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(54) **MACHINERY FOR THE APPLICATION OF A CHEMICAL SUBSTANCE AND METHOD FOR THE MEASUREMENT OF THE WEAR OF A ROLL FOR THE APPLICATION OF A CHEMICAL SUBSTANCE**

(57) Machine (1) for spreading a fluid/viscous chemical substance such as for example a dyes and/or adhesives on a leather (4), comprising a first roller (7), configured to spread said chemical substance on said leather (4), and characterized in that said first roller (7) is associated with a recognition element (14) comprising a corresponding first memory (16), and that said machine (1) is associated with a reading element (18) configured to reading the information stored in said first memory (16).

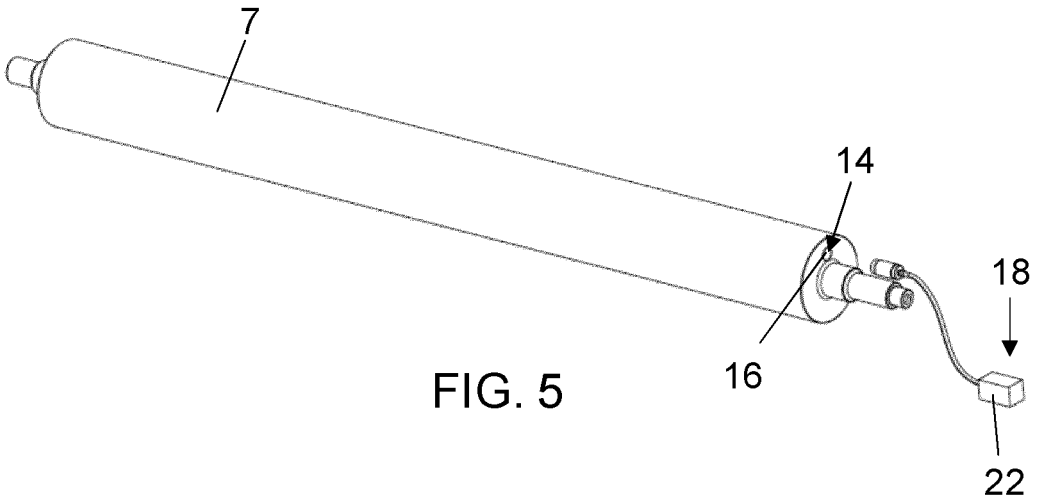

FIG. 5

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Description

[0001] The present invention relates to a machine for the application of chemical substances, preferably for the spreading of dyes and/or adhesives, on leathers and to a method for measuring the wear of a roller for the application of chemical substances, preferably for the spreading of dyes and/or adhesives on leathers.

[0002] Machines are known that allow the application of chemical substances on leathers, eco-leathers or synthetic leathers. Usually the chemicals to be applied can be represented by glues or adhesive substances, or by paints, or by layers comprising resins or polyurethane-based materials.

[0003] These known machines provide for example a conveyor line that places the leathers at the disposal of the treatment unit provided in the machine itself. In particular, the machine treatment unit is equipped with a roller on which the chemical substance to be applied to the leather is applied.

[0004] In known machines, the roller has, on its surface, a plurality of protrusions or recesses which allow the chemical substance to remain more attached to the roller.

[0005] Furthermore, the known machines provide a doctor blade which is pushed against the application roller by means of suitable pneumatic or hydrodynamic pistons, and this in order to remove the excess chemical substance.

[0006] The protrusions/recesses present on the surface of the roller, or in any case the surface of the roller in general, tend to wear out with use and this due to the abrasiveness of the chemical substance to be applied and/or the surface of the leather to be treated. The wear of the application roller means that, after a certain period of time, a too thin layer of chemical substance is deposited on the treated leathers, or, in extreme conditions, even that the deposition of chemical substance acting as a dye or glue is not uniform over the entire leather to be treated and, therefore, it happens that the treated leathers have lighter patches (where less chemical dye has been deposited, against the greater wear of the roller) and darker patches (where more chemical substance has been deposited dye, in the face of less wear of the roller) or in any case that the layer of chemical substance acting as glue is superficially distributed in a non-homogeneous way.

[0007] Currently, in order to monitor the operations of application of chemical substances on the leather and the state of wear of the application roller, to eventually implement the appropriate countermeasures, an operator is positioned downstream of the machine to visually check the quality of the treated leathers at the exit of the machine; in particular, if the operator visually detects signs of inhomogeneity on the treated leathers and on leaving the machine, the operator himself signals that the roller is worn out and that it is therefore necessary/appropriate to replace it.

[0008] However, this solution is not fully satisfactory as it requires the use of trained and dedicated operators, thus causing an undesirable increase in costs. Furthermore, the aforementioned control is carried out a posteriori on the leathers already treated and, therefore, the actual replacement of the roller takes place only after at least one leather has unacceptable quality standards, thus entailing an undesirable waste of leather. Furthermore, it is currently necessary for the operator to meticulously check all the leathers treated with the machine, otherwise it is likely that not one, but a plurality of leathers will be unsatisfactorily treated before the actual maintenance and/or replacement of the roller is carried out, further aggravating the disadvantages described above.

[0009] Furthermore, currently, in order to carry out different treatments, such as the use of different paints, or the deposition of greater or lesser quantities of colors, glue or other chemical substances in the fluid state, different and dedicated application rollers are mounted on the machine. To this end, some machines are equipped with a rotating frame on which a plurality of different rollers are applied and, if necessary, the frame can be rotated so as to bring the desired roller in correspondence with the leather to be treated, in order to thus apply on the latter the desired chemical. In this case it can be complicated to keep track of the operations carried out with each roller, and consequently of their state of wear. Therefore, in this context, it may undesirably happen that a roller is used without knowing its real state of wear.

[0010] JP 2015-231696 discloses a system for depositing a liquid on a sheet and subsequently forming an image.

