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(54) **Improved device for roller painting and corresponding method**

(57) A device (10) for roller painting, especially suitable to be used for works of painting/decorating of interior and/or exterior environments or locations of civil and/or industrial contexts, comprising a first roller (12) and a second roller (16), respectively, defining a paint roller and a smoothing roller, rotatably stabilised with respect to a

first axis (14) and to a second axis (18) inside a shell or cover (20) which partially encloses them and comprising, also, means of interaction and co-operation with a tray assembly (40) for the loading of said first roller (12) with the paint of said tray assembly.

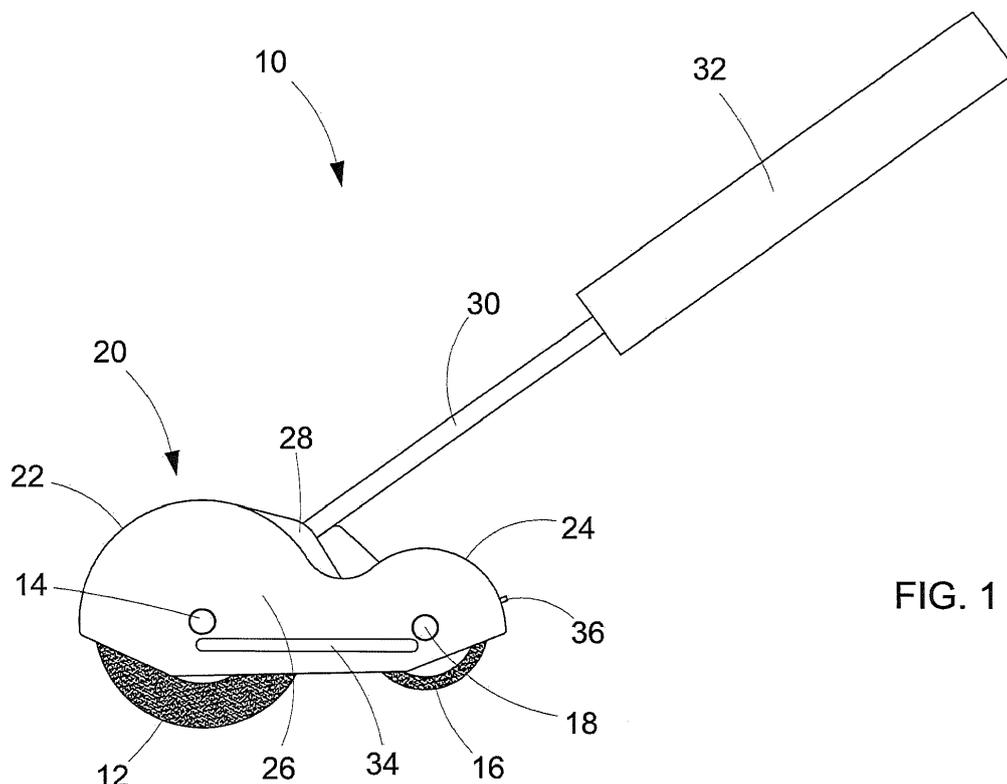


FIG. 1

Description

[0001] The present invention relates to an improved device for roller painting.

More particularly the present invention relates to a device for roller painting especially suitable for being used for works of painting/decorating of interior and/or exterior environments or locations of civil and/or industrial contexts.

[0002] As is known, the operations of painting/decorating of walls and/or ceilings are typically performed using brushes or rollers soaked with paint in the colour and in the finishes most suitable for the decorative and coverage effect required.

[0003] Referring specifically to rollers, they are made up of a central core defined by a cylinder in plastic material or another type covered with a sponge or with bristles of different length and rotating with respect to an axis defined by a metal or plastic support provided with a handle suitable for being gripped by a user.

Rollers for painting have different dimensions as a function of the use for which they are designed (rollers of medium/large diameter for walls or ceilings, rollers of small diameter for radiators or frames or the like).

[0004] According to the type of finish or decorative effect which is to be obtained or the type of wall which has to be painted (for example a wall with irregular surface or not adequately primed before painting), the rollers can be of the honeycomb or crinkle type, with varyingly long bristles or fringes or the like.

[0005] Moreover the rollers for painting can be of the type with manual or automatic loading with different features on the basis of the ways whereby they are dipped and loaded with the paint.

[0006] The manual loading rollers are dipped into a basin or receptacle containing the paint, while the automatic loading ones are dipped with continuity by means of a piston or a compressor connected to the tank containing the paint placed in a remote position. Some rollers, moreover, are provided with a tank for the paint directly integrated in the central core of the same roller or in the grip.

