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(54) **HORIZONTAL DYEING HEAD FOR EDGES OF LEATHER PIECES AND FINISHED LEATHER ARTICLES**

HORIZONTALER FÄRBEKOPF FÜR LEDERSTÜCKE UND FERTIGE LEDERWAREN

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Description

Technical Field

[0001] The present invention relates to a horizontal dyeing head for edges of leather pieces and finished leather articles, which is used in the haberdashery-leather industry.

Background of the Invention

[0002] One of the basic process steps in the haberdashery-leather industry is the step of dyeing edges of leather pieces and finished leather articles. Substantially, this step includes application of water-soluble dye, whereas the quality of the process step executed depends on the amount of dye deposited on the edge of the piece or finished article to be dyed.

[0003] WO 2018/129597 A1 discloses an apparatus for dyeing edges of leather pieces comprising a vertically arranged dyeing head connected to a motor via a magnetic coupling. The dyeing head comprises a dyeing shaft and an eccentric pump connected to a dye container, said dyeing shaft and said eccentric pump having a common rotation axis and connected to each other by means of a channel-and-tube system. The dyeing shaft is provided with a plate for controlling the thickness of the dye film on said dyeing shaft, the plate being arranged perpendicularly to the shaft axis and tangentially to the lateral surface thereof. The magnetic coupling consists of magnets for the dyeing shaft arranged radially and incorporated into a magnet holder which is attached to the dyeing shaft axis, and magnets for the motor also being arranged radially and incorporated into a second magnet holder attached to the motor axis, whereby both holders have an equal number of magnets arranged one above the other. In the dyeing process, the edge of the piece is touched the dyeing shaft which transfers dye onto the piece. In this known apparatus, the dyeing shaft diameter is significantly smaller compared to known apparatus which ensures the transfer of a greater amount of dye onto the leather piece per one application and, as a result of this, the number of applications of dye onto the piece reduces which leads to significant reduction of the duration of the whole process. On the other hand, the area on which the dye is applied is on the side of the dyeing shaft and the operator has difficulty monitoring the dyeing result. The operator checks how the piece has been dyed after completing the whole operation, which creates difficulties for the immediate control of the quality of the operation executed. In addition, sometimes this allows for formation of edging both on the front part and on the rear part of the piece. The eccentric pump used in the apparatus construction is a relatively complex mechanism requiring additional modules, such as a system of channels for dye transference from the dye container to the dyeing shaft, which further complicates the design of this known apparatus.

[0004] DE 295 18 563 U1 discloses a device for dyeing edges of leather pieces comprising a dyeing roller having a vertically arranged axis and driven by a motor via a coupling. The dyeing roller is arranged in the upper part of a hollow cylinder, in which lower part, a delivery screw pump is located. The hollow cylinder with the delivery screw pump are immersed in a dye container. In the upper part of the hollow cylinder, an opening is formed for discharging the dye sucked-in by the screw pump from the dye container and for transferring the dye onto the dyeing roller. In this known device for dyeing leather pieces, the area on which the dye is applied is on the side of the dyeing shaft and the operator has difficulty monitoring the dyeing result. Furthermore, finished articles are very difficult to dye using this device, due to the fact that the dyeing roller is located in the middle of the device having a complex design, and the access to the dyeing area is highly restricted.

Disclosure of the Invention

[0005] An object of the present invention is to provide a horizontal dyeing head for leather pieces and finished leather articles having a simplified and reliable design and allowing for direct monitoring of the dyeing process.

[0006] Another object of the present invention is to provide a horizontal dyeing head for leather pieces and finished leather articles, which is able to prevent formation of edging on the front and rear parts of the piece to be dyed.

[0007] A further object of the present invention is to provide a horizontal dyeing head which can be easily and quickly cleaned from the dye.

[0008] A horizontal dyeing head for edges of leather pieces and finished leather articles comprising a vertically arranged delivery screw pump enclosed in a pipe that is immersed in a dye container, and a plate for adjusting the thickness of the layer of dye onto a dyeing means. According to the present invention, a guide bearing is arranged coaxially in the upper end of the delivery screw pump, and said guide bearing is provided with a central channel and radial openings connecting an increased pressure area of the delivery screw pump to the central channel. A plenum is arranged above the guide bearing, and the central channel is open to said plenum in which an angled magnetic coupling (18) is located, said angled magnetic coupling comprising magnets built into a first magnet holder and magnets built into a second magnet holder, whereby axes of said first magnet holder and said second magnet holder are arranged at an angle of 94 degrees relative to each other. The first magnet holder is attached to the upper end of said guide bearing, and the second magnet holder is attached to an end of a suction pump and to said dyeing means representing a horizontal dyeing shaft a part of which is housed in said suction pump for returning the excess dye from the dyeing shaft into the dye container. A horizontal channel is formed along the axis and along the entire length of said

dyeing shaft for discharging dye from the plenum to the end of the dyeing shaft, where a central opening is provided for outflow the dye to the outer dyeing surface of the dyeing shaft having an inclination of 4° relative to the horizontal. A magnet holder having magnets incorporated therein is mounted in the lower end of the delivery screw pump, said magnet holder is a part of a magnetic coupling for connecting the delivery screw pump to a motor by an external magnet holder having magnets incorporated therein, whereat the motor and the external magnet holder are located outside the horizontal dyeing head.

