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(71) Applicant: **Klein, Harmannus Everardus**
Slochterstraat 80
NL-9611 CS Sappemeer(NL)

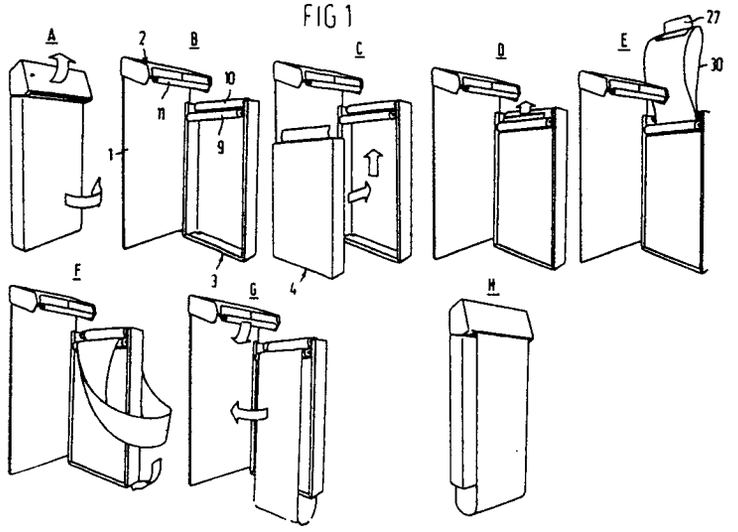
(72) Inventor: **Klein, Harmannus Everardus**
Slochterstraat 80
NL-9611 CS Sappemeer(NL)

(74) Representative: **Urbanus, Henricus Maria, Ir. et al**
c/o Vereenigde Octrooibureaux Nieuwe Parklaan 107
NL-2587 BP 's-Gravenhage(NL)

(54) **A towel dispenser.**

(57) A towel dispenser comprising a casing having a space for receiving a clean towel a supply roller - (10) by means of which successive clean towel portions can be supplied, an outlet opening and an inlet opening, a retracting device fitted with rollers, - (9, 11) as well as a space for storing the towel portion used, means being provided for temporarily locking the transport of a towel portion, wherein the clean towel and the space for storing the towel portion used are designed as an exchangeable unit - (4)

FIG 1



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A towel dispenser

This invention relates to a towel dispenser comprising a casing having a space for receiving a clean towel, a supply roller by means of which successive clean towel portions can be supplied, an outlet opening and an inlet opening, a retracting device fitted with rollers, as well as a space for storing the towel portion used, means being provided for temporarily locking the transport of a towel portion.

A prior towel dispenser of this type described in Dutch patent 138,457, meanwhile abandoned, is not only complicated but moreover requires considerable dexterity and time for inserting a clean towel. Besides, the dispenser is unusable for a prolonged period in case of malfunction of its mechanical part.

It is an object of the present invention to eliminate these drawbacks.

To this end, a towel dispenser of the above described type is characterized in that the clean towel and space for storing the towel portion used are designed as an exchangeable unit. As this unit can be exchanged integrally, the insertion of a clean towel at the location concerned requires very little time.

The exchangeable unit may comprise a casing wherein the space for the clean towel or clean towel portion and the space for storing the towel portion used are separated by a movable wall.

In a further elaboration of the present invention, the exchangeable unit can be received in the casing of the dispenser, adjacent the top of which there are disposed two spaced apart rollers, one roller coacting with the clean towel portion supplied from the bottom along the outer wall of the casing of the exchangeable unit, the other roller coacting with the used towel portion supplied from the bottom and outwardly along the casing of the exchangeable unit.

In the casing there may further be arranged near the top a hold-down roller coacting with the supply roller and the take-up roller for the simultaneous rotation of these two rollers. The hold-down roller may alternatively consist of two separate rollers, one adapted to coact with the supply roller, the other with the take-up roller. This arrangement prevents the soiled towel portion from contaminating the clean towel portion, which naturally is highly important especially when the device is used in hospitals.

For obtaining an effective drive, the shafts of the supply roller and the take-up roller can extend outwardly of the casing of the exchangeable unit and a roller or gear may be mounted on the projecting ends of said shafts, said rollers or gears being arranged to be either locked or drivable by a third roller or gear by means of a time lag mechanism.

A further improvement is obtained when use is made of a crank-shaped locking member extending between the two ends of the clean towel portion wound about the supply roller, while the outwardly extending end is fitted with a locking pin adapted to coact with a recess of the third roller or gear at the same time linking up eccentrically with the time lag mechanism.

The exchangeable unit can further be extended upwardly relative to the front wall of the casing of the dispenser, so that the clean towel portion extending upwardly between the front wall of the casing of the dispenser and the front wall of the casing of the exchangeable unit can be guided over the projecting part of the exchangeable unit and subsequently around the supply roller in such a manner that the ends of the towel wrapped around the supply roller are in contact with each other, thus producing an automatic locking, unless the above crank-shaped locking member keeps the ends of the portions wrapped around the supply roller separated from each other.

In a further elaboration of the present invention, the casing of the dispenser may include a rear wall, an upper wall rotatably attached thereto and fitted with the hold-down roller, and a cover-like front wall rotatably connected to the rear wall, said front wall being adapted to receive the exchangeable unit.

A further constructive simplification may consist in that the supply roller, the take-up roller, the rollers or gears connected thereto and the third roller or gear and the time lag mechanism coupled thereto are accommodated in a separate frame conveniently mountable in the cover-like front wall of the casing of the dispenser. Thus assembly is strongly simplified and in case of technical problems, essentially only said separate frame need be removed and the casing of the dispenser can remain in place.

One embodiment of the towel dispenser according to the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 shows perspective views A-H of the dispenser according to the present invention and its use;

Fig. 2 is an enlarged more detailed diagrammatic side view of the towel dispenser shown in Fig. 1; and

Fig. 3 is a perspective, diagrammatic view of a part of the towel dispenser showing the drive of the rollers.

According to Fig. 1, a towel dispenser according to the present invention comprises a rear wall 1, a hinged upper wall 2 and a cover-like front wall 3. As shown in Figs. 1C and 1D, the cover-like front wall may accommodate an exchangeable unit 4 containing the towel.

As shown in Fig. 2, the exchangeable unit includes a casing 5 having a movable partition 6. Underneath the partition is disposed a clean towel portion which may be present therein either in a rolled-up or in a folded configuration, while above the partition the soiled towel portion falls in a loose fold. The towel generally indicated at 30 is basically of the endless type. The ends thereof can be attached to the movable partition 6. As further shown in Fig. 2, the casing 5 is fitted at its lower end with a slotted opening 7 for the passage of the clean towel portion and at its top with a passage 8 for passing the returned soiled towel portion.

The direction of movement of the towel, represented in Fig. 2 by a fat line is shown by arrows. The towel in this figure is in the locked position. The non-locked position is partly shown by a dashed line.

As further shown in the drawings, the cover-like front wall is fitted at its top with a take-up roller 9, a supply roller 10 for feeding-in the soiled towel portion and feeding-out the clean portion, respectively. In the rotatable cover 2 of the dispenser there is further rotatably provided a hold-down roller 11. In the embodiment shown in Fig. 2, the hold-down roller 11 is rotatably suspended through rods 12 from the inside of the cover 2.

As shown more in particularly in Fig. 3 (the hold-down roller is omitted here for the sake of clarity) rollers 9, 10 are mounted in a separate frame 13, conveniently mountable in the cover-like front wall 3 of the casing of the towel dispenser. Mounted on the outwardly projecting ends (not shown) of the shafts of rollers 9, 10 are gears 14, 15 adapted to coact through a driving belt 16 with a third gear 17 mounted for rotation by means of a shaft, not shown, on the sidewall of said frame 13.

As further shown in Fig. 3 there is affixed to the gear 17 a disc 18 having a recess 19. Cooperating with recess 19 is the cam-shaped end 20 of the crank-shaped locking member 21. As best shown in Fig. 2 the locking member extends between the clean towel portions disposed about the supply roller 10.

The above third gear 17 is further engaged eccentrically by a rod 22 whose other end, with interposition of a time lag mechanism 23, engages the respective wall of the frame 13. The time lag mechanism may take the form of suction cups 24, with a valve 25, as is known per se.

As shown in particular in Fig. 2, the two portions of the clean towel wrapped around the supply roller 10 abut on a nose-shaped portion 26 of the casing 5 of the exchangeable unit 4. In the position shown by solid lines in Fig. 2, the locking member 21 will not touch the two towel portions. The two towel portions therefore abut on the nose-shaped portion 26, resulting in an automatic locking, so that pulling at the downwardly extending clean towel portion has no effect.

In this position the cam-shaped end 20 of the crank-shaped locking member will extend into the recess 19 of the disc 18, in which position furthermore the bellows 24 are pressed together. The time lag mechanism may incorporate a compression spring which is compressed when the bellows are pressed together.

When the bellows 24 are moved to the starting position by the intake air for a given period of time through the valve 25, the third gear 17 will also be moved and, consequently, the cam-shaped end will be pressed out of the recess 19, so that the locking member is swivelled outwardly into the position shown in Fig. 2 by dashed lines. The one part of the towel portion wrapped around the supply roller 10 will then be released from the nose-shaped portion 26, so that the user can pull at the towel until the cam-shaped end 20, being subjected to a pull, falls back again in the recess 19, at which moment the bellows 24 are also compressed again.

Reverting to Fig. 1, it shows successively Figures 1A-H, in which

Fig. 1A shows a closed towel dispenser without exchangeable unit;

Fig. 1B shows the dispenser shown in Fig. 1 in opened position;

Fig. 1C shows the installation of the exchangeable unit in the box-shaped front wall of the dispenser;

Fig. 1D shows the dispenser after the installation of the exchangeable unit;

Fig. 1E shows the pulling of a portion of the towel contained in the exchangeable unit between the roller 9 and the roller 10 by means of a pull tab 27 attached to the towel;

Fig. 1F shows the rotation through 180° of the pulled out towel portion and its folding around the cover-like front wall of the towel dispenser;

Fig. 1G shows the towel dispenser with the exchangeable unit received therein just before its closure and

Fig. 1H shows the towel dispenser including an exchangeable unit, shown in Fig. 1, ready for use.

It will be clear that a great many modifications are possible within the scope of the present invention: for instance, the drive, as shown in Fig. 3 may have a totally different design. Also further modifications are possible without departing from the scope of the present invention. The essential point is in fact that use is made of a rapidly and conveniently exchangeable unit, allowing the towel dispenser to be attended to even by a non-expert. Besides, in case of technical defects, the frame with fittings can be removed and replaced in its entirety by a new frame, so that on the one hand the dispenser need be inoperative for a short period only, and on the other hand repair can be effected in an appropriate place.

Claims

1. A towel dispenser comprising a casing having a space for receiving a clean towel, a supply roller by means of which successive clean towel portions can be supplied, an outlet opening and an inlet opening, a retracting device fitted with rollers, as well as a space for storing the towel portion used, means being provided for temporarily locking the transport of a towel portion, characterized in that the clean towel and the space for storing the towel portion used are designed as an exchangeable unit.

2. A towel dispenser according to claim 1, characterized in that the exchangeable unit includes a casing wherein the space for the clean towel or clean towel portion and the space for storing the towel portion used are separated by a movable wall.

3. A towel dispenser according to claim 1 or 2, characterized in that the exchangeable unit is received in the casing of the dispenser, adjacent the top of which there are disposed two spaced apart rollers, one roller coacting with the clean towel portion supplied from the bottom along the outer wall of the casing of the exchangeable unit, the other roller coacting with the used towel portion supplied from the bottom and outwardly along the casing of the exchangeable unit.

4. A towel dispenser according to claim 3, character ized in that adjacent the top there is arranged a hold-down roller coacting with the supply roller and the take-up roller for the simultaneous rotation of these two rollers.

5. A towel dispenser according to claim 4, characterized in that the hold-down roller includes two separate rollers, one roller being adapted to coact with the supply roller, the other with the take-up roller.

6. A towel dispenser according to any one of the preceding claims, characterized in that the shafts of the supply roller and the take-up roller project from the casing of the exchangeable unit and a roller or gear is mounted on the projecting ends of said shafts, said rollers or gears being arranged to be either locked or drivable by a third roller or gear by means of a time lag mechanism.

7. A towel dispenser according to claim 6, characterized by a crank-shaped locking member extending between the two ends of the clean towel portion wrapped around the supply roller, while the outwardly extending end is fitted with a locking pint adapted to coact with a recess of the third roller or gear at the same time linking up eccentrically with the time lag mechanism.

8. A towel dispenser according to any one of the preceding claims, characterized in that the exchangeable unit is extended upwardly relative to the front wall of the casing of the dispenser, so that the clean towel portion extending upwardly between the front wall of the casing of the dispenser and the front wall of the casing of the exchangeable unit can be guided over the projecting part of the exchangeable unit and subsequently around the supply roller in such a manner that the ends of the towel portion wrapped around the supply roller are in contact with each other, thus producing an automatic locking, unless said crank-shaped locking member keeps the ends of the portions wrapped around the supply roller separated from each other.

9. A towel dispenser according to any one of the preceding claims, characterized in that the casing of the dispenser includes a rear wall, an upper wall rotatably attached thereto and fitted with the hold-down roller, and a cover-like front wall rotatably connected to the rear wall, said front wall being adapted to receive the exchangeable unit.

10. A towel dispenser according to claim 9, characterized in that the supply roller, the take-up roller, the rollers or gears connected thereto and the third roller or gear and the time lag mechanism coupled thereto are accommodated in a separate frame mountable in the cover-like front wall of the casing of the dispenser.

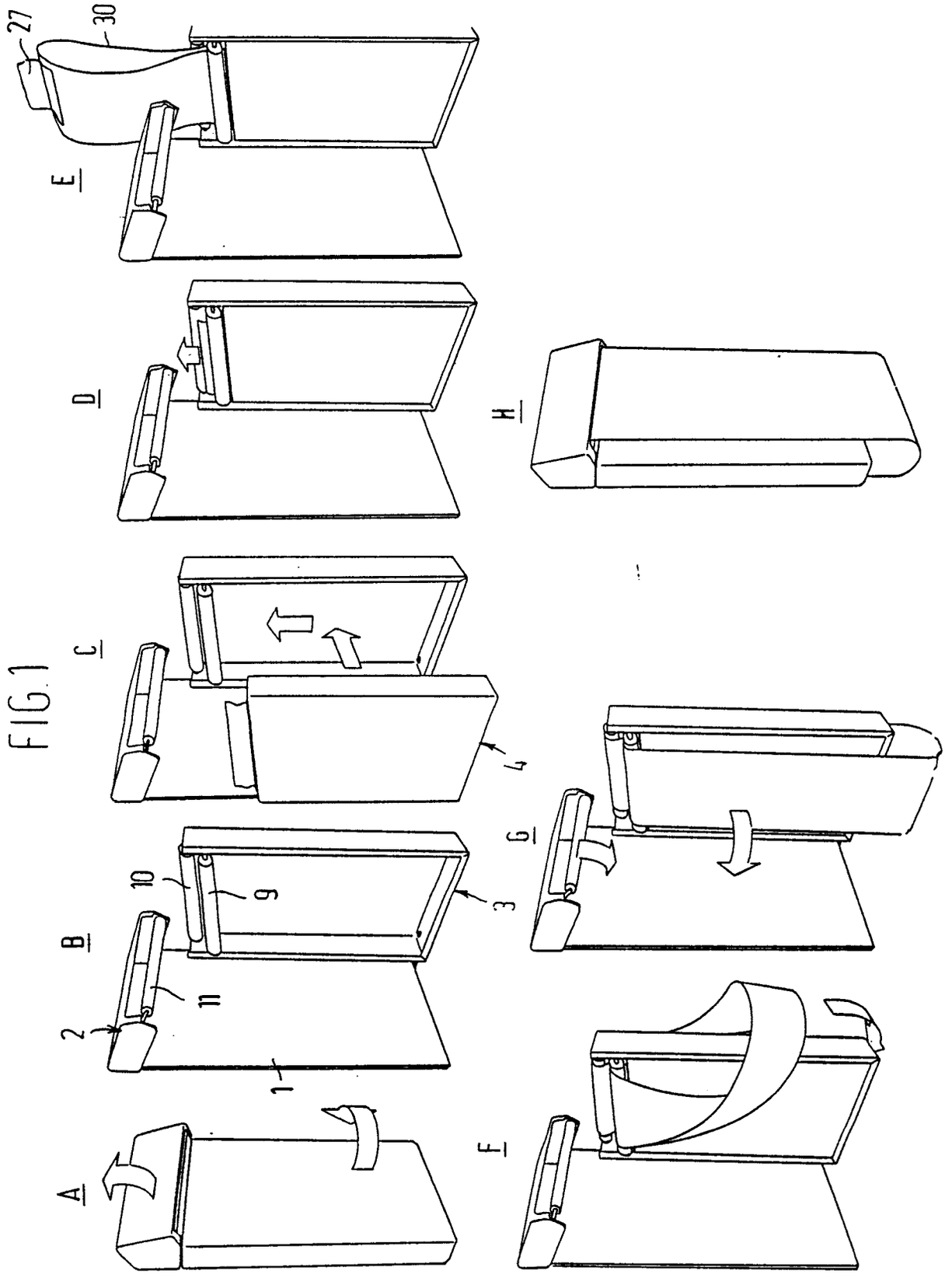

FIG.1

FIG.3

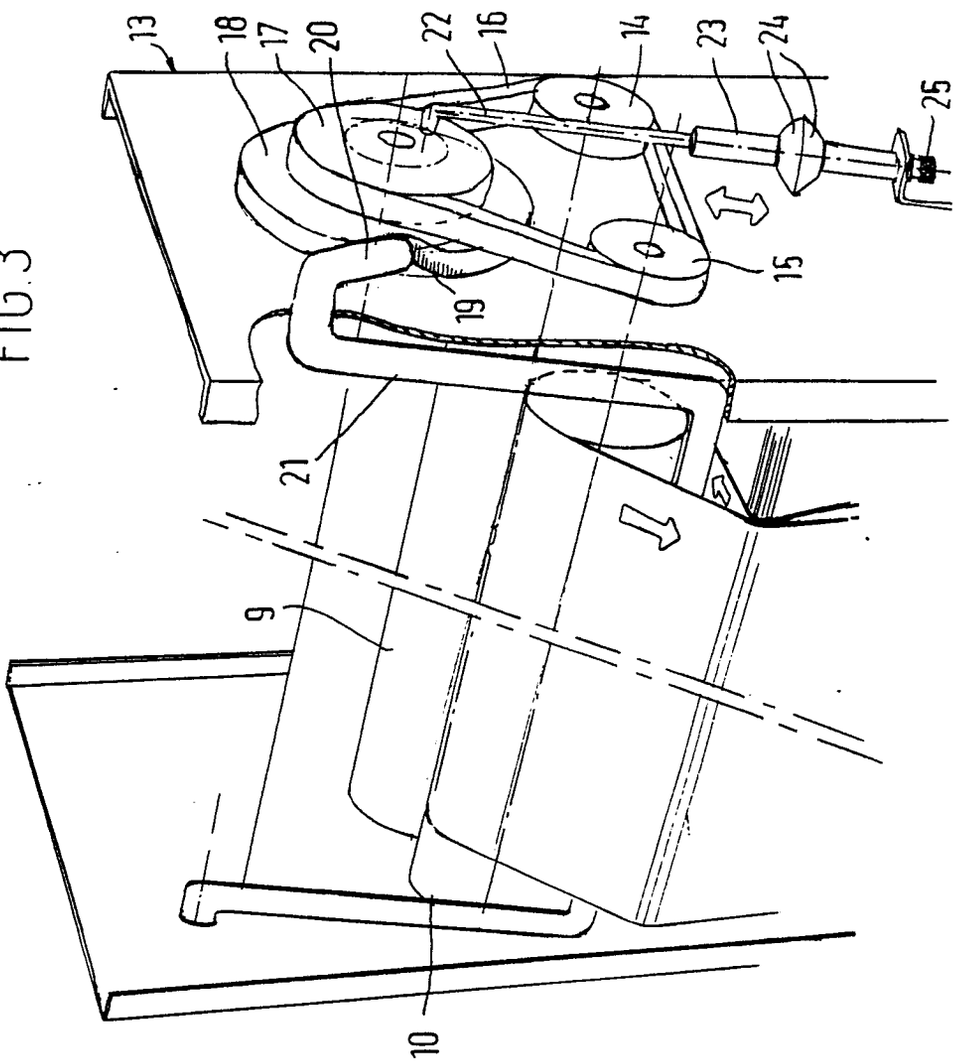
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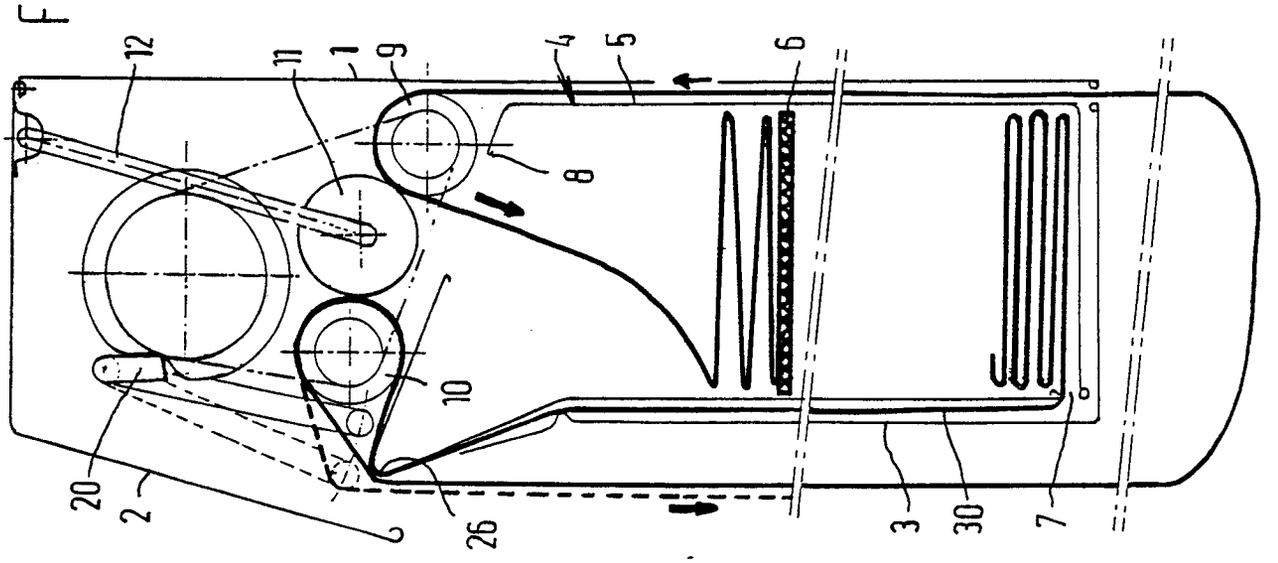
FIG.2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EUROPEAN SEARCH REPORT

Application number

EP 85 20 2114

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	AU-B- 411 364 (TERRILLS HYDE PARK LAUNDRY PROPRIETARY LTD.) * Page 5, line 23 - page 9, line 19; figures 3-7 *	1	A 47 K 10/28
A	US-A-4 139 168 (ALBERDING)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 47 K
B 65 H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11-08-1986	PORWOLL H.P.

CATEGORY OF CITED DOCUMENTS

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