[0011] US 2006/0284060 discloses a roller to which an IC tag is applied comprising a memory and the possibility of wireless communication for use in a photographic printing apparatus.

[0012] US 2004/0149295 discloses a rubber-coated roller for pressing a web of plant material obtained during tobacco processing. The roller has a plurality of concentric layers with different colors, in order to allow a quick and simple diagnosis of the wear to which the roller has been subjected.

[0013] The purpose of the invention is to propose a machine and/or a method for detecting and/or monitoring the wear of a roller for the application of chemical substances, preferably for the spreading of dyes and/or adhesives, on leathers, which solves at least in part the drawbacks of traditional solutions.

[0014] Another purpose of the invention is to propose a machine and/or a method for automatically detecting and/or monitoring the wear of a roller for the application of chemical substances, preferably for the spreading of dyes and/or adhesives, on leathers.

[0015] Another object of the invention is to propose a machine and/or a method for continuously, reliably and precisely detecting and/or monitoring the wear of a roller for the application of chemical substances, preferably for the spreading of dyes and/or or adhesives, on leathers.

[0016] Another object of the invention is to propose a machine and/or a method which completely eliminates or at least significantly reduces any intervention and/or control by the operator.

[0017] Another object of the invention is to propose a machine and/or a method which allow to foresee when it is necessary to carry out maintenance and/or replacement of an application roller.

[0018] Another object of the invention is to propose a machine and/or a method which allow to know the state of the rollers used even in the case of the presence of interchangeable rollers.

[0019] Another purpose of the invention is to propose a machine and/or a method that can be installed/used on-line in leather processing/treatment plants.

[0020] Another object of the invention is to propose a machine and a method that can also be used in dirty or chaotic environments, such as a leather dyeing line.

[0021] Another object of the invention is to propose a machine and a method that can be used to know the state of wear of a roller when it is mounted on a machine after having been previously used, and subsequently disassembled.

[0022] Another object of the invention is to propose a machine and a method for monitoring the wear of a support roller.

[0023] Another object of the invention is to propose a machine and a method for monitoring the wear of a support mat.

[0024] Another object of the invention is to propose a machine and/or a method of simple construction and low cost, which can also be installed/implemented in existing and operational plants.

[0025] Another purpose of the invention is to propose a machine and/or a method which have an alternative and/or improved characterization, both in constructive and functional terms, with respect to traditional solutions.

[0026] All these purposes, both individually and in any combination thereof, and others which will emerge from the following description, are achieved, according to the invention, with a device for the application of chemical substances, preferably for the spreading of dyes and/or adhesives, on leathers according to claim 1, method for detecting/monitoring the wear of a roller for the application of chemical substances, preferably for the spreading of dyes and/or adhesives, on leathers according to claim 12.

[0027] The present invention is here hereinafter further clarified in some of its preferred embodiments reported for purely illustrative and non-limiting purposes with reference to the attached drawing tables, in which:

Figure 1 shows a perspective view of the machine according to the invention in a first embodiment,
Figure 2 shows it from another angle,
Figure 3 shows in perspective view the machine according to the invention and in a second embodiment,
Figure 4 shows it from another angle,
Figure 5 shows the roller and the recognition element in perspective view in one embodiment,
Figure 6 shows the backing roller in top view in one embodiment, and
Figure 7 shows the support mat in side view.

[0028] As is clear from the figures, the machine 1 according to the invention is preferably of the type configured to spread a chemical substance, preferably liquid and/or viscous, on a leather 4.

[0029] It is understood that by "leather", here we mean two-dimensional leather products, natural and/or synthetic, in eco-leather, i.e. leather worked with specific methods and/or machine configured to reduce its environmental impact or in other synthetic materials, for example plastic, with characteristics similar or at least common to leather, and in general manufactured two-dimensional goods to be used in leather goods. Preferably, the leather articles to be treated are finished or substantially finished articles which are obtained in the final stages of the leather manufacturing, treatment and/or finishing processes.

[0030] In particular, the leather 4 can be of the discrete type - ie the articles to be processed can substantially be represented by a succession of single leathers separated and distinct from each other.

[0031] For example, said chemical substance can be a paint, or a glue, or a chemical substance suitable for making a coating on said leather 4, such as a resin, preferably polymeric, or a polyurethane-based substance. In particular, said chemical substance may have different abrasiveness characteristics, which may depend on the particle size of any solid particles dispersed inside it, on the chemical composition, or on other properties.

[0032] Conveniently, the leather 4 can be made available by means of a suitable transport line, for example comprising a conveyor belt on which the leathers to be treated are positioned.

[0033] Advantageously, the machine 1 can comprise at least a first roller 7 on which the chemical substance is deposited, preferably pouring it directly onto the roller at a blade 10 which can be applied to the first roller 7. In particular, said blade can be positioned at the and/or or in contact with the surface of the first roller 7. Advantageously, said at least one first roller 7 can have a plurality of recesses and/or protrusions 8 which allow said chemical substance to be retained on the roller itself.

[0034] Conveniently, the first roller 7 can be heated, in order to also perform a thermal treatment of the chemical substance to be deposited.

[0035] Advantageously, said at least one first roller 7 can be associated with at least one blade 10 (doctor blade) configured to remove any excess of said chemical substance which is present on said at least one first roller 7.

[0036] Conveniently the first roller 7 can be rubber-

coated.

[0037] Advantageously, the first roller 7, and in particular its surface, can have an appropriate finishing, which for example can provide a plurality of recesses and projections, preferably ordered, in order to define asperities in which the chemical substance to be deposited can be collected.

