

(19)



(11)

EP 1 625 914 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
01.01.2014 Bulletin 2014/01

(51) Int Cl.:
B24B 29/06 (2006.01)

(21) Application number: **05017257.6**

(22) Date of filing: **09.08.2005**

(54) **Satin finishing system with flap wheels for shaped tubes**

Seidengänzende Nachbearbeitungsvorrichtung mit Lamellen-Schleifscheiben für geformte Röhren

Dispositif de finition satinée au moyen de disques à lamelles pour tubes profilés

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

(30) Priority: **10.08.2004 IT MI20041641**

(43) Date of publication of application:
15.02.2006 Bulletin 2006/07

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Description

[0001] The present invention refers to a satin finishing system with flap wheels for shaped tubes which comprises at least one station equipped with at least one set of flap wheels with a vertical axis, at least one station equipped with at least one set of flap wheels with a horizontal axis, means designed to rotate the sets of flap wheels, means designed to slide the tube being processed longitudinally through said stations and means designed to move the tube to be processed transversally to its direction of travel.

[0002] In order to satin finish or polish a shaped tube, systems with abrasive cloths are currently used, in which each finishing station comprises a pair of opposed finishing heads, each of which comprises a ring of abrasive cloth carried by a drive roller and a roller which holds the abrasive cloth in contact with the surface to be processed.

[0003] The finishing heads are positioned vertically and simultaneously process the two opposite sides of a shaped tube made to pass in a per se known manner between the finishing heads.

[0004] Systems of the prior art present numerous limits and/or drawbacks, amongst which:

- processing of the shaped tube must take place in two stages: after having processed two sides of the shaped tube, it is necessary to stop the system, cause the tube to move back (or, in any case, bring it back) to the input to the system and rotate it to process another two sides; all this considerably lengthens processing times, reducing the productivity of the system;
- the abrasive cloths wear very rapidly, drastically reducing their removal capacity and no longer ensuring the initial level of finishing: it is therefore necessary to stop the system often to replace worn cloths, which can sometimes be re-used in the finishing heads that perform rougher finishing;
- the heat produced during processing of the tube by the abrasive cloths makes it necessary to cool the tube with water, with the consequent formation of sludge, which must be removed.

[0005] US 5 901 400 A discloses a satin finishing system with flap wheels for shaped tubes moveable on a bed of rollers with horizontal axes, mounted idly and carried by a support, comprising, in combination with each other:

- at least one satin finishing station equipped with at least one set of flap wheels with a horizontal axis;
- means designed to set in rotation the sets of flap wheels;
- at least one feed station, designed to feed the tube to be processed along the roller bed.

[0006] The object of the present invention is to overcome the abovementioned limits and/or drawbacks presented by the systems of the prior art, allowing all sides of a shaped tube to be "treated" in a single "pass" - with a consistently homogeneous surface finish - and the tube to be air-cooled: this allows a drastic reduction in processing times and costs.

[0007] This object is achieved by means of a satin finishing system produced according to the present invention, which has the characterising features illustrated in claim 1; further advantageous characteristics of the invention form the subject matter of the dependent claims.

[0008] Further characteristics of the invention will be made clearer by the detailed description that follows, referring to a purely exemplifying and therefore non-limiting embodiment thereof, illustrated in the appended drawings, in which:

- Figure 1 shows diagrammatically a side view of a satin finishing system according to the invention;
- Figures 2 e 3 show diagrammatically a front, partially sectional view and a side view of one of the satin finishing stations with a horizontal axis 4 of Figure 1;
- Figures 4 and 5 show diagrammatically a front, partially sectional view and a side view of one of the satin finishing stations with a vertical axis 6 of Figure 1.
- Figure 6 shows diagrammatically a front view and a side view of one of the feed stations 8 of figure 1, designed to feed the tube to be processed longitudinally;
- Figure 7 shows diagrammatically a front view and a side view of one of the carriages 9 of Figure 1, designed to move the tube to be processed transversally to its direction of travel.

[0009] In the attached figures like elements will be identified by the same reference numerals wherever possible.

[0010] Figure 1 shows diagrammatically a side view of a satin finishing system according to the invention, which comprises, in combination with each other:

- a bed of rollers 1 with horizontal axes, mounted idly and carried by a support 2, on which slides a shaped tube 3 to be processed: the roller bed 1, the support 2 and the tube 3 will not be described because they are per se known;
- at least one satin finishing station 4 (better described with reference to Figures 2 and 3) equipped with at least one set 20 (Figures 2 and 3) of flap wheels 5 with a horizontal axis; in Figure 1 six satin finishing stations 4 which perform an increasingly high finish are shown;
- at least one satin finishing station 6 (described better with reference to Figures 4 and 5) equipped with at least one set 30 (Figures 4 and 5) of flap wheels 7 with a vertical axis; in Figure 1 six satin finishing sta-

tions 6 which perform an increasingly high finish are shown;

- means (21, 22; 31, 32) designed to set the sets (20, 30) of flap wheels (5, 7) in rotation;
- at least one feed station 8, seen better in Figure 6, designed to feed the tube 3 to be processed longitudinally along the roller bed 1;
- at least one carriage 9, placed downstream of the at least one feed station 8 and seen better in Figure 7, designed to move the tube 3 to be processed transversally to its direction of travel and hold it in position between the sets 20 of flap wheels 5 with a horizontal axis of the satin finishing stations 4.

[0011] Without departing from the scope of the invention, the flap wheels (5, 7) may be replaced by grinding wheels or any other equivalent abrasive means, provided it is different from abrasive cloths.

[0012] At the start and at the end of the roller bed 1 and between the two adjacent satin finishing stations (4, 6) there are preferably a feed station 8 and a carriage 9.

[0013] Furthermore, since the heat produced during processing of the tube by means of the flap wheels (5, 7) is less than that developed by the abrasive cloths of a traditional system, the tube 3 can be cooled during processing by means of jets of air issuing from delivery nozzles 10 placed upstream of each satin finishing station (4, 6): the use of water of cooling means and the consequent formation of sludge are thus avoided and it is possible to use a dust suction system, of which only the suction openings 11, situated level with each satin finishing station (4, 6), can be seen in Figure 1.

[0014] For simplicity of the graphic representation, only one of the satin finishing stations 4 with a vertical axis, one with a horizontal axis resting on a support 302, one of the feed stations 8, a carriage 9, an air delivery nozzle 10 and a dust suction nozzle 11 are identified with reference numerals in Figure 1.