[0009] In one preferred embodiment of the present invention, said plate for adjusting the thickness of a layer of dye on the outer dyeing surface of the dyeing shaft is connected, by means of an axle, to a handle for adjusting the clearance between the dyeing shaft and the plate.

[0010] In in another preferred embodiment of the present invention, the suction screw pump is housed in a sleeve.

[0011] In in another preferred embodiment of the present invention, magnets of the angled magnetic coupling are arranged in two composite cylindrical magnets of the same diameter, said cylindrical magnets are built coaxially into the first magnet holder and the second magnet holder, and common axes of said composite cylindrical magnets and said magnet holders are arranged at an angle of 94 degrees relative to each other. Each of said cylindrical magnets is composed of two pairs of segmental magnets and each of said segmental magnets is a diametrically polarized segment, whereby the segmental magnets of each pair are arranged opposite each other in said composite cylindrical magnets and are with the same polarity at the inner and outer sides of the segment, whereat the segmental magnets of one pair have an opposite polarity in relation to the segmental magnets of the other pair.

[0012] The advantages of the horizontal dyeing head according to the invention are as follows:

- The horizontal dyeing head has a simplified and reliable design.
- The horizontal position of the dyeing shaft having an adjusting plate arranged on the upper side of the dyeing head allows for execution of the dyeing process from the lower side of the dyeing shaft, as a result of which the operator is able to monitor directly the dyeing result.
- In case that the thickness of the layer of dye on the dyeing shaft is properly adjusted, and the operator is able to monitor directly the dyeing process, the occurrence of edging on the front and rear parts of the piece to be dyed is fully prevented.
- The horizontal dyeing head allows for dyeing finished leather articles since the whole space above and under the dyeing shaft is free.
- Due to the angled magnetic coupling, the horizontal portion of the dyeing head, being the working tool, may be easily replaced with another one loaded with

another colour without interrupting the technological process. If necessary, the dyeing head used may be cleaned easily, but may be placed on a support station, which prevents it from drying, and may be repositioned if the same colour has to be used again.

Brief Description of Drawings

[0013]

FIG. 1 is a schematic diagram of a horizontal dyeing head (3D model);

FIG. 2 is a schematic diagram of a horizontal dyeing head from another side view;

FIG. 3 is a perspective side view of a horizontal dyeing head;

FIG. 4 is a perspective view of the horizontal dyeing head of FIG. 3 from another side view;

FIG. 5 is a perspective view of the horizontal dyeing head of FIG. 3 illustrating a process of dyeing of a leather piece.

FIG. 6 is a front view with a partial section of a part of the horizontal dyeing head where an angled magnetic coupling is mounted;

Fig 7 is a perspective view of segmental magnets of which a cylindrical magnet is composed;

FIG. 8 is a perspective view of a cylindrical magnet;

FIG. 9 is a perspective view showing the relative position of two composed cylindrical magnets in an angled magnetic coupling;

Modes for Carrying Out the Invention

[0014] Referring to FIG. 1 through FIG. 4, a horizontal dyeing head according to the present invention is shown, the horizontal dyeing head comprising a vertically arranged delivery screw pump 9 and a guide bearing 19 arranged coaxially at the upper end of said delivery screw pump 9, in said guide bearing 19, a central channel 21 and radial openings 22 connecting an increased pressure area of the delivery screw pump 9 to the central channel (21) are provided. The delivery screw pump 9 is accommodated in a pipe 20 immersed in a dye container 1 that is closed by a protecting cap 2, and said dye container 1 has a charging hole 3. A plenum 11 is arranged above the guide bearing 19, and the central channel 21 is open to said plenum 11. An angled magnetic coupling 18 is located in the plenum 11 and said angled magnetic coupling 18 comprising magnets built into a first magnet holder 18.1 and magnets built into a second magnet holder 18.2, whereby axes 25 and 26 of said first magnet holder 18.1 and said second magnet holder 18.2 are arranged at an angle of 94 degrees relative to each other (see FIG. 6, 8 and 9). The first magnet holder 18.1 is attached to the upper end of said guide bearing 19, and the second magnet holder 18.2 is attached to an end of a suction pump 14 and to a horizontal dyeing shaft 7, a part of which is housed in said suction pump 14 for returning the

excess dye from the horizontal dyeing shaft 7 into the dye container 1. A horizontal channel 12 is formed along the axis and along the entire length of said horizontal dyeing shaft 7 for discharging dye from the plenum 11 to the end of the horizontal channel 12, where a central opening 13 is provided for outflow the dye to the outer dyeing surface of the horizontal dyeing shaft 7 having an inclination of 4° relative to the horizontal. The horizontal dyeing shaft 7 and the suction pump 14 form the horizontal part 4 of the dyeing head. The plenum 11, the angled magnetic coupling 18, the dyeing shaft 7 and the guide bearing 19 form a main part 4 of the horizontal dyeing head provided with a levelling sensor 8.