[0038] Furthermore, the blade 10 is configured to define with the surface of the roller 7, a basin, inside which the chemical substance to be deposited on the leather is poured and/or sprayed. Advantageously, the side walls of said basin can be made by means of a pair of laminar elements (not shown), which are positioned at the opposite ends of the blade 10. Advantageously, said laminar elements can be configured to come into contact with the blade 10 and with the first roller 7 in order to prevent the chemical substance from escaping from the basin through passages that do not correspond to those desired, which are those in correspondence with the recesses and/or the points where the external surface of the first roller is not in contact with the blade 10.

[0039] In a preferred embodiment said first roller 7 may be in the upper position with respect to the leather 4 to be treated in order to spread said chemical substance on the upper surface of said leather 4 to be treated. In an alternative embodiment, said roller can be in a lower position with respect to said leather to be treated, in order to spread said chemical substance on the lower surface of said leather 4.

[0040] Advantageously in an embodiment shown in Figure 3, the machine 1, can comprise a plurality of first rollers 7, 7' mounted on a frame 12 which allows to change the roller that must come into contact with said leather 4. For example, there may be three or four first rollers 7, 7', preferably positioned at the vertices of a regular polygon. Advantageously, the frame 12 can rotate around an axis passing for the center of the polygon formed by the first rollers 7, in order to change the roller which is in a position suitable for depositing said chemical substance on said leather 4. Advantageously said first rollers 7 can have said recesses and/or protrusions in a different arrangement, or they can have a different shape and/or density, in order to deposit a greater or lesser quantity of said chemical substance on said leather 4, according to the needs.

[0041] Conveniently, said at least one first roller 7 can be rotated by a motor (not shown), preferably electric, in a direction which can be equirotating or counter-rotating with respect to the direction of advancement of the leather along the transport line. Advantageously, said motor can be configured to rotate said first roller 7 with a speed of at least 1Hz, and preferably between about 10 and 110 Hz. Conveniently, the rotation speed of the motor can be detected by means of a suitable sensor, preferably an optical sensor, or alternatively it can be measured by analyzing the working frequency of the motor, and in particular of the inverter that allows it to rotate.

[0042] Conveniently, said first roller 7 can be associated with a first recognition element 14 which allows to univocally recognize said first roller 7.

[0043] For example, said first recognition element 14 can comprise a frame number or in any case a stamped and/or engraved alphanumeric code on said first roller 7, or on a plate associated with the roller itself.

[0044] Alternatively, said first recognition element 14 can comprise a succession of high contrast graphic elements substantially defining a code uniquely associated with said first roller 7. Advantageously, said sequence can be one-dimensional - ie the graphic elements follow one another along a line - thus substantially defining a barcode, or it can be two-dimensional - ie the graphic elements follow one another on a surface - thus essentially defining a QR code.

[0045] In a further embodiment, said first recognition element 14 can comprise a first memory 16 configured to store information relating to said first roller 7 and/or its conditions of use, and/or the duration of its use and/or its state of wear. Advantageously, the first memory 16 is of the rewritable type. Advantageously, said first recognition element 14 can comprise an electronic label configured to be written and/or read by means of proximity. In particular, the first recognition element 14 can comprise a circuit which acts substantially as a receiver and/or transmitter, preferably in the radio frequency range. Basically, the first recognition element 14 can be an RFID tag. Advantageously, in this way it is possible to modify, even in real time and in conditions of use, the information that is stored on the plate, and which therefore can represent and/or be referred to the state of wear in real time of the first roller 7. Advantageously the label can be of the active, passive, semi-active, or semi-passive type, and is preferably of the passive type.

[0046] Advantageously, in one embodiment, the first recognition element 14 can be inserted inside a suitable recess positioned on one of the two bases of the first roller 7, and which can advantageously be closed again, so as to protect the recognition element itself. Advantageously, the recess can be closed so as not to compromise and/or disturb the reading of the associated information on said first recognition element 14, as will be clear later. For example, this can be achieved by filling the recess itself with a suitable resin which is substantially transparent to electromagnetic radiation in the frequency range that is of interest. In particular, this can allow the first recognition element 14 to be repaired from splashes of paint or other chemical substances deriving from the rotation of the first roller 7.

[0047] In one embodiment, said machine 1 can comprise a second roller 9, preferably with a diameter greater than the first roller 7. Said second roller 9 can be configured to be in contrast with said first roller 7, that is, to come into contact with and/or to be in correspondence with the surface of the leather 4 which does not come into contact with said first roller 7. In an embodiment said second roller 9 can also be configured to spread a further chemical substance on the face of the leather 4 which is

opposite to that on which said first roller 7 spreads said chemical substance.

[0048] In a preferred embodiment, the second roller 9 can be configured to contact the lower surface of the leather 4 to be treated. In an alternative embodiment said second roller 9 can be configured to come into contact with the upper surface of the leather 4 to be treated.

[0049] Advantageously, said second roller 9 can be associated with a mat 13 configured to dampen the vibrations to which the leather 4 to be treated can be subjected, in order to make the coating of the chemical substance more homogeneous. In particular, said mat 13 can be made of polymeric materials or natural rubbers, preferably soft ones. In particular, the mat 13 can cover only the curved surface of the second roller 9. In particular the mat 13 can be configured to come into contact with the surface of said leathers 4 on which said chemical substance is not applied.

[0050] In one embodiment, said mat 13 can be positioned substantially around and/or completely wraps said second roller 9. In another embodiment, said mat 13 can substantially be a conveyor belt, configured to only partially wind said further roller 13 and be subsequently sent back to further rollers of the conveyor line. In a further embodiment, said mat 13 can be substantially part of said second roller 9, which can therefore be a rubber-coated roller. A further support layer 13' can be associated with said mat 13, for example made of canvas, which allows the mat itself to be supported. Preferably, said further support layer 13 can be associated with the surface of the mat 13 which is not intended to come into contact with the leathers 4 to be treated.