[0015] In Figure 1 the tube 3 is a square tube (square or rectangular in section) but, without departing from the scope of the invention, the tube 3 can be polygonal in section (for example hexagonal) and the satin finishing system further comprises at least one satin finishing station (omitted in Figure 1) equipped with at least one set of flap wheels with an inclined axis.

[0016] Figures 2 and 3 show diagrammatically a front, partially sectional view and a side view of a satin finishing station 4 equipped with two sets 20 of flap wheels 5 with a horizontal axis.

[0017] A satin finishing station 4 comprises a supporting element 23, fixed to the support 2 of Figure 1, which cantileverly carries two slides (24, 25) each of which carries a set 20 of flap wheels 5 with a horizontal axis, mounted on a shaft 21 set in rotation by a motor 22.

[0018] The slides (24, 25) are connected to the supporting element 23 by means 26 designed to move each slide (24, 25) vertically; each set 20 of flap wheels 5 is connected to the relative slide (24, 25) by means 27 de-

signed to make the set 20 slide horizontally along the respective slide (24, 25).

[0019] The means (26, 27) designed to move each slide (24, 25) along the supporting element 23, and each set 20 of flap wheels 5 along the relative slide (24, 25) will not be described, however, because they are per se known; these means can be hydraulic or pneumatic or else they can consist of threaded couplings moved, by means of a screw and screw-nut coupling, by threaded shafts driven by a motor.

[0020] Figures 4 and 5 show diagrammatically a front, partially sectional view and a side view of one of the satin finishing stations 6, which comprises a pair of supporting elements 33, fixed to the support 302, each of which carries a set 30 of flap wheels 7 with a vertical axis, mounted on a shaft 31 set in rotation by a motor 32.

[0021] Each supporting element 33 is connected to the support 302 by means 36 designed to move it horizontally with respect to the support 2; each set 30 of flap wheels 7 is connected to the relative supporting element 33 by means 37 designed to make the set 30 slide vertically along the supporting element 33.

[0022] The satin finishing station 6 is similar to a station 4 and - in Figures 4 and 5 - the corresponding elements are indicated with the reference numerals used in Figures 2 and 3 increased by 10.

[0023] As can be seen from Figures 4 and 5, the height of the support 302 is such that, when the sets 30 of flap wheels 7 are completely lowered, the top area of the sets 30 is in contact with the tube 3.

[0024] The vertical movement of the sets 20, and the horizontal movement of the sets 30 allows the distance between the sets 20 and 30, respectively, to be adapted to the size of the tube 3 to be processed, and the flap wheels 5 and 7, respectively, to be kept in contact with the tube 3, compensating for wear on said wheels during the satin finishing process.

[0025] In the preferred embodiment illustrated in Figures 2-5, the sets (20, 30) comprise a plurality of flap wheels (5, 7) of different thickness, each of which has a thickness corresponding to that of one of the tubes 3 to be processed: the horizontal movement of the sets 20, and the vertical movement of the sets 30 allows the tube 3 to be brought level with the flap wheels (5, 7) having a working height corresponding to that of the tube 3, thus wearing only said flap wheels (5, 7).

[0026] The fact of forming sets (20, 30) by means of flap wheels (5, 7) of different thickness and of moving the sets (20, 30) with respect to the tube 3 allows the wear to be divided between the various flap wheels (5, 7) belonging to the groups (20, 30) according to the sizes of the tubes 3 processed each time.

[0027] The above is economically advantageous because it allows only the flap wheels (5, 7) actually worn to be replaced, whilst in systems of the prior art wear is divided unevenly and is concentrated in the area always in contact with the tube, regardless of the size of said tube.

[0028] To compensate for the wear on the flap wheels (5 and 7, respectively) in contact each time with the tube 3 and keep their peripheral speed constant, advantageously the speed of rotation of the set (20 and 30, respectively) to which said flap wheels (5 and 7, respectively) belong is increased.

[0029] Figure 6 shows diagrammatically a front view and a side view of one of the stations 8 of Figure 1 designed to feed the tube 3 to be processed longitudinally; said station is advantageously made by means of an assembly known to the art as a pinch roll and therefore will not be described herein.

[0030] Figure 7 shows diagrammatically a front view and a side view of one of the carriages 9 of figure 1, designed to move the tube 3 to be processed transversally to its direction of travel.

[0031] The carriage 9 comprises a pair of idle rollers 70, with a vertical axis, carried by a base 71 on which they can be moved transversally to the direction of travel of the tube 3 by means of movement means 72 not described herein because they are known to the art or in any case can be implemented by a person skilled in the art without inventive activity.

[0032] Without departing from the scope of the invention, a person skilled in the art can make to the satin finishing system described above all the changes and improvements suggested by normal experience and/or the natural evolution of the art.

Claims

1. A satin finishing system with flap wheels (5, 7) for shaped tubes (3) moveable on a bed of rollers (1) with horizontal axes, mounted idly and carried by a support (2), **characterised in that** it comprises, in combination with each other:

- at least one satin finishing station (4) equipped with at least on set (20) of flap wheels (5) with a horizontal axis;
- at least one satin finishing station (6) equipped with at least one set (30) of flap wheels (7) with a vertical axis;
- means (21, 22; 31, 32) designed to set in rotation the sets (20, 30) of flap wheels (5, 7);
- at least one feed station (8), designed to feed the tube (3) to be processed along the roller bed (1);
- at least one carriage (9), placed downstream of the at least one feed station (8) and designed to move the tube (3) to be processed transversally to the direction of feed thereof and hold it in position between the sets (20) of flap wheels (5) with a horizontal axis belonging to the satin finishing stations (4).

2. A satin finishing system according to claim 1 for

shaped tubes (3) with a polygonal section, **characterised in that** it further comprises at least one satin finishing station equipped with at least one set of flap wheels with an inclined axis.

