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(54) IRONING DEVICE WITH HEAT RECOVERY

BÜGELVORRICHTUNG MIT WÄRMERÜCKGEWINNUNG

DISPOSITIF DE REPASSAGE AVEC RECUPERATION DE CHALEUR

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Description

Technical field

[0001] The invention relates to an ironing device with heat recovery means for absorbing heat emitted by one or more elements of the ironing device during the ironing process, in which at least part of the absorbed heat is emitted back to the unironed textiles upon entering the ironing device.

[0002] The invention furthermore relates to an ironing device with heat recovery means for at least partly absorbing heat emitted by the ironed textiles upon leaving the ironing device.

Background art

[0003] Currently, various ways are known to recover heat from an ironing device. GB2102842A, DE468074 and DE 3128520A1 describe ironing devices in which heat from one or more ironing rolls is conducted to the ironing roll itself or to a predrying device.

[0004] Another example relates to the "Aircup" by the applicant, as illustrated in Fig. 1. The trough (1) of the ironing roll (2) is heated to ±180°C by means of an oil-fired gas burner (3). The waste gases (4) of the gas burner are carried away to a heat exchanger (5). The steam (6) which is produced by ironing moist textiles on the ironing roll is sucked from the ironing roll centrally and also carried away to the heat exchanger (5). Moist air (±130°C) is discharged via a separate duct (7). In this way, the heat exchanger (5) recovers the residual heat of the waste gases (4) (±240°C) and the steam (6) (±110°C) in order to heat the supplied fresh air (8) from ±25°C to ±80°C. This heated air (9) is introduced into the ironing roll (2) as additional heat in order to further heat the textiles to be ironed.

[0005] However, the fact that part of the recovered heat is lost in the form of moist air of ±130°C via the discharge duct (7) is a drawback in this case.

[0006] First, the textiles to be ironed are washed, leaving a residual moisture of approximately 50%. This residual moisture has to be removed during ironing, to which end the textiles have to be heated to at least ±160°C. At the end of the ironing path, when they leave the (last) ironing roll, the textiles are dry and have a temperature, when completely dry, of ±140°C to 150°C.

[0007] Thereafter, the textiles cool down in the ironing room of the building, leading to an increase in the ambient temperature in the building. Another drawback in this case is the fact that this heat is completely lost.

[0008] When the textiles have been washed and are introduced into the ironing device, they have a temperature of ±20°C. It is known to introduce the textiles into the ironing device at a higher temperature by means of a treatment in the washing device in which the last rinse of the textiles takes place at a relatively high temperature (±40°C). However, it is a drawback that additional heat has to be generated in the washing device in order to reach this relatively high temperature.

[0009] It is therefore an object of the invention to provide a simple, inexpensive and time-saving method to introduce the unironed textiles into the ironing device at a relatively high temperature.

Summary of the invention

[0010] This object of the invention is achieved by providing an ironing device which comprises an ironing unit for ironing textiles, in which unironed textiles are introduced at an input side and ironed textiles leave the ironing unit at an output side, and heat recovery means for at least partially absorbing and transporting heat emitted by one or more elements of the ironing device during the ironing process, in which said heat recovery means comprise a heat exchange system on the input side, adapted in order to at least partly emit the absorbed heat to the unironed textiles at the input side, characterized in that said heat recovery means comprise a heat exchange system on the output side, in which said heat exchange system on the output side is configured such that, during operation of the ironing device, it at least partly absorbs the heat which is emitted by the ironed textiles and at least partly emits the absorbed heat back to the heat exchange system on the input side.

[0011] The warmer the textiles are when they are introduced into the ironing device, the sooner ironing/drying can take place. It is an advantage in this connection that the same production can be achieved using less power.

[0012] In a specific embodiment of an ironing device according to the invention, the input side of the heat exchange system comprises one or more rotatably arranged rolls against which the textiles to be ironed rest and with which they are carried along, with these rolls being configured such that they at least partly emit the absorbed heat to the unironed textiles on the input side.

[0013] In a more specific embodiment of an ironing device according to the invention, said rolls on the input side are provided, on the side opposite the side against which the textiles rest, with one or more liquid-filled chambers, with the liquid, during operation of the ironing device, at least partly absorbing the heat which is produced during the ironing process and at least partly emitting the absorbed heat back to the textiles.

[0014] In its most advantageous embodiment, the contact between the textiles and the rolls is optimized for maximum heat emission. This is achieved by forcing a heated liquid, steam or waste gases to travel a maximum path while being in contact with the textiles. This may be achieved, for example, by means of liquid chambers or partitions.

[0015] It is therefore also an object of the invention to provide a simple, inexpensive and time-saving method for recovering the heat of the ironed textiles.

[0016] In a specific embodiment of an ironing device

according to the invention, the output side of the heat exchange system comprises one or more rotatably arranged rolls against which the ironed textiles rest and with which they are carried along, with these rolls being configured such that they at least partly absorb the heat which is emitted by the ironed textiles.

[0017] In a more specific embodiment of an ironing device according to the invention, said rolls on the output side are provided, on the side opposite the side against which the textiles rest, with one or more liquid-filled chambers, with the liquid, during operation of the ironing device, at least partly absorbing the heat which is emitted by the ironed textiles.

[0018] The heat recovery system according to the invention comprises a removal/supply system for transporting the heat recovered during the ironing process to the input side of the ironing device. Heat can be recovered in the form of liquids (e.g. water, oil) or waste gases (e.g. flue gases, steam). Heat can be recovered from the cooling roll, the ironing rolls or any element of the ironing device which emits heat.

[0019] In one embodiment, the heat recovery system comprises a tube system for transporting liquids. In another embodiment, the heat recovery system comprises a flue system of discharge ducts for transporting waste gases.

[0020] In a specific embodiment of an ironing device according to the invention, the rolls on the output side are connected to the rolls on the input side by means of a tube system which comprises a pump system for circulating the liquid between the rolls on the output side and input side, so that the absorbed heat on the output side is at least partly emitted to the heat exchange system on the input side. The tube system is preferably insulated.