[0007] The manual loading rollers have a disadvantage linked to the fact that, after having been dipped into the paint, they then have to be passed once or several times, for example, over a metal or plastic grille in order to "drain" the excess paint in such a way as to avoid excessive dripping during painting.

[0008] This operation is not necessary in the case of automatic loading rollers or in those with integrated tank which, tendentially, allow the correct quantity of paint to be provided without the need for preventive draining of the roller for the elimination of the quantity of paint in excess.

[0009] However rollers with automatic loading or those with tank integrated in the roller have some important disadvantages linked to the fact that they are not easy to use due to their weight (for example rollers with tank

integrated in the roller) or due to the overall dimensions (for example the tubes for feeding the paint to the roller make the use of the roller at the corners of the walls difficult if not impossible).

5 **[0010]** A further disadvantage, common both to rollers with manual loading and to those with automatic loading, is represented by the fact that the user, despite a preventive elimination of the paint in excess (rollers with manual loading), must take good care to cover his or her head, wear goggles or similar systems in order to protect him or herself against the splashes caused by the rotary movement of the roller during repeated passing over walls, ceilings and the like.

10 **[0011]** A further disadvantage of traditional rollers is represented by the fact that, despite the fact that they are more convenient to use compared to brushes in terms of rapidity of application of the paint, they tend to leave imperfections on the wall represented by drips of paint, lumps, etc.

15 **[0012]** US 3,409,929 describes a device of painting with rollers comprising a pair of levelling rollers placed on opposite sides of a main roller, mounted to rotate in a cap formed by two parts hinged one to the other.

20 **[0013]** The main object of the present invention is that of avoiding the disadvantages mentioned above.

25 **[0014]** More particularly the object of the present invention is that of providing an improved device for roller painting which does not create splashes or drips of paint during the painting of walls, ceilings and the like.

30 **[0015]** A further object of the present invention is that of providing an improved roller device suitable for guaranteeing the application of layers of paint evenly and without residues of drips, lumps or similar imperfections.

35 **[0016]** A further object of the present invention is that of providing a roller device for painting which is easy to load with paint and for which preventive removal of the excess paint is not necessary.

40 **[0017]** A further object of the present invention is that of providing a roller painting device with reduced weights and overall dimensions, easy and rapid to use and such as to allow the application of layers of paint also at the corners between walls or between walls and ceiling.

45 **[0018]** A further object of the present invention is that of making available to users a device for painting with roller suitable for guaranteeing a high value of resistance and reliability in time and such, moreover, as to be able to be easily and economically manufactured.

[0019] These and other objects, which will be made clearer here below, are achieved in accordance with the invention with the features listed in the annexed independent claim 1.

50 **[0020]** According to the invention an improved device is provided for roller painting comprising a first roller and a second roller, respectively, defining a paint roller and a smoothing roller, rotatably stabilised with respect to a first axis and to a second axis inside a shell or cover which partially encloses them and means of interaction and co-operation with a tray assembly for the loading of

said first roller with the paint of said tray assembly.

[0021] The constructional and functional features of the improved device for roller painting of the present invention will be made clearer by the following detailed description, in which reference is made to the accompanying drawings which represent a preferred and non-limiting embodiment thereof, in which:

Figure 1 represents schematically a side view of the improved device for roller painting of the present invention;

Figure 2 represents schematically a partially sectioned side view of the same device;

Figure 3 represents a schematic view from above of the paint roller of the present invention coupled to a tray for loading the paint;

Figures 4 and 5 represent two sectioned side views depicting the ways with which the paint roller of the invention co-operates with the tray for loading the paint.

[0022] Referring to the aforementioned drawings, the improved device for roller painting of the present invention, denoted overall by 10, comprises a first roller 12 rotatably positioned with respect to a first axis 14 and a second roller 16 rotatably positioned with respect to a second axis 18 parallel to said first axis 14.

[0023] The first roller 12 defines a paint roller of the type with long pile, in sponge, velvet, in natural or synthetic material or in other different and suitable materials and finishes chosen according to the type of wall to be painted or of paint used or, again, of the final effect required.

[0024] The second roller 16, which preferably has a smaller diameter than that of the first roller 12, defines a smoothing roller (for the function described here below), typically with short pile and in natural or synthetic fibre, in sponge or in another suitable material.

[0025] Said first roller 12 and second roller 16 which, as described above, have parallel axes of rotation, are rotatably stabilised inside a shell or cover 20 made in one piece or in separate components and assembled by gluing or welding, said shell being in plastic or metal material or in another suitable lightweight material, resistant and easy to wash. The shell or cover 20 comprises a front portion 22 partially covering the first roller 12 and a rear portion 24 partially covering the second roller 16; in accordance with the preferred embodiment shown in the drawings, the covering of said first and second rollers is tendentially equal to at least 120°.