3. A satin finishing system according to claim 1, **characterised in that** at the start and end of the roller bed (1) and between two adjacent satin finishing stations (4, 6) there are a feed station (8) and a carriage (9).
4. A satin finishing system according to claim 1 or 2, **characterised in that**, during processing of the tube (3), it is cooled by means of jets of air.
5. A satin finishing system according to claim 1 or 2, **characterised in that** the tube (3) is cooled by jets of air issuing from nozzles (10) situated upstream of each satin finishing station (4, 6).
6. A satin finishing system according to claim 1 or 2, **characterised in that** it further comprises a dust suction system having suction openings (11) placed level with each satin finishing station (4, 6).
7. A satin finishing system according to claim 1, **characterised in that** each satin finishing system (4) comprises a supporting element (23), fixed to the support (2), which carries projectingly two slides (24, 25) each of which carries a set (20) of flap wheels (5) with a horizontal axis; **in that** the slides (24, 25) are connected to the supporting element (23) by means (26) designed to move each slide (24, 25) vertically and **in that** each set (20) of flap wheels (5) is connected to the relative slide (24, 25) by means (27) designed to make the set (20) slide along the respective slide (24, 25).
8. A satin finishing system according to claim 1, **characterised in that** each satin finishing station (6) comprises a pair of supporting elements (33), fixed to a support (302), each of which carries a set (30) of flap wheels (7) with a vertical axis, **in that** the supporting elements (33) are connected to the support (302) by means (36) designed to move them horizontally with respect to the support (302) and **in that** each set (30) of flap wheels (7) is connected to the relative supporting element (33) by means (37) able to make the set (30) slide vertically along the supporting element (33).
9. A satin finishing system according to claim 8, **characterised in that** the height of the support (302) is such that, when the sets (30) of flap wheels (7) are completely lowered, the top area of the sets (30) is in contact with the tube (3).
10. A satin finishing system according to claim 7 or 8,

characterised in that each set (20, 30) of flap wheels (5, 7) is mounted on a shaft (21, 31) set in rotation by a motor (22, 32).

11. A satin finishing system according to claim 1, **characterised in that** the sets (20, 30) comprise a plurality of flap wheels (5, 7) of different thickness, the thickness of each flap wheel (5, 7) corresponding to that of one of the tubes (3) to be processed.
12. A satin finishing system according to claim 11, **characterised in that** the horizontal movement of the sets (20) and the vertical movement of the sets (30) allow the tube (3) to be brought level with the flap wheels (5, 7) having a thickness corresponding to that of the tube (3).
13. A satin finishing system according to claim 1, **characterised in that** the at least one carriage (9) comprises a pair of idle rollers (70), with a vertical axis, carried by a base (71) on which they can be moved transversally with respect to the direction of travel of the tube (3) by movement means (72).
14. A satin finishing system according to claim 1 or 11, **characterised in that**, to compensate for the wear on the flap wheels (5 and 7, respectively) in contact each time with the tube (3) and keep their peripheral speed constant, the speed of rotation of the set (20 and 30, respectively) to which said flap wheels (5 and 7, respectively) belong is increased.

Patentansprüche

1. Seidenglänzendes Nachbearbeitungssystem mit Lamellen-Schleifscheiben (5, 7) für geformte Röhren (3), die auf einem Bett von Rollen (1) mit horizontalen Achsen beweglich sind, welche leerlaufend angebracht und durch eine Stütze (2) getragen sind, **dadurch gekennzeichnet, dass** es in Kombination miteinander Folgendes umfasst:

- zumindest eine seidenglänzende Nachbearbeitungsstation (4), die mit zumindest einem Satz (20) Lamellen-Schleifscheiben (5) mit einer vertikalen Achse ausgestattet ist;
- zumindest eine seidenglänzende Nachbearbeitungsstation (6), die mit zumindest einem Satz (30) Lamellen-Schleifscheiben (7) mit einer vertikalen Achse ausgestattet ist;
- Mittel (21, 22; 31, 32), die dazu gestaltet sind, die Sätze (20, 30) Lamellen-Schleifscheiben (5, 7) in Drehung zu versetzen;
- zumindest eine Zufuhrstation (8), die zum Zuführen der Röhre (3), die verarbeitet werden soll, das Rollenbett (1) entlang gestaltet ist;
- zumindest einen Schlitten (9), der der zumin-

dest einen Zufuhrstation (8) nachgeschaltet angeordnet ist und dazu gestaltet ist, die Röhre (3), die verarbeitet werden soll, quer verlaufend zur Zufuhrrichtung zu bewegen und sie zwischen den Sätzen (20) Lamellen-Schleifscheiben (5) in Position zu halten, wobei eine horizontale Achse zur den seidenglänzenden Nachbearbeitungsstationen (4) gehört.

2. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 1 für geformte Röhren (3) mit einem mehrkantigen Teilabschnitt, **dadurch gekennzeichnet, dass** sie ferner zumindest eine seidenglänzende Nachbearbeitungsstation umfasst, die mit zumindest einem Satz Lamellen-Schleifsteine mit einer geneigten Achse ausgestattet ist.
3. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 1, **dadurch gekennzeichnet, dass** am Beginn und am Ende des Rollenbetts (1) und zwischen zwei benachbarten seidenglänzenden Nachbearbeitungsstationen (4, 6) eine Zufuhrstation (8) und ein Schlitten (9) vorhanden ist.
4. Seidenglänzendes Nachbearbeitungssystem nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass**, während des Verarbeitens der Röhre (3), diese mithilfe von Luftstrahlen gekühlt wird.
5. Seidenglänzendes Nachbearbeitungssystem nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** die Röhre (3) mithilfe von Luftstrahlen gekühlt wird, die aus Düsen (10) austreten, welche jeder seidenglänzenden Nachbearbeitungsstation (4, 6) nachgeschaltet angeordnet sind.
6. Seidenglänzendes Nachbearbeitungssystem nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** es ferner in Staubsaugsystem mit Saugöffnungen (11) umfasst, die auf gleicher Höhe mit jeder seidenglänzenden Nachbearbeitungsstation (4, 6) angeordnet sind.
7. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 1, **dadurch gekennzeichnet, dass** jede seidenglänzende Nachbearbeitungsstation (4) ein Stützelement (23) umfasst, das an der Stütze (2) befestigt ist und vorstehend zwei Gleitstücke (24, 25) trägt, welche jedes einen Satz (20) Lamellen-Schleifscheiben (5) mit einer horizontalen Achse trägt; dass die Gleitstücke (24, 25) durch Mittel (26) mit dem Stützelement (23) verbunden sind, die zum vertikalen Bewegen jedes Gleitstücks (24, 25) gestaltet sind, und dass jeder Satz (20) Lamellen-Schleifscheiben (5) durch Mittel (27) mit dem relativen Gleitstück (24, 25) verbunden sind, die dazu gestaltet sind, den Satz (20) entlang des jeweiligen Gleitstücks (24, 25) gleiten zu lassen.

8. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 1, **dadurch gekennzeichnet, dass** jede seidenglänzende Nachbearbeitungsstation (6) ein Paar Stützelemente (33) umfasst, die an der Stütze (2) befestigt sind und jedes einen Satz (30) Lamellen-Schleifscheiben (7) mit einer vertikalen Achse tragen; dass die Stützelemente (33) durch Mittel (36) mit der Stütze (302) verbunden sind, die dazu gestaltet sind, sie horizontal bezüglich der Stütze (302) zu bewegen, und dass jeder Satz (30) Lamellen-Schleifscheiben (7) durch Mittel (37) mit dem relativen Stützelement (33) verbunden ist, die dazu imstande sind, den Satz (30) vertikal entlang des Stützelements (33) gleiten zu lassen.
9. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 8, **dadurch gekennzeichnet, dass** die Höhe der Stütze (302) derart ist, dass, wenn die Sätze (30) Lamellen-Schleifscheiben (7) vollständig abgesenkt sind, der obere Bereich der Sätze (30) mit der Röhre (3) in Kontakt ist.
10. Seidenglänzendes Nachbearbeitungssystem nach einem der Ansprüche 7 oder 8, **dadurch gekennzeichnet, dass** jeder Satz (20, 30) Lamellen-Schleifscheiben (5, 7) auf einer Welle (21, 31) angebracht ist, die durch einen Motor (22, 32) in Drehung versetzt wird.
11. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 1, **dadurch gekennzeichnet, dass** die Sätze (20, 30) mehrere Lamellen-Schleifscheiben (5, 7) mit unterschiedlicher Stärke aufweisen, wobei die Stärke jeder Lamellen-Schleifscheibe (5, 7) jener der Röhren (3), die verarbeitet werden sollen, entspricht.
12. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 11, **dadurch gekennzeichnet, dass** die horizontale Bewegung der Sätze (20) und die vertikale Bewegung der Sätze (30) ermöglichen, dass die Röhre (3) auf eine Höhe mit den Lamellen-Schleifscheiben (5, 7) gebracht werden, die eine Stärke aufweisen, welche jener der Röhre (3) entspricht.
13. Seidenglänzendes Nachbearbeitungssystem nach Anspruch 1, **dadurch gekennzeichnet, dass** der zumindest eine Schlitten (9) ein Paar Mitläuferrollen (70) mit einer vertikalen Achse umfasst, die durch eine Basis (71) getragen sind, auf der sie quer verlaufend bezüglich der Laufrichtung der Röhre (3) durch Bewegungsmittel (72) bewegt werden können.
14. Seidenglänzendes Nachbearbeitungssystem nach einem der Ansprüche 1 oder 11, **dadurch gekennzeichnet, dass** zum Ausgleichen des Verschleißes

an den Lamellen-Schleifscheiben (5 bzw. 7) jeweils in Kontakt mit der Röhre (3) und konstant Halten ihrer Umfangsgeschwindigkeiten die Drehgeschwindigkeit des Satzes (20 bzw. 30), zu dem die Lamellen-Schleifscheiben (5 bzw. 7) gehören, erhöht ist.

Revendications

- Dispositif de finition satinée au moyen de disques à lamelles (5, 7) pour tubes profilés (3) mobiles sur un lit de rouleaux (1) à axes horizontaux, montés de façon libre et supportés par un support (2), **caractérisé en ce qu'il** comprend, en combinaison l'un avec l'autre :
 - au moins un poste de finition satinée (4) doté d'au moins un jeu (20) de disques à lamelles (5) à axe horizontal ;
 - au moins un poste de finition satinée (6) doté d'au moins un jeu (30) de disques à lamelles (7) à axe vertical ;
 - de moyens (21, 22 ; 31, 32) conçus pour mettre les jeux (20, 30) de disques à lamelles (5, 7) en rotation ;
 - au moins un poste d'alimentation (8) conçu pour alimenter le tube (3) à traiter le long du lit de rouleaux (1) ;
 - au moins un chariot (9) placé en aval de l'au moins un poste d'alimentation (8) et conçu pour déplacer le tube (3) à traiter transversalement au sens d'alimentation de celui-ci et le maintenir en place entre les jeux (20) de disques à lamelles (5) à axe horizontal appartenant aux postes de finition satinée (4).
- Dispositif de finition satinée selon la revendication 1 pour tubes profilés (3) à section polygonale, **caractérisé en ce qu'il** comprend en outre au moins un poste de finition satinée doté d'au moins un jeu de disques à lamelles à axe incliné.
- Dispositif de finition satinée selon la revendication 1, **caractérisé en ce qu'un** poste d'alimentation (8) et un chariot (9) sont prévus au départ et à la fin du lit de rouleaux (1) et entre deux postes de finition satinée (4, 6) adjacents.
- Dispositif de finition satinée selon la revendication 1 ou 2, **caractérisé en ce que** pendant le traitement du tube (3), celui-ci est refroidi au moyen de jets d'air.
- Dispositif de finition satinée selon la revendication 1 ou 2, **caractérisé en ce que** le tube (3) est refroidi par des jets d'air provenant de buses (10) situées en amont de chaque poste de finition satinée (4, 6).

6. Dispositif de finition satinée selon la revendication 1 ou 2, **caractérisé en ce qu'il** comprend en outre un système d'aspiration des poussières présentant des ouvertures d'aspiration (11) placées à niveau avec chaque poste de finition satinée (4, 6). 5
7. Dispositif de finition satinée selon la revendication 1, **caractérisé en ce que** le poste de finition satinée (4) comprend un élément de support (23) fixé au support (2), qui porte deux glissières (24, 25) en saillie, dont chacune porte un jeu (20) de disques à lamelles (5) à axe horizontal ; **en ce que** les glissières (24, 25) sont reliées à l'élément de support (23) par des moyens (26) conçus pour déplacer chaque glissière (24, 25) verticalement et **en ce que** chaque jeu (20) de disques à lamelles (5) est relié à la glissière qui le concerne (24, 25) par des moyens (27) conçus pour faire glisser le jeu (20) le long de la glissière (24, 25) respective. 10 15 20
8. Dispositif de finition satinée selon la revendication 1, **caractérisé en ce que** le poste de finition satinée (6) comprend une paire d'éléments de support (33) fixée à un support (302), dont chacun supporte un jeu (30) de disques à lamelles (7) à axe vertical, **en ce que** les éléments de support (33) sont reliés au support (302) par des moyens (36) conçus pour les déplacer horizontalement par rapport au support (302) et **en ce que** chaque jeu (30) de disques à lamelles (7) est relié à l'élément de support correspondant (33) par des moyens (37) capables de faire glisser le jeu (30) verticalement le long de l'élément de support (33). 25 30
9. Dispositif de finition satinée selon la revendication 8, **caractérisé en ce que** la hauteur du support (302) est telle que lorsque les jeux (30) de disques à lamelles (7) sont abaissés complètement, la partie supérieure des jeux (30) est en contact avec le tube (3). 35 40
10. Dispositif de finition satinée selon la revendication 7 ou 8, **caractérisé en ce que** chaque jeu (20, 30) de disques à lamelles (5, 7) est monté sur un arbre (21, 31) mis en rotation par un moteur (22, 32). 45
11. Dispositif de finition satinée selon la revendication 1, **caractérisé en ce que** les jeux (20, 30) comprennent une pluralité de disques à lamelles (5, 7) de différente épaisseur, l'épaisseur de chaque disque à lamelles (5, 7) correspondant à celle de l'un des tubes (3) à traiter. 50
12. Dispositif de finition satinée selon la revendication 11, **caractérisé en ce que** le mouvement horizontal des jeux (20) et le mouvement vertical des jeux (30) permettent au tube (3) d'être mis à niveau avec les disques à lamelles (5, 7) présentant une épaisseur correspondant à celle du tube (3). 55
13. Dispositif de finition satinée selon la revendication 1, **caractérisé en ce que** l'au moins un chariot (9) comprend une paire de rouleaux libres (70), à axe vertical, portés par une base (71) sur laquelle ils peuvent être déplacés transversalement par rapport au sens de transport du tube (3) par des moyens de déplacement (72).
14. Dispositif de finition satinée selon la revendication 1 ou 11, **caractérisé en ce que** pour compenser l'usage des disques à lamelles (5 et 7, respectivement) en contact à chaque fois avec le tube (3) et pour maintenir leur vitesse périphérique constante, la vitesse de rotation du jeu (20 et 30, respectivement) auquel les disques à lamelles (5 et 7, respectivement) appartiennent, est augmentée.