[0021] In a particular embodiment of an ironing device according to the invention, the heat exchange systems comprise pressing means which press the textiles resting on these rolls against the latter during the rotary movement of the rolls.

[0022] In a possible embodiment of an ironing device according to the invention, the pressing means comprise one or more belts which are at least partly arranged around the surface of the rolls, with these belts co-rotating with these rolls during the rotary movement of the rolls and pressing the textiles against the rotating rolls.

[0023] In an advantageous embodiment of an ironing device according to the invention, the heat exchange systems on the input and output side are of an identical design.

[0024] In a first particular embodiment of an ironing device according to the invention, the ironing device comprises one or more ironing rolls with a heated trough or heated roll for ironing the textiles, and the heat recovery means are provided in order to recover the heat which is released by this heated trough or heated roll during the ironing process.

[0025] In a most advantageous embodiment, the heat, at least the residual heat, of one or more heat sources in the ironing device is at least partly recovered in order to preheat the textiles by means of the heat exchanger on the input side.

[0026] In a particular embodiment of an ironing device according to the invention, the ironing device comprises one or more channels for transporting the heat which is produced during the ironing process, and the heat recovery means are designed to recover said heat.

[0027] If waste gases are used to remove the heat, the discharge ducts may be provided with partitions so that the waste gases are forced to travel along an optimum path enabling the maximum amount of heat to be transferred from the waste gases to the roll, as is illustrated, for example in Fig. 4.

[0028] In a possible embodiment of an ironing device according to the invention, the ironing device is heated by means of gas, diesel, kerosene, electricity, oil, liquid or steam.

[0029] The invention furthermore provides a method for recovering heat from an ironing device for preheating textiles, the method comprising the following steps:

- at least partly recovering heat from the ironed textiles on the output side of the ironing device via the heat exchange system on the output side,
- transporting said heat to the input side with the heat recovery means,
- at least partly emitting said heat to the unironed textiles on the input side via the heat exchange system on the input side.

[0030] In a specific embodiment of the method, the first heat recovery means comprises one or more rolls via which the ironed textiles leave the ironing device, and the second heat recovery means comprises one or more rolls via which the unironed textiles are introduced into the ironing device.

Brief description of drawings

[0031]

Fig. 1 shows an existing heat recovery process of an ironing device.

Fig. 2 shows an embodiment of an ironing device according to the invention.

Fig. 3 shows another embodiment of an ironing device according to the invention.

Fig. 4 shows an embodiment of a discharge duct (flue) with helical distribution of the waste gases.

Mode(s) for carrying out the invention

[0032] A preferred embodiment of an ironing device (20) according to the invention, as is shown in Fig. 2, consists of an input side (21) for introducing the unironed textiles and an output side (22) where the ironed textiles leave the ironing unit. The grey line represents the textiles

(23) travelling through the ironing device (20) which, in this embodiment, comprises two ironing rolls (24a and 24b).

[0033] On the input side (21) of the ironing device (20), there is a heat exchanger (25a) in the form of a rotatable roll (26a) against which the textiles (23) to be ironed rest and with which they are carried along, and a belt system (27a) which presses the textiles (23) against the roll (26a) along a maximum surface of the roll.
In another embodiment, the heat exchange system may contain two or more rotatably arranged rolls (26a). The one or more rolls (26a) are also referred to as preheating rolls.

[0034] On the output side (22) of the ironing device (20), a preferably identical heat exchanger (25b) is arranged in the form of a rotatable roll (26b) against which the textiles (23) to be ironed rest and with which they are carried along, and a belt system (27b) which presses the textiles (23) against the roll (26b) along a maximum surface of the roll. The one or more rolls (26b) are also referred to as cooling rolls.

[0035] The belt system (27b) is connected (27c) to the belt system (27a) and to the ironing rolls (24a and 24b), so that the rolls (26a and 26b) are driven by the ironing rolls (24a and 24b).

[0036] The belt system presses the textiles (23) against the rolls (26a and 26b) and ensures optimum transfer of heat to/from the textiles (23). The belts prevent the presence of air between the textiles and the rolls (26a and 26b) and thus prevent cooling occurring during the transfer of heat. The belts are preferably made from polyester/nomex.

[0037] The double-wall rolls (26a and 26b) are provided with several liquid-filled chambers (28a and 28b) distributed across the surface of the rolls. A tube system (29a and 29b) and a pump system (30) ensure the circulation of liquid between the rolls (26a and 26b). The liquid absorbs heat from the ironed textiles on the output side via the liquid-filled chambers (28b) of the roll (26b), following which the heated liquid is pumped through the tube system (29b) to the roll (26a) on the input side. There, the liquid at least partly emits its heat to the unironed textiles via the liquid-filled chambers (28a) of the roll (26a). The slightly cooled liquid is then pumped back via the tube system (29a) to the roll (26b) on the output side. In this way, only a minimum amount of heat is lost in the tube system (29a and 29b).

[0038] The textiles (23) enter the ironing device (20) at a temperature of ±20°C. On the roll (26a), the textiles are heated to ±50°C by oil which has a temperature of ±70°C on the output side and is pumped to the input side. Cooled oil of ±50°C is pumped back to the output side and can be used there to cool down the ironed textiles. After leaving the ironing rolls, the textiles have a temperature of ±140°C. In the heat exchanger (25b) on the output side, heat is extracted from the textiles, which subsequently leave the roll (26b) at a temperature of ±70°C.

[0039] The amount of heat which can be emitted to the textiles (23) in this way on the input side (21) of the ironing device (20) is 5% of the total heat required at the input.

[0040] Suitable liquids preferably have good heat-conducting properties, such as for example water and thermal oil.

[0041] The double-wall rolls (26a and 26b) are preferably made from materials having good heat-conducting properties, such as, inter alia, copper, iron and steel. A layer of paraffin leads to good heat-conducting properties. The double wall is preferably a laser-welded plate comprising a flat (thicker) outer plate and a (thinner) inner plate. In a specific embodiment, the liquid chambers are approximately 200mm wide and the roll is divided into 4 chambers.