[0015] As indicated above, an angled magnetic coupling 18 is located in the plenum 11 and said angled magnetic coupling 18 comprising magnets built into a first magnet holder 18.1 and magnets built into a second magnet holder 18.2 (see FIG.6). The plenum 11 is not shown in this FIG. 6. Referring to FIG. 7 through FIG. 9, magnets of said angled magnetic coupling 18 are arranged in two composite cylindrical magnets "A" and "B" having identical diameter and built coaxially into the first magnet holder 18.1 and in the second magnet holder 18.2, respectively, which common axes 25 and 26, respectively, are arranged at an angle of 94 degrees relative to each other. Each of composite said cylindrical magnets "A" and "B" is composed of two pairs of segmental magnets 18.3, 18.5 and 18.4, 18.6, and each of said segmental magnets 18.3, 18.4, 18.5 and 18.6 is a diametrically polarized segment, whereby the inner side (with the smaller diameter) of one pair of segmental magnets 18.3, 18.5 is a north magnetic pole "N", while the outer side (with the larger diameter) is a south magnetic pole "S". The other pair of segments 18.4, 18.6 are polarized in the opposite diametrical direction - the inner side (with the smaller diameter) is a south magnetic pole "S" and the outer side (with the larger diameter) is a north magnetic pole "N". The segmental magnets of each pair 18.3, 18.5 and 18.4, 18.6 are located opposite (radial) to each other in the composite cylindrical magnets "A" and "B" and are with the same polarity at the inner side and outer side, whereby the segmental magnets of one pair have the opposite polarity in relation to the segmental magnets of the other pair.

[0016] A plate 6 is provided for adjusting the thickness of a layer of dye on the outer dyeing surface of the horizontal dyeing shaft 7, whereby said plate 6 is connected to a handle 5 (see FIG. 3), using a shaft 16, for adjusting the clearance between the horizontal dyeing shaft 7 and the plate 6. A suction screw pump 14 for returning the excess dye from the outer surface of the dyeing shaft 7 to the dye container 1 through a tube 15 is housed in a sleeve 23. A safety cap 17 is provided for the horizontal dyeing shaft 7 (see FIG 4).

[0017] In this embodiment, a magnetic coupling described in WO 2018/129597 A1 is used for connecting the delivery screw pump 9 to a motor (not shown). Referring to FIG. 1, the magnetic coupling comprises a mag-

net holder 10 having magnets incorporated therein and mounted to the lower end of the delivery screw pump 9, and an external magnet holder (not shown) having magnets incorporated therein, and said external magnet holder is connected to the motor axis, whereby the motor and the second magnet holder are located outside the horizontal dyeing head.

[0018] The principle of operation of the horizontal dyeing head is as follows:

10 The movement of the motor is transmitted to the delivery screw pump 9 through the magnetic coupling and dye is sucked-in from the dye container 1 via its bottom part and is delivered upwards to the radial openings 22, which connect the increased pressure area of the delivery screw pump 9 to the central channel 21. Thus, the dye delivered by the delivery screw pump 9 is raised along the central channel 21, passing through the centre of the guide bearing 19, and is poured into the plenum 11, and from there, by means of the angled magnetic coupling 18, the dye is entered the horizontal channel 12 of the horizontal dyeing shaft 7. The dye is exited from the horizontal channel 12 through the central opening 13 and is run down the horizontal dyeing shaft 7, due to the inclination of 4 degrees. The desired layer of dye is formed on the outer dyeing surface of the horizontal dyeing shaft 7 by means of the adjusting plate 6. When the layer of dye is formed on the dyeing shaft 7, the leather piece 24 (see FIG. 5) is touched the horizontal dyeing shaft 7, while moving in the direction shown by the arrow on the FIG. 5. When the leather piece is touched the dyeing shaft 7, the layer of dye on the dyeing shaft 7 is transferred onto the leather piece 24 due to the adhesion.

[0019] The dye thickness on the dyeing shaft is adjusted using the plate 6 for applying an even layer of dye.

35 The excess dye is ran down the adjusting plate 6 and is entered the inlet of the suction screw pump 14, which is delivered the excess dye into the dye container 1 through the tube 15.

