight, which increases when it has been washed and therefore needing two people to move it into the centrifuge.

Description of the Invention.

[0009] The machine object of the invention comprises a frame, formed by side bedplates joined by longitudinal cross members, a carpet shaking station with the aim of releasing the small particles of dirt in it, a washing station for the carpet with the corresponding brushes cleaners and means to supply liquids such as water and detergents, and subsequent collection, and a centrifuge station for the carpet when clean.

[0010] To avoid having to carry the carpet manually to the centrifuge station once washed, there is a complementary element, which is a carriage for moving the washed carpet, from the rear of the machine, to one of its side parts where there is the loading mouth of the centrifuge station.

[0011] This carriage has a slope formed by rollers, designed so that one height of the slope is composed of the rollers for winding the carpet once it has been washed in the washing station, and a second height at the opening of the loading mouth of the centrifuge station.

[0012] The shaking, washing, and centrifuge stations, work continuously, so that once the carpet is washed, it is collected in the same machine and is placed manually with the help of the aforementioned carriage, in the centrifuge located in the lower side of the machine.

[0013] The positioning of the three aforementioned stations, namely shaking, washing and centrifuge for drying is as follows: The shaking station of the carpet is positioned at the lower front side of the frame, and comprises means for turning that hit the surface of the carpet shaking it from below, and releasing the particles of dirt and dust on the top side, so they it be vacuumed and then collected in a tray located horizontally under these means of turning, which comprise a shaft placed horizontally at the lower side of the machine, whose ends rest on the side bedplates through the corresponding supports with bearings, and with movement supplied to the shaft by means of the corresponding geared motor.

[0014] The washing station occupies the upper position and works with means of movement comprising rails placed horizontally on the machine bedplate, and fitted

with the corresponding end of travel stops, positioned variably, on which slide, in a programmed manner, and affected by a forward backward movement left right and vice versa, a cleaning carriage that acts on the top side of the carpet, exerting its action through a set of small-diameter brushes, these brushes turn in opposite directions or the same direction, depending on type of carpet, with possibility of adjusting the pressure of the brushes on the surface of the carpet to be cleaned, as well as varying the cleaning carriage speed, at the same time moving the carpet forward as well as the transversal movement, while at the same time brushing and adding water and detergents, through the corresponding nozzles located beside the brushes.

[0015] The dirty water and detergent used in the washing station is collected in a tray located at the bottom of the washing station and which extends the whole width of the machine, this tray empties into the corresponding drain and is connected to the general sewer with a pump for moving it from the machine to the sewer.

[0016] The carriage cleaner is moved by a transversal toothed-belt driven by a geared motor that moves the cleaning carriage in a forwards-backwards motion over the entire width of the machine, with a flexible chain containing tubes for water and the detergent.

[0017] The centrifuge station occupies a central and lower position on the machine, and the centrifuge chamber has its entry portal in a bracket parallel to the right-hand bedplate of the same, with the corresponding hatch, on the inside of the chamber there is the centrifuge drum, driven by an electric motor located on the left-hand bedplate of the machine.

[0018] The hatch of centrifuge chamber has means of support for turning the centrifuge drum, such as a vertical plate bracket joined to the side bedplates by suitable means, and some means to absorb the drum vibrations that include coil springs and one or more shock absorbers, which are connected to the support bracket by one of their ends and the opposite end connects to a metal section resting on the floor.

[0019] The water expelled in spinning operations is evacuated through a suitable conduit, moved by an electric sucking-blowing pump located at the lower rear of the machine (10).

[0020] Other details and characteristics shall be shown throughout the description below referring to drawings attached to this report which are shown for illustrative but not limiting purposes only in a drawing of the invention.

Description of the drawings.

[0021]

Fig. 1 is a general perspective of the washing machine (10) in which its outer parts can be seen from the front.

Fig. 2 is a general perspective of the washing machine (10) in which its outer parts can be seen from the back.

Fig. 3 is a side elevation view of the door (21) supported by the side bedplate (11) of the machine. (10) by means of a bracket plate (22).

Fig. 4 is another side elevation view of the door (21) and its closing devices.

Fig. 5 is a side elevation view of the shaker prism (44).

Fig. 6 is a front elevation view of the shaker prism (44).

Fig. 7 is a front elevation view of the bracket plate (76) of the centrifuge drum (46), this bracket is resting on the metal section (68), with the aid of coil springs (67), and one or more shock absorbers (67).

Fig. 8 is a view of the rear of the door (21) incorporating a disc (74) that fits into the entry portal (47) of the centrifuge drum (46).

Fig. 9 is a side elevation view of the carpet-holding trolley (79).

Fig. 10 is a front elevation view of the carpet-holding trolley (79).

Fig. 11 is a detail of the tray support (62).

[0022] Below is a list of the machine's main components, depicted in the illustrations with the following numbers: (10) machine, (11-12) side bedplates, (13) washing station, (14-15) rail guide, (16) continuous belt, (17) roller, (18) carpet, (19) rollers, (20) cable holder chain, (21) door, (22) plate bracket, (23) door turning axis, (24- 25) electric motors, (26-27) electric motor reduction gears, (24-25), (28) electric motor, (29) electric motor reduction gear (28), (30-31) electric motors, (32) roller, (33) belts, (34) tray, (35) handrails, (36-37) semi-shafts, (38-39) transport chain, (40) toothed pulley, (41) rear tray, (42) semi-shafts, (43) bars, (44) shaker prism, (45) supports of prism (44), (46) centrifuge drum, (47) entry portal, (48-49) centrifuge drum supports, (49) drum, (50) geared motor, (51) handle, (52) damper, (53) bolts, (54) tab, (55) shaft, (56) pneumatic cylinder, (57) tank open, (58) electric pump, (59) electric pump, (60) tray to collect liquids, (61) inlet for sucking dust, (62) tray, (63) inlet portal tray (62), (64) entry portal, (65) orifice, (66) springs, (67) toothed wheels, (68) metal section, (69) disc, (70) cleaner rollers of washing station (13), (71) roller, (72-73) rollers, (74) sealing disc of door (21), (75) centring devices, (76) centrifuge drum support, (77) plates, (78) drilled holes, (79) support metal section of tray (62), (80) foot, (81) wheel, (83) longitudinal beams, (84) cross members, (85) rollers, (86) props, (87) wheels, (88) cross members, (89) carriage for moving the carpets.

Description of a preferred embodiment of the invention.

[0023] In one of the preferred embodiments of the invention, as can be seen in Fig. 1, the Machine (10) presents on a frame formed by side bedplates (11-12) and some cross members (35), some of them hidden in Figures 1 and 2, forming a tough structure, on which the

different parts and pieces that form part of it are fitted, formed on the station level by:

[0024] A station for shaking the dust comprising a shaker (44) that rests its ends on the supports (45).

[0025] A washing station, comprising a cleaning carriage (13).

[0026] A drying station, comprising a centrifuge drum (46).

[0027] A carriage (89) for moving the wet carpets.

[0028] The shaking station is formed by a longitudinal prism-shaped body (44), whose end parts are resting through the supports and bearings (45) on the side bedplates (11-12), with the help of semi-shafts that are born in its smaller side bases and that rest and turn on these supports (45). In turn, the prism (44) presents in the upper and lower bases, a steel bar or similar material (43) welded to the same, as can be seen in Figures 4 and 5.

[0029] The longitudinal prism (44) is fitted behind the traction cylinders (19-26), see Fig. 1, and the function of the latter (19-26) is to hold the carpet (18) with them when turning in opposite directions and locating the carpet over the prism (44) which when turning and through a the aid of the bars (43) shakes the carpet (18) to dislodge the dust it contains, and it is deposited in the tray (62), that can be removed from the machine. (10) for cleaning, thanks to the inlet portal (63) the heavier and larger particles, while the lighter that are in the air after shaking are sucked up by the vacuum inlet (61), on the side bedplate (12) with the aid of a vacuum hose not represented in the illustrations, whose sucking mouth is located at the mouth (61).

[0030] The tray (62), as can be seen in Fig. 1 rests on the side bedplates (11-12) and occupies a horizontal position under the plane of the movement cylinders (19-26), and can be removed from the machine. (10) from the side by the inlet portal (64) in the bedplate side (11), as can be seen in detail "1" of Fig. 1, to remove the dust deposited on it, and replace it.

[0031] To help with the removal of the tray (62) from the machine. (10) by one of its side bedplates, and as shown in Fig. 11, there is a foot (80), on whose lower ends there is a wheel (81).

[0032] The washing station comprises a cleaning carriage (13) that moves on longitudinal rails (14-15) whose ends are welded or similar method to the bedplates (11-12), as can be seen in Fig. 1, helped by the wheels (62), moving the carriage (13) progressively along the rails (14-15), cleaning the carpet (18), with the cleaning rollers (19) pouring into the (18) water the appropriate detergents, which later fall onto the tray (41) located below the rollers (72-73), with a sloping bottom to facilitate the evacuation of the soapy water by the most adequate means, as can be seen in Figures 1 and 2, this evacuation being carried out with an electric sucking and blowing pump (59), built in the lower rear side of the machine (10).

[0033] The movement of the carpet (18) on the continuous belts (16) is achieved a through the cylinders (17-32), see Figures 1 and 2, which (17-32) turn thanks to the fact that they incorporate in the ends of the semi-axles (36-37), toothed wheels (67), that receive the traction from the electric motor (25) with its gear reducer (27) and the aid of chains (38-39).

[0034] The drying station comprises a centrifuge drum (46) placed horizontally in the lower side of the machine (10), with a loading mouth (47) or inlet portal which is cut back in the side bedplate (11), as can be seen in Fig. 7, and of the bracket plate (76) which (47) has a door (21) to close the centrifuge station, whose drum (46) turns on semi-axles (23) not illustrated in the figures.

[0035] The centrifuge drum (46) rests on its ends on the side bedplates (11-12), through the corresponding supports (48-49) with the corresponding bearings not illustrated in the figures. The centrifuge drum (46) turns thanks to an electric motor (31) built into the side bedplate (12), whose outlet shaft is fitted to the drum (46) by suitable means.

[0036] To seal the centrifuge station, there is a door (21), with means for opening and closing on the inlet portal or loading mouth (47). The means for opening and closing the door (21) are as shown in Figures 3 and 6, a tab (54) that projects from one of the vertical sides of the door (21) and with an orifice (65), in which the shaft (55) of the piston (56) enters so as to lock the door in a programmed manner (21), once the carpet (18) is inside the centrifuge drum (46), the liquid used in these centrifuge operations, is evacuated by an electric sucking-blowing pump for water (58) fitted to the lower rear side of the machine (10).

[0037] In turn, the centrifuge station has means to absorb the vibrations produced by the centrifuge drum (46), comprising a support plate (76) joined to the side bedplate (11) through tabs (77), coil springs (67) that rest on a metal section (68) attached to the floor, to which is joined, by suitable means, a damper (52) that complements the action of the coil springs (67).

[0038] The door (21) incorporates means to hold the centrifuge drum (46), such as the support (48), secured to the door (21) with nuts and bolts (50), as can be seen in Fig. 6, the rear of the door (21) having a disc (69), as a means to ensure sealing when closing the door (21) in the inlet portal (47).

[0039] As a complementary and specific element to move the wet carpet (18) after it has been washed in the washing station, and to move it to the centrifuge station, see figures 9 and 10, a carriage (89) has been designed with the essential feature that the height of the cross members (83) at their highest point, is almost equal to the height of the roller (72) on which the carpet (18) is wound after passing through the washing station, and the height of the lowest point of the cross members (83) is almost equal that of the inlet portal (47) of the centrifuge drum (46). These beams (83) are parallel and are joined by means of cross members (84), and the carriage rests on the floor through the props (86), joined by cross members (88), and the wheels (87) located at the ends of said sections (80), between the longitudinal beams (83) the

free-turning rollers (85) are fitted.

[0040] The machine (10) works as follows: The operator enters the carpet (18) between the rollers (19-26) located at the front of the machine (10), which (19-26) as they turn in opposite directions, they drag the carpet (18) inside of machine (10), locating it above the shaker prism (44) which with the help of the bars (43) hits the carpet (18) by from the underside, shaking the dust, which is collected, according to the size of the particles, in the tray (62) or vacuumed via the inlet portal (61), then the carpet (18) is expelled, so that the operator can locate the edge of the carpet (18) on the conveyor belt (16) which moves (18) forward, until it is located vertically in the washing station (13) and its rollers (70) which brush the carpet at the same time in a programmed manner (13) and via suitable passageways, pours water and detergents onto the carpet (18), while at the same time the station (13) moves from right to left of the rails (14-15) in a backwards and forwards movement, adapted to the width of the carpet (18), pouring the detergents and dirty water into the tray (41), once the washing station has finished its program, the carpet (18) is rolled onto the roller (72), ready to be moved by the carriage (89) to the centrifuge station.

[0041] When the carpet (18) has been cleaned by the station (13), it is placed at the rear of the machine (10), so that the operator can collect it from rollers (72-73) with the help of the carriage (89), and put it into the centrifuge drum (46) to eliminate the liquids added during the washing operations, closing the door (21) in the inlet portal (47), sealing any possible leakage of liquids from the carpet (18) through a the sealing disc (74), that folds onto the inlet portal (47), when the operator pushes this door (21) using the handle (51), turning the door with the shaft (23).

[0042] Once the door (21) has been placed opposite the inlet portal (47), the shaft (55) of the pneumatic or hydraulic piston (56) moves forward on the tab (54) entering the orifice (55) in the bore (66), locking the door (21), and the programmed centrifuge operations are started, the duration of which will depend on the dimensions and weight of the carpet (18) to be washed.

[0043] Having sufficiently described this invention using the figures attached, the essence of the invention is summarised in the following claims.

Claims

1. Machinery (10) for dedusting, washing and centrifuging of carpets (18), said machinery (10) comprises a washing station, occupying an upper position in the machinery (10), working with a cleaning carriage (13) and some movement means, comprising rails (14,15) placed horizontally between side bedplates (11, 12) of the frame of the machinery (10), on which can slide the cleaning carriage (13) in a programmed manner, excitable with a swaying movement from right to left and vice versa, between stops defining the end of the travel path, said stops can be positioned in a variable manner and said rails (14,15) being provided with said stops, the cleaning carriage (13) can act on the top side of the carpet (18) exerting its action through a set of small-diameter brushes, which are rotatable in opposite directions, with the possibility of adjusting the pressure of the brushes on the surface of the carpet (18) to be cleaned, as well as the possibility of adjusting the speed of the cleaning carriage (13), combining at the same time the moving of the carpet (18) forward, with the moving from right to left and vice versa of the cleaning carriage (13), wherein said cleaning carriage (13) is coupled to a transversal toothedbelt driven by a geared motor to impart to the cleaning carriage (13) said swaying movement, **characterised by** the fact that said machinery (10) comprises:

   - a station for shaking the dust being positioned at the lower front side of the frame of the machinery (10) and comprising a shaker (44) that rests its ends on supports (45-46) attached to the side bedplates (11-12) of the machinery (10),
   - a centrifuge station, comprising a centrifuge drum (46), said centrifuge station occupying a central and lower position on the machinery (10),
   - a carriage (89) for moving the carpets (18) from the washing station to the centrifuge station,

   wherein the washing station further comprises a roller (72) to wind the carpet (18) thereon, and the carriage (89) has longitudinal beams (83) whose height at the highest point is almost equal to the height of the roller (72) on which the carpet is wound after passing through the washing station, and the height of the lowest point of the longitudinal beams (83) is almost equal to the loading mouth (47) or inlet portal of the centrifuge drum (46).

2. Machinery according to claim 1 **characterised by** the fact that the shaker (44) is formed by a longitudinal prism (44), whose ends rest through said supports and bearings (45,46) on the side bedplates (11-12) of the machinery (10) with the aid of semiaxles that spring from the smaller side bases of the prism (44), and they enter these supports (45,46), in turn the prism (44) has in the upper and lower bases, a steel bar (43) welded to it.

3. Machinery according to claim 2 **characterised by** the fact that the longitudinal prism (44) acting as a carpet shaker (44), is fitted behind movement cylinders (19-26), their function being to hold the carpet (18) between them as they rotate in opposite directions, and locate the carpet (18) over the prism (44), which when turning and with the aid of the steel bars (43) they shake the carpet (18), to dislodge the dust

contained in it, and deposit on a tray (62), the particles of greatest weight and size, while the lighter that are in the air after shaking are sucked up by a vacuum inlet (61), with the aid of an external vacuum source whose sucking tube is located at the vacuum inlet (61).

4. Machinery according to claim 3 **characterised by** the fact that the vacuum inlet (61) is cut back in the side bedplate (12) of the machine (10).

5. Machinery according to claim 1 **characterised by** the fact that the centrifuge station comprises the centrifuge drum (46) placed horizontally in the lower side of the machinery (10), with the loading mouth (47) or inlet portal which is cut back in one of the side bedplates (11) and in a first support (76) which has a door (21) to close the loading mouth (47) or inlet portal, whose centrifuge drum (46) turns on semi-axles (23).

6. Machinery according to claim 1 **characterised by** the fact that the centrifuge drum (46) rests on its ends on the side bedplates (11-12), through corresponding second supports (48-49) with corresponding bearings, so that the centrifuge drum (46) turns thanks to an electric motor (31) built into one of the side bedplates (12), whose outlet shaft is fitted to the drum (46).

7. Machinery according to claim 5, **characterised by** the fact that the door (21) comprises means for opening and closing it on the inlet portal or loading mouth (47), such as a lug (54) which projects from one of the vertical sides of the door (21) and with an orifice (65), where the shaft (55) of a piston (56) can enter, so as to lock the door (21) in a programmed manner, when the carpet (18) is in the centrifuge drum (46).

8. Machinery according to claim 1 **characterised by** the fact that the centrifuge station has means to absorb the vibrations produced by the centrifuge drum, comprising coil springs (67) that rest on a metal section (68) attached to the floor, to which is joined a damper (52) from its ends, that complements the action of the coil springs (67).

9. Machinery according to any one of claims 5 and 7, **characterised by** the fact that the door (21) incorporates means to hold the centrifuge drum (46), such as the second support (48), secured to the door (21) with nuts and bolts (50), the rear of the door (21) having a disc (69), as a means to ensure sealing when closing the door (21) in the loading mouth (47) or the inlet portal.

10. Machinery according to claim 1 **characterised by** the fact that the longitudinal beams (83) are parallel and are joined by means of cross members (84), with some free-turning rollers (85) fitted between the longitudinal beams (83), the carriage (89) resting on the floor through props (86) in whose ends wheels (87) are fitted.

11. Machinery according to claim 1 **characterised by** the fact that to evacuate the liquids and detergents of the washing station (13), there is an electric sucking-blowing pump (58), installed in the lower side rear of the machine (10).

12. Machinery according to any one of claims 1 and 6 **characterised by** the fact that to eliminate the water from the carpet (18) by the centrifuge drum (46), there is an electric sucking-blowing pump (59) fitted to the lower rear part of the machine (10) with which the centrifuge drum (46) can be evacuated.

Patentansprüche

1. Maschine (10) zum Entstauben, Waschen und Schleudern von Teppichen (18), wobei die Maschine (10) eine Waschstation umfasst, die den oberen Bereich der Maschine (10) einnimmt, und mit einem Reinigungsschlitten (13) und einer Reihe von Bewegungsmitteln arbeitet, welche Schienen (14,15) umfassen, die horizontal zwischen den Tragplatten (11,12) des Maschinenrahmens der Maschine (10) angeordnet sind und auf denen der Reinigungsschlitten (13) in programmierter Form mittels einer Wiegebewegung von rechts nach links und umgekehrt zwischen Endanschlägen, die das Ende des Verfahrwegs bestimmen, hin und her gleitet, wobei diese Endanschläge, mit denen die Schienen (14,15) versehen sind, variabel positionierbar sind und der Reinigungsschlitten (13) auf die Oberseite des Teppichs (18) mittels einer Reihe von gegenläufig drehbaren Bürsten mit kleinem Durchmesser einwirken kann, und zwar mit der Möglichkeit, den auf die Oberfläche des zu reinigenden Teppichs (18) ausgeübten Bürstendruck sowie die Geschwindigkeit des Reinigungsschlittens (13) einzustellen, wobei gleichzeitig die Vorwärtsbewegung des Teppichs (18) mit der Seitwärtsbewegung des Reinigungsschlittens (13) von rechts nach links und umgekehrt verbunden werden kann und der Reinigungsschlitten (13) mit einem transversalen durch einen Getriebemotor angetriebenen Zahnriemen, der die Wiegebewegung des Reinigungsschlittens (13) erzeugt, gekoppelt ist, **dadurch gekennzeichnet, dass** diese Maschine (10) Folgendes umfasst:

- eine Staubschüttelstation, die im unteren vorderen Bereich des Maschinenrahmens der Maschine (10) angeordnet ist und einen Schüttler (44) umfasst, der mit seinen Enden auf Stützen

(45-46) ruht, die an den seitlichen Tragplatten (11-12) der Maschine (10) befestigt sind;
- eine Schleuderstation, die eine Schleudertrommel (46) umfasst, wobei sich die Schleuderstation im mittleren unteren Bereich der Maschine (10) befindet;
- einen Schlitten (89) der die Teppiche (18) von der Waschstation zur Schleuderstation befördert, wobei die Waschstation außerdem eine Walze (72) zum Aufrollen des Teppichs (18) umfasst und wobei der Schlitten (89) Längsbalken (83) aufweist, deren Höhe am höchsten Punkt mit der Höhe der Walze (72), auf die der Teppich nach seinem Durchlauf durch die Waschstation aufgerollt wird, nahezu übereinstimmt, und deren Höhe am niedrigsten Punkt der Längsbalken (83) mit der Einfüllöffnung (47) bzw. dem Beladeportal der Schleudertrommel (46) nahezu übereinstimmt.

2. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** der Schüttler (44) aus einem Längsprisma (44) gebildet wird, dessen Enden durch Stützen und Lager (45-46) auf beiden Tragplatten (11-12) der Maschine (10) ruhen, und zwar mittels Halbachsen, die von den kleineren Seitenplatten des Prismas (44) ausgehen und in diese Stützen (45-46) hineinragen, wobei das Prisma (44) seinerseits an der unteren und oberen Platte jeweils eine angeschweißte Stahlstange (43) aufweist.

3. Maschine nach Anspruch 2, **dadurch gekennzeichnet, dass** das als Teppichschüttler (44) fungierende Längsprisma (44) hinter Bewegungszylindern (19-26) befestigt ist, deren Aufgabe es ist, den Teppich (18) zwischen ihnen zu halten, während sie sich in entgegengesetzten Richtungen bewegen, und den Teppich (18) auf dem Prisma (44) zu positionieren, das beim Drehen mit Hilfe der Stahlstangen (43) den Teppich (18) schüttelt, um den Staub zu entfernen und die größeren und schwereren Staubpartikel in einer Wanne (62) aufzufangen, während die nach dem Schütteln in der Luft befindlichen leichteren Partikel durch einen Vakuumeinlass (61) mit Hilfe einer externen Vakuumquelle, deren Saugschlauch am Vakuumeinlass (61) angeordnet ist, eingesaugt werden.

4. Maschine nach Anspruch 3, **dadurch gekennzeichnet, dass** der Vakuumeinlass (61) in die seitliche Tragplatte (12) der Maschine (10) hineingezogen ist.

5. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schleuderstation die horizontal im unteren Bereich der Maschine (10) angeordnete Schleudertrommel (46) mit der Einfüllöffnung (47) bzw. dem Beladeportal umfasst, das in eine der seitlichen Tragplatten (11) und in eine erste Stütze (76) hineingezogen ist, die eine Tür (21) aufweist, um die Einfüllöffnung (47) bzw. das Beladeportal zu öffnen, dessen Schleudertrommel (46) sich auf Halbachsen (23) dreht.

6. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schleudertrommel (46) mit ihren Enden auf den seitlichen Tragplatten (11-12) mittels entsprechender zweiter Stützen (48-49) mit entsprechenden Lagerungen aufliegt, sodass sich die Schleudertrommel (46) dank eines in eine der seitlichen Tragplatten (12) eingebauten Elektromotors (31), dessen Antriebswelle an der Trommel (46) befestigt ist, dreht.

7. Maschine nach Anspruch 5, **dadurch gekennzeichnet, dass** die Tür (21) Mittel zum Öffnen und Schließen am Beladeportal bzw. an der Einfüllöffnung (47) umfasst, und zwar eine Lasche (54), die aus einer der Vertikalseiten der Tür (21) herausragt, und eine Öffnung (65), in welche der Schaft (55) eines Kolbens (56) einfahren kann, um so die Tür (21) in programmierter Form zu verschließen, wenn sich der Teppich (18) in der Schleudertrommel (46) befindet.

8. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schleuderstation über Mittel verfügt, um die von der Schleudertrommel erzeugten Schwingungen zu absorbieren, wobei diese Mittel Spiralfedern (67) umfassen, die auf einem am Fußboden befestigten Metallteil (68) ruhen und mit einem an den Enden befestigten Dämpfungselement (52) versehen sind, das die Wirkung der Spiralfedern (67) unterstützt.

9. Maschine nach einem der Ansprüche 5 und 7, **dadurch gekennzeichnet, dass** die Tür (21) Mittel zur Halterung der Schleudertrommel (46) umfasst, wie beispielsweise eine zweite Stütze (48), die an der Tür mit Muttern und Schrauben (50) gesichert ist, wobei die Rückseite der Tür (21) mit einer Dichtscheibe (69) als Mittel, um das dichte Verschließen der Tür (21) an der Einfüllöffnung (47) am Beladeportal sicherzustellen, versehen ist.

10. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Längsbalken (83) parallel verlaufen und mittels Querträgern (84) verbunden sind, wobei einige freidrehende Rollen (85) zwischen den Längsbalken (83) befestigt sind und der Schlitten (89) auf Beinen (86), an deren Enden Räder (87) befestigt sind, auf dem Fußboden steht.

11. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** zum Zwecke des Ablassens der Flüssigkeiten und Reinigungsmittel der Waschstation (13) eine elektrische Ansaug- und Blaspumpe (58) im unteren rückwärtigen Bereich der Maschine (10) instal-

liert ist.

12. Maschine nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** zur Entfernung des Wassers aus dem Teppich (18) durch die Schleudertrommel (46) im unteren rückwärtigen Bereich der Maschine (10) eine elektrische Ansaug-und Blaspumpe (59) vorgesehen ist, mit welcher die Schleudertrommel (46) entleert werden kann.

Revendications

1. Equipement (10) pour dépoussiérer, nettoyer et centrifuger des tapis (18), ledit équipement (10) comprenant une station de nettoyage qui occupe une position supérieure sur l'équipement (10), travaillant avec un chariot de nettoyage (13) et des moyens de mouvement, comprenant des rails (14, 15) placés horizontalement entre des plaques d'assise latérales (11, 12) du châssis de l'équipement (10) sur lesquels peuvent coulisser le chariot de nettoyage (13) d'une manière programmée, activé avec un mouvement oscillant de droite à gauche et inversement, entre des butées définissant la fin du parcours, ces butées pouvant être placées d'une manière variable et lesdits rails (14, 15) sont munis de ces butées, le chariot de nettoyage (13) peut agir sur la partie supérieure du tapis (18) en exerçant son action à travers un ensemble de brosses de petit diamètre qui sont rotatives dans des directions opposées, avec la possibilité de régler la pression des brosses sur la surface du tapis (18) à nettoyer, ainsi que la possibilité de régler la vitesse du chariot de nettoyage (13), en combinant en même temps le mouvement d'avance sur le tapis (13) et le mouvement de droite à gauche et inversement du chariot de nettoyage (13), où ledit chariot de nettoyage (13) est accouplé à une bande dentée manoeuvrée par un moteur à engrenage pour donner audit chariot de nettoyage (13) ce mouvement oscillant, **caractérisé en ce que** ledit équipement (10) comprend :

- une station pour secouer la poussière positionnée sur la partie frontale inférieure du châssis de l'équipement (10) et comprenant un vibreur (44) dont les extrémités reposent sur des supports (45-46) fixés sur les plaques d'assise latérales (11-12) de l'équipement (10),
- une station de centrifugation comprenant un tambour de centrifugation (46), ladite station de centrifugation occupant une position centrale et inférieure sur l'équipement (10),
- un chariot (89) pour passer les tapis (18) de la station de nettoyage à la station de centrifugation., où la station de nettoyage comprend également un rouleau (72) pour aérer le tapis (18) et le chariot (89) a des faisceaux longitudinaux (83) dont la hauteur au point le plus élevé est presque égale à la hauteur du rouleau (72) sur laquelle le tapis est aéré après le passage de la station de nettoyage, et la hauteur du point inférieur des faisceaux longitudinaux (83) est presque égale à la bouche d'entrée du tambour de centrifugation (46).

2. Équipement conformément à la revendication 1 **caractérisé en ce que** le vibreur (44) est composé d'un prisme longitudinal (44) dont les extrémités reposent sur lesdits supports et paliers (45-46) sur les plaques d'assise latérales (11-12) de l'équipement (10) avec l'aide de demi-essieux qui partent des bases latérales inférieures du prisme (44) et entrent dans ces supports (45-46), à son tour le prisme (44) dans les bases supérieure et inférieure une barre en acier (43) soudée à celui-ci.

3. Équipement conformément à la revendication 2 **caractérisé en ce que** le prisme longitudinal (44) faisant fonction de secoueur de tapis (44) est logé derrière des cylindres en mouvement (19-26) dont la fonction est de tenir le tapis (18) entre ceux-ci quand ils tournent dans des directions opposées, et placer le tapis (18) sur le prisme (44) qui en tournant et avec l'aide des barres en acier (43) secouent le tapis (18), pour retirer la poussière qu'il contient, et déposer sur un plateau (62), les particules les plus lourdes et de plus grande taille, alors que les plus légères qui se trouvent dans l'air après avoir secoué sont aspirées par une entrée d'aspiration (61) avec l'aide d'une source d'aspiration externe dont le tube d'aspiration est placé sur l'entrée d'aspiration (61).

4. Équipement conformément à la revendication 3 **caractérisé en ce que** l'entrée d'aspiration (61) est réduite dans la plaque d'assise (12) de l'équipement (10).

5. Équipement conformément à la revendication 1 **caractérisé en ce que** la station de centrifugation comprend le tambour de centrifugation (46) placé horizontalement sur la partie inférieure de l'équipement (10) avec la bouche de décharge (47) ou bouche d'entrée qui est réduite sur l'une des plaques d'assise latérales (11) et sur un premier support (76) qui a une porte (21) pour fermer la bouche de décharge (47) ou bouche d'entrée dont le tambour de centrifugation (46) tourne sur des semi-essieux (23).

6. Équipement conformément à la revendication 1 **caractérisé en ce que** le tambour de centrifugation (46) repose sur ses extrémités sur les plaques d'assise latérales (11-12) à travers des supports secondaires correspondants (48-49) avec les paliers correspondants, de sorte que le tambour de centrifugation (46) tourne grâce à un moteur électrique (31)

construit dans l'une des plaques d'assise latérales (12) dont le manche de sortie est adapté au tambour (46).

7. Équipement conformément à la revendication 5 **caractérisé en ce que** la porte (21) comprend des moyens pour l'ouvrir et le fermer sur une bouche d'entrée ou bouche de décharge (47) comme une anse (54) qui projette de l'un des côtés verticaux de la porte (21) et avec des orifices (65) où le manche (55) a un piston (56) qui peut entrer de sorte à fermer la porte (21) d'une manière programmée, quand le tapis est dans le tambour de centrifugation (46).

8. Équipement conformément à la revendication 1 **caractérisé en ce que** la station de centrifugation a des moyens pour absorber les vibrations produites par le tambour de centrifugation, comprenant des ressorts à spirale (67) qui reposent sur une section métallique (68) fixée au sol à laquelle est uni un amortisseur (52) depuis ses extrémités qui complète l'action des ressorts à spirale (67).

9. Équipement conformément à n'importe laquelle des revendications 5 et 7 **caractérisé en ce que** la porte (21) incorpore des moyens pour tenir le tambour de centrifugation (46), comme le second support (48), fixé à la porte (21) avec des écrous et des boulons (50), l'arrière de la porte (21) ayant un disque (69) comme moyen pour garantir l'étanchéité en refermant la porte (21) dans la bouche de décharge (47) et la bouche d'entrée.

10. Équipement conformément à la revendication 1 **caractérisé en ce que** les faisceaux longitudinaux (83) sont parallèles et unis par des éléments transversaux (84) avec quelques rouleaux à mouvement libre (85) logés entre les faisceaux longitudinaux (83), le chariot (89) reposant sur le sol à travers des étais (86) sur les extrémités desquels sont logées des roues (87).

11. Équipement conformément à la revendication 1 **caractérisé en ce que** pour évacuer les liquides et détergents de la station de nettoyage (13) est employée une pompe électrique d'aspiration-soufflage installée sur la partie inférieure arrière de l'équipement (10).

12. Équipement conformément à n'importe laquelle des revendications 1 et 6 **caractérisé en ce que** pour éliminer l'eau du tapis (18) du tambour de centrifugation (46) est employée une pompe électrique d'aspiration-soufflage (59) située sur la partie arrière inférieure de l'équipement grâce à laquelle l'eau du tambour de centrifugation (46) peut être évacuée.

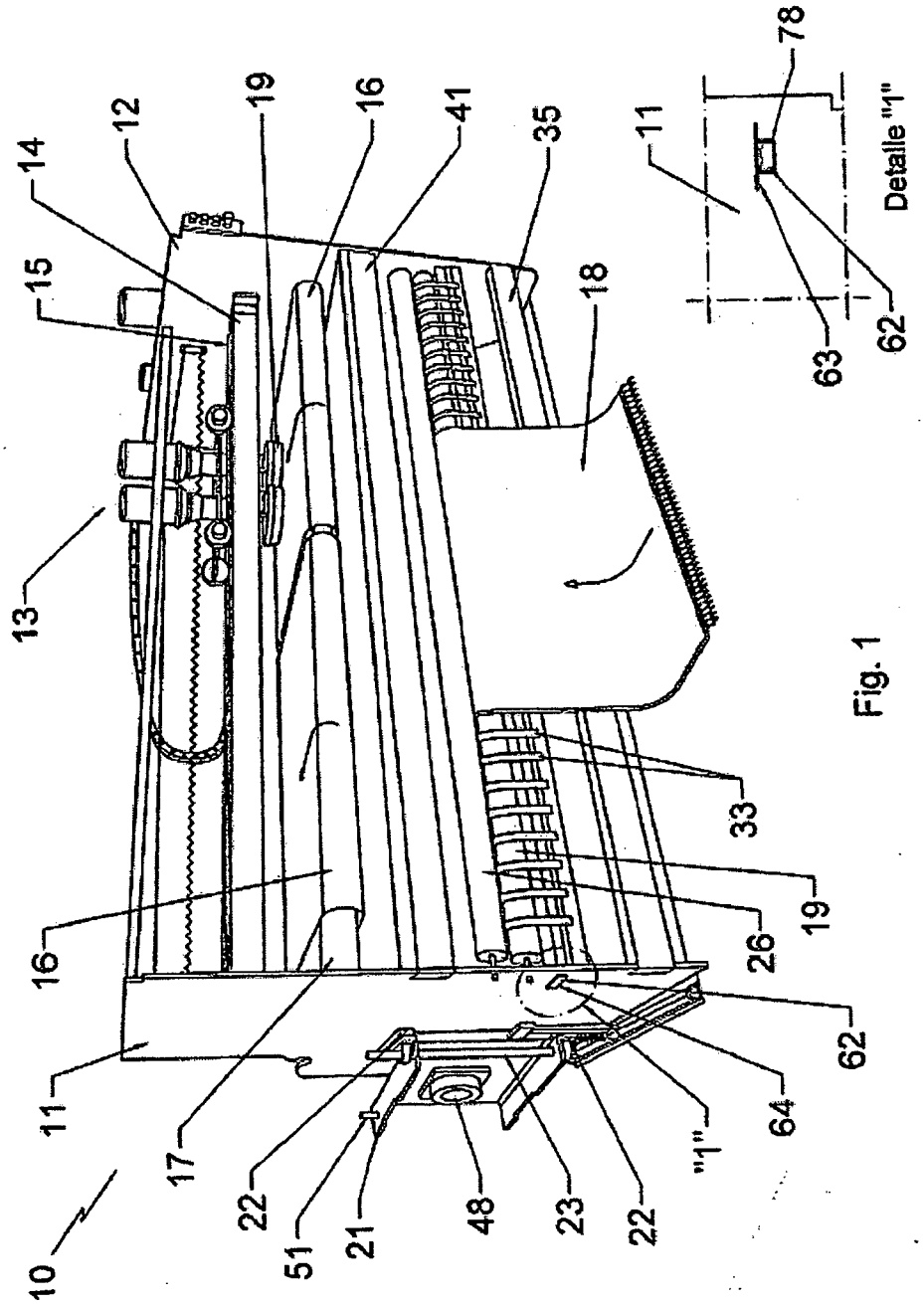
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Fig. 1

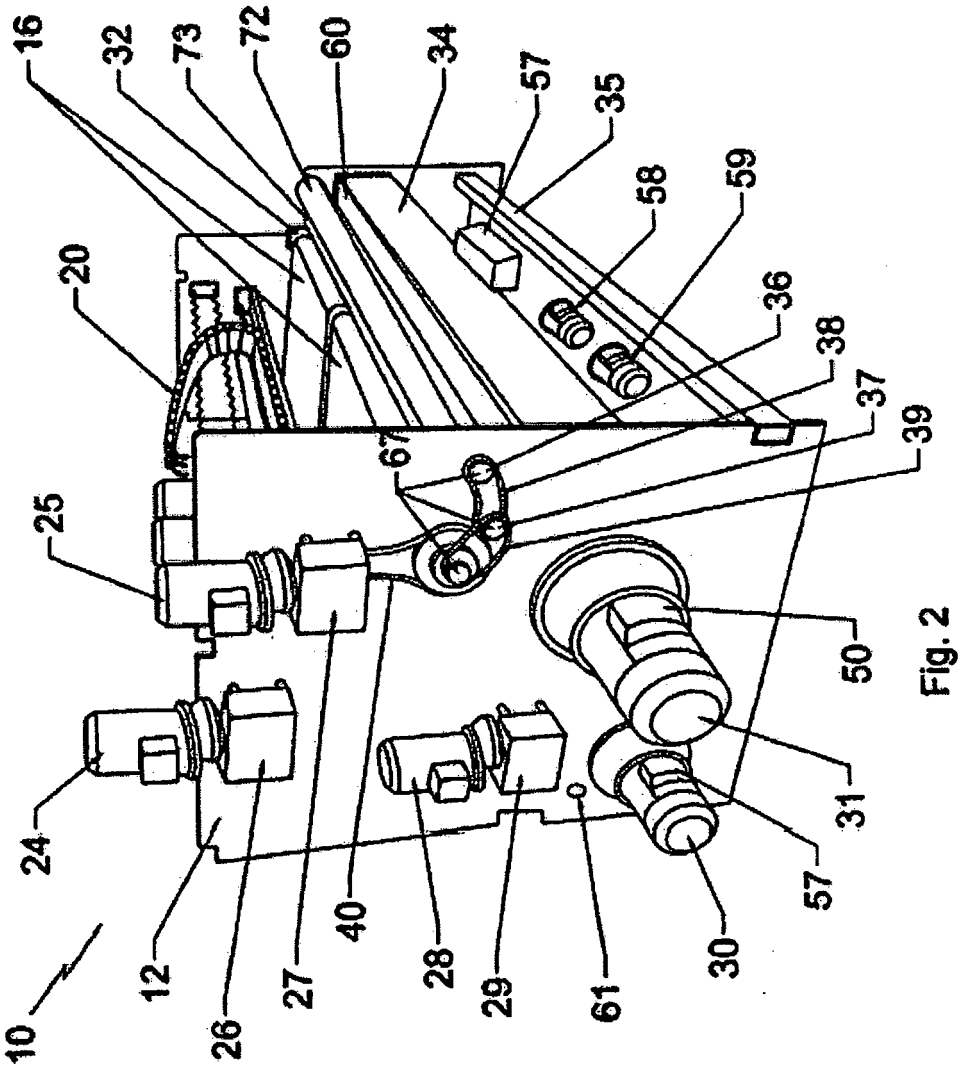
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Fig. 2

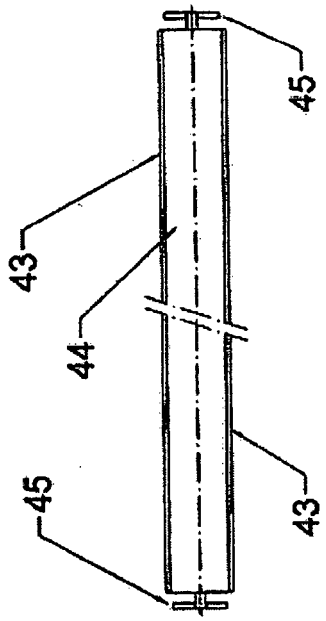

Fig. 4

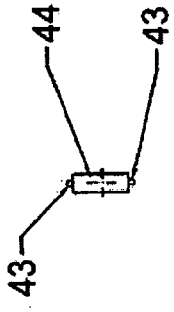

Fig. 5

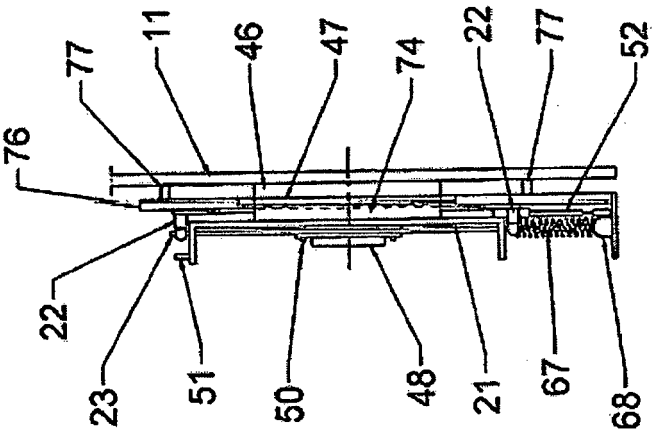

Fig. 3

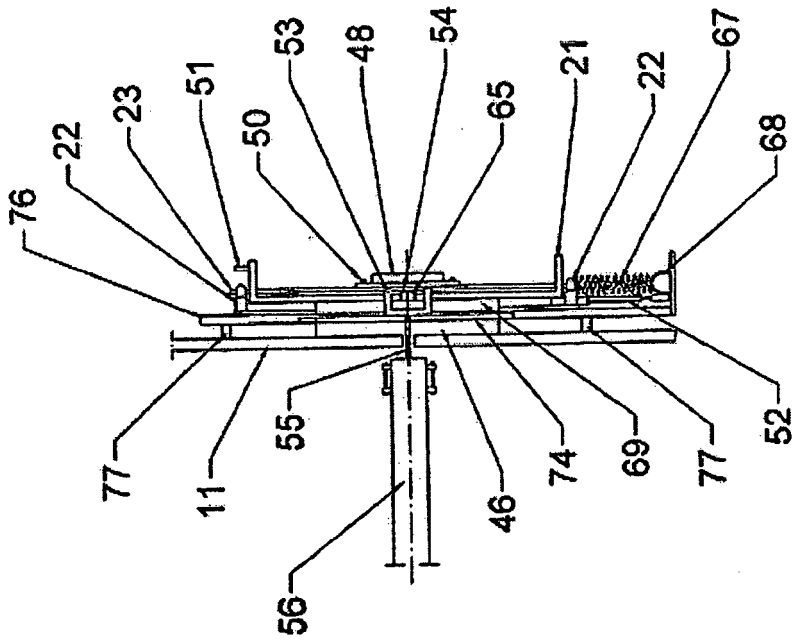

Fig. 6

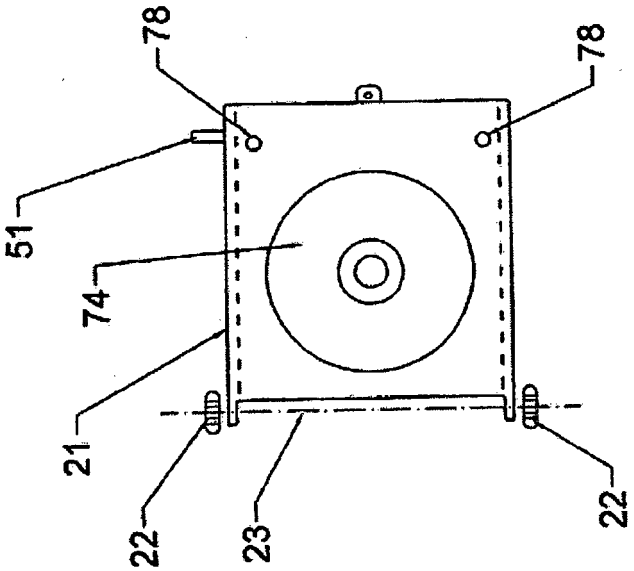

Fig. 8

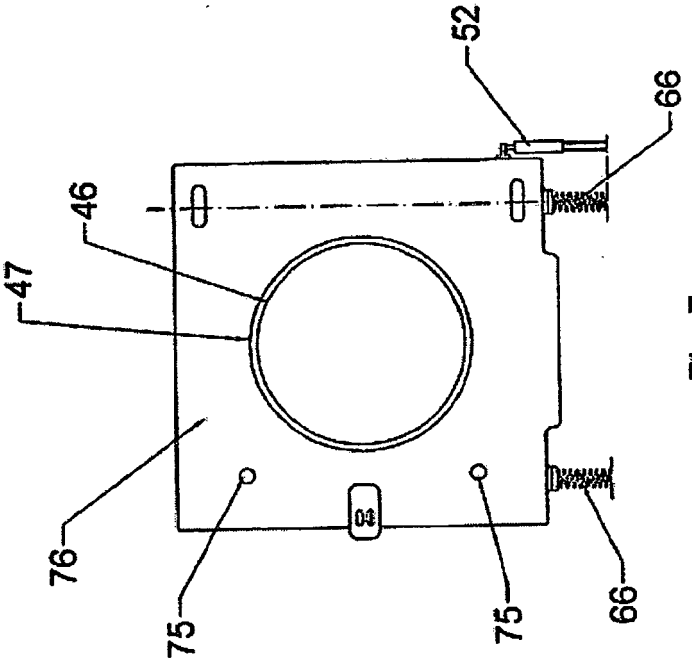

Fig. 7

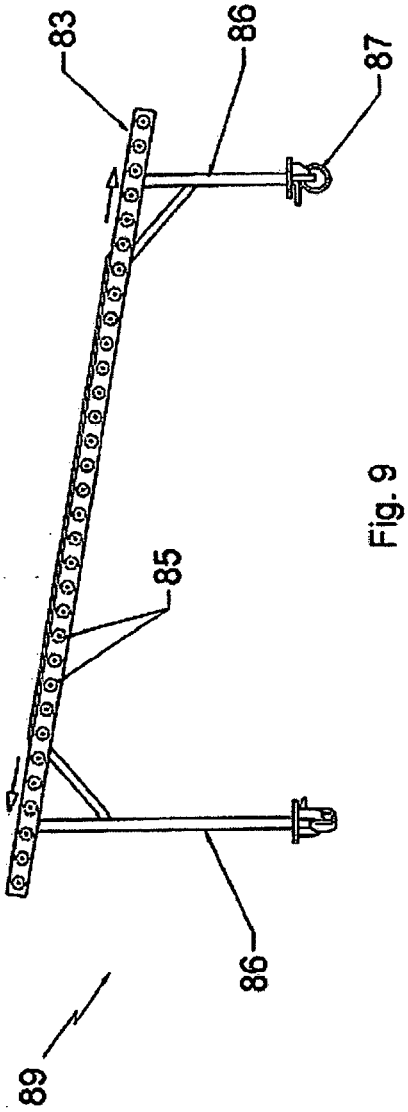

Fig. 9

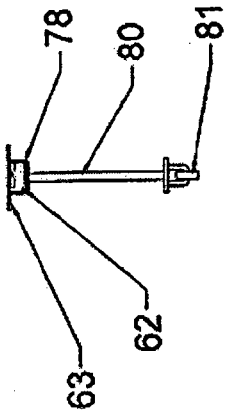

Fig. 11

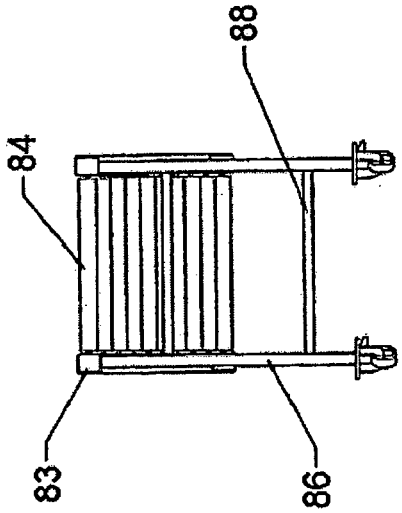

Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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