[0051] Said mat 13 can in turn be subject to wear, due to the repeated transit of the leathers 4 in contact with its surface, and this can lead to its thinning, even inhomogeneous, and also can cause its cracking and/or breaking as a result of repeated stretching. This can lead to an uneven distribution of the chemical substance.

[0052] Conveniently, said second roller 9 can include a second recognition element 15, substantially similar to the first recognition element 14. In particular, it can be associated in a manner similar to that with which the first recognition element 14 is associated with the first roller 7, for example inserted inside an appropriate indentation on one of the base faces or on the curved surface.

[0053] Conveniently, the mat 13 can be associated with a third recognition element 33, for example positioned at and/or near one of its side edges. Alternatively, the third recognition element 33 can be positioned in correspondence with and/or in proximity to and/or facing the first recognition element 14 - ie positioned on the same side with respect to the apparatus 5 and the machine 1. Preferably the third recognition element 33 can be positioned between said further support layer 13' and said mat 13.

[0054] Conveniently said second recognition element 15 can comprise a second memory 17, substantially similar to the first memory 16.

[0055] Conveniently said third recognition element 33 can comprise a third memory 35 substantially similar to said second memory 17 and/or to said first memory 16.

[0056] Advantageously, the machine 1 can further comprise a first reading element 18 configured to read the information associated with said first recognition element 14. For example, said first reading element 18 can be a barcode and/or Q-code reader R, or it can be a video camera configured to detect the frame number stamped and/or engraved on said first roller 7 or on a tag associated with it, or it can be a radio frequency circuit configured to read the information stored on said RFID tag.

[0057] Advantageously, the first reading element 18 can be positioned on the machine 1 in correspondence with and/or facing the first recognition element 14, for example at the base of the first roller 7 to which the recognition element itself is applied.

[0058] Advantageously, in the embodiment in which the second recognition element 15 and/or the third recognition element 33 are present, the first reading element 18 can be configured to read and/or write information both on said recognition element 14 and on said second 15 and/or third 33 recognition element. Alternatively, the machine 1 can comprise a second reading element 19 configured to read information from said second recognition element 15, and in particular from said second memory 17 and/or a third reading element 37 configured to read information from said third recognition element 33, and in particular from said third memory 35.

[0059] Conveniently said first reading element 18, and/or said second reading element 19 and/or said third recognition element 33 can be connected to a suitable configured control and processing unit to process and/or store the information read by the devices themselves. Advantageously, the control and processing unit can be the same that controls the machine 1, and in particular the rotation of said at least one first roller 7 and/or of said second roller 9, or it can be different. Advantageously, the control and processing unit can be positioned remotely with respect to the machine 1, so as to protect it from any environmental factors that could damage it. Advantageously, the connection between said first reading element 18, said second reading element 19 and said third recognition element 33 and said control and processing unit can be made via cable or wireless.

[0060] In one embodiment, the first reading element 18 and/or the second reading element 19 and/or the third recognition element 33 may not be present, and the reading of the information relating to the first roller 7 and/or the second roller 9 and/or the mat 13 can be made by an operator, who subsequently inserts the data into the control and processing unit.

[0061] In another embodiment, the machine 1 may further comprise at least a first writing element 22 configured to store suitable information on the first recognition element 14, and in particular on the first storage device writing 16.

[0062] In particular, for example, said writing element

can substantially comprise a radiofrequency antenna configured to store information on said first recognition element 14, and in particular in said storage element 16.

[0063] In a preferred embodiment, said writing element 22 can be included in said first reading element 18.

[0064] in addition, the machine 1, and in particular applying apparatus 5, may comprise a second writing element 23 configured to write information on said second recognition element 15.

[0065] in addition, the machine 1, and in particular the apparatus application 5, may comprise a third writing element 39 configured for writing information on said third recognition element 33.

[0066] In one embodiment the first writing element 22 and/or the second writing element 23 and/or the third writing element 39 can coincide.

[0067] In a further embodiment said second writing element 23 and said third writing element 39 can coincide with and be separate and distinct from said first writing element 22. In a further embodiment said second writing element can be included in said second reading element 19 and said third writing element 39 can be included in said third reading element 37.

[0068] Advantageously, the information detected by the machine 1 can comprise:

- the number of revolutions performed by the first roller 7 and/or the second roller 9, preferably calculated from when the first roller itself was used for the first time,
- the direction and/or the instantaneous speed of movement of the first roller 7 and/or of the second roller 9 and/or of the mat 13,
- the characteristics of the chemical substance applied by means of said first roller 7,
- the working time of the first roller 7 and/or of the second roller 9 and/or of the mat 13,
- the characteristics of the leather 4 which has received said chemical substance by means of said first roller 7,
- meters traveled by the first roller 7 with a blade 10 applied,
- meters traveled by the first roller 7 and/or the second roller 9 and/or the mat 13 in contact with the leather 4,
- the maximum temperature reached by the first roller 7 during its use,
- the meters covered by the first 7 and/or by the second 9 roller and/or by the mat 13
- the number of washing cycles the first roller has undergone 7,
- the number of heating cycles the first roller has undergone 7.

[0069] Advantageously, said information can be suitably stored and/or processed by the control and processing unit.

[0070] Conveniently, said information can be inserted directly into said control and processing unit by an operator, or it can be automatically detected by the control and processing unit itself.

[0071] Advantageously, an appropriate algorithm can be implemented in the control and processing unit which, starting from one or more of the information acquired by the control unit itself, is able to define the degree of wear and/or the expected residual useful-life of the first roller 7 and/or of the second roller 9 and/or of the mat 13 on the basis of the detected information.

[0072] Advantageously, said information can be stored in said first memory 16 and/or in said second memory 17 and/or in said third memory 35 by means of the first writing element 22 and/or the second writing element 23 and/or the third writing element 39, in order, for example, to be subsequently read by said first reading element 18 and/or second reading element 19 and/or said third reading element 37 and transmitted to said control and processing unit.

