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(54) **Laundry dryer with pliable drum dividing member**

(57) Laundry dryer comprising a rotatable drum (1) with at least a lifter (2) for moving the laundry as the drum (1) rotates, the lifter (2) is adapted to house a winding mechanism (3) for a pliable member (4) to be wound and unwound, said pliable member (4) is slidably changeable

from a first position, in which the pliable member (4) is contained inside the lifter (2), to a second position, in which the pliable member (4) extends into the drum (1) and is adapted to be associated with the drum (1) so as to divide the latter into separate compartments.

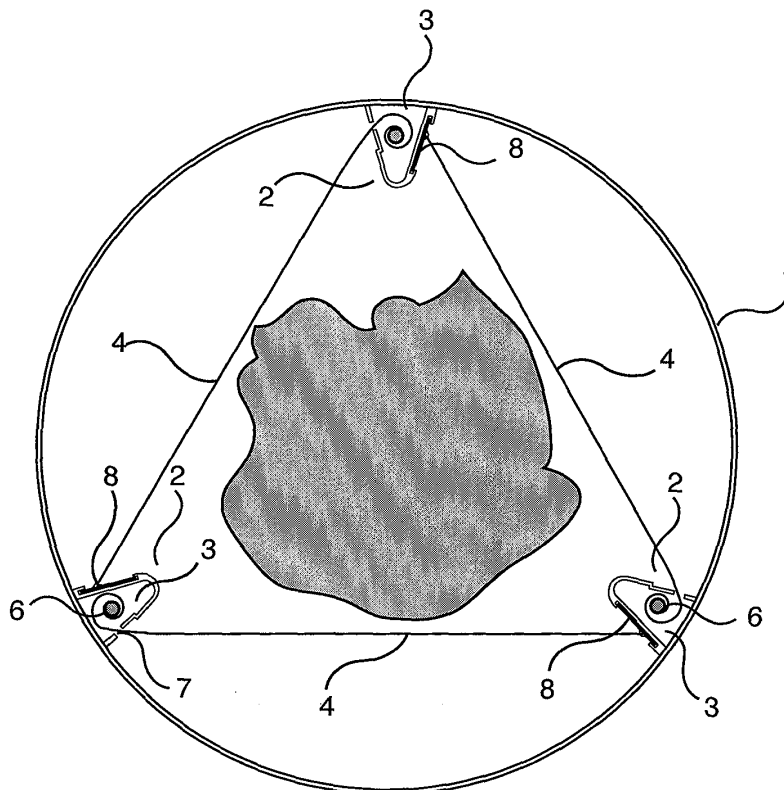


fig 2

Description

[0001] The present invention refers to a laundry dryer.

[0002] It may be necessary to keep different type of articles to be dried effectively separated in the drum and to confine such articles in reduced spaces, with respect to the volume of the drum, in order to minimize mechanical stress caused by the movement of the drum. Further, there is the need for limiting the movement of articles during the drying operation and for preventing articles to be dried to come into contact with the drum.

[0003] This may be the case, for example, with knitwear and woollens, which would shrink if, they exceedingly moved during drying. The same may apply to shoes or other items for drying that could be damaged by the movement in the drum.

[0004] Also well known are the drawbacks of using rotary laundry dryers to dry footwear, i.e. the loud thumping and banging noises normally generated by placing relatively hard footwear in the rotating drum of a laundry dryer.

[0005] The aim of the present invention is therefore to provide a laundry dryer having a drum in which it is possible to effectively keep separated, inside the drum, different kinds of articles to be dried.

[0006] It is an object of the present invention to provide a laundry dryer having a drum in which it is possible to confine delicate articles into separate compartments of reduce volumes, with respect to the volume of the drum, in order to limit the movement of the articles and to reliably avoid damages to such articles during the drying operation.

[0007] It is a further object to provide a laundry drier having a drum in which it is possible, in the same load, to keep shoes separate from any more delicate articles of clothing therefore preventing their entanglement and damage.

[0008] It is a further object to provide a laundry drier having a drum in which it is possible to encapsulate shoes to allow them to be effectively dried reducing loud thumping and banging noises.