[0026] Said front and rear portions are laterally closed by means of two opposite shoulders 26 suitable for supporting the axes of rotation of the first roller 12 and of the second roller 14.

[0027] The shell or cover 20, in the region comprised between the front portion 22 and the rear portion 24, develops a fork 28 with respect to which a rod 30 is hinged, provided, at the opposite end to that of attachment with

respect to the fork, with a grip 32 with respect to which it is possible to connect an optional extension (not shown in the drawings). The hinge connection between the rod 30 and the fork 28 of the cover 20 is of the frictional type so as to allow the locking of said rod in any angular position.

[0028] The opposite shoulders 26 of the shell or cover 20, at their lower edge, have a pair of opposite ridges 34 developed perpendicularly to the outer lateral surface of said shoulders and away from the same, said ridges 34 being longitudinally extended in a continuous or partial manner between the axes of rotation of the first and second roller so as to define a pair of sliding guides whose function will be made clearer here below.

[0029] On the external surface of the shell or cover 20 and at the lower edge of the rear portion 24 a further ridge 36 is formed, externally projecting and developed in a continuous or partial manner in a direction parallel to the axis of the second roller 16; the function of said ridge will be detailed herein below in the description.

[0030] Internally to the shell or cover 20 and at the intermediate region between the front portion 22 and the rear portion 24 of said cover a rib or partition 38 is developed, departing from the inner surface of the shell or cover and in a direction parallel to the axes of rotation of the first and second roller, slanted in the direction of the second roller 16 and having the function of defining an obstacle or shield to the spread of the splashes or atomised particles of paint which detach from the first roller 12 during the rolling movement and suitable, also, for conveying the possible drips in the direction of the second roller 16.

[0031] The internal configuration of the shell or cover 20 is, preferably, made in a scroll with curvilinear profile in such a way that the splashes or atomised particles of paint, generated by the rolling of the first roller 12 on the surface to be painted, are collected in the gap formed between said first roller 12 and the internal surface of the shell and are conveyed in the direction of the rib or partition 38.

[0032] The first roller 12 and the second roller 16, as mentioned previously, define, respectively, the paint roller and the smoothing roller.

[0033] After having loaded the paint roller with the paint, according to the methods detailed here below, the roller painting device is brought into contact with the surface of the wall or of the ceiling or the like and the user proceeds with the painting operation. In this phase, during the forward movement of the painting assembly, the first roller 12 or paint roller spreads the layer of paint, while the second roller 16 or smoothing roller performs the dual function of collection of the splashes or drips of paint released by the first roller and of smoothing of the layer of paint deposited by the same first roller, rendering, in this way, the treated surface more even, without imperfections and possible lumps of paint. This function of the second roller 16 or smoothing roller is also performed during the return stroke of the painting device.

[0034] The smoothing roller 16 has conveniently a width slightly larger than the first roller 12, so as to smooth the side edges of the track of paint left by the first roller. The device for painting with roller of the present invention is preferably used in combination with a tray assembly for paint roller denoted overall by 40 in Figures 3 to 5 and suitable for allowing the loading of the first roller 12 or paint roller with the paint for the painting of walls, ceilings or the like. This tray assembly for painting is the object of a previous European patent application (EP2452828), incorporated here by reference, in the name of the same holder and, therefore, is not described in detail in reference to the component parts and to the modes of operation.

[0035] The roller painting device 10 is coupled to the tray assembly 40 and, in particular, is positioned with respect to a tray 42 with the opposite ridges 34 in contact with the edges 44 of the tray 42 longitudinally extended along the entire length of the same.

[0036] As schematised in Figures 4 and 5, the ridges 34 allow the sliding of the painting device with respect to the tray 42 of the tray assembly 40 in the direction of a receptacle 46 containing the paint 48 and in an opposite direction and define, as mentioned above, sliding guides for the same roller device.

[0037] More particularly, as schematised in Figure 4, the painting device of the invention, sliding with respect to the tray 42 of the tray assembly 40 by means of the ridges 34 in contact with the edges 44, moves to the receptacle 46 and, by applying pressure on a pivoted lever 50, determines the opening of a window formed in the receptacle 46 and, consequently, causes the exit from the same of a quantity of paint in the direction of the tray 42 and partially filling the same.