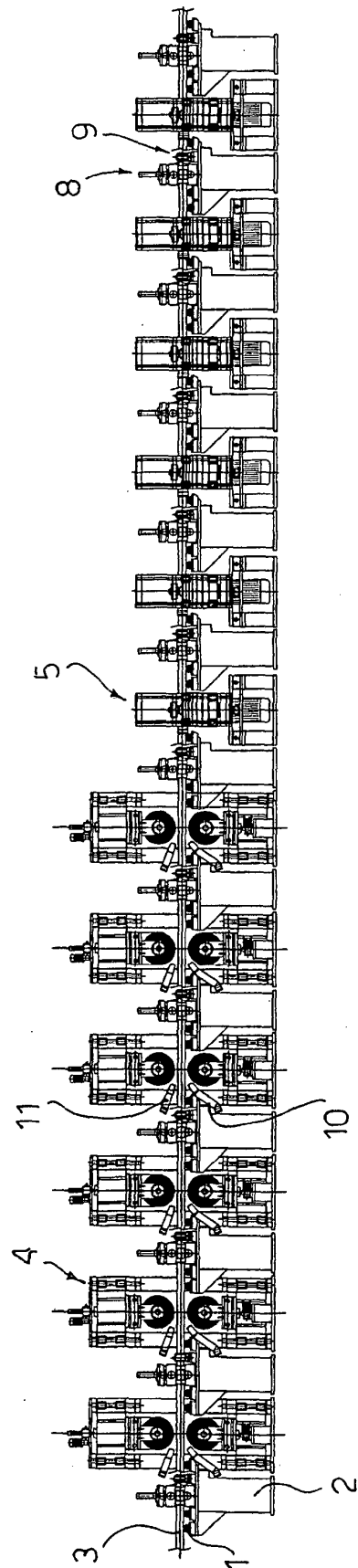


FIG. 1

FIG. 2

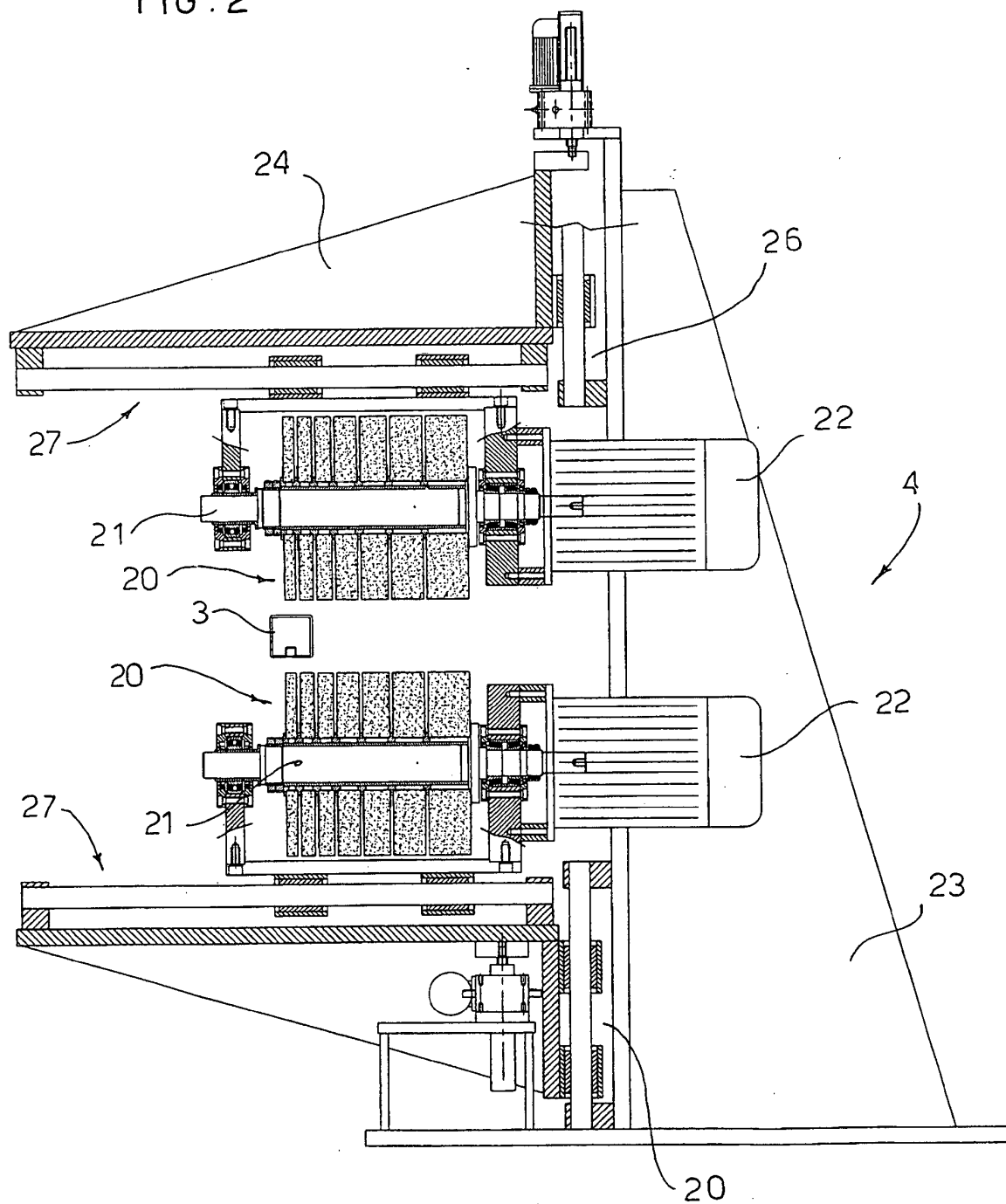