[0009] It is a further object to provide a laundry drier having a drum in which it is possible to prevent articles to be dried to come into contact with the drum during the drying operation.

[0010] According to the present invention, this aim is reached in a laundry dryer having the characteristics as recited and defined in the appended claims.

[0011] The invention, illustrated and described herein, it is not intended to be limited to the details shown because various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

[0012] Anyway, features and advantages of the present invention may be more readily understood from the description that is given below by way of a nonlimiting example with reference to the accompanying drawings,

in which:

- Figure 1 is a front elevational view of a drum of a laundry drier, according to the present invention;
- Figure 2 is a front elevational view of a drum of a laundry drier, according to a further embodiment of the present invention;
- Figure 3 is an enlarged detailed view of a lifter, according to the present invention;
- Figure 4 is an enlarged detailed view of a lifter, according to the present invention.

[0013] With reference to the figures, the laundry dryer, according to the present invention, comprises a rotatable drum, generally designated by the reference numerical 1, with at least a lifter 2 for moving the laundry as the drum rotates. The lifter 2 is adapted to house a winding mechanism 3 for a pliable member 4 to be wound and unwound, the pliable member 4 is slidably changeable from a first position, in which the pliable member 4 is contained inside the lifter 2, to a second position, in which the pliable member 4 extends into the drum 1 and is adapted to be associated with the drum 1 so as to divide the latter into separate compartments.

[0014] The laundry dryer is provided, as known in the art, with a fan, a heater, and an air circuit, in order to direct a heated airflow into the drum, through perforations thereof. The airflow, flowing into the drum, comes into contact there with the laundry that is to be dried, so that moisture in the laundry is absorbed by the air by cooling and it is condensed and discharged. The air circuit can form a closed loop with the drum or an air circuit opened to the atmosphere.

[0015] Referring now to the figures of the drawings in detail, the laundry dryer comprises a drum 1 that can be rotated around a longitudinal axis and within which at least one lifter 2 is provided for moving the laundry as the drum rotates. The lifter 2 extends longitudinally on the internal surface of the drum 1, substantially along the entire longitudinal dimension of the drum 1. The lifter 2 can be fastened to the drum 1 by means of screws, rivet or other equivalent clamping means, but in a further embodiment the lifter 2 can be formed integrally in one piece with the drum 1.

[0016] The lifter 2 comprises a V shaped shell with the apex facing onto the inner portion of the drum 1. The lifter 2 is adapted to form with the drum 1 a cavity 5 defining a housing for the winding mechanism 3. The winding mechanism 3 comprises a roll support or reel 6 arranged in the cavity 5 for the pliable member 4 to be wound and unwound. A first end edge of the pliable member 4 is associated with the reel 6, and the latter is biased by appropriate spring means so as to keep the pliable member 4 in the first position, in which the pliable member 4 is completely wound around the reel 6 inside the V

shaped shell of the lifter 2 and so as to automatically rewind the pliable member 4 when the latter is unwound and extends into the drum 1 in the second position.

[0017] The V shaped shell of the lifter 2 comprises a longitudinal slot 7, which the pliable member 4 is adapted to pass through for being slidably changeable between the first and the second position.

[0018] A free end edge of the pliable member 4 is associated with a clamping body 8 adapted to be arranged in correspondence to a first seat 9, which is provided on the V shaped shell of the lifter 2, when the pliable member 4 is wound around the reel 6 and contained inside the lifter 2, in the first position.

[0019] The pliable member 4 is adapted to be unwound from the first position to the second position by means of the clamping body 8, which can be easily handled by a user.

[0020] In a first embodiment of the present invention, the clamping body 8 is adapted to be removably fastened directly to the internal surface of the drum 1. Projections (not shown) can be provided on the clamping body 8 in order to engage the perforations of the drum 1. Clearly other type of fastening can be envisaged.

[0021] In a second preferred embodiment, the clamping body 8 is adapted to be removably fastened to a further lifter 2, according to the present invention, associated with the drum 1. Advantageously the V shaped shell of the lifter 2 is provided externally with a second seat 10 adapted to receive and locked in position the clamping body 8, as shown in figure 2 and 3.

