(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 728 647 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
06.12.2006 Bulletin 2006/49

(51) Int Cl.:
B44C 7/04 *(2006.01)* ***B44C 7/06*** *(2006.01)*

(21) Application number: **05425279.6**

(22) Date of filing: **02.05.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

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(54) Apparatus for the preparation of a decorative covering to be applied to surfaces

(57) It is provided an apparatus for the prepasting of decorative covering (2) provided in rolls (2b), comprising a supporting structure (6), which includes a supporting element (10), on which a roll (2b) of decorative covering (2) is placed, means (5) for spreading the paste (4) on the decorative covering (2), and a unit for unwinding the decorative covering (2), the apparatus (1) also comprising a raised platform (7) for supporting at least one operator (8), and means (9) for moving the structure (6).

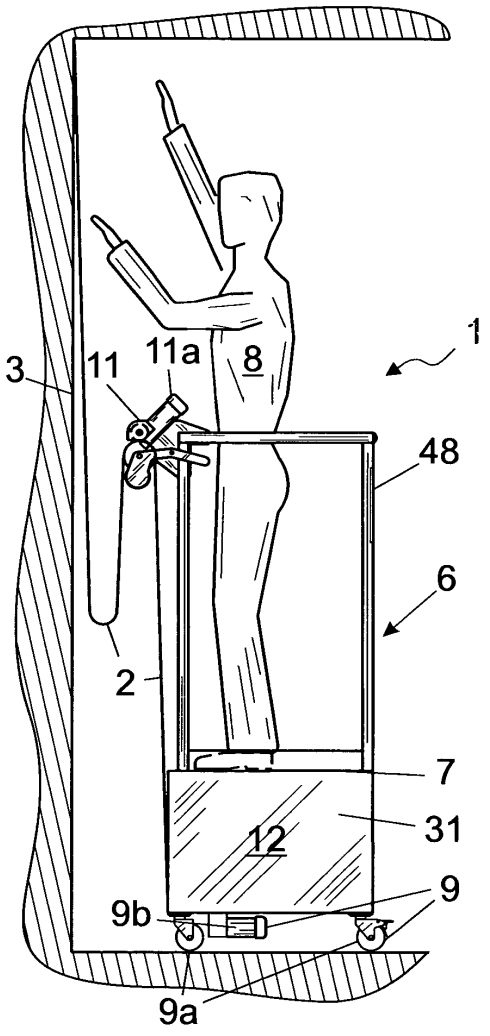

Fig. 1a

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Description

[0001] The object of the present invention is an apparatus for the preparation of decorative covering of the type described in the preamble of the first claim.

[0002] It is common knowledge that decorative coverings, such as wallpaper and upholstery, are used to cover and decorate walls, ceilings, furniture and so on, and are usually attached thereto with the aid of pastes.

[0003] According to the known technique, the coverings are applied in several stages. The covering material usually comes in rolls and, in a preliminary stage, an operator unrolls and precuts strips of covering material of a length slightly exceeding the height, or length, of the wall to cover.

[0004] These strips of covering material are then placed on a suitably-prepared long table, laid so that the side that will come into contact with the wall or other surface remains uppermost.

[0005] The strips of covering material are then prepasted, i.e. a fluid glue or similar product is spread thereon with the aid of a brush or other device and the strip is left in the air for several minutes, called the "soaking time or period".

[0006] During said time, the paste penetrates into the covering material and softens it, thus facilitating its adhesion to a wall or ceiling.

[0007] After completing the soaking stage, the covering material is now ready to be attached to the wall.

[0008] The operator makes the strip of covering material coated with paste adhere to the wall, paying careful attention to its alignment to avoid any unsightly discrepancies in the completed covering.

[0009] To complete this latter procedure, the operator needs to use a ladder. After one strip of covering material has been applied to the wall, the operator accurately cuts away the excess length using a trimming knife or similar device.

[0010] The operator then places another strip alongside the first, until the whole wall has been covered.

[0011] The above-described pasting process is time-consuming and laborious, and the necessary precision in the positioning of the covering material depends exclusively on the ability of the operator.

[0012] The operator's ability is further tested when the covering material has to be placed on the upper part of the walls, so operators have to work on ladders that restrict their freedom of movement and do not provide stable support.

[0013] Given the above-mentioned drawbacks, the procedure is even more difficult when it comes to covering ceilings.

[0014] A further drawback stems from the need to provide an ample supporting surface for the covering material in order to apply the paste on the strip, and from the time-consuming nature of the procedure, partly because of the soaking time required, which reduces the operator's productivity.

[0015] Automatic pasting machines have been developed to overcome some of the above-mentioned drawbacks.

[0016] Said pasting machines enable the strips to be prepasted and precut quickly and automatically, but the other drawbacks remain unchanged. In particular, there is still a need for the expertise of the operators, ample space to handle the covering material to apply, a considerable amount of time for the soaking process, and various cutting procedures to fine adjust the strips of covering material accurately.

[0017] In this situation, the technical goal behind the present invention is to realize an apparatus for the preparation of covering material capable of substantially overcoming the above-mentioned drawbacks.

[0018] In the context of said technical goal, an important object of the invention is to realize an apparatus capable both of applying paste to said wall covering material and of speeding up and facilitating the task of attaching said covering to walls, ceilings or the like, to automate the process of hanging wall and ceiling coverings as far as possible, and to reduce the work required of the operator. Another important object of the invention is to realize an apparatus that facilitates and enables an optimal alignment of the wallpaper or covering material when it is arranged on walls or ceilings.

[0019] A further object of the invention is to realize an apparatus capable of reducing and/or absorbing the wallpaper soaking time.

[0020] A further object of the invention is to produce strips of covering material of precise length to enable their speedy application.

[0021] The specified technical goal and objects are achieved by an apparatus for the preparation of a decorative covering to apply to surfaces as claimed in the attached Claim 1.

[0022] Preferred embodiments are illustrated in the dependent claims.