[0038] The roller painting device, subsequently, disengages from the contact with the pivoted lever 50 of the receptacle 46 which, due to an elastic effect, returns into its rest position causing the closure of the window of the receptacle 46 and therefore the exit of paint from the same (Figure 5) and, sliding with the ridges 34 along the edges 44 of the tray 42, allows the first roller 12 or paint roller to be loaded with the paint which has flowed into the tray 42.

As clearly schematised in Figures 4 and 5, the ridges 34 of the painting device, as well as allowing the sliding of the same device with respect to the tray 42, allow the second roller 16 or smoothing roller to be maintained not in contact with the paint contained in the same tray.

[0039] The painting device 10, by moving backwards towards the outer edge of the tray 42 opposite the receptacle 46, moves with the further ridge 36 into contact with at least one stop element 52, developed on the upper surface of the tray on the opposite side with respect to the receptacle 46 and extended perpendicularly to the longitudinal axis of the same tray. The further ridge 36, coming into contact with the stop element 52, causes an overturning or rotation upwards of the shell or cover 20 (taking account of the hinge connection of the shell or

cover 20 with respect to the rod 30 and, consequently, of the rollers secured to the same, avoiding, in this way, dripping of the paint loaded in the first roller on raising of the painting device).

5 **[0040]** The painting device, loaded with the paint in this way, is therefore ready for use.

[0041] As can be seen from the above the advantages that the roller painting device of the present invention achieves are clear.

10 **[0042]** The improved device for roller painting of the present invention has the considerable advantage of being able to perform the painting operations without splashes or drips of paint during painting.

[0043] A further object of the present invention is that of providing an improved roller device such as to guarantee the application of layers of paint evenly and without residues of drips, lumps or similar imperfections, so as to obtain the final result of a smooth and even painted surface and, consequently, of high quality.

20 **[0044]** A further advantage is represented by the fact that the roller device of the invention, combined with a tray assembly for containing the paint, is easy and convenient to load without the need for elimination of the excess paint (in that the tray assembly allows the right quantity of paint to be made available).

25 **[0045]** Additionally advantageous is the fact that the roller painting device of the invention has reduced overall dimensions which do not limit the use thereof at the corners between walls and/or between the ceiling or the like. More particularly, since it does not have portions of handle or grip projecting laterally with respect to the first and second roller, it is found to be easier to handle and use also at the corners between adjacent walls.

30 **[0046]** A further advantage is represented by the fact that the shell or cover and, in particular, the extension of the front portion to cover the first roller or paint roller is such as to avoid possible contacts of said roller with, for example, the ceiling of a room while painting the walls. This allows a result of better quality to be obtained with consequent saving in terms of time.

35 **[0047]** In the embodiment illustrated the second roller or smoothing roller 16 has been provided with a diameter smaller than the first roller 12 in order to avoid it coming into contact with the paint contained in the tray 42 during the soaking of the first roller 12. However the same result can be obtained by making the two rollers, for example, of the same diameter, providing the ridges 34 tilted, in such a way that the second roller 16 stays raised with respect to the first roller 12 during the sliding on the edges 44 of the tray.

40 **[0048]** Although the invention has been described above with particular reference to one of its embodiments given only by way of a non-limiting example, numerous changes and variations will appear clear to a person skilled in the art in light of the description given above. The present invention therefore intends to embrace all the changes and variations which come within the scope of the following claims.

Claims

1. A device (10) for roller painting, especially suitable to be used for works of painting/decorating of interior and/or exterior environments or locations of civil and/or industrial contexts, comprising a first roller (12) and a second roller (16), respectively, defining a paint roller and a smoothing roller, rotatably stabilised with respect to a first axis (14) and to a second axis (18) inside a shell or cover (20) which partially encloses them, said device **characterised in that** it comprises means of interaction and co-operation with a tray assembly (40) for loading said first roller (12) with the paint contained in said tray assembly, said means of co-operation and interaction with the tray assembly (40) being constituted by sliding guides defined by a pair of opposite ridges (34), suitable for being placed in contact with edges (44) of a tray (42) of the tray assembly (40) longitudinally extended along the entire length of the same, said ridges being formed perpendicularly to the outer lateral surface of opposite shoulders (26) of the shell or cover (20) away therefrom and developed longitudinally in a continuous or discontinuous manner between said first axis (14) and said second axis (18).

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 2. Device for roller painting according to claim 1, **characterised in that** the shell or cover (20) comprises a front portion (22) partially covering the first roller (12) and a rear portion (24) partially covering the second roller (16), with said front and rear portions laterally closed by means of said opposite shoulders (26) suitable for supporting the axes of rotation of the first roller (12) and of the second roller (14).

