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(11) **EP 1 024 202 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.08.2000 Bulletin 2000/31

(51) Int. Cl.⁷: **C14B 1/56**

(21) Application number: **00100882.0**

(22) Date of filing: **18.01.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **27.01.1999 IT VI990013**

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(54) **A machine for the continuous plating and embossing of hides and the like**

(57) The invention provides a machine (1) for the continuous plating and embossing of hides and the like, particularly suitable for processing hides tanned with the ecological system, which uses products that can be diluted in water and that require a reaction time to reticulate, in order to affix the plating and embossing action on the surface thereof, significantly greater than the times required by hides tanned with chemical solvents.

The machine (1) is characterised by the fact that the plating and embossing action of the hide (4) is performed by winding and pressing it on an operating cylinder (2) by means of a belt (3) under tension, also partially wound on said cylinder (2) and placed externally thereto.

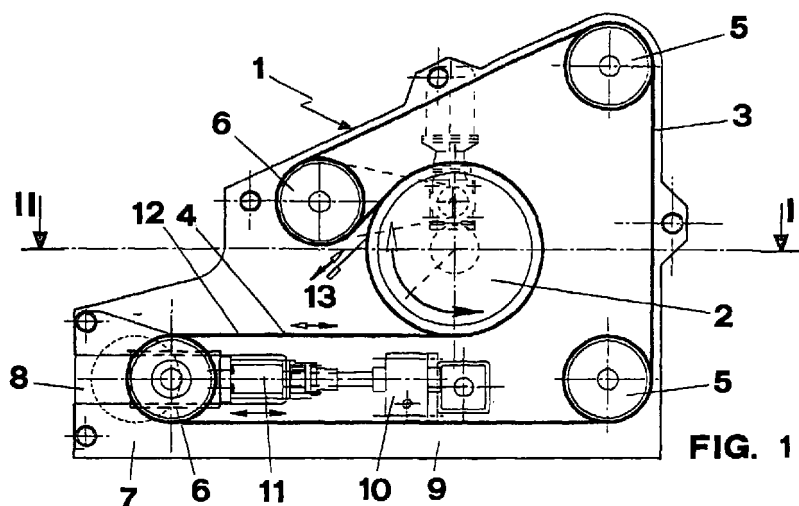


FIG. 1

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Description

[0001] The present invention concerns a machine for continuously plating and embossing hides and the like, in the field of tanning.

[0002] Among the various processes to which tanned hides are subjected are those known as plating and embossing, by which the characteristics of the external surface of the hide are improved, rendering it glossy and/or embossed to increase the aesthetic effect.

[0003] In the present state of the technology, the operation of plating and embossing tanned hides is performed with two types of machines, commonly known as presses, which both use the same operating parameters, ie a high compression of the material associated with a high temperature, but operate according to two different principles.

[0004] In a first type of press, called a platen press, the hide, compensated by a felt, is placed between two opposing planes which, approaching each other, causes the said hide to be compressed.

[0005] In a second type of press, known as a roller press, the hide is passed between two opposing rollers with parallel axes which, approaching each other, causes the hide to be compressed as it runs between them, transported by a felt or a belt.

[0006] Both types of machine are more or less optimum for the specific type of skin being processed.

[0007] For example, use of the platen press is characterised by an optimum quality of the finished product, as it is possible to exert high pressures over a wide area, but it has the disadvantage of low productivity because the plates must be opened and closed at each successive compression action of the hide.

[0008] Likewise, the roller press, although it gives greater productivity as the hides advance continuously between the two processing rollers, has the disadvantage of only exerting pressure over a small area, that is to say along the tangent line of contact between the hide and the top and bottom processing rollers; this prevents the application of high pressures, which would be exerted over a limited area of the hide and damage it.

[0009] With the introduction of ecological hide tanning systems, in which chemical solvents have been replaced by products that can be diluted in water, which do not pollute the environment when discharged, the disadvantages of operation of both types of presses have subsequently become evident, to the point of rendering them unproductive to use.

[0010] In fact, hides tanned with the new ecological system use products which can be diluted in water, and which require a reaction time to reticulate, ie to affix the plating and embossing action on the surface, significantly greater than the times required for hides tanned with chemical solvents, in a ratio of up to one to four, so that, even using a roller press, the processing cycle is significantly longer to obtain a final product of quality.

[0011] The aim of the present invention is to make a press for plating and embossing hides, tanned in the traditional mode or in the ecological water-based mode, which permits high productivity and better quality products to be obtained than is possible with the known types of machines.

[0012] This is obtained with an innovative press for plating and embossing tanned hides, in which the hide to be processed is compressed simultaneously over a wide area and remains under compression for a significant period of time, as occurs in a platen press, without increasing the operating cycle time, as occurs in a roller press.

[0013] Structurally, the plating and embossing press according to the invention is composed of a heated rotating cylinder, which acts as an operating roller having its external surface polished or engraved, on which the hide to be processed is wound through a wide angular aperture; the said hide is put under compression against said surface of the operating roller by the thrust actions exerted by an external belt, in turn would round the said roller with an equal angular aperture, said hide and said belt advancing at a rate equal to the peripheral velocity of said operating roller.

[0014] The external thrust belt, preferably of the closed loop type, is capable of running on intermediate rollers and on a movable drive roller which gives the belt the necessary tension, which, apart from pressing the hide against the external machined surface of the operating roller, also rotates the said operating roller when it is mounted idle on the machine, in other words it is not rotated by its own special motor reducer.

[0015] Advantageously, said belt is shaped so as to act also as a plane of support and as a conveyor belt for the hide in the zone of insertion between the rotating cylinder and said thrust belt.

[0016] This and other characteristics of the invention will become more evident from the description of one of its possible embodiment, given as an illustrative non-limitative example, with the aid of the appended drawings in which:

Figure 1 shows an elevation of the machine according to the invention;

Figure 2 shows a plan view, in a cross-section through line II-II of Figure 1, of the machine according to the invention;

Figure 3 shows schematically the principle of operation of the machine according to the invention.

[0017] As can be seen from the Figures, the continuous plating and embossing machine 1 according to the invention consists of a rotating cylinder 2, which acts as an operating roller and is heated by means known per se, such as diathermic oil, steam, water or electrical resistance heating and which has its external surface

polished or appropriately engraved. On said cylinder is wound, by an angular aperture preferably greater than 180°, a portion of a belt 3, which advances at a rate equal to the peripheral velocity of the said cylinder.

[0018] Between the cylinder 2 and the belt 3 is inserted the hide 4, which is placed with the surface to be treated in contact with the machined surface of the said cylinder and advances at the same velocity as it.

[0019] The plating and embossing action of the hide 4 is performed as the said hide is held and pressed against the surface of the cylinder by the thrust action exerted by the external belt which operates in conditions of significant tension in the direction of arrow F (see Figure 3).

[0020] The belt 3, of the closed loop type, of felt or other material suitable for the purpose, is wound over a number of intermediate rollers 5, one of which 6' acts as a drive roller, and a second 6'', mounted on a bracket 7, is capable of sliding between guides 8, provided on the shoulders 9 of the machine, so as to control the tension of the said belt.

[0021] The value of the tension on the belt 3 is one of the decisive parameters for the success of the plating and embossing operation of the hide, therefore the micrometric displacement of the bracket 7 is performed by a motor reducer 10 controlled by a load cell 11.

[0022] The said belt 3 is always configured so as to present one of its flat portions 12 on which the hides 4' to be treated are placed, by the operator or by known means, so as to function, by its continuous advance, as a conveyor belt for the hide in the work area.

[0023] Outside the hide winding area there is an appropriate laminar device 13, which provides for the removal of the hide 4 processed by the surface of the cylinder 2, when the hide is inserted from the flat portion 12 and the said cylinder rotates anticlockwise (direction of the black arrow); alternatively the said device acts as a plane of insertion for the hide when the said cylinder rotates clockwise (direction of the clear arrow), depending on the type of hide or the feed system.

[0024] From the description, the advantages become evident of using the machine according to the invention, which allows the hides to remain in full contact with the machined surface of the hot cylinder for a considerable time without involving a drop in productivity of the machine, which operates continuously.

[0025] Another advantage derived from the use of the machine according to the invention is the possibility of continuously embossing "WET BLUE" or dyed leather with optimum results giving a degree of humidity up to 40%.

[0026] In such operating conditions the machine is fitted with a belt or felt capable of absorbing part of the water expelled from the wet hide.

[0027] Structural solutions other than the one illustrated are obviously possible, without departing from the scope of the patent, which is characterised by the fact that the plating or embossing action of the hide is per-

formed by winding and pressing it on the operating cylinder by a belt under tension, also partially wound on the said cylinder and placed externally to it.

Claims

1. A continuous plating and embossing machine for hides and the like, particularly suited to the processing of hides tanned with the ecological system, which uses products that can be diluted in water and that require a reaction time to reticulate, that is, to affix the plating and embossing action on the surface thereof, considerably greater than the times required by hides tanned with chemical solvents, said machine (1) characterised by the fact that it comprises a rotating cylinder (2), which acts as an operating roller, heated by known means, such as diathermic oil, steam, water or electric resistors and which has its external surface machine polished or appropriately engraved, there being wound on said cylinder a portion of a belt (3), which advances at the same rate as the peripheral velocity of the said cylinder, and there being inserted between said cylinder (2) and said belt (3) the hide (4), which is placed with its surface to be treated in contact with the machined surface of the said cylinder and advances at the same rate as it, the plating or embossing action of the hide (4) being performed as it is held pressed against the surface of the cylinder by the thrust action exerted by the said belt (3) placed externally and which operates in conditions of considerable tension.
2. A continuous plating and embossing machine (1) for hides (4) and the like, the machine (1) comprising a heated rotating cylindrical roller (2) having a polished and/or engraved surface, the roller having a belt (3) wound thereon which advances at the same rate as the periphery of the roller, the belt being controllably tensioned so that, in operation, a hide (4) inserted between the belt (3) and the roller (2) is compressed therebetween, such that the surface of the roller (2) exerts a plating or embossing action on the hide (4).
3. A continuous plating and embossing machine according to claim 1 or claim 2 characterised by the fact that the portion of the belt (3) in tension is wound on a cylinder (2) through an angular aperture greater than 180°.
4. A continuous plating and embossing machine according to any one of claims 1 to 3, characterised by the fact that the belt (3), preferably of the closed loop type, of felt or other material suitable for the purpose, is wound on a number of intermediate rollers (5), at least one of which (6'') is capable of sliding linearly so as to control the tension of the said

belt.

5. A continuous plating and embossing machine according to claim 4, characterised by the fact that the movable roller (6'') is mounted on a bracket (7) capable of sliding between guides (8), provided on the shoulders (9) of the machine. 5
6. A continuous plating and embossing machine according to claims 4 and/or 5, characterised by the fact that the value of the tension of the belt (3) is regulated by a motor reducer (10) controlled by a load cell (11) applied to the movable roller (6''). 10
7. A continuous plating and embossing machine according to claim 6, characterised by the fact that the movable roller (6'') acts as a drive roller for a conveyor belt (3). 15
8. A continuous plating and embossing machine according to one or more of the foregoing claims, characterised by the fact that one of the intermediate rollers (6'') is driven and acts as a drive roller for a conveyor belt (3). 20
9. A continuous plating and embossing machine according to one or more of the foregoing claims, characterised by the fact that the operating cylinder (2) is mounted idle on the supporting structure of the machine and is rotated by the drag due to the compressive action generated by the belt (3) running on its outer surface. 25 30
10. A continuous plating and embossing machine according to one or more of the foregoing claims, characterised by the fact that the belt (3) is configured so as to present, before cylinder (2), one of its flat portions (12), on which the hides (4) to be treated are placed, by the operator or by known means, such that it acts, by its continuous advance, as a conveyor belt for the hide in the work area. 35 40
11. A continuous plating and embossing machine according to one or more of the foregoing claims, characterised by the fact that, outside the winding area of the hide, there is a laminar device (13) which removes the processed hide (4) from the surface of the cylinder (2), when the operating cylinder turns anticlockwise and the hides (4) are inserted with the help of the flat portion (12). 45 50
12. A continuous plating and embossing machine for hides and the like, according to one or more of the foregoing claims, characterised by the fact that, outside the winding area of the hide, there is a laminar or similar device (13) which acts as a plane of insertion for the hide (4) to be processed when the operating cylinder (2) turns clockwise. 55

13. Use of the continuous plating and embossing machine as defined in one or more of the foregoing claims, characterised by the fact that the plating and embossing action of the hide is performed by winding and pressing it on the operating cylinder with a belt under tension, also partially wound on said cylinder and placed externally to it.

14. Use of the continuous plating and embossing machine for hides and the like, as described in one or more of the foregoing claims, characterised by the fact that it permits "WET BLUE" or dyed leather to be embossed continuously and with optimum results giving a degree of humidity of up to 40%.