[0023] Further characteristics and advantages of the invention are better explained below in the detailed description of a preferred embodiment of the invention, with reference to the attached drawings, wherein:

Fig. 1a shows the apparatus according to the invention being used on a vertical wall;

Fig. 1b illustrates the apparatus according to the invention being used on a ceiling;

Fig. 2 identifies the lower part of the apparatus according to the invention;

Fig. 3 shows the roll of covering material and the elements for supporting it;

Fig. 4 shows a detail of the lower part of the invention;

Fig. 5 is a further element in the lower part of the invention;

Fig. 6 illustrates another element in the lower part of the invention, for the prepasting of the covering material;

Fig. 7 is a 3D view of a detail of the invention;

Fig. 8 shows a side view of the element illustrated in Fig. 7;

Fig. 9a schematically illustrates one possible shape of the profile for the rollers shown in the detail illustrated in Fig. 7; and

[0024] **Fig. 9b** schematically illustrates another possible shape for the profile of the rollers shown the detail illustrated in Fig. 7.

[0025] With reference to the above-mentioned figures, the apparatus for the preparation of coverings to apply to surfaces according to the invention is globally indicated by the numeral **1.**

[0026] Said apparatus 1 is suitable for facilitating and speeding up the application of decorative coverings **2** to surfaces **3.**

[0027] The term surfaces 3 is used to mean a vertical wall, a ceiling, a piece of furniture, a partition, or the like.

[0028] The apparatus 1 includes means **5** for applying paste **4** to the covering material 2, specifically on the back **2a** of said covering.

[0029] Moreover, said apparatus **1** includes a supporting structure **6** that comprises a raised platform **7,** which provides stable support for at least one operator **8.** Said apparatus 1 is complete with means of movement **9,** which may simply be wheels **9a,** skids or the like, or they may include a drive motor **9b** and related controls **9c** and steering means **9d,** for the rapid displacement of the apparatus 1.

[0030] The covering material 2 is provided in rolls **2b** and the structure 6 also includes a supporting element **10,** for a roll 2b, and a unit **11** for unwinding the covering material 2, preferably attached to the top of the structure 6, plus control devices **11a** for controlling the unit 11 placed so as to be readily accessible to the operator 8.

[0031] The means 5 for applying the paste 4 and the supporting element 10 is preferably arranged in a work unit **12,** preferably situated in the bottom of the structure 6 and including a spraying device **13,** suitable for wetting the covering material 2, and a plurality of feed rollers **15** for guiding the covering material 2 along a trajectory **16.**

[0032] Alternatively, said trajectory may simply correspond to the distance coming between said roll 2b and said unwinding unit 11.

[0033] To be more specific, the unit 12 contains a roll 2b of covering material 2, attached to the supporting element 10, that essentially comprises a shaft whose axis **10a** lies substantially perpendicular to the trajectory 16 of the covering material 2. The axis 10a consequently also coincides with the axis of the roll 2b.

[0034] The supporting element 10 is preferably idle.

[0035] It is advisable for the covering material 2 to be unwound from the roll 2b along a trajectory that is straight in the horizontal plane to avoid problems with the alignment of said covering material 2 during its application to the surface 3.

[0036] For said purpose, situated near the last feed roller **15a,** there are two sensor devices **17,** suitable for identifying the position of the covering material 2, to check that its trajectory 16 remains straight.

[0037] Said sensors 17, illustrated in figures 2 and 4, are preferably magnetic of inductive type, i.e. they have a magnetic unit **17a** that creates a field of magnetic forces.

[0038] Said field of forces is influenced by a ferromagnetic element **17b,** situated in the vicinity of the magnetic unit 17a, and by the presence of any disturbing elements, such as the covering material 2.

[0039] A receiver, often coinciding with the unit 17a or with the element 17b, is consequently provided to measures the type of magnetic field.

[0040] The sensors 17 are positioned so that any deviation of the covering material 2 from the trajectory 16 changes the way in which it interferes with the electromagnetic field, and consequently changes said field.

[0041] The receiver **17c** can thus indirectly evaluate the position of the covering material 2.

[0042] The unit 12 also comprises means 5 for applying the paste 4.

[0043] These spreading means 5 includes a roller **23,** whose axis **23a** is perpendicular to the trajectory 16 of the covering material 2. Said roller 23 is supported along its axis by suitable hinges or bearings that are attached to the sides of a tray **24.**

[0044] Said tray 24 is partially filled with fluid paste 4, so that the roller 23 is continuously in contact with the paste.

[0045] To adjust the amount of paste 4 on the roller 23, there is also a suitably-adjustable wiping roller **25,** called a doctor, lying adjacent to the roller 23.

[0046] The upper surface of the roller 23, that emerges from the paste 4, is in contact with the back 2a of the covering material 2.

[0047] To ensure the contact of the covering material 2 with the upper part of the roller 23, the feed rollers 15 trace a trajectory 16 that virtually interferes with said roller 23. The presence of the roller 23 thus induces a deviation of the trajectory 16 of the covering material 2 and the two elements consequently remain in contact.

[0048] Alternatively, two rollers in contact with the roller 23 may be placed so as to hold the covering material 2 against the upper part of the roller 23. In this case, said rollers must be rapidly separable to allow for the insertion of the covering material 2.

[0049] Moreover, as mentioned previously, the unit 12 preferably includes a spraying device 13, schematically represented in Fig. 5.

[0050] Said device is situated in the vicinity of the covering material 2, downstream from the roll 2b and suitably upstream from the means 5 for spreading the paste 4.

[0051] The spraying device 13 comprises a container **26,** which preferably contains distilled water.

[0052] The water is heated by an electric heating element **27,** powered by means of a power cord **28.**

[0053] The water is consequently brought to the boil to create steam that opens a valve **29,** when it reaches

a sufficient pressure inside the container 26, and escapes through a nozzle **30,** situated in the vicinity of the covering material 2. The nozzle 30 is preferably of a width similar to the width of the covering material 2.

[0054] In fact, the purpose of the nozzle 30 is to spray the covering material 2 over its entire width to soften the material and thereby reduce the soaking time needed for the covering material 2 after the application of the paste 4.