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 3. Device for roller painting according to claim 2, **characterised in that** it provides tilting means defined by a further ridge (36) formed on the external surface of the shell or cover (20) at the lower edge of the rear portion (24) externally projecting and developed in a continuous or partial manner in a direction parallel to the axis of the second roller (16), said further ridge (36) suitable for coming into contact with a stop element (52) of the tray (42) for an overturning or rotation upwards of the shell or cover (20) further to the loading of the first roller (12) with the layer of paint present in the same tray and coming from a receptacle (48) of the tray assembly (40).

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 4. Device for roller painting according to claim 2 or 3, **characterised in that** internally to the shell or cover (20) and at the intermediate region between the front portion (22) and the rear portion (24) a rib or partition (38) is developed, departing from the inner surface of the shell or cover and in a direction parallel to the axes of rotation of the first and second roller, slanted in the direction of the second roller (16) and having the function of defining an obstacle or shield to the

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5. Device for roller painting according to any one of claims 2 to 4, **characterised in that** the shell or cover (20), in the region tendentially comprised between the front portion (22) and the rear portion (24), develops a fork (28) with respect to which a rod (30) is hinged, provided, at the opposite end to that of attachment with respect to said fork, with a grip (32) with respect to which it is possible to connect an optional extension, the hinge connection between the rod (30) and the fork (28) being of the frictional type.

spread of the splashes or atomised particles of paint which detach from the first roller (12) during the rolling movement and suitable, also, for conveying the possible drips in the direction of said second roller (16).
 6. Device for roller painting according to any one of the preceding claims, **characterised in that** the first roller (12) or paint roller is of the long pile type, in sponge, velvet, in natural or synthetic material and the second roller (16) or smoothing roller is with short pile and in natural or synthetic fibre, in sponge or the like.
 7. Device for roller painting according to any one of the preceding claims, **characterised in that** the shell or cover (20) is made in one piece or in separate components and assembled by gluing or welding, in light metal or plastic material, resistant and easy to wash.
 8. Device according to any one of the preceding claims, wherein said second roller (16) has a width greater than said first roller (12).
 9. Device according to any one of the preceding claims, wherein said second roller (16) has a diameter smaller than the first roller (12).
 10. Method of use of the device for roller painting according to one or more of the preceding claims, in co-operation with the tray assembly (40), **characterised in that** it comprises the steps of:
 - sliding of said painting device (10) with respect to the tray (42) of the tray assembly (40) with the opposite ridges (34) in contact with the edges (44) of the tray (42) in order to move to the receptacle (46) where, by applying pressure on a pivoted lever (50) of the receptacle (46), it determines the opening of a window formed in the same receptacle and the exit from the same of a quantity of paint partially filling said tray;
 - loading of the first roller (12) with the paint released from the receptacle (46) and contained in the tray (42) by means of a forward and backward movement of the painting device;
 - overturning of the painting device (10) by rotation with respect to the hinge connection with

the rod (30) as a result of a contact between the further ridge (36) and the at least one stop element (52) of the tray (40);

- with said ridges (34) which keep the second roller (16) or smoothing roller always distanced with respect to the paint of the tray (42).