[0042] Fig. 3 shows a most advantageous embodiment of an ironing device (20) according to the invention, in which the waste gasses, resulting from heating one or more ironing rolls (24b and/or 24a - not shown in the figures) and having a temperature of ±240°C, are removed via a discharge duct or flue (32) to the roll on the input side (21) in order to emit heat there for preheating the textiles. The cooled waste gases are then discharged via a flue system (31). There, the temperature of the waste gases is ±100 to 120°C.

[0043] Fig. 4 shows an embodiment of a discharge duct for waste gases (also referred to as flue), in which the interior of the discharge duct is provided with helical partitions (41) which force the waste gases to travel an optimum path so that the heat of the waste gases is emitted to the ironing roll in an optimum manner.

[0044] The ironing device according to the invention can be used on all types of ironing machines. The ironing unit may be designed as having one or more ironing rolls (24a and 24b), irrespective of the size of the ironing roll, and one or more rolls (26a and 26b).

Claims

1. Ironing device (20), comprising an ironing unit for ironing textiles (23), in which unironed textiles are introduced at an input side (21) and ironed textiles leave the ironing unit at an output side (22), and heat recovery means (25a, 25b, 24a, 24b, 30, 32) for at least partially absorbing heat emitted by one or more elements (26b, 24b, 24a) of the ironing device (20) during the ironing process, in which said heat recovery means (25a, 25b, 24a, 24b, 30, 32) comprise a heat exchange system (25a) on the input side (21), adapted in order to at least partly emit the absorbed heat to the unironed textiles at the input side (21), **characterized in that** said heat recovery means (25a, 25b, 24a, 24b, 30, 32) comprise a heat exchange system (25b) on the output side (22), in which said heat exchange system (25b) on the output side (22) is configured such that, during operation of the ironing device (20), it at least partly absorbs the heat

which is emitted by the ironed textiles (23) and at least partly emits the absorbed heat back to the heat exchange system (25a) on the input side (21).

2. Ironing device (20) according to claim 1, **characterized in that** said heat exchange system (25b) on the output side (22) comprises one or more rotatably arranged rolls (26b) against which the ironed textiles (23) rest and with which they are carried along, whereby said rolls (26b) are configured such that they at least partly absorb the heat which is emitted by the ironed textiles (23).

3. Ironing device (20) according to claim 2, **characterized in that** said rolls (26b) on the output side (22) are provided, on the side opposite the side against which said textiles (23) rest, with one or more liquid-filled chambers, whereby the liquid, during operation of the ironing device (20), at least partly absorbs the heat which is emitted by the ironed textiles (23).

4. Ironing device (20) according to one of the preceding claims, **characterized in that** said heat exchange system (25a) on the input side (21) comprises one or more rotatably arranged rolls (26a) against which the textiles (23) to be ironed rest and with which they are carried along, whereby said rolls (26a) are configured such that they at least partly emit the absorbed heat to said textiles (23).

5. Ironing device (20) according to the preceding claim, **characterized in that** said rolls (26a) on the input side (21) are provided, on the side opposite the side against which said textiles (23) rest, with one or more liquid-filled chambers (28a), whereby the liquid, during operation of the ironing device, at least partly absorbs the heat which is produced during the ironing process and at least partly emits the absorbed heat back to said textiles (23).

6. Ironing device (20) according to claims 2 or 3 and 4 or 5, **characterized in that** said rolls (26b) on the output side (22) are connected to said rolls (26a) on the input side (21) by means of a tube system (29a and 29b) which comprises a pump system (30) for circulating said liquid between said rolls (26a and 26b) on the output side (22) and the input side (21), so that the absorbed heat on the output side (22) is at least partly emitted to the heat exchange system (25a) on the input side (21).

7. Ironing device (20) according to one of claim 6, **characterized in that** said heat exchange systems (25a and 25b) comprise pressing means (27a, 27b and 27c) which press the textiles (23) resting on the rolls (26a and 26b) against the rolls (26a and 26b) during the rotary movement of said rolls (26a and 26b).

8. Ironing device (20) according to claim 7, **characterized in that** said pressing means (27a, 27b and 27c) comprise one or more belts (27a, 27b and 27c) which are at least partly arranged around the surface of said rolls (26a and 26b), whereby these belts co-rotate with said rolls (26a and 26b) during the rotary movement of said rolls (26a and 26b) and press said textiles (23) against the rotating rolls (26a and 26b).

9. Ironing device (20) according to one of claims 1 to 8, **characterized in that** said heat exchange systems (25a and 25b) are configured identically.

10. Ironing device (20) according to one of claims 1 to 9, **characterized in that** the ironing device (20) comprises one or more ironing rolls (24a and 24b) provided with a heated trough or heated roll (1) for ironing said textiles (23), and **in that** said heat recovery means (25a, 25b, 24a, 24b, 30, 32) are provided to recover heat which is emitted by said heated trough or roll (1) during the ironing process.

11. Ironing device (20) according to one of claims 1 to 10, **characterized in that** the ironing device (20) comprises one or more channels (29b, 32) for transporting the heat which is produced during the ironing process, and **in that** said heat recovery means (25a, 25b, 24a, 24b, 30, 32) are designed to recover said heat.

12. Method for recovering heat from an ironing device (20) according to any of the preceding claims, for preheating textiles (23), **characterized in that** the method comprises the following steps:

- at least partly recovering heat from the ironed textiles (23) on the output side (22) of the ironing device (20) via the heat exchange system (25b) on the output side (22),
- transporting said heat to the input side (21),
- at least partly emitting said heat to the unironed textiles (23) on the input side (21) via the heat exchange system (25a) on the input side (21).

13. Method according to claim 12, in which the heat exchange system (25b) on the output side (22) comprises one or more rolls (26b) via which the ironed textiles leave the ironing device (20), and the heat exchange system (25a) on the input side (21) comprises one or more rolls (26a) via which the unironed textiles (23) are introduced into the ironing device (20).