[0022] The pliable member 4, fastened to the drum 1 or to the lifter 2, is adapted to divide the drum 1 into separate compartments so as to keep articles to be dried effectively separated, and to confine articles in reduced spaces, thereby minimizing mechanical stress caused by the movement of the drum 1.

[0023] When there is no longer need for separate compartments, the clamping body 8 is adapted to be disengaged from the second seat 10 of the lifter 2, and the pliable member 4 is adapted to be automatically rewound around the reel 6, inside the V shaped shell of the lifter 2, by means of the winding mechanism 3.

[0024] In a most preferred embodiment, the drum 1 comprises three lifter 2, according to the present invention, in order to define a triangular enclosed chamber adapted to encapsulate items to be dried and to prevent the latter to come into contact with the drum 1, as shown in figure 2.

[0025] The pliable member 4 is preferably made of an air-permeable material, such as in the case of a web, net, or a mesh or it can be made of plastic material provided with openings.

[0026] Conclusively, it can therefore be stated that the laundry dryer, according to the present invention, allows to effectively keep separated, inside the drum, different kinds of articles to be dried, and to confine delicate articles into separate compartments of reduced volume so as to limit the movement of the articles and to reliably

avoid damage to such articles during the drying operation.

[0027] Further, it can be stated that the apparatus, according to the present invention, is simple in construction, light in weight, occupies minimum of the useful space of the dryer, is easy to use, simple to manufacture, reliable in operation, does not damage the drum, and allows efficient utilization of the drying drum's lifter as additional supports for objects being dried.

[0028] Although the above description and drawings contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention.

Claims

1. Laundry dryer comprising a rotatable drum (1) with at least a lifter (2) for moving the laundry as the drum (1) rotates, **characterized in that** said lifter (2) is adapted to house a winding mechanism (3) for a pliable member (4) to be wound and unwound, said pliable member (4) being slidably changeable from a first position, in which the pliable member (4) is contained inside said lifter (2), to a second position, in which the pliable member (4) extends into the drum (1) and is adapted to be associated with said drum (1) so as to divide the latter into separate compartments.
2. Laundry dryer according to claim 1, **characterized in that** said pliable member (4) is adapted to be removably fastened to an internal surface of the drum (1).
3. Laundry dryer according to claim 1, **characterized in that** said pliable member (4) is adapted to be removably fastened to at least one of said lifter (2).
4. Laundry dryer according to claim 1, **characterized in that** said lifter (2) is adapted to form with the drum (1) a cavity (5) defining an housing for the winding mechanism (3).
5. Laundry dryer according to claim 4, **characterized in that** said winding mechanism (3) comprises a roll support or reel (6) arranged in the cavity (5) for the pliable member (4) to be wound and unwound
6. Laundry dryer according to claim 4, **characterized in that** said reel (6) is biased by spring means so as to keep the pliable member (4) in the first position, in which the pliable member (4) is completely wound around the reel (6) inside the lifter (2) and so as to automatically rewind the pliable member (4) when the latter is unwound and extends into the drum (1) in the second position.

7. Laundry dryer according to any of the preceding claims, **characterized in that** said lifter (2) comprises a longitudinal slot (7) which the pliable member (4) is adapted to pass through for being slidably changeable between the first and the second position. 5
8. Laundry dryer according to any of the preceding claims, **characterized in that** a free end edge of the pliable member (4) is associated with a clamping body (8) adapted to be arranged in correspondence to a first seat (9), provided on the lifter (2), when the pliable member 4 is wound around the reel (6) and contained inside the lifter (2), in the first position. 10
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9. Laundry dryer according claim 8, **characterized in that** said clamping body (8) is adapted to be removably fastened to the internal surface of the drum (1). 20
10. Laundry dryer according to claim 9, **characterized in that** projections are provided on the clamping body (8) in order to engage perforations of the drum (1). 25
11. Laundry dryer according to claim 8, **characterized in that** said clamping body (8) is adapted to be removably fastened to at least one of said lifter (2). 30
12. Laundry dryer according to claim 11, **characterized in that** said lifter (2) is provided with a second seat (10) adapted to receive and locked in position the clamping body (8). 35