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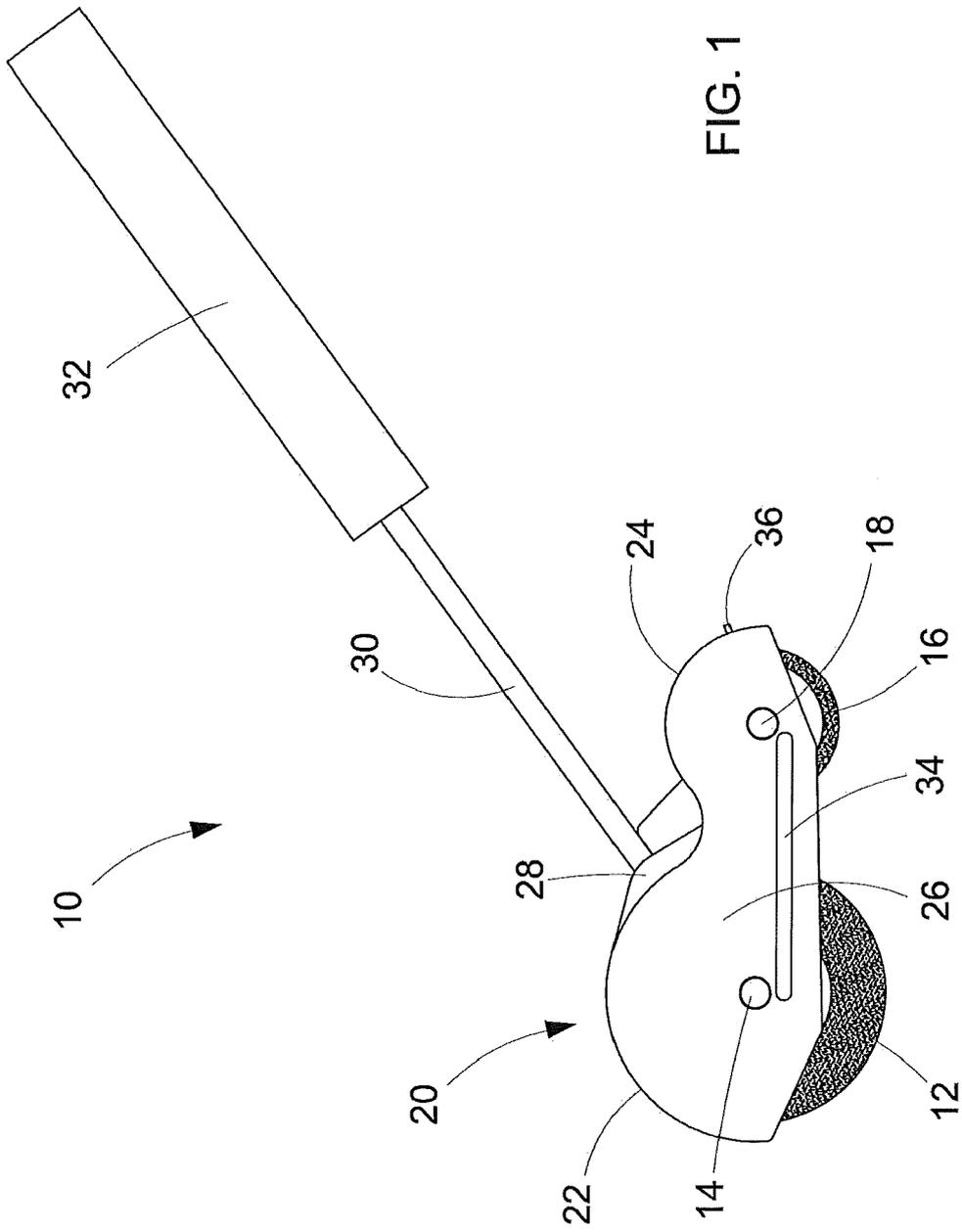