Patentansprüche

1. Bügelvorrichtung (20), umfassend eine Bügeleinheit zum Bügeln von Textilien (23), in die an einer Ein-

gangsseite (21) ungebügelte Textilien eingeführt werden und bei der die gebügelten Textilien die Bügeleinheit an einer Ausgangsseite (22) verlassen, und Wärmerückgewinnungsmittel (25a, 25b, 24a, 24b, 30, 32), um zumindest teilweise Wärme zu absorbieren, die während des Bügelprozesses von einem oder mehreren Elementen (26b, 24b, 24a) der Bügelvorrichtung (20) abgegeben wird, wobei die Wärmerückgewinnungsmittel (25a, 25b, 24a, 24b, 30, 32) ein Wärmetauschsystem (25a) an der Eingangsseite (21) umfassen, das dafür eingerichtet ist, die absorbierte Wärme an der Eingangsseite (21) zumindest teilweise an die ungebügelten Textilien abzugeben, **dadurch gekennzeichnet, dass** die Wärmerückgewinnungsmittel (25a, 25b, 24a, 24b, 30, 32) ein Wärmetauschsystem (25b) an der Ausgangsseite (22) umfassen, wobei das Wärmetauschsystem (25b) an der Ausgangseite (22) derart gestaltet ist, dass es während des Betriebes der Bügelvorrichtung (20) zumindest teilweise die Wärme absorbiert, die von den gebügelten Textilien (23) abgegeben wird, und die absorbierte Wärme zumindest teilweise zurück an das Wärmetauschsystem (25a) an der Eingangsseite (21) gibt.

2. Bügelvorrichtung (20) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Wärmetauschsystem (25b) an der Ausgangsseite (22) eine oder mehrere drehbar angeordnete Walzen (26b) umfasst, an denen die gebügelten Textilien (23) anliegen und an denen sie entlang geführt werden, wobei die Walzen (26b) derart gestaltet sind, dass sie zumindest teilweise die Wärme absorbieren, die von den gebügelten Textilien (23) abgegeben wird.

3. Bügelvorrichtung (20) nach Anspruch 2, **dadurch gekennzeichnet, dass** die Walzen (26b) an der Ausgangsseite (22) an der Seite, die der Seite gegenüberliegt, an der die Textilien (23) anliegen, mit einer oder mehreren mit Flüssigkeit gefüllten Kammern ausgestattet sind, wobei die Flüssigkeit während des Betriebes der Bügelvorrichtung (20) zumindest teilweise die Wärme absorbiert, die von den gebügelten Textilien (23) abgegeben wird.

4. Bügelvorrichtung (20) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Wärmetauschsystem (25a) an der Eingangsseite (21) eine oder mehrere drehbar angeordnete Walzen (26a) umfasst, an denen die zu bügelnden Textilien (23) anliegen und an denen sie entlang geführt werden, wobei die Walzen (26a) derart gestaltet sind, dass sie die absorbierte Wärme zumindest teilweise an die Textilien (23) abgeben.

5. Bügelvorrichtung (20) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Walzen (26a) an der Eingangsseite (21) an der Seite, die der Seite gegenüberliegt, an der die Textilien (23) anliegen, mit einer oder mehreren mit Flüssigkeit gefüllten Kammern (28a) ausgestattet sind, wobei die Flüssigkeit während des Betriebes der Bügelvorrichtung zumindest teilweise die Wärme absorbiert, die während des Bügelprozesses erzeugt wird, und die absorbierte Wärme zumindest teilweise zurück an die Textilien (23) abgibt.

6. Bügelvorrichtung (20) nach Anspruch 2 oder 3 und 4 oder 5, **dadurch gekennzeichnet, dass** die Walzen (26b) an der Ausgangsseite (22) mit den Walzen (26a) an der Eingangsseite (21) verbunden sind, mit Hilfe eines Rohrsystems (29a und 29b), das ein Pumpsystem (30) zum Umwälzen der Flüssigkeit zwischen den Walzen (26a und 26b) an der Ausgangsseite (22) und der Eingangsseite (21) umfasst, so dass die absorbierte Wärme an der Ausgangsseite (22) zumindest teilweise an das Wärmetauschsystem (25a) an der Eingangsseite (21) abgegeben wird.

7. Bügelvorrichtung (20) nach einem der Anspruch 6, **dadurch gekennzeichnet, dass** die Wärmetauschsysteme (25a und 25b) Pressmittel (27a, 27b und 27c) umfassen, welche die Textilien (23), die an den Walzen (26a und 26b) anliegen, während der Drehbewegung der Walzen (26a und 26b) gegen die Walzen (26a und 26b) pressen.

8. Bügelvorrichtung (20) nach Anspruch 7, **dadurch gekennzeichnet, dass** die Pressmittel (27a, 27b und 27c) ein oder mehrere Bänder (27a, 27b und 27c) umfassen, die zumindest teilweise um die Oberfläche der Walzen (26a und 26b) herum angeordnet sind, wobei sich diese Bänder während der Drehbewegung der Walzen (26a und 26b) zusammen mit den Walzen (26a und 26b) drehen und die Textilien (23) gegen die sich drehenden Walzen (26a und 26b) pressen.

9. Bügelvorrichtung (20) nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** die Wärmetauschsysteme (25a und 25b) identisch gestaltet sind.

10. Bügelvorrichtung (20) nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** die Bügelvorrichtung (20) eine oder mehrere Bügelwalzen (24a und 24b) umfasst, die mit einer beheizten Wanne oder beheizten Walze (1) zum Bügeln der Textilien (23) ausgestattet sind, und dadurch, dass die Wärmerückgewinnungsmittel (25a, 25b, 24a, 24b, 30, 32) dafür bereitgestellt sind, Wärme zurückzugewinnen, die während des Bügelprozesses von der beheizten Wanne oder Walze (1) abgegeben wird.

11. Bügelvorrichtung (20) nach einem der Ansprüche 1

bis 10, **dadurch gekennzeichnet, dass** die Bügelvorrichtung (20) einen oder mehrere Kanäle (29b, 32) umfasst, um die Wärme zu transportieren, die während des Bügelprozesses erzeugt wird, und dadurch, dass die Wärmerückgewinnungsmittel (25a, 25b, 24a, 24b, 30, 32) dafür gestaltet sind, Wärme zurückzugewinnen.