[0055] Alternatively, there may be several nozzles 30 arranged in a line over the entire width of the covering material 2.

[0056] Thanks to the presence of the spraying device 13, the covering material 2 can complete the soaking process as it covers the trajectory 16, so that the operator 8 does not have to wait for the soaking time to elapse.

[0057] Said trajectory 16 is deliberately extended by means of various turns traced by the feed rollers 15 to enable the paste soaking time to elapse before the covering material 2 is attached to the surface 3.

[0058] There is a bearing structure **31** to hold the above-described components, i.e. the supporting element 10, the spraying device 13, the means 5 for spreading the paste 4, the feed rollers 15, all forming part of the unit 12; said structure 31 may coincide with a portion of the supporting structure 6.

[0059] Said bearing structure 31 is preferably composed of two side plates **32,** the surface of which lies perpendicular to the axis 10a of the roll 2b, and a plurality of crossbars, lying obliquely with respect to the plates 32.

[0060] The elements belonging to the unit 12 are preferably keyed to the supporting structure 31, so that they can quickly and easily be detached for various necessary maneuvers, such as removing and inserting the roll 2b, topping up the paste 4 or water, and servicing.

[0061] The bearing structure 31 consequently provides stable support for the elements in the unit 12 by means of the plates 32, and assures the easy accessibility of said elements.

[0062] After it has passed through the elements of the unit 12, the covering material 2 is conducted along the trajectory 16 to the unwinding unit 11.

[0063] The unwinding unit 11, illustrated in figs 7 and 8, serves the purpose of unwinding the roll 2b and is preferably attached to the top of the supporting structure 6 by means of a specific load-bearing structure **34;** and it includes control devices 11a, placed so as to be accessible to the operator 8, i.e. in the vicinity of the operator.

[0064] For this purpose, the unwinding unit 11 preferably comprises a drive roller **35** and an unwinding pressure roller **36** in contact with the drive roller 35.

[0065] Said rollers 35 and 36, which turn around axes **35a** and **36a** passing through their center, are parallel to one another and perpendicular to the trajectory 16 of the covering material 2.

[0066] The preferred embodiment involves the drive roller 35 being situated above the unwinding pressure roller 36.

[0067] The drive roller is driven by a specific unwinding motor **37,** preferably of electric type, while the unwinding pressure roller 36 is preferably idle.

[0068] The drive roller 35 and the motor 37 are preferably attached directly to the structure 34.

[0069] The covering material 2 is inserted between the drive roller 35 and the unwinding pressure roller 36; it is consequently in contact with both and is entrained by the unwinding pressure roller 36.

[0070] In order to entrain the covering material 2, the rollers 35 and 36 are made with particular patterns, shapes and materials.

[0071] The materials may be polymers, preferably polyurethane, which enables a better adhesion of the rollers 35 and 36 to the covering material 2; alternatively, they may be made of silicone or rubber.

[0072] The drive roller is wider than the width of the covering material 2, while the unwinding pressure roller 36 may be wider, the same as, or narrower than the width of the covering material 2.

[0073] The diameter of the rollers may vary and the unwinding pressure roller 36 is preferably larger in diameter than the drive roller 35, to avoid the covering material 2 being bent at an excessively steep angle.

[0074] The profile of the rollers 35 and 36 is studied specifically to enable the unwinding and correct alignment of the covering material 2.

[0075] To be more specific, said rollers may have teeth or serrated grooves, as illustrated in figures 9a and 9b. The drive roller 35 preferably uses a serrated tooth profile, as illustrated in Fig. 9a, while the unwinding pressure roller 36 preferably uses a rounded tooth as illustrated in Fig. 9b.

[0076] Moreover, said teeth are arranged on the drive roller 35 along lines that form a double spiral converging towards the center, as illustrated in Fig. 7. Alternatively, a diverging double spiral profile may be used.

[0077] Underneath the two rollers, there is preferably an element **38** for collecting the excess paste 4. Said collection element 38 is suitably in the shape of a segment of a cylinder.

[0078] A supporting bar 39 is conveniently placed on the collection element 38 for the cutting of the covering material 2; this bar preferably has a central groove for further facilitating the cutting of the covering material 2.

[0079] Alternatively, said supporting bar 39 may be replaced by an automatic cutting device.

[0080] The collection element 38 and the unwinding pressure roller 36 are connected to the structure 34 by means of a body **40** revolving around a shaft **41.** Said revolving body 40 is supported on the structure 34 by means of revolving bearings, or other connections that enable rotational freedom.

[0081] The body 40 substantially comprises two side elements **42,** which lie mainly on a plane perpendicular to the rollers 35 and 36 and are connected together by means of the collection element 38.

[0082] Said side elements 42 are hinged in the middle

and have the bearings for the roller 36 and the collection element 38 at one end and, at the other end, an electro-hydraulic actuator **43** that holds the pressure roller 36 up against the drive roller 35, as illustrated in Fig. 8.

[0083] The electro-hydraulic actuator 43 is provided on both the right-hand side and the left-hand side of the unwinding unit 11 and serves the purpose of correcting any misalignment of the covering material 2 vis-à-vis its trajectory 16, as prompted by the sensors 17.

[0084] To correct the trajectory of the paper 2, the two actuators automatically and alternately push the pressure roller 36 against the drive roller 35 and then release it.

[0085] The pressure difference in the entrainment of the covering material 2 at one of the two ends gives rise to a displacement of the material along the axis perpendicular to the trajectory 16.

[0086] The body 40 may also be turned manually, so that the two rollers 35 and 36 can be separated to enable the passage of the front end of a roll 2b of covering material 2.

[0087] In the vicinity of the feed unit, there is preferably also an electronic control center **46** for controlling the apparatus 1.

[0088] Said electronic control center 46 can perform several functions, including the measurement of a strip of covering material 2, based on the turns of the drive roller 35 or a like method, and other functions too, and is based on any known electronic technology.