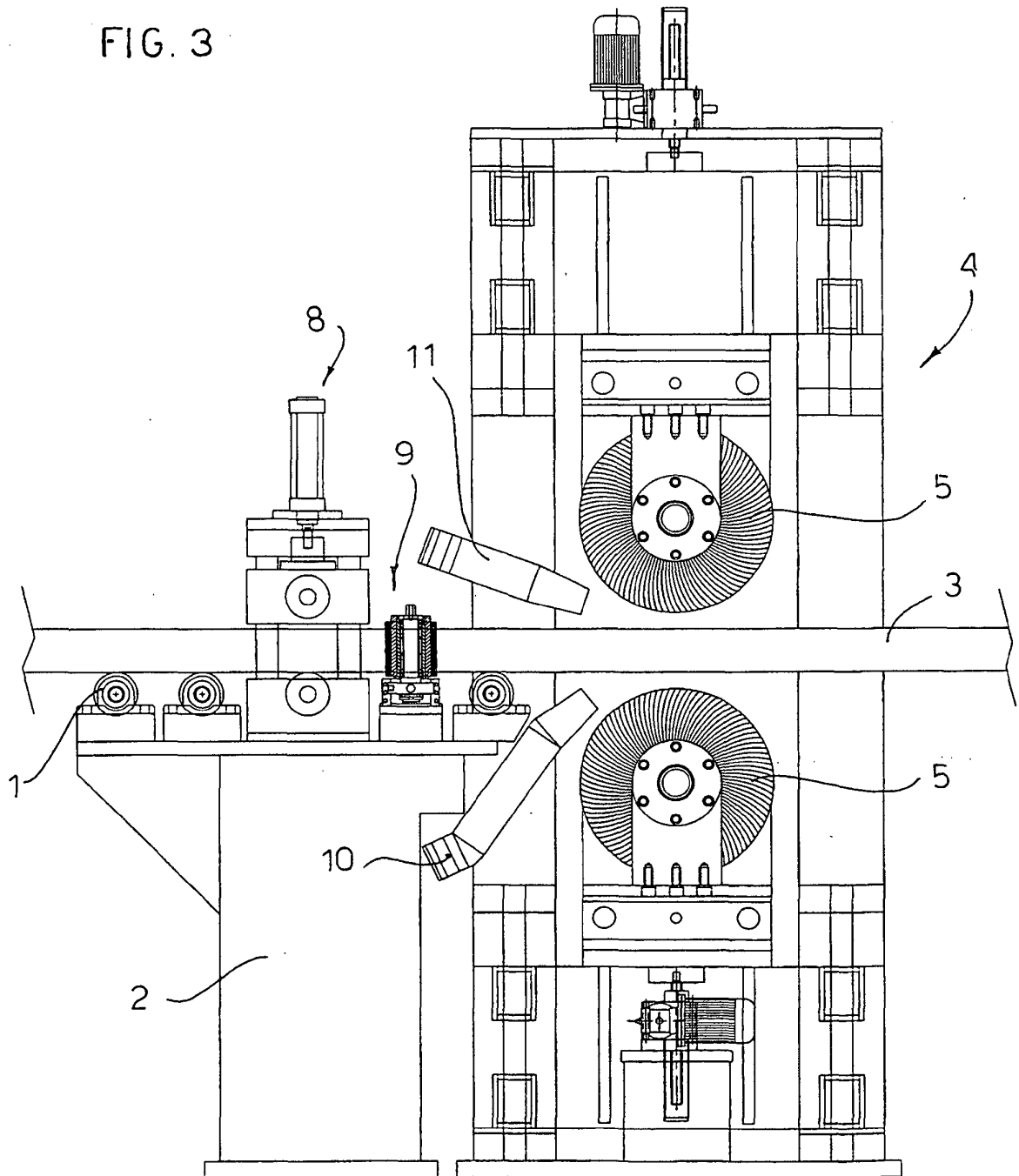
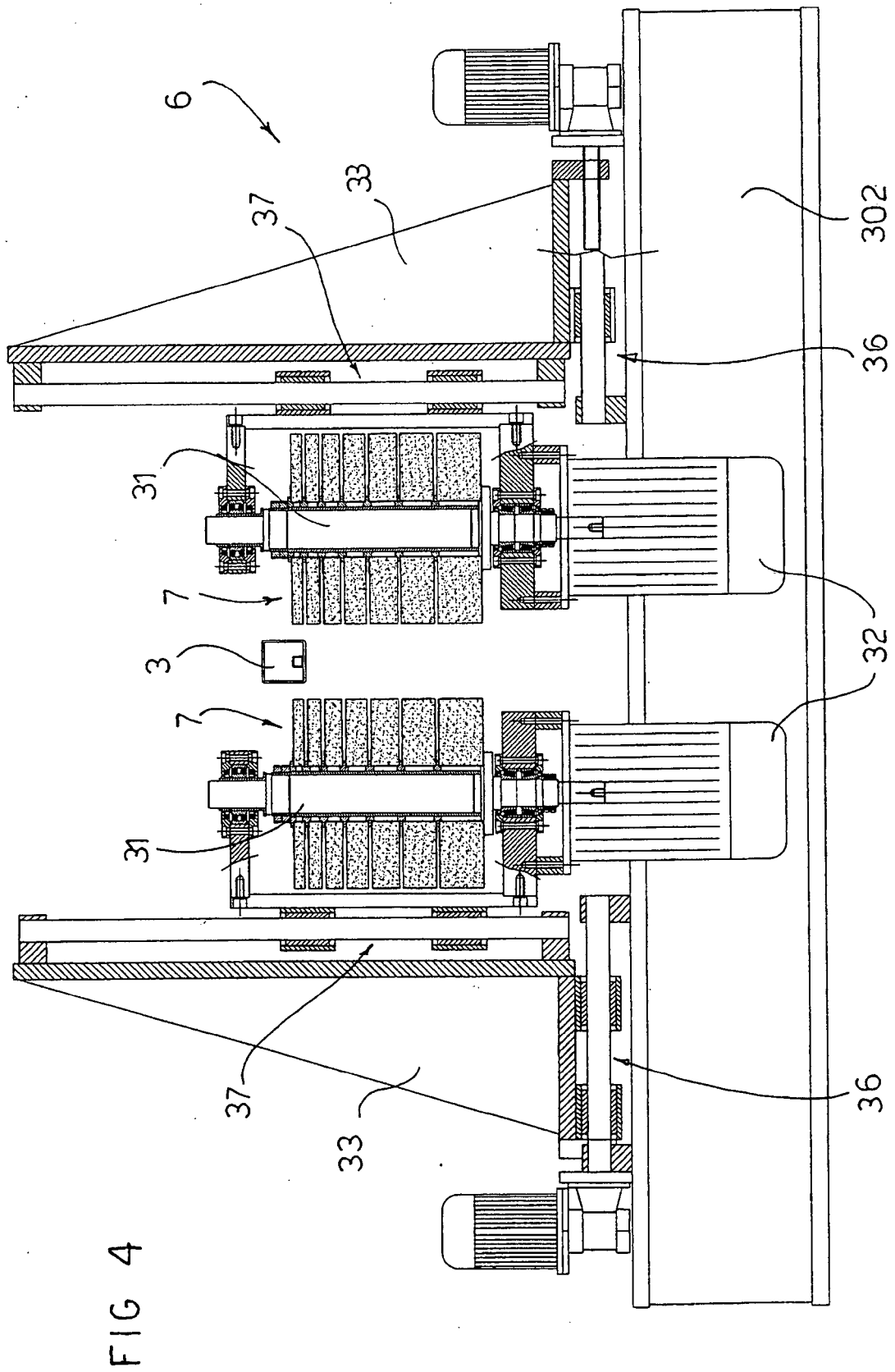