12. Verfahren zur Wärmerückgewinnung aus einer Bügelvorrichtung (20) nach einem der vorhergehenden Ansprüche, um Textilien (23) vorzuwärmen, **dadurch gekennzeichnet, dass** das Verfahren die folgenden Schritte umfasst:

- zumindest teilweises Rückgewinnen von Wärme aus den gebügelten Textilien (23) an der Ausgangsseite (22) der Bügelvorrichtung (20) über ein Wärmetauschsystem (25b) an der Ausgangsseite (22),
- Transportieren der Wärme zur Eingangsseite (21),
- mindestens teilweises Abgeben der Wärme an die ungebügelten Textilien (23) an der Eingangsseite (21) über das Wärmetauschsystem (25a) an der Eingangsseite (21).

13. Verfahren nach Anspruch 12, wobei das Wärmetauschsystem (25b) an der Ausgangsseite (22) eine oder mehrere Walzen (26b) umfasst, über die die gebügelten Textilien die Bügelvorrichtung (20) verlassen und das Wärmetauschsystem (25a) an der Eingangsseite (21) eine oder mehrere Walzen (26a) umfasst, über die die ungebügelten Textilien (23) in die Bügelvorrichtung (20) eingeführt werden.

Revendications

1. Dispositif de repassage (20), comprenant une unité de repassage pour repasser des textiles (23), dans lequel les textiles non repassés sont introduits au niveau d'un côté entrée (21) et les textiles repassés quittent l'unité de repassage au niveau d'un côté sortie (22), et des moyens de récupération de chaleur (25a, 25b, 24a, 24b, 30, 32) pour absorber au moins partiellement la chaleur émise par un ou plusieurs éléments (26b, 24b, 24a) du dispositif de repassage (20) pendant le processus de repassage, dans lequel lesdits moyens de récupération de chaleur (25a, 25b, 24a, 24b, 30, 32) comprennent un système d'échange de chaleur (25a) sur le côté entrée (21), conçu afin d'émettre au moins en partie la chaleur absorbée vers les textiles non repassés au niveau du côté entrée (21), **caractérisé en ce que** lesdits moyens de récupération de chaleur (25a, 25b, 24a, 24b, 30, 32) comprennent un système d'échange de chaleur (25b) sur le côté sortie (22), dans lequel ledit système d'échange de chaleur (25b) sur le côté sortie (22) est configuré de sorte que, pendant le fonctionnement du dispositif de repassage (20), il absorbe au moins en partie la chaleur qui est émise par les textiles repassés (23) et émet au moins en partie la chaleur absorbée en retour vers le système d'échange de chaleur (25a) sur le côté entrée (21).

2. Dispositif de repassage (20) selon la revendication 1, **caractérisé en ce que** ledit système d'échange de chaleur (25b) sur le côté sortie (22) comprend un ou plusieurs rouleaux agencés en rotation (26b) contre lesquels les textiles repassés (23) reposent et avec lesquels ils sont transportés, de sorte que lesdits rouleaux (26b) sont configurés de sorte qu'ils absorbent au moins en partie la chaleur qui est émise par les textiles repassés (23).

3. Dispositif de repassage (20) selon la revendication 2, **caractérisé en ce que** lesdits rouleaux (26b) sur le côté sortie (22) sont munis, sur le côté opposé au côté contre lequel lesdits textiles (23) reposent, d'une ou plusieurs chambres remplies de liquide, de sorte que le liquide, pendant le fonctionnement du dispositif de repassage (20), absorbe au moins en partie la chaleur qui est émise par les textiles repassés (23).

4. Dispositif de repassage (20) selon une des revendications précédentes, **caractérisé en ce que** ledit système d'échange de chaleur (25a) sur le côté entrée (21) comprend un ou plusieurs rouleaux agencés en rotation (26a) contre lesquels les textiles (23) à repasser reposent et avec lesquels ils sont transportés, de sorte que lesdits rouleaux (26a) sont configurés de sorte qu'ils émettent au moins en partie la chaleur absorbée vers lesdits textiles (23).

5. Dispositif de repassage (20) selon la revendication précédente, **caractérisé en ce que** lesdits rouleaux (26a) sur le côté entrée (21) sont munis, sur le côté opposé au côté contre lequel lesdits textiles (23) reposent, d'une ou plusieurs chambres remplies de liquide (28a), de sorte que le liquide, pendant le fonctionnement du dispositif de repassage, absorbe au moins en partie la chaleur qui est produite pendant le processus de repassage et émet au moins en partie la chaleur absorbée en retour vers lesdits textiles (23).

6. Dispositif de repassage (20) selon les revendications 2 ou 3 et 4 ou 5, **caractérisé en ce que** lesdits rouleaux (26b) sur le côté sortie (22) sont reliés auxdits rouleaux (26a) sur le côté entrée (21) au moyen d'un système de tube (29a et 29b) qui comprend un système de pompe (30) pour faire circuler ledit liquide entre lesdits rouleaux (26a et 26b) sur le côté sortie (22) et le côté entrée (21), de sorte que la chaleur absorbée sur le côté sortie (22) est au

moins en partie émise vers le système d'échange de chaleur (25a) sur le côté entrée (21).

7. Dispositif de repassage (20) selon une de la revendication 6, **caractérisé en ce que** lesdits systèmes d'échange de chaleur (25a et 25b) comprennent des moyens de pression (27a, 27b et 27c) qui pressent les textiles (23) reposant sur les rouleaux (26a et 26b) contre les rouleaux (26a et 26b) pendant le mouvement rotatif desdits rouleaux (26a et 26b).

8. Dispositif de repassage (20) selon la revendication 7, **caractérisé en ce que** lesdits moyens de pression (27a, 27b et 27c) comprennent une ou plusieurs courroies (27a, 27b et 27c) qui sont au moins en partie agencées autour de la surface desdits rouleaux (26a et 26b), de sorte que ces courroies tournent conjointement avec lesdits rouleaux (26a et 26b) pendant le mouvement rotatif desdits rouleaux (26a et 26b) et pressent lesdits textiles (23) contre les rouleaux rotatifs (26a et 26b).

9. Dispositif de repassage (20) selon une des revendications 1 à 8, **caractérisé en ce que** lesdits systèmes d'échange de chaleur (25a et 25b) sont configurés de façon identique.

10. Dispositif de repassage (20) selon une des revendications 1 à 9, **caractérisé en ce que** le dispositif de repassage (20) comprend un ou plusieurs rouleaux de repassage (24a et 24b) munis d'une cuvette chauffée ou un rouleau chauffé (1) pour repasser lesdits textiles (23), et **en ce que** lesdits moyens de récupération de chaleur (25a, 25b, 24a, 24b, 30, 32) sont prévus pour récupérer la chaleur qui est émise par ladite cuvette ou ledit rouleau chauffé (1) pendant le processus de repassage.

11. Dispositif de repassage (20) selon une des revendications 1 à 10, **caractérisé en ce que** le dispositif de repassage (20) comprend un ou plusieurs canaux (29b, 32) pour transporter la chaleur qui est produite pendant le processus de repassage, et **en ce que** lesdits moyens de récupération de chaleur (25a, 25b, 24a, 24b, 30, 32) sont conçus pour récupérer ladite chaleur.

12. Méthode pour récupérer la chaleur d'un dispositif de repassage (20) selon n'importe laquelle des revendications précédentes, pour préchauffer des textiles (23), **caractérisé en ce que** la méthode comprend les étapes suivantes :

- récupération au moins en partie de la chaleur provenant des textiles repassés (23) sur le côté sortie (22) du dispositif de repassage (20) via le système d'échange de chaleur (25b) sur le côté sortie (22),
- transport de ladite chaleur jusqu'au côté entrée (21),
- émission au moins en partie de ladite chaleur vers les textiles non repassés (23) sur le côté entrée (21) via le système d'échange de chaleur (25a) sur le côté entrée (21).

13. Méthode selon la revendication 12, dans laquelle le système d'échange de chaleur (25b) sur le côté sortie (22) comprend un ou plusieurs rouleaux (26b) via lesquels les textiles repassés quittent le dispositif de repassage (20), et le système d'échange de chaleur (25a) sur le côté entrée (21) comprend un ou plusieurs rouleaux (26a) via lesquels les textiles non repassés (23) sont introduits dans le dispositif de repassage (20).

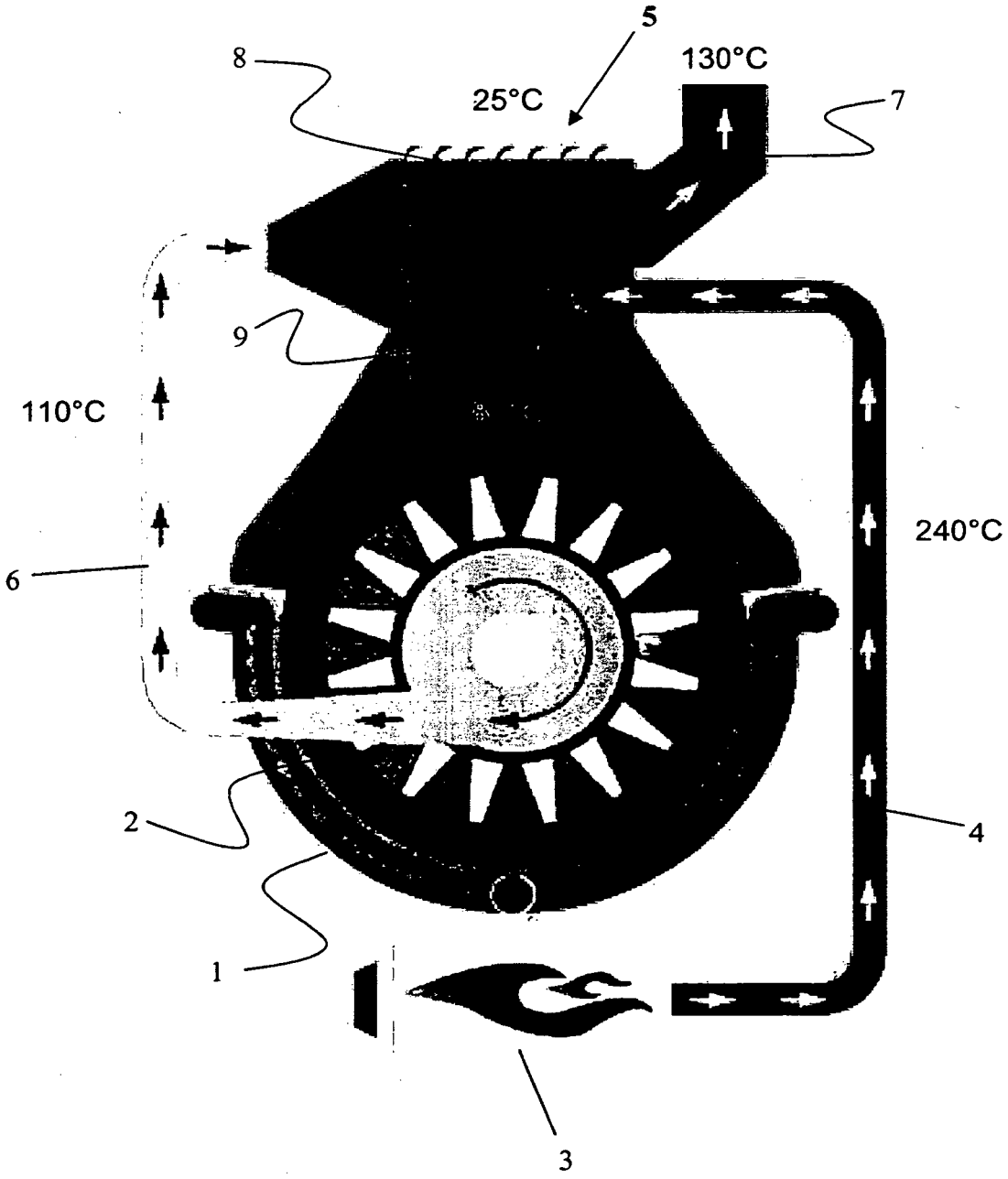

FIG. 1

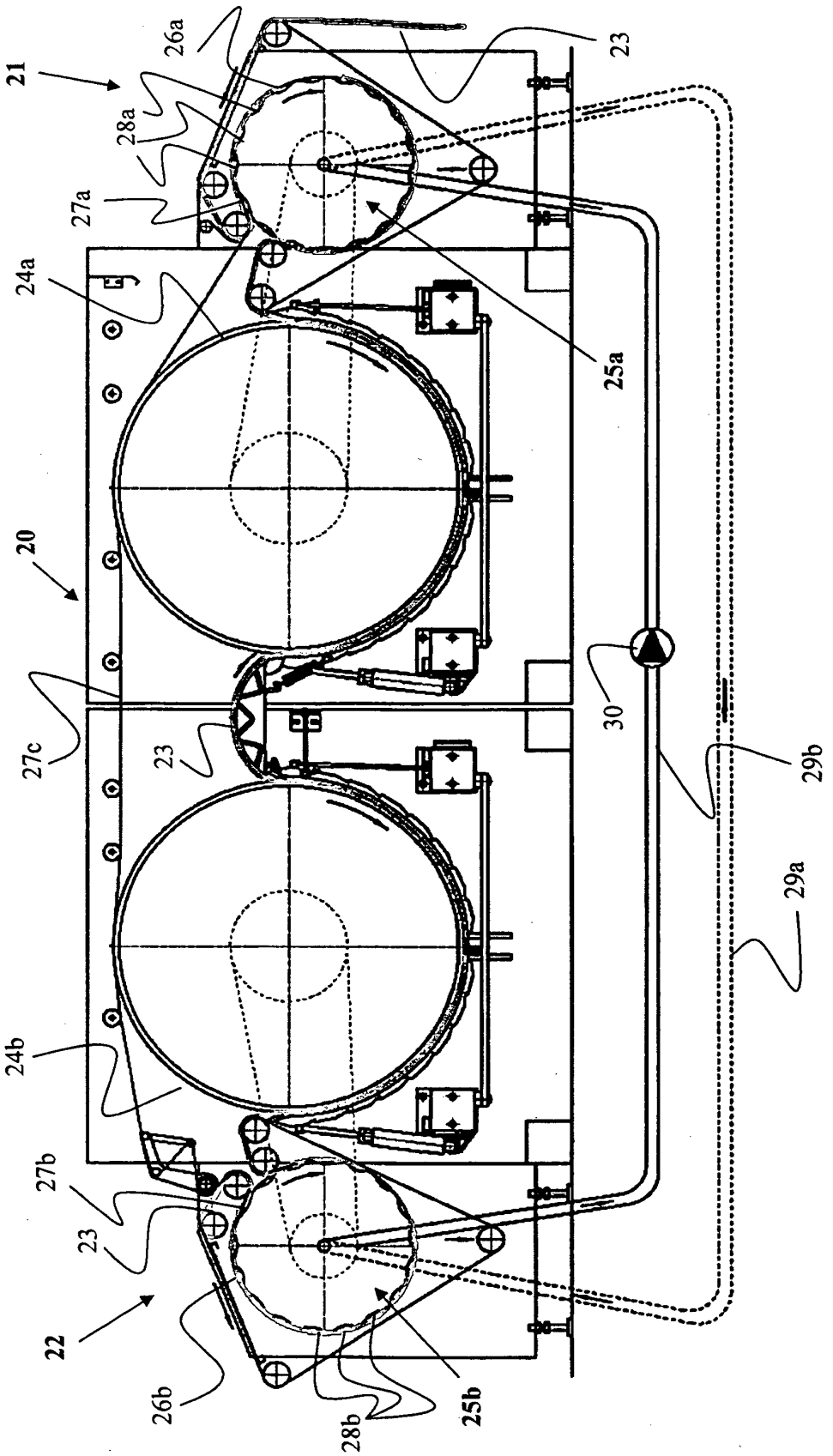
21
26a
23
28a
27a
24a
25a
20
27c
23
30
29b
29a
24b
27b
23
22
26b
28b
25b

FIG. 2

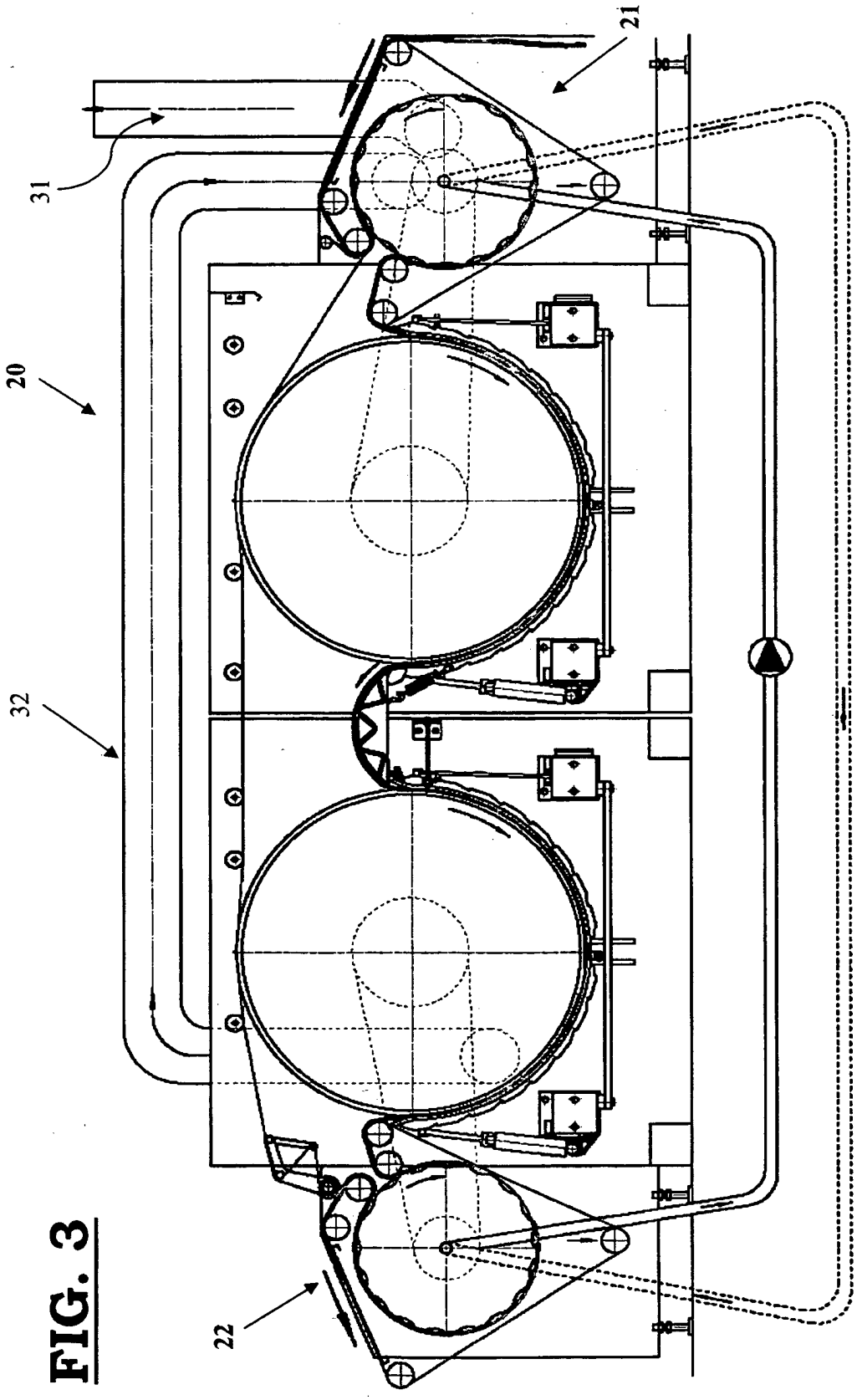

FIG. 3

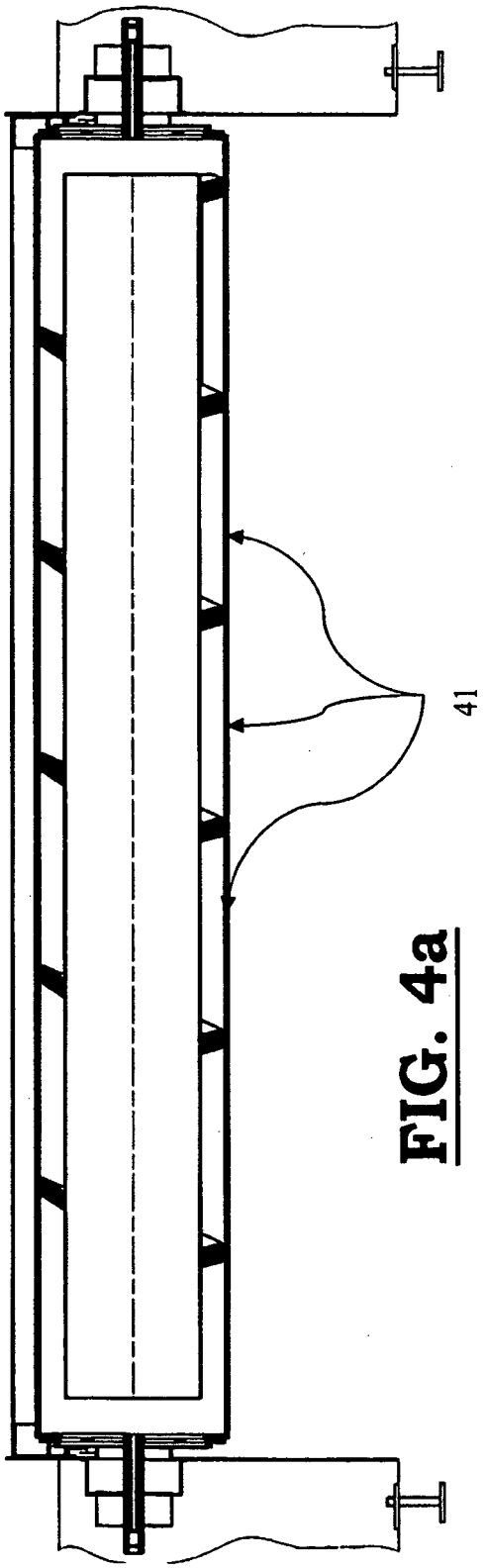

FIG. 4a

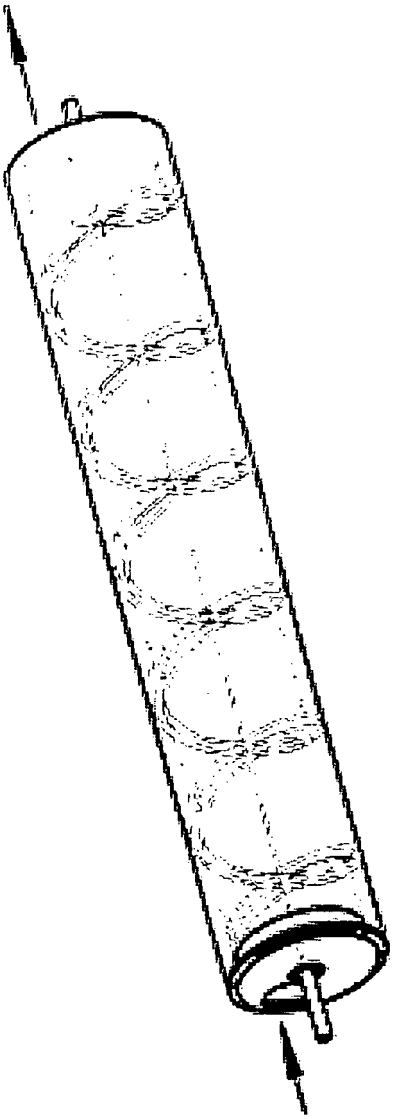

FIG. 4b

REFERENCES CITED IN THE DESCRIPTION

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