[0089] Said control center 46 preferably includes a screen for displaying the parameter settings, and a push-button panel for selecting said parameters.

[0090] On said apparatus, there are preferably also control devices 11a for the unwinding unit 11.

[0091] The apparatus 1 also includes the supporting structure 6 for the unit 12 and the unwinding unit 11.

[0092] The supporting structure 6 also includes the raised platform 7, preferably situated above the unit 12 and useful for attaching the covering material to the higher areas of the surfaces 3, when these are walls or ceilings. To access the raised platform 7, there is preferably a ladder, suitably of folding type.

[0093] There are also side and front barriers **48** for the safety of the operator 8 and for supporting some of the components.

[0094] The raised platform 7 may be either manually or electrically adjustable in height, or alternatively positioned at a fixed height.

[0095] Finally, there may be one or two telescopic arms **49** for supporting an upper roller **50** for applying the covering material 2 to the surface 3. Said arms 49 are suitably hinged to the upper part of the supporting structure 6 and run along said structure in the direction further away from or nearer to the wall 3.

[0096] The telescopic arm 49 conveniently has one end including a suspension to ensure a good contact between the upper roller 50 and the surface 3.

[0097] The entire apparatus 1 is preferably connected to the mains power supply to power the motor 9b for moving the apparatus, the motor 37, and other devices. The apparatus 1 is also conveniently fitted with an electric battery and current converter to guarantee continuity of operation even in the event of a temporary power failure.

[0098] The apparatus as described above in structural terms operates in the manner explained below.

[0099] The roll 2b of covering material 2 is placed on the supporting element 10, which is temporarily removed and then reinstalled simply by exerting some pressure thereon.

[0100] The covering material 2 is unwound by hand and channeled onto the feed rollers 15 along the trajectory 16.

[0101] The covering material 2 is then partially unwound and brought up to the unwinding unit 11, where it is inserted between the two rollers 35 and 36.

[0102] This last maneuver is done by turning the revolving body 40 by means of the actuators 43, so as to create a wide gap between the two rollers 35 and 36 and thus enable the insertion of the covering material 2; then the actuators 43 are re-enabled and the two rollers 35 and 36 are moved back into contact with one another.

[0103] The covering material 2 is then unwound until it reaches the groove in the supporting bar 39, where it is accurately cut with the aid of a trimming knife. The electronic control center 46 governs the length of the strip and the other parameters, set by means of the pushbutton control panel.

[0104] The start command is preferably given by means of said electronic control center 46.

[0105] The unwinding unit 11 is enabled by means of the control devices 11a, the motor 37 starts turning the drive roller 35 and said roller turns the unwinding pressure roller 36, which entrains the covering material 2 over a length corresponding to the length of the strip that needs to be cut.

[0106] Any misalignment occurring during the unwinding of the roll 2b is detected by the sensor devices 17, which command the actuators 43 that keep the covering material 2 aligned by exerting a greater pressure on one or other side of the roller 36. These maneuvers are preferably controlled automatically.

[0107] During its entrainment, the covering material 2 passes through the spraying device 13 and is wetted, preferably with steam, which softens the covering material 2, thus reducing the soaking time required.

[0108] Then the back 2a of the covering material 2 comes into contact with the means 5 for spreading the paste 4, i.e. with the roller 23 which continually dips into the tray 24 to collect the fluid paste 4.

[0109] The amount of paste 4 that is spread ,over the covering material 2 is accurately regulated by the wiping roller, or doctor 25.

[0110] After it has been pasted, the covering material 2 continues along a lengthy trajectory 16 until it reaches the unwinding unit 11.

[0111] Said trajectory 16 is deliberately extended to

enable the paper 2 to become soft on the way between the means 5 for spreading the paste 4 and the unwinding unit 11.

[0112] While the covering material 2 follows the described route, the operator 8, preferably standing on the platform 7, grasps the end of the covering material 2 in his hands and applies it to the wall.

[0113] This last maneuver can also be done,automatically if the platform is equipped with the telescopic arms 49 and the upper roller 50.

[0114] When a stretch of covering material 2 of the predetermined length has been unwound, the unwinding unit 11 stops and the operator can cut the length of covering material 2 either by hand, with the aid of the groove on the supporting bar 39, or automatically.

[0115] Once the strip of covering material 2 has been cut, the operator completes the application of said strip on the surface 3; here again, the entire procedure can be completed by the upper roller 50 and mechanical arms 49.

[0116] The upper roller 50 and mechanical arms 49 are particularly useful in the case of the surface 3 being a ceiling, in which case it is advisable for the means of movement 9 to include a drive motor 9b and to be operated by means of corresponding controls 9c and steering means 9d, so that the apparatus 1 can complete the hanging operation entirely automatically.

[0117] Once a strip of covering material 2 has been applied to the surface 3, the apparatus 1 is shifted by the means of movement 9 to apply the next strip, and so the process goes on until the surface 3 has been covered.

[0118] To move the apparatus along to apply the different strips of covering material 2, it is even more convenient for the means of movement 9 to include the drive motor 9b and for said means to be governed by corresponding controls 9c and steering means 9d.

[0119] The invention offers important advantages.

[0120] In fact, using the apparatus 1 makes the procedure for pasting and hanging covering material much quicker and, for the most part, automatic, thus considerably reducing the work required of the operators 8 and considerably increasing their productivity. In fact, there no longer any need to go through the time-consuming manual pasting procedure that characterized the wallpaper hanging process.

[0121] A further advantage stems from the fact that the apparatus 1 enables a remarkable and automated precision in the application of the covering material to the surfaces 3.

[0122] This precision is favored by the presence of the raised platform 7, on which the operator 8 stands, thus no longer needing to use ladders or the like, and being able to rely on a solid support that enables the application of the covering material to be done accurately even in difficult areas.

[0123] The accurate unwinding of the covering material 2 is assured by the previously-described sensors 17 and actuators 43.

[0124] This characteristic that the unwound strip of covering material 2 must have is of fundamental importance to avoid leaving unsightly discrepancies on the covered wall, and it an pose considerable problems if the rolls 2b have not been carefully made, as is often the case.