[0073] Alternatively, said information can be stored and/or recorded on any other storage and/or recording medium.

[0074] Advantageously, the control and processing unit can comprise a suitable software module configured to store in a suitable database and organize in an orderly manner the information received from the first reading element 18 and/or from the second reading element 19 and/or from the third reading element 37.

[0075] Conveniently, moreover, said first software module can be configured to implement suitable algorithms which, on the basis of the information entered and appropriate parameters, for example including the history of information relating to the use of other rollers, or information predefined by the manufacturer, and the information stored in said database is able to define the degree of wear and/or the expected residual useful-life span of said first roller 7 and/or said second roller 9 and/or said mat 13. In particular, the first roller 7 and/or second roller 9 and/or mat 13 are defined as worn if one or more parameters measured or calculates ti result outside the predefined and/or operator-selected tolerance ranges. For example, the state of wear can be defined by the control and processing unit, based on the information contained therein, possibly processed according to suitable algorithms.

[0076] Furthermore, the control and processing unit can comprise a second software module configured to control the writing element 22, and/or the second writing element 23 and/or the third writing element 39, in order to control which information is written in said first memory 16 or in said second memory 17 or in said third memory 35.

[0077] Conveniently, when the degree of wear of the first roller 7 and/or of the second roller 9 and/or of the mat 13 is higher than a predefined value and/or selected by the operator, the first software module can send a message (for example a notification, or in any other way by means of suitable output means) to the operator, in order to request a control and/or maintenance operation

and/or replacement of the roller and/or the mat itself.

[0078] The operation of the machine 1 according to the invention is clear from the foregoing, and in particular it can comprise one or more of the following operations.

[0079] The first roller 7, on which the first recognition element 14 has been installed, can be installed in the machine 1 and spread with said chemical substance.

[0080] Similarly, the second roller 9 and/or the mat 13 on which the second 15 and the third 33 recognition element have been installed respectively can also be installed on the machine 1.

[0081] Subsequently, the conveyor line is activated so as to make available the leathers 4 to the machine 1.

[0082] Advantageously, the operator can record the operating parameters and/or the appropriate information in the control and processing unit. Alternatively, all or some of the information can be automatically detected by the machine 1 by means of suitable sensors.

[0083] Advantageously, the control and processing unit can send appropriate commands in order to store said operating parameters and/or said appropriate information on the first memory 16 of the first recognition element 14 and/or on the second memory 17 of the second recognition element 15 and/or on the third memory 35 of the third recognition element 33.

[0084] Subsequently, in one embodiment, the leathers 4 are made to pass into contact with the first roller 7 so that the chemical substance is spread on the surface of the leathers themselves. In this phase the leathers 4 are supported by the second roller 9, and more particularly by the mat 13 (if present).

[0085] Correspondingly, relevant information and/or operating parameters are detected and/or recorded.

[0086] Advantageously, if the first recognition element 14 comprises the first memory 16 and/or the second recognition element 15 comprises the second memory 17 and/or the third recognition element 33 comprises the third memory 35, it is possible for the operator to enter in said control and processing unit the information relating for example to the nature of the leather 4 and/or of the chemical substance, in order to allow it to be stored inside the storage element. Alternatively, the information can be stored inside the control and processing unit.

[0087] Subsequently, if it is necessary to replace the first roller 7 with a further first roller 7', for example to carry out a different process, or to spread a further chemical substance different from said chemical substance, the first reading element 18 can detect the presence of a further first roller 7' different from the first roller 7 thanks to the further first recognition element 14' (substantially similar to said first recognition element 14) present on said further first roller 7'. Similarly, it is possible to carry out the same operations if it is necessary to replace the second roller 9 and/or the mat 13.

[0088] Advantageously, the procedure for acquiring and/or storing the information is unchanged with respect to that used for the first roller 7.

[0089] Conveniently, the data relating to different rollers 7, 7' are stored separately and in an orderly manner by the first software module executed on said control and processing unit. In this way it is possible to monitor the state of wear of several rollers 7, 7' even if these have to be used for periods of time interspersed with each other, or if they are used again after a period of inactivity.

[0090] Advantageously, the stored information is used to define the state of wear of the first roller 7, 7'. In particular, the information detected can be compared with the parameters which are stored inside said control and processing unit.

[0091] From what has been said, the machine and the method according to the invention are particularly advantageous in that:

- they allow to measure in real time information useful for determining the wear status of a roller,
- allow said information to be stored in real time on a device associated with said roller,
- they allow to keep track of the wear of a roller even after a long time from the last use.

Claims

1. Machine (1) for spreading a fluid/viscous chemical substance such as for example a dyes and/or adhesives on a leather (4), comprising a first roller (7), configured to spread said chemical substance on said leather (4), and **characterized in that** said first roller (7) is associated with a recognition element (14) comprising a corresponding first memory (16), and that said machine (1) is associated with a reading element (18) configured to reading the information stored in said first memory (16).

2. Machine according to claim 1 **characterized in that** it further comprises:

   - a second roller (9), configured to act as a contrast with respect to said first roller (7), to which is associated a second recognition element (15) comprising a second memory (17) and/or
   - a mat (13), preferably in rubberized material, configured to come into contact with one of its surfaces with the surface of said leathers (4) on which said chemical substance is not applied, to which a third recognition element (33) comprising a third memory (35) is associated,
   - a corresponding second reading element (19) configured to read the information stored in said second memory (17),
   - a corresponding third reading element (37) configured to read the information stored in said third memory (35).

3. Machine according to one or more of the preceding claims **characterized in that** said first (16) and/or

said second (17) and/or said third (33) memory are comprised within a respective RFID tag.