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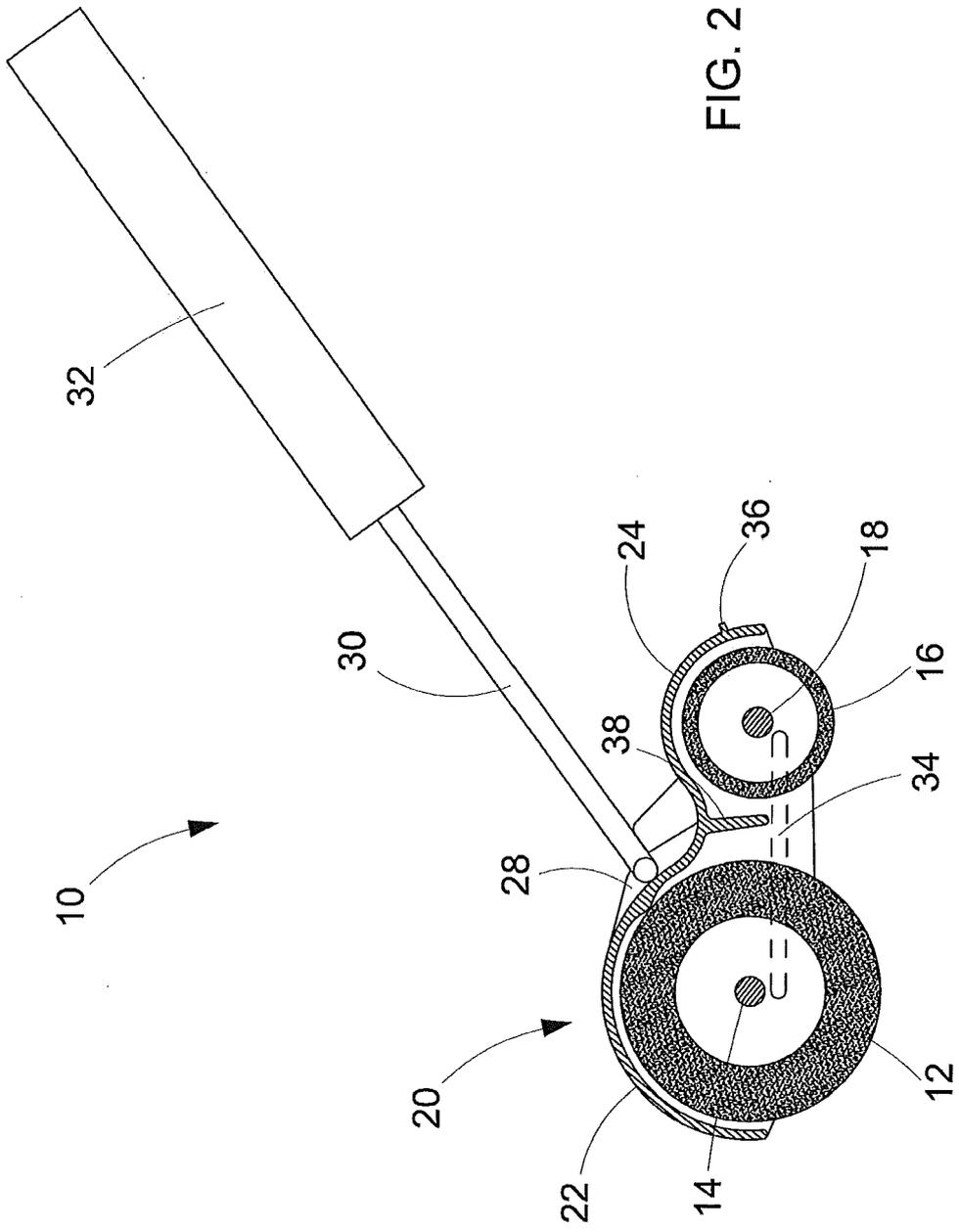