[0125] These problems have been overcome by the sensor devices 17 and actuators 43.

[0126] Accuracy is also favored by the design of the teeth on the rollers 35 and 36. To be more specific, the drive roller 35 has an arrangement of its teeth along lines that trace a double spiral converging towards the center.

[0127] This arrangement of the teeth creates two forces parallel to the axis of the roller that come to bear on the covering material 2 and guide the right-hand half of said material towards the left and the left-hand half towards the right. If the covering material 2 becomes slightly misaligned as it proceeds along its path, one of the two forces prevails over the other and restores the covering material 2 to the correct alignment in the middle of the rollers 35 and 36.

[0128] Should the drive roller 35 be narrower than the width of the covering material 2, the above-described balancing action on the forces is more limited, but there is the important advantage of the drive roller 35 not becoming soiled with paste. On the other hand, the alternative arrangement, with a diverging double spiral profile, enables a better spreading of the covering material.

[0129] A considerable accuracy is also assured in the length of the various strips of covering material thanks to the presence of the electronic control center 46. There is also a battery to guarantee a continuing precision even in the event of a power failure.

[0130] A further advantage of the apparatus 1 consists in that the operator 8 does not need to wait for the covering material 2 to soak.

[0131] In fact, the soaking time elapses while the covering material 2 unwinds and moves along its path, and is also shortened by the spraying device 13. This feature further increases the productivity of the system.

[0132] Should the apparatus 1 include the arms 49 and the upper roller 50, the process is almost totally automated.

[0133] In fact, the operator 8 can apply the covering material 2 without difficulty and with a minimum effort even on ceilings. In this case, all the operator 8 has to do is apply the first strip of covering material to the wall 3, then the rest is done automatically.

[0134] The automation is even more complete if a drive motor 9b is provided in the means of movement 9.

[0135] A further advantage stems from the special teeth on the rollers 35 and 36, which enable an excellent entrainment of the covering material 2 and its adhesion to the rollers 35 and 36.

[0136] Finally, the hanging process is very clean, thanks to the presence of the collection element 38.

[0137] The invention may undergo numerous variations without departing from the concept of the invention.

[0138] For instance, the means 5 for spreading the paste 4 may be situated in line with the unwinding unit 11, in which case the soaking time elapses after the unwinding of the covering material 2 on a level with the unit 11, so it is not necessary to define a lengthy trajectory 16, since a substantially linear trajectory from the roll 2b to the unwinding unit 11 will suffice.

Claims

1. Apparatus for the preparation of a decorative covering to apply to surfaces, said decorative covering (2) being provided in at least one roll (2b) and said apparatus (1) being of the type comprising means (5) for spreading paste (4) on said decorative covering (2), **characterized in that** it comprises:

   - a supporting structure (6) including a raised supporting platform (7), suitable for occupation by at least one operator (8),
   - means of movement (9) for said supporting structure (6),
   - supporting elements (10) for said roll (2b) attached to said supporting structure (6),
   - a unit (11) for unwinding said roll (2b), attached to said supporting structure (6), and
   - devices for controlling said unwinding unit (11) that are accessible to said operator (8),
   - said means (5) for spreading paste (4) being engaged to said supporting structure (6) between said roll (2b) and said unwinding unit (11).

2. Apparatus according to claim 1, comprising a spraying device (13), suitable for wetting said decorative covering (2) and situated downstream from said roll (2b) and upstream from said means (5) for spreading paste (4).

3. Apparatus according to claim 2, wherein said spraying device (13) is suitable for delivering steam.

4. Apparatus according to claim 3, wherein said spraying device (13) includes a container (26) for containing water, an electric heating element (27) suitable for boiling said water and an electric power cord (28) suitable for providing electrical energy to said heating element (27).

5. Apparatus according to claim 3, wherein said spraying device (13) includes at least one delivery nozzle (30), the width of which is similar to that of said decorative covering.

6. Apparatus according to claim 1, wherein said unwinding unit (11) and said supporting structure (6) define a trajectory (16) for said decorative covering (2), and wherein said apparatus (1) includes at least one sensor device (17) suitable for detecting any displacement of said decorative covering (2) from said trajectory (16), and an actuator (43) suitable for restoring said decorative covering (2) to said trajectory (16).

7. Apparatus according to claim 6, wherein said actuator (43) is designed to exert an asymmetrical pressure on said unwinding pressure roller (36) in contrast with said drive roller (35) suitable for modifying said trajectory (16).

8. Apparatus according to claim 6, wherein said sensor device (17) is of inductive type.

9. Apparatus according to claim 1, wherein said unwinding unit includes a drive roller (35) and an unwinding pressure roller (36) suitable for entraining said decorative covering (2).

10. Apparatus according to claim 9, wherein said drive roller (35) presents a surface having a plurality of linear grooves that form a double spiral profile extending in opposite directions.

11. Apparatus according to claim 9, wherein said drive roller (35) and unwinding pressure roller (36) have a surface including teeth suitable for entraining said decorative covering (2).

12. Apparatus according to claim 9, wherein said drive roller (35) and unwinding pressure roller (36) have a surface made of a polymer material.

13. Apparatus according to claim 1, wherein said raised platform (7) can be moved in the vertical direction.

14. Apparatus according to claim 1, wherein said means of movement (9) includes at least wheels (9a), and a drive motor (9b) acting on at least some of said wheels (9a).

15. Apparatus according to claim 1, comprising control devices (9c) for said motor (9b) and steering means (9d) for said wheels (9a).

16. Apparatus according to claim 1, comprising telescopic arms (49) and an upper roller (50), suitable for applying said decorative covering (2) to said surface (3).