[0020] The angular magnetic coupling 18 works as follows: To close the lines of force in the shortest way, the composite cylindrical magnets "A" and "B" (composed of segmental magnets 18.3, 18.5 and 18.4, 18.6) rotate relative to each other until they are in a stable position with one of their opposite poles. The composite cylindrical magnets "A" and "B" remain in this equilibrium position until they are brought out of this state by the rotation of one of said two magnets "A" and "B". The magnetic field of the two nearest segmental magnets of the composite cylindrical magnet "A" and the composite cylindrical magnet "B" is closed through the south (positive) magnetic pole "S" of the magnetic segment of the composite cylindrical magnet "A", the north (negative) magnetic pole "N" of the magnetic segment of the composite cylindrical magnet "B", the south (positive) magnetic pole "S" of the magnetic segment of the composite cylindrical magnet "B" and the north (negative) magnetic pole "N" of the magnetic segment of the composite cylindrical magnet "A". In an equilibrium state, the force of attraction has its

maximum (absolute values of the force of attraction depend on the distances between the cylindrical magnets, however, in case of a fixed distance, this is the maximum value for this distance).

[0021] Rotation of the composite cylindrical magnet "A" about the axis 25 counterclockwise (see FIG.9) causes the lines of force of the magnetic field to be stretched, which forces the composite cylindrical magnet "B" to rotate about the axis 26 in such a direction as to recover again the equilibrium state, i.e. the composite cylindrical magnet "B" seeks to catch up with the rotation of the cylindrical magnet "A", and this rotation will continue until the composite cylindrical magnet "A" rotates to 45 degrees from the initial (equilibrium) state. When rotated to more than 45 degrees, the two magnetically coupled segments of said magnet "A" and said magnet "B" will begin to move away from each other due to the rotation of the cylindrical magnets "A" and "B" about the axes 25 and 26, respectively, and the magnetic coupling between them will weaken. Meanwhile, when rotating to more than 45 degrees, the next pair of magnetic segments of said composite cylindrical magnets "A" and "B" will have taken the place of the diverging magnetic segments and the cycle will be repeated in the next 90 degrees of rotation of the composite cylindrical magnet "A" about the axis 25. As a result of the rotation about the axis 25 of the composite cylindrical magnet "A" at a certain angle is also rotation about the axis 26 of the composite cylindrical magnet "B" at the same angle. If the rotation of the composite cylindrical magnet "A" is continuous, then the composite cylindrical magnet "B" will rotate continuously at the same speed. In this way, a transmission of rotation of axes arranged at an angle of 94 degrees to each other is realized, which changes the direction of movement of the dye to 94 degrees.

[0022] Due to the angled magnetic coupling 18, the horizontal portion 4 of the dyeing head, being the working tool, may be easily replaced with another one loaded with another colour without interrupting the technological process. If necessary, the dyeing head used may be cleaned easily, but may be placed on a support station, which prevents it from drying, and may be repositioned if the same colour has to be used again.

Claims

1. A horizontal dyeing head for edges of leather pieces and finished leather articles comprising a vertically arranged delivery screw pump (9) enclosed in a pipe (20) immersed in a dye container (1), and a plate (6) for adjusting the thickness of the layer of dye onto a dyeing means, **characterized in that** a guide bearing (19) is arranged coaxially at the upper end of said delivery screw pump (9), and said guide bearing (19) is provided with a central channel (21) and radial openings (22) connecting an increased pressure area of the delivery screw pump (9) to the central chan-

nel (21), wherein a plenum (11) is arranged above the guide bearing (19), and the central channel 21 is open to said plenum (11) in which an angled magnetic coupling (18) is located and said angled magnetic coupling (18) comprising magnets built into a first magnet holder (18.1) and magnets built into a second magnet holder (18.2), whereby axes (25, 26) of said first magnet holder (18.1) and said second magnet holder (18.2) are arranged at an angle of 94 degrees relative to each other, wherein the first magnet holder (18.1) is attached to the upper end of said guide bearing (19) and the second magnet holder (18.2) is attached to an end of a suction pump (14) and to the dyeing means which is a horizontal dyeing shaft (7) a part of which is housed in said suction pump (14) for returning the excess dye from the outer surface of the horizontal dyeing shaft (7) into the dye container (1), wherein a horizontal channel 12 is formed along the axis and along the entire length of said horizontal dyeing shaft (7) for discharging dye from the plenum (11) to the end of the horizontal channel (12), where a central opening (13) is provided for outflow the dye to the outer dyeing surface of the horizontal dyeing shaft (7) having an inclination of 4° relative to the horizontal, wherein a magnet holder (10) having magnets incorporated therein is mounted in the lower end of said delivery screw pump (9) and said magnet holder (10) is a part of a magnetic coupling for connecting the delivery screw pump (9) to a motor by an external magnet holder having magnets incorporated therein, whereby the motor and the external magnet holder are located outside the horizontal dyeing head.