FIG. 3





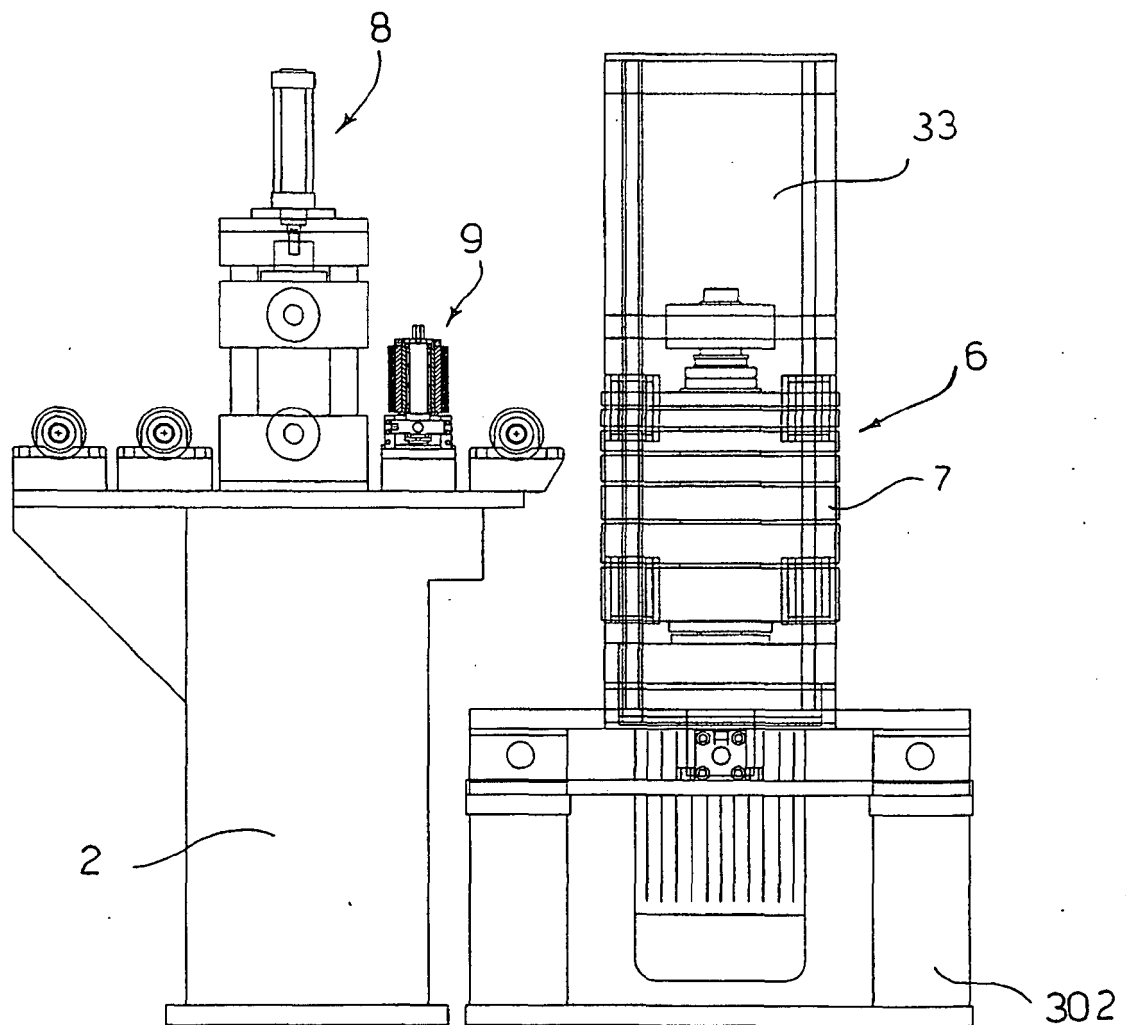
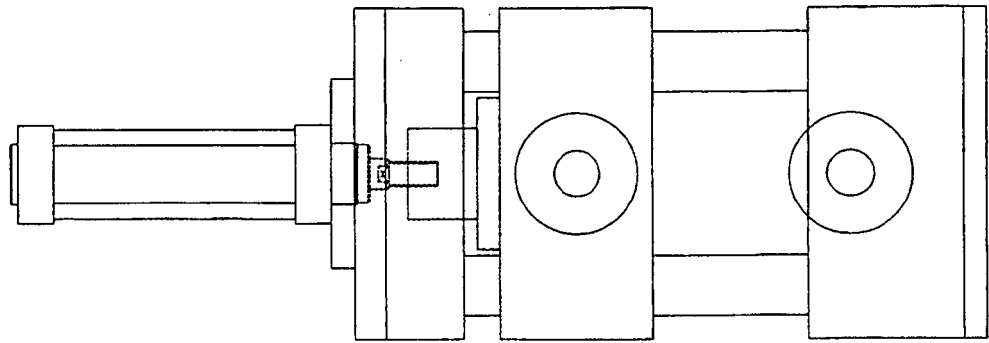
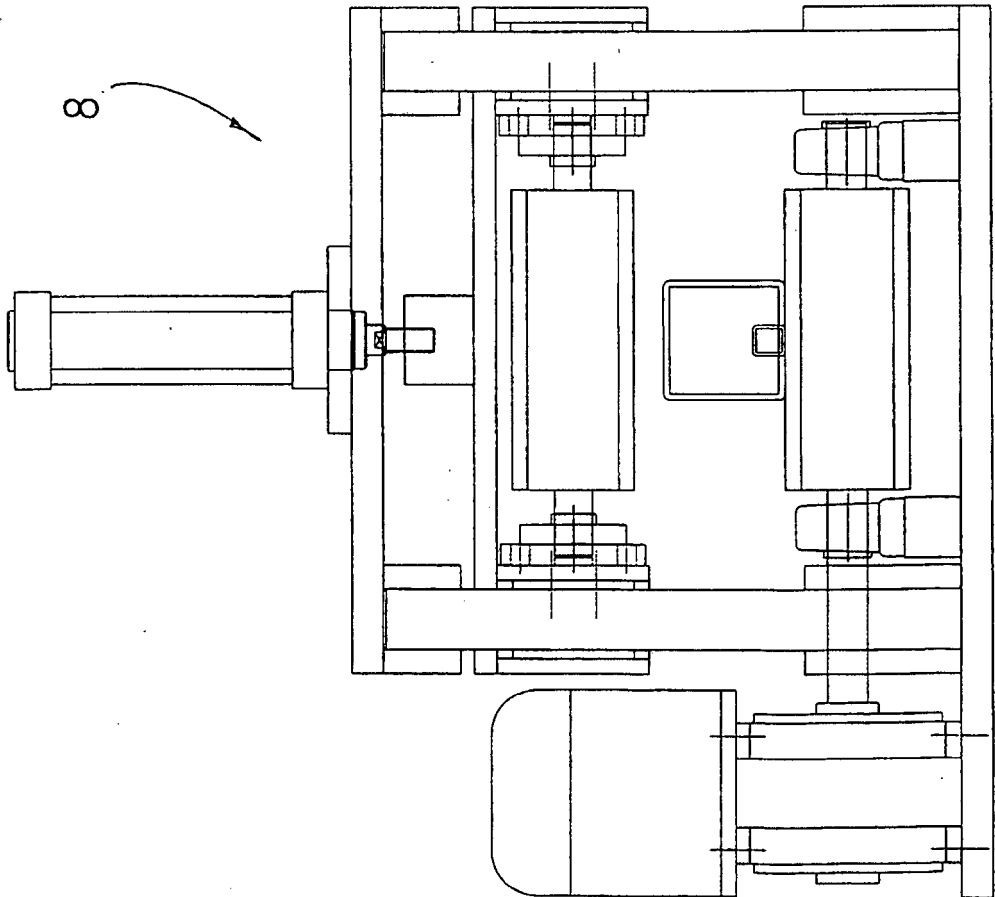