FIG. 2

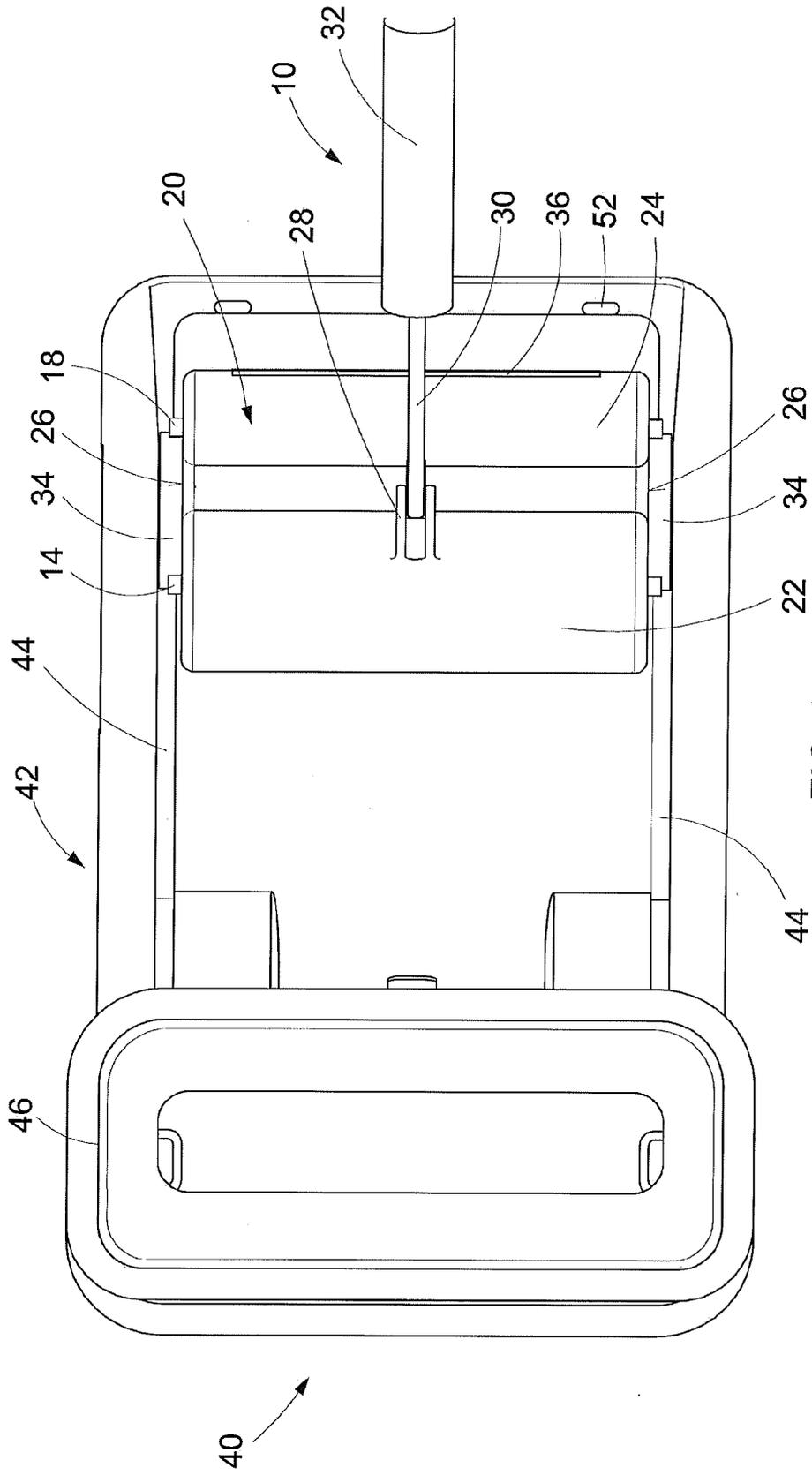
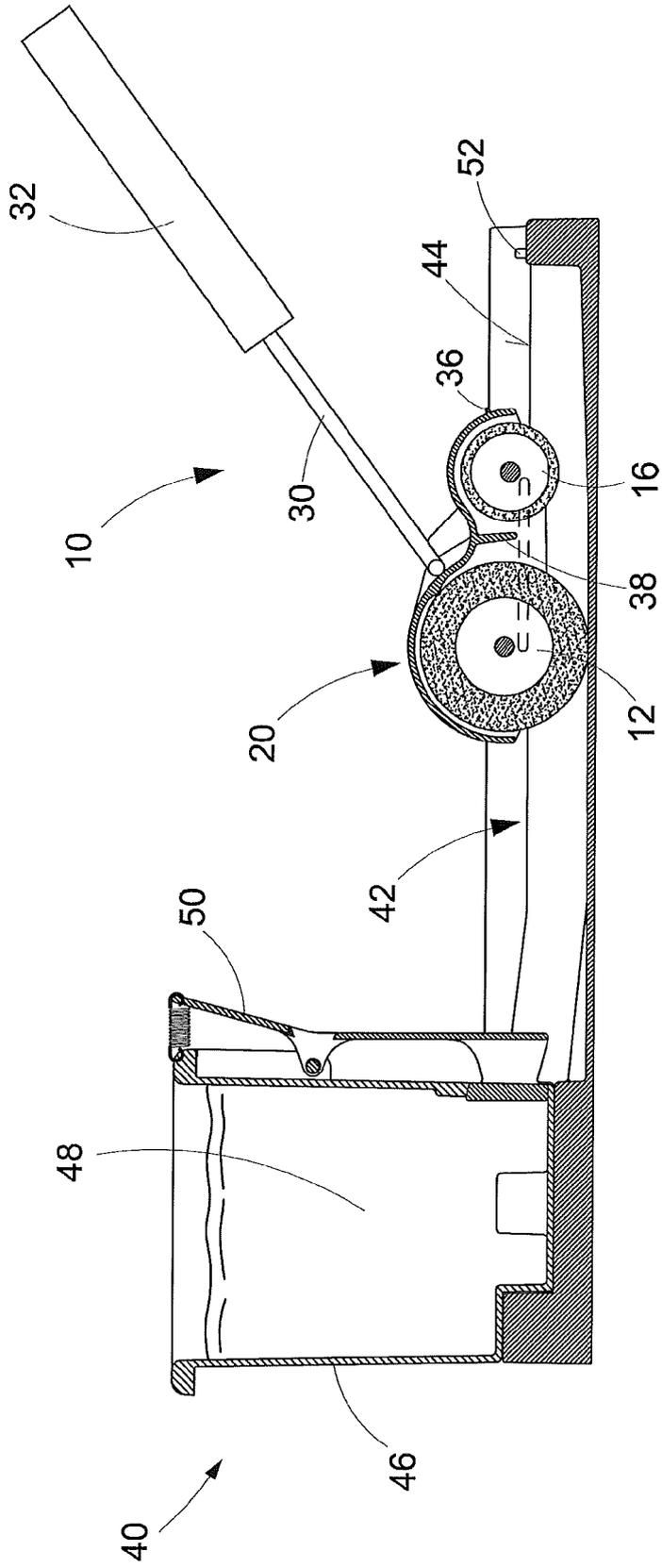


FIG. 3

FIG. 5





EUROPEAN SEARCH REPORT

Application Number
EP 13 19 4712

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 January 2014	Examiner Rente, Tanja
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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24-01-2014

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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