2. The horizontal dyeing head according to claim 1, **characterized in that** said plate (6) for adjusting the thickness of a layer of dye on the outer dyeing surface of the dyeing shaft (7) is connected, using an axis (16), to a handle (5) for adjusting the clearance between the dyeing shaft (7) and the plate (6).
3. The horizontal dyeing head according to claims 1 and 2, **characterized in that** said suction screw pump (14) is housed in a sleeve (23).
4. The horizontal dyeing head according to claims 1 and 2, **characterized in that** the magnets of the angled magnetic coupling (18) are arranged in two composite cylindrical magnets (A, B) of the same diameter, said composite cylindrical magnets (A, B) are built coaxially into the magnet holders (18.1, 18.2), and the common axes (25, 26) of said composite cylindrical magnets (A, B) and said magnet holders (18.1, 18.2) are arranged at an angle of 94 degrees relative to each other, wherein each of said composite cylindrical magnets (A, B) is composed of two pairs of segmental magnets (18.3, 18.5 and 18.4, 18.6) and each of said segmental magnets

(18.3, 18.4, 18.5, 18.6) is a diametrically polarized segment, whereby the segmental magnets of each pair (18.3, 18.5 and 18.4, 18.6) are arranged opposite each other in said composite cylindrical magnets (A, B) and are with the same polarity at the inner and outer sides of the segment, whereat the segmental magnets of one pair (18.3, 18.5) have an opposite polarity in relation to the segmental magnets of the other pair (18.4, 18.6).

Patentansprüche

1. Ein horizontales Färbeaggregat für Kanten von Lederstücken und fertigen Lederwaren, umfassend eine vertikal angeordnete Schraubenpumpe (9), die in einem Rohr (20) eingebettet in einem Farbbadbehälter (1) angeordnet ist, sowie eine Platte (6) zur Einstellung der Dicke einer Farbschicht auf ein Färbelement. Es ist **gekennzeichnet durch** ein koaxial angeordnetes Führungslager (19) am oberen Ende der Schraubenpumpe (9), welches mit einem zentralen Kanal (21) und radialen Öffnungen (22) verbunden ist, die einen Bereich mit erhöhtem Druck der Schraubenpumpe (9) mit dem zentralen Kanal (21) verbinden. Über dem Führungslager (19) ist ein Sammelraum (11) angeordnet, und der zentrale Kanal (21) steht mit diesem Sammelraum (11) in Verbindung, in dem eine Winkelmagnetkupplung (18) angeordnet ist. Die Winkelmagnetkupplung (18) umfasst Magnete, die in einem ersten Magnethalter (18.1) und einem zweiten Magnethalter (18.2) eingebaut sind, wobei die Achsen (25, 26) des ersten Magnethalters (18.1) und des zweiten Magnethalters (18.2) unter einem Winkel von 94 Grad zueinander angeordnet sind. Der erste Magnethalter (18.1) ist am oberen Ende des Führungslagers (19) befestigt, und der zweite Magnethalter (18.2) ist an einem Ende einer Saugpumpe (14) und an dem Färbelement, das eine horizontale Färbewelle (7) ist, befestigt. Ein Teil dieser horizontalen Färbewelle (7) ist in der Saugpumpe (14) angeordnet, um überschüssige Farbe von der äußeren Oberfläche der horizontalen Färbewelle (7) in den Farbbadbehälter (1) zurückzuführen. Ein horizontaler Kanal (12) entlang der Achse und entlang der gesamten Länge der horizontalen Färbewelle (7) ist für das Abführen von Farbe aus dem Sammelraum (11) bis zum Ende des horizontalen Kanals (12) vorgesehen, wobei eine zentrale Öffnung (13) zum Abfluss der Farbe auf die äußere Färbefläche der horizontalen Färbewelle (7) mit einer Neigung von 4 Grad relativ zur Horizontalen vorhanden ist. Ein Magnethalter (10) mit darin eingebauten Magneten ist am unteren Ende der Schraubenpumpe (9) montiert und dient als Teil einer Magnetkupplung, um die Schraubenpumpe (9) mit einem Motor über einen externen Magnethalter mit darin eingebauten Magneten zu verbinden. Der

Motor und der externe Magnethalter befinden sich außerhalb des horizontalen Färbeaggregats.