4. Machine according to one or more of the preceding claims **characterized in that** said first (14) and/or said second (15) recognition element are positioned in correspondence with one of the base surfaces of said first (7) and said second (9) roller, respectively, preferably in a suitable recess.

5. Machine according to one or more of the preceding claims **characterized in that** said first (14) and/or said second recognition element (15) are positioned on the curved surface of said first (7) and said second (9) roller, respectively, preferably in a suitable recess.

6. Machine according to one or more of the preceding claims **characterized in that** said third recognition element (33) is associated with said mat (13) on the surface opposite to that intended to come into contact with said leather (4).

7. Machine according to one or more of the preceding claims **characterized in that** it comprises at least one writing element (22,23,39) configured to store information in said memory (16) and/or in said second memory (17) and/or in said third memory (35).

8. Machine according to one or more of the preceding claims **characterized in that** said at least one writing element (22, 23, 39) is integrated in said first reading element (18) and/or in said second reading element (19) and/or in said third recognition element (33).

9. Machine according to one or more of the preceding claims **characterized in that** it comprises a command and control unit connected with at least one of said first (18), second (19), and third (37) recognition element and/or with at least one between said first (22), said second (23), said third (39) writing element in order to read and/or write information in said first (16) and/or said second (17) and/or said third (35) memory.

10. Machine according to one or more of the preceding claims **characterized in that** said first recognition element is inserted inside a suitable reclosable recess positioned on one of the two bases of said first roller (7).

11. Machine according to one or more of the preceding claims **characterized in that** it comprises a blade (10) positioned in correspondence with said first roller (7) in order to define a basin intended to contain the chemical substance to be deposited on the leather and intended to come into contact with the protruding portions of the surface of the first roller (7).

12. Method for defining the state of wear of said first roller (7) for the application of a chemical substance to a leather (4), configured to be mounted in a machine (1) for the treatment of said leather, said method being **characterized by** the fact that the state of wear of said first roller (7) is defined by considering one or more of the following information:

- the number of revolutions performed by the first roller (7) and/or of the second roller (9) preferably calculated from when said first roller (7) was used for the first time,
- the direction and/or the instantaneous speed of movement of the first roller (7) and/or of the second roller (9) and/or of the mat (13),
- the characteristics of the chemical substance applied by means of said first roller (7),
- the working time of the first roller (7) and/or the second roller (9) and/or the mat (13),
- the characteristics of the leather (4) which has received said chemical substance by means of said first roller (7),
- meters traveled by the first roller (7) with a blade (10) applied,
- meters traveled by the first roller (7) and/or the second roller (9) and/or the mat (13) in contact with the leather (4),
- the maximum temperature reached by the first roller (7) during its use,
- the meters traveled by the first (7) and/or the second (9) roller and/or the mat (13)
- the number of washing cycles the first roller (7) has undergone,
- the number of heating cycles to which the first roller (7) was subjected.

13. Method according to the previous claim **characterized in that** at least one of said information is written in said recognition elements (14, 15, 33), and in particular in said memories (16, 17, 35).

14. Method according to one or more of claims 12, 13 **characterized in that** a control and processing unit connected to said recognition elements (18,19,33) sends a message to a user if, following the reading and/or processing of the information stored in said memories (16,17,35) results that said first roller (7), and/or said second roller (9) and/or said mat (13) show a state of wear greater than a value default and/or selected by a user.

15. Method according to one or more of claims 12-14 **characterized in that** said information and/or the state of wear due to a working cycle are stored in said memories (16, 17, 35) by means of said writing devices (22, 23, 39).