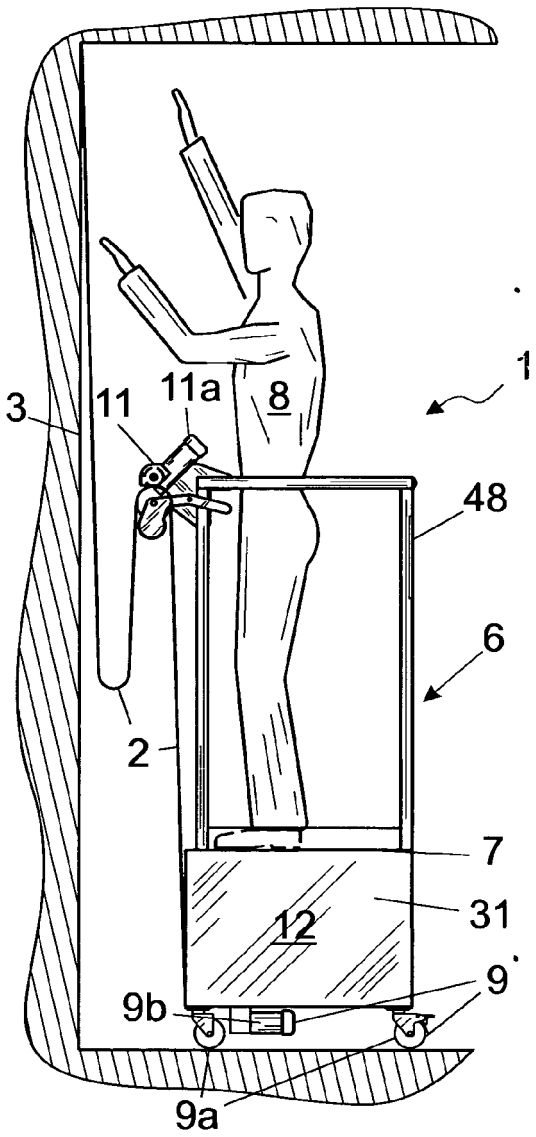
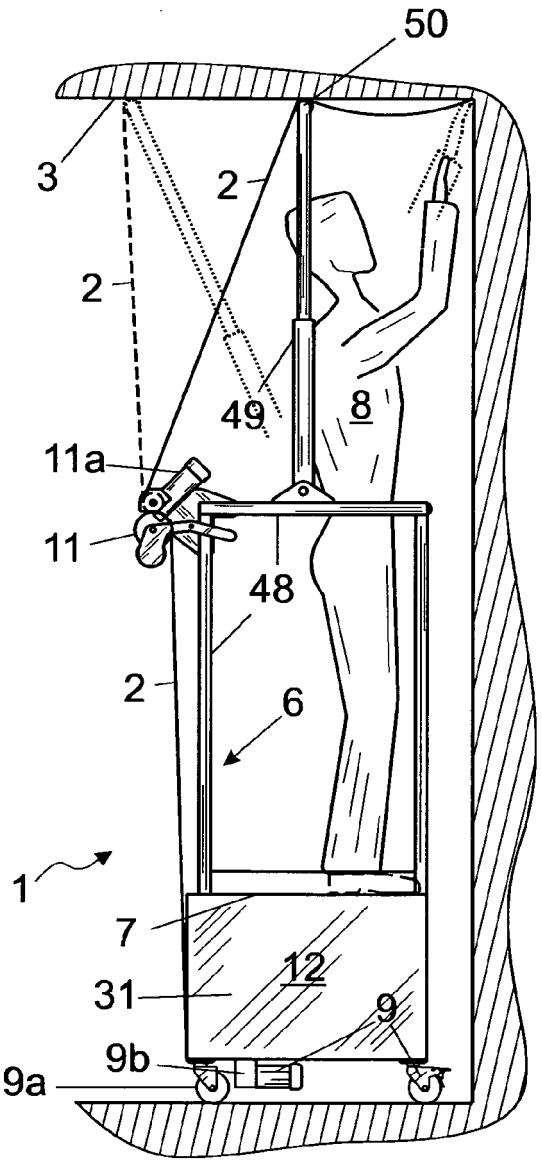

1
3
11
11a
8
48
6
2
7
12
31
9
9b
9a

Fig. 1a

Fig. 1b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9b
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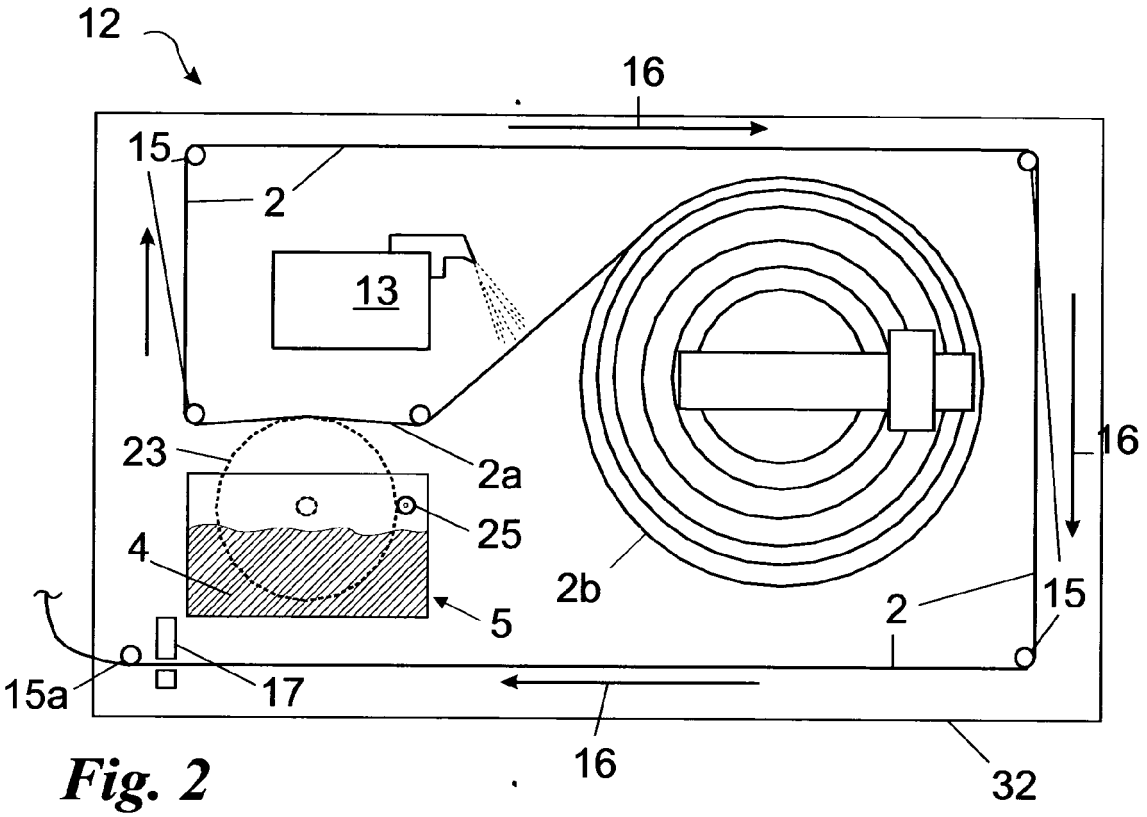
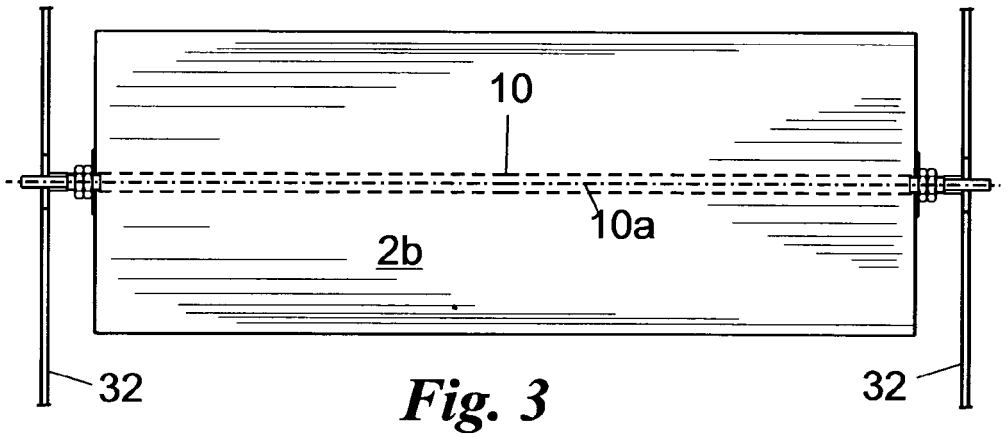


Fig. 2



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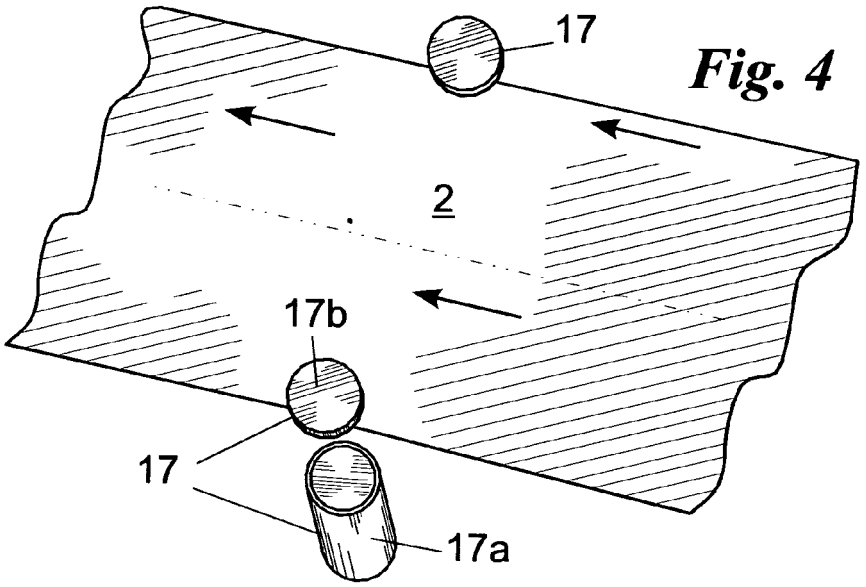

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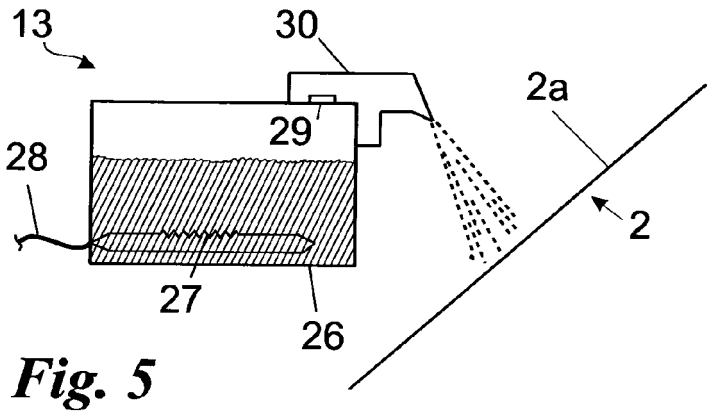