FIG. 5

FIG. 6

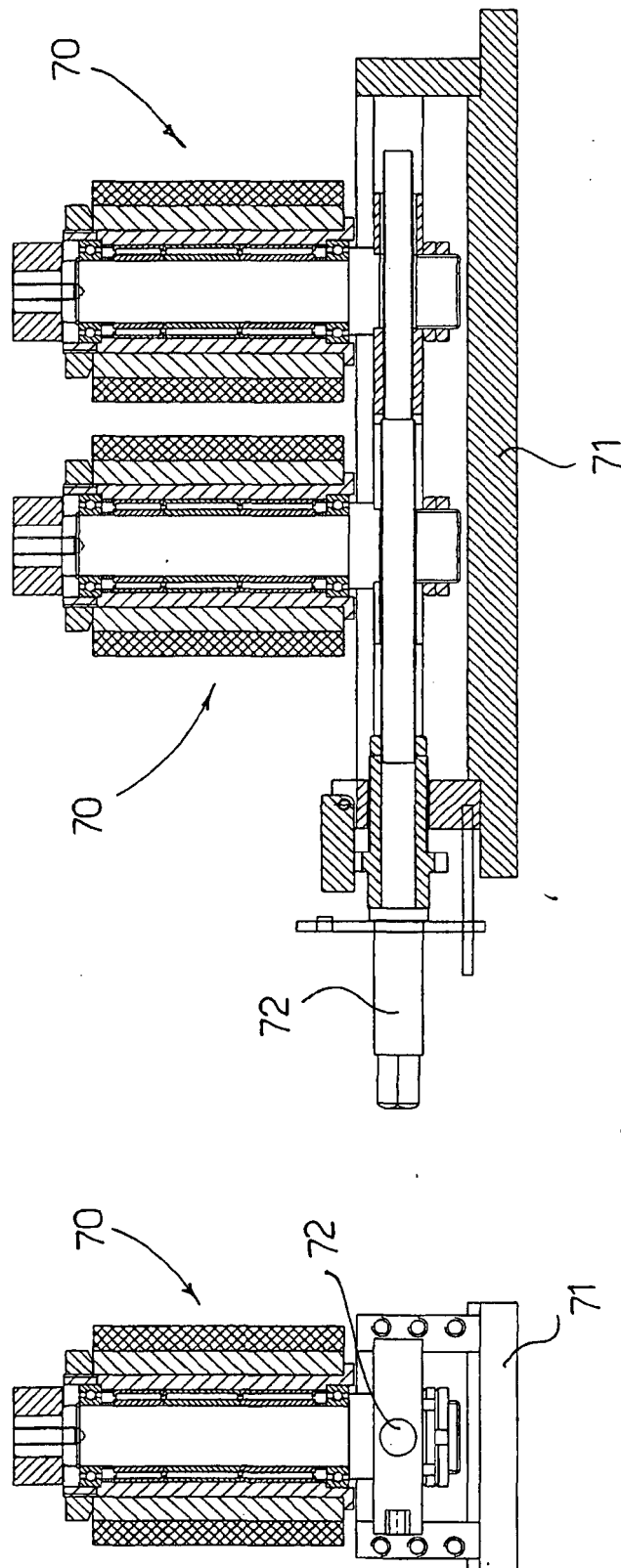


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FIG. 7



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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