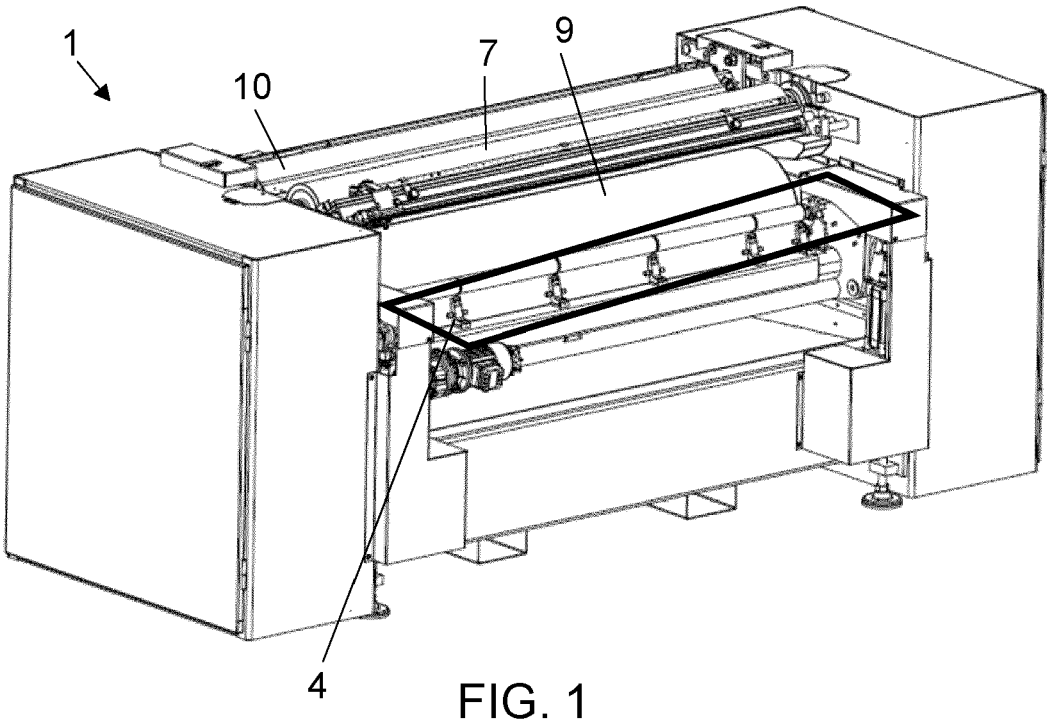

FIG. 1

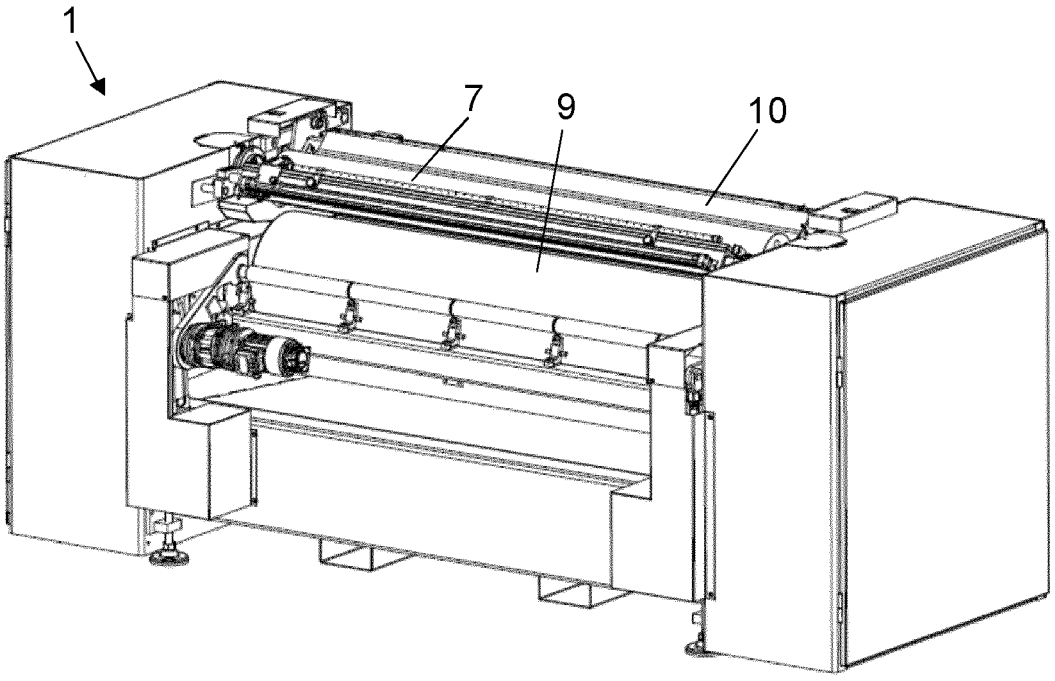

FIG. 2

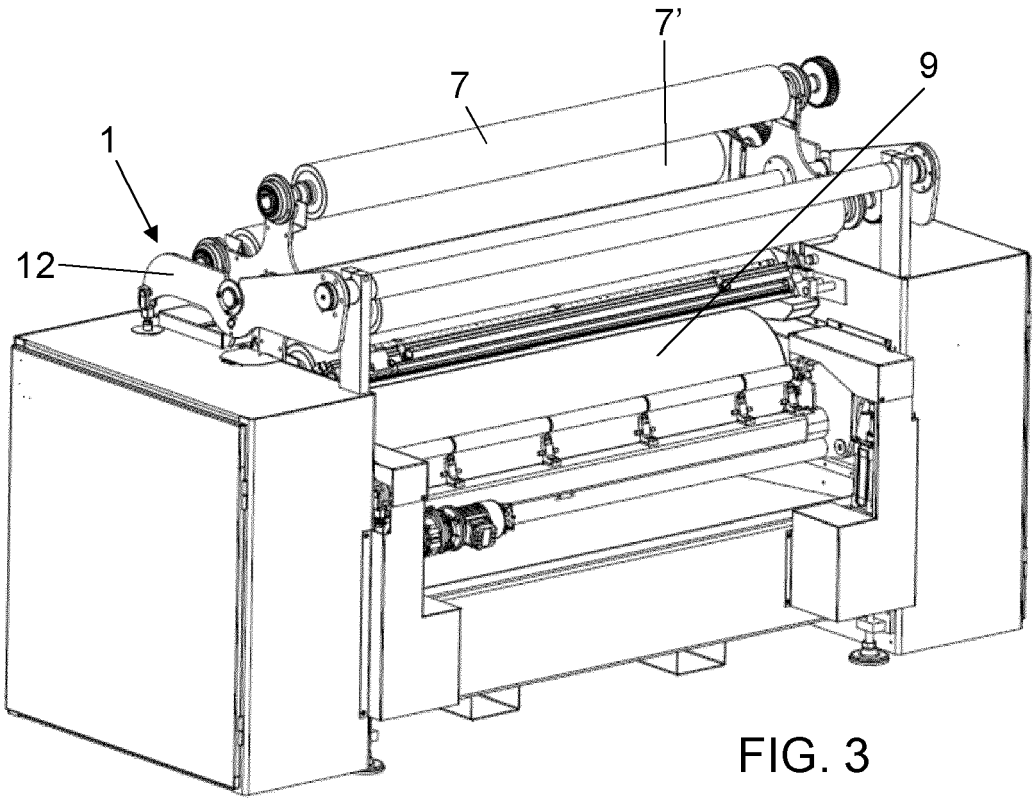

FIG. 3

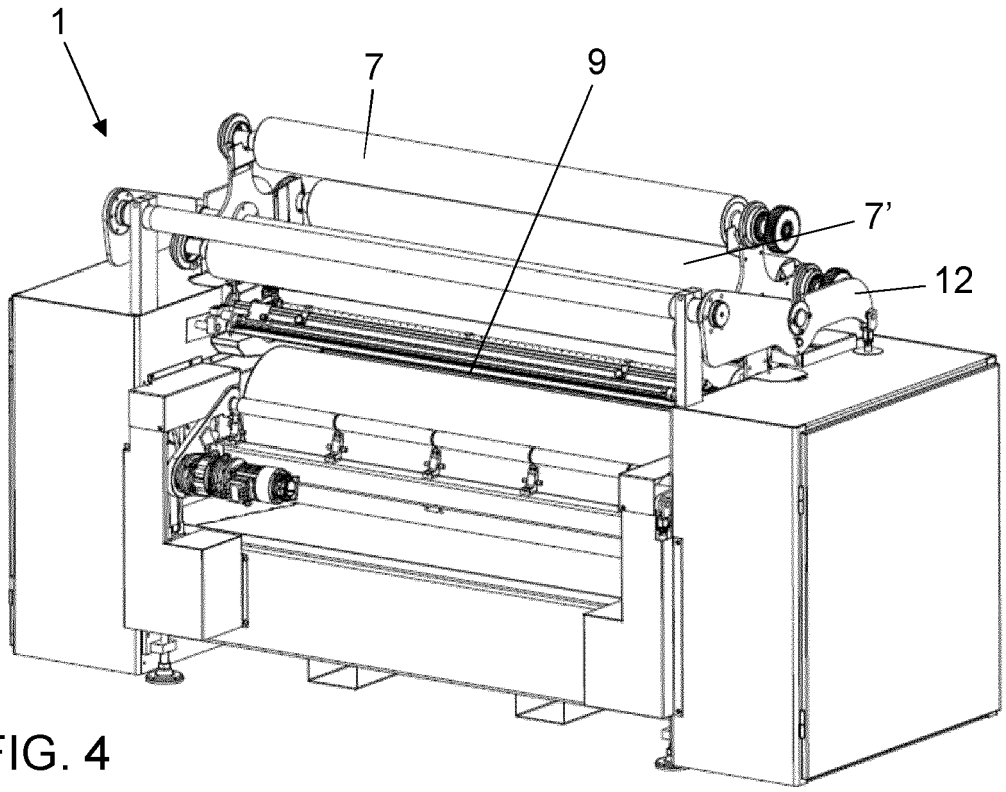

FIG. 4

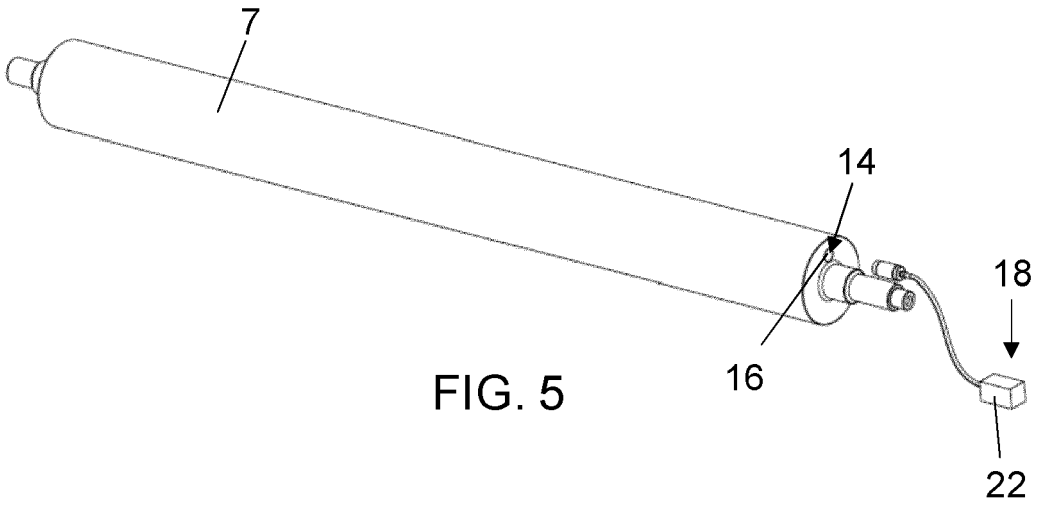

FIG. 5

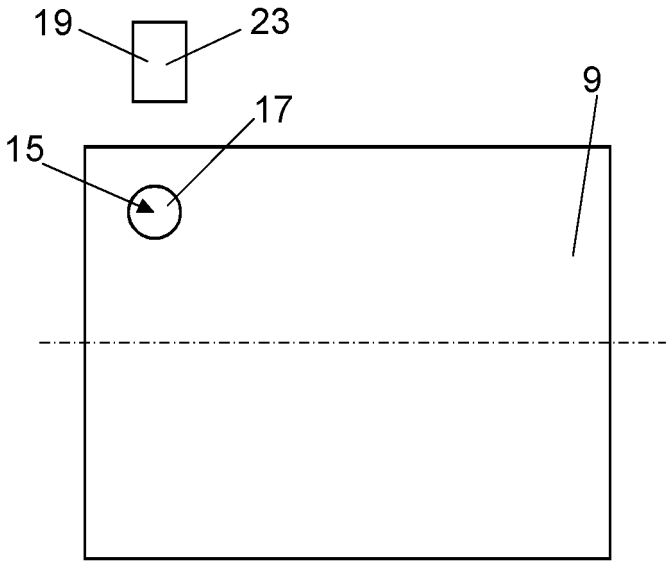

FIG. 6

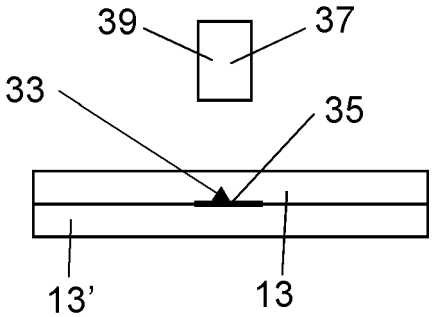

FIG. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 21 19 8782

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Place of search	Date of completion of the search	Examiner
The Hague	13 January 2022	Roldán Abalos, Jaime

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