2. Das horizontale Färbeaggregat gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Platte (6) zur Einstellung der Dicke einer Farbschicht auf der äußeren Färbefläche der Färbewelle (7) über eine Achse (16) mit einem Griff (5) verbunden ist, um den Abstand zwischen der Färbewelle (7) und der Platte (6) einzustellen.
3. Das horizontale Färbeaggregat gemäß den Ansprüchen 1 und 2, **dadurch gekennzeichnet, dass** die Saugschraubenpumpe (14) in einer Hülse (23) untergebracht ist.
4. Das horizontale Färbeaggregat gemäß den Ansprüchen 1 und 2, **dadurch gekennzeichnet, dass** die Magnete der Winkelmagnetkupplung (18) in zwei zusammengesetzten zylindrischen Magneten (A, B) mit demselben Durchmesser angeordnet sind. Diese zusammengesetzten zylindrischen Magnete (A, B) sind koaxial in den Magnethaltern (18.1, 18.2) eingebaut, und die gemeinsamen Achsen (25, 26) dieser zusammengesetzten zylindrischen Magnete (A, B) und Magnethalter (18.1, 18.2) sind relativ zueinander unter einem Winkel von 94 Grad angeordnet. Jeder dieser zusammengesetzten zylindrischen Magnete (A, B) besteht aus zwei Paaren von segmentierten Magneten (18.3, 18.5 und 18.4, 18.6), und jeder dieser segmentierten Magnete (18.3, 18.4, 18.5, 18.6) ist ein diametral polarisiertes Segment. Dabei sind die segmentierten Magnete jedes Paares (18.3, 18.5 und 18.4, 18.6) in den zusammengesetzten zylindrischen Magneten (A, B) einander gegenüberliegend angeordnet und haben an der inneren und äußeren Seite des Segments dieselbe Polarität. Die segmentierten Magnete eines Paares (18.3, 18.5) haben jedoch eine entgegengesetzte Polarität im Vergleich zu den segmentierten Magneten des anderen Paares (18.4, 18.6).

Revendications

1. Tête de teinture horizontale pour les bords de pièces en cuir et d'articles en cuir fini, comprenant une pompe à vis de distribution (9) disposée verticalement et enfermée dans un tuyau (20) immergé dans un récipient de colorant (1), et un racleur (6) permettant de régler l'épaisseur de la couche et qui permet de guider la teinture (19) qui est disposé coaxialement à l'extrémité supérieure de ladite pompe à vis de distribution (9), et ledit palier de guidage (19) est pourvu d'un canal central (21) et d'ouvertures radiales (22) reliant une zone de pression accrue de la pompe à vis de distribution (9) au canal central (21), un plenum (11) étant disposé au-dessus du palier

de guidage (19), et le canal central (21) étant ouvert audit plenum (11) dans lequel est situé un accouplement magnétique angulé (18), ledit accouplement magnétique angulé (18) comprenant des aimants intégrés dans un premier support d'aimant (18.1) et des aimants intégrés dans un second support d'aimant (18.2), les axes (25, 26) du premier support d'aimant (18.1) et du second support d'aimant (18.2) étant disposés selon un angle de 94 degrés l'un par rapport à l'autre, le premier support d'aimant (18.1) étant fixé à l'extrémité supérieure dudit palier de guidage (19) et le second support d'aimant (18.2) étant fixé à une extrémité d'une pompe d'aspiration (14) et au moyen de teinture qui est un arbre de teinture horizontal (7), dont une partie est logée dans ladite pompe d'aspiration (14) pour renvoyer l'excès de colorant de la surface extérieure de l'arbre de teinture horizontal (7) dans le récipient de colorant (1), un canal horizontal (12) étant formé le long de l'axe et sur toute la longueur de l'arbre de teinture horizontal (7) pour évacuer le colorant du plenum (11) jusqu'à l'extrémité du canal horizontal (12), où une ouverture centrale (13) est prévue pour l'écoulement du colorant vers la surface de teinture extérieure de l'arbre de teinture horizontal (7) ayant une inclinaison de 40° par rapport à l'horizontale, un support d'aimant (10) comportant des aimants incorporés étant monté à l'extrémité inférieure de la pompe à vis de distribution (9) et le support d'aimant (10) faisant partie d'un accouplement magnétique pour relier la pompe à vis de distribution (9) à un moteur par l'intermédiaire d'un support d'aimant externe comportant des aimants incorporés, le moteur et le support sont externes à la tête de teinture.

2. La tête de teinture horizontale selon la revendication 1, **caractérisée en ce que** ladite plaque (6) permettant d'ajuster l'épaisseur d'une couche de colorant sur la surface extérieure de l'arbre de teinture (7) est reliée, à l'aide d'un axe (16), à une molette (5) permettant d'ajuster la teinture entre le racleur (6) et l'axe (7).
3. La tête de teinture horizontale selon les revendications 1 et 2, **caractérisée en ce que** ladite pompe à vis d'aspiration (14) est logée dans un manchon (23).
4. La tête de teinture horizontale selon les revendications 1 et 2, **caractérisée en ce que** les aimants de l'accouplement magnétique angulaire (18) sont disposés dans deux aimants cylindriques composites (A, B) de même diamètre, les aimants cylindriques composites (A, B) étant incorporés de manière coaxiale dans les supports d'aimant (18.1, 18.2), et les axes communs (25, 26) desdits aimants cylindriques composites (A, B) et des supports d'aimant (18.1, 18.2) étant disposés selon un angle de 94 de-

grés les uns par rapport aux autres. Chacun de ces aimants cylindriques composites (A, B) est composé de deux paires d'aimants segmentés (18.3, 18.5 et 18.4, 18.6), et chacun de ces aimants segmentés (18.3, 18.4, 18.5, 18.6) est un segment polarisé diamétralement. Les aimants segmentés de chaque paire (18.3, 18.5 et 18.4, 18.6) sont disposés en opposition dans les aimants cylindriques composites (A, B) et présentent la même polarité sur les côtés intérieur et extérieur du segment, tandis que les aimants segmentés d'une paire (18.3, 18.5) ont une polarité opposée par rapport aux aimants segmentés de l'autre paire (18.4, 18.6).

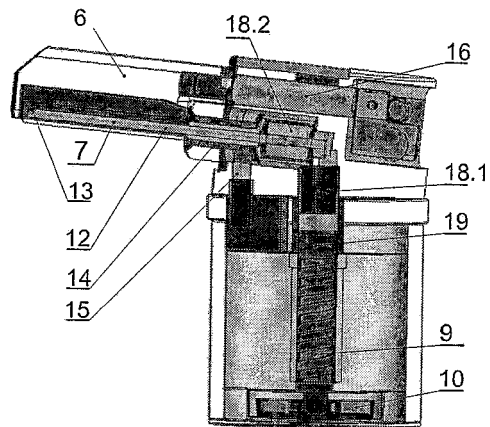


FIG. 1

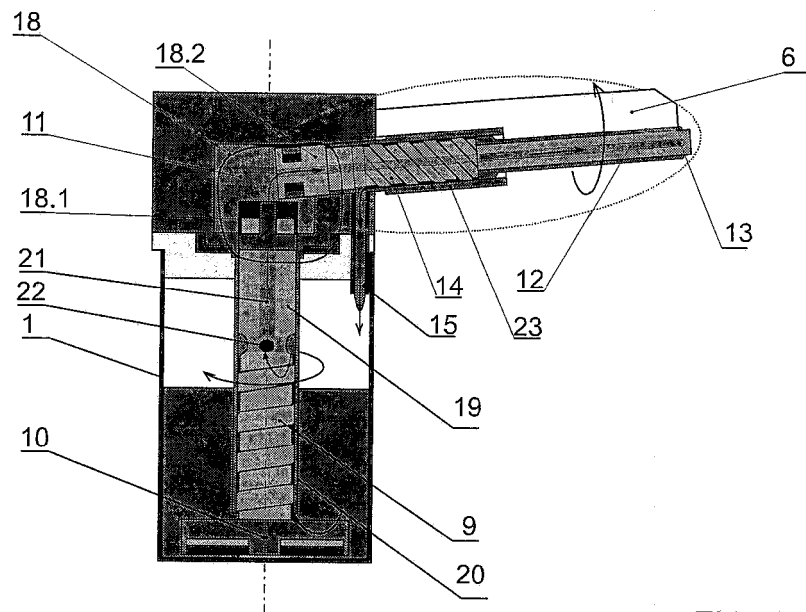


FIG. 2

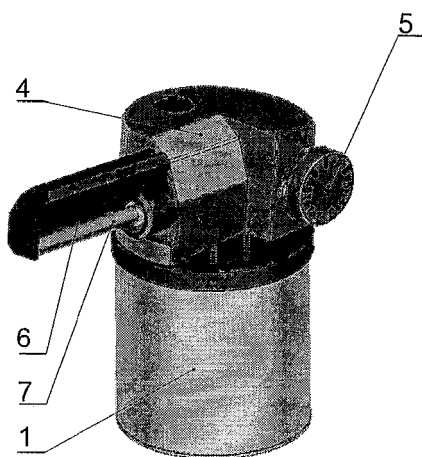


FIG. 3

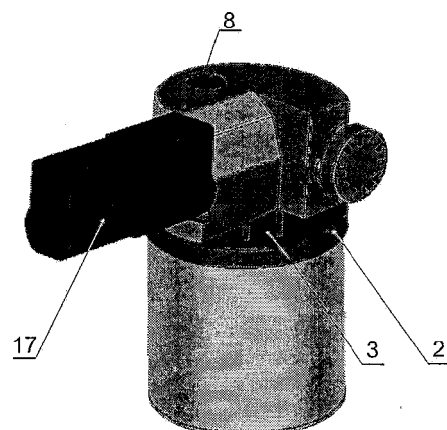


FIG. 4

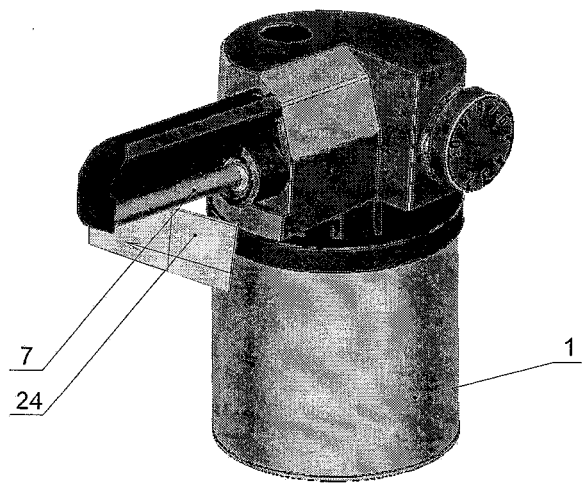


FIG 5.

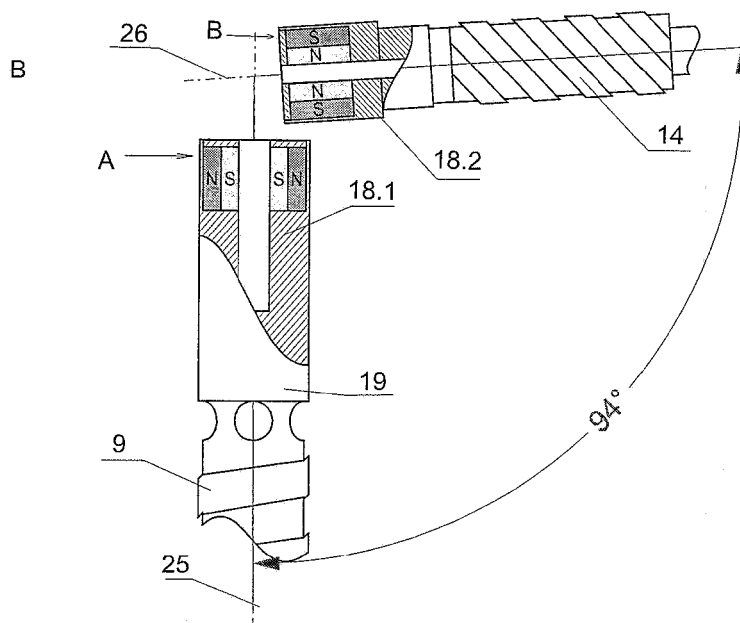


FIG 6.

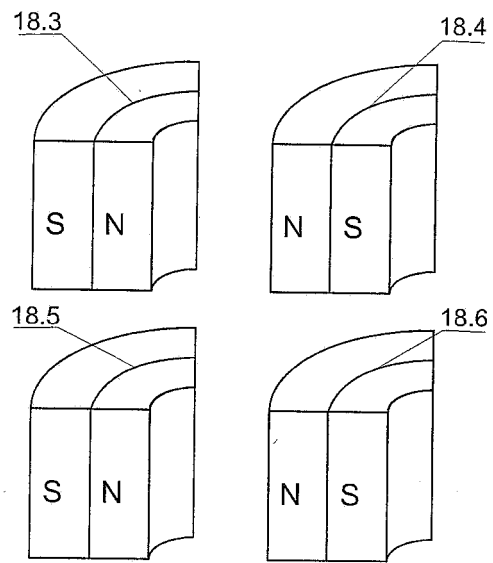


Fig. 7

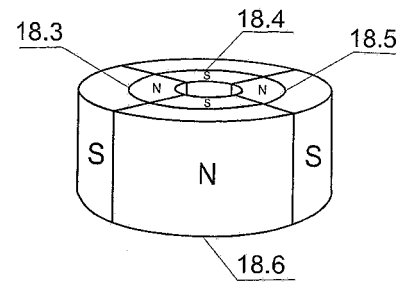


Fig. 8

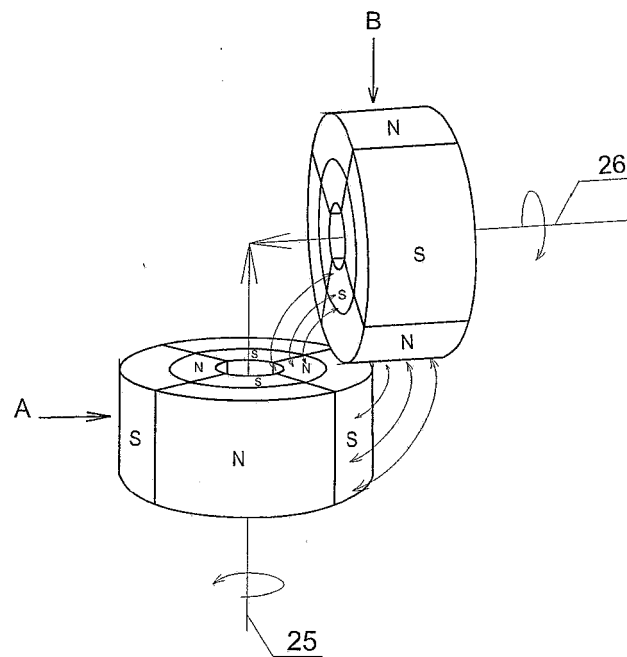


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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