Fig. 5

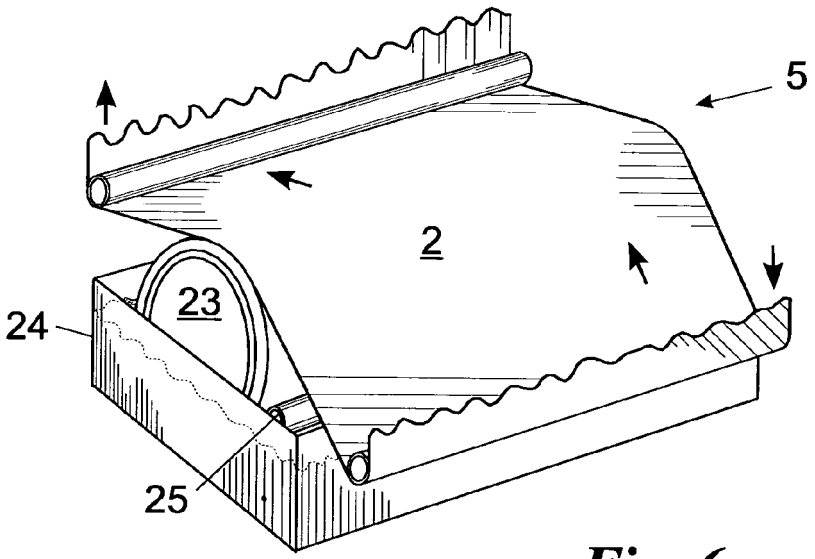


Fig. 6

Fig. 7

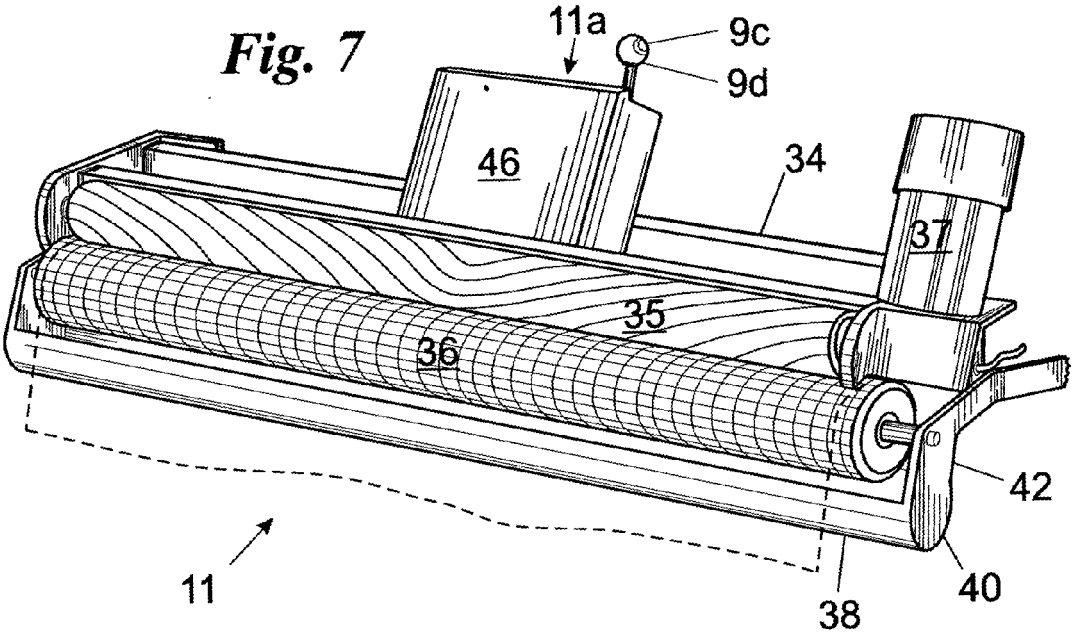


Fig. 8

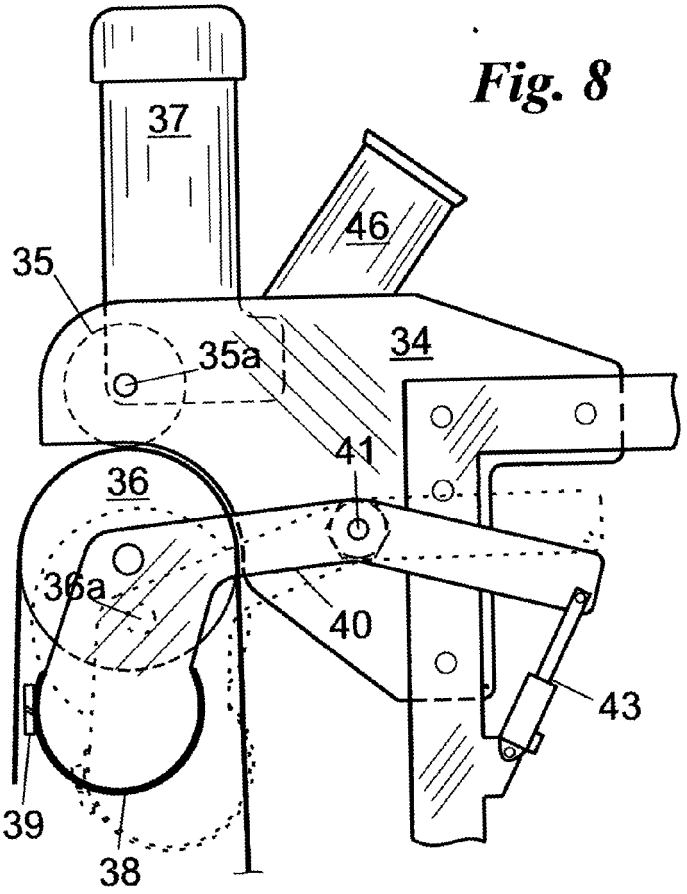


Fig. 9a

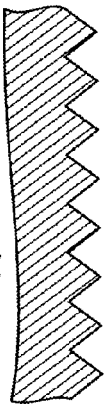
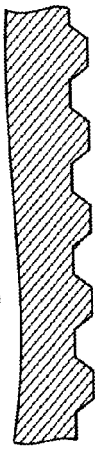


Fig. 9b



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EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5279

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	DE 260 720 C (HEINRICH VOIGT) 31 January 1912 (1912-01-31) * the whole document * -----	1-16	
A	DE 202 10 871 U1 (C.A. JUERGEN LEHNARTZ GMBH) 2 January 2003 (2003-01-02) * page 7, line 1 - page 9, line 4; figure 1 * -----	1-16	
A	DE 88 07 924 U1 (ROMETSCH, SIEGFRIED, 8031 SEEFELD, DE) 19 October 1989 (1989-10-19) * page 5, line 12 - page 6, line 20; figure 1 * -----	1-16	
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B44C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	24 October 2005	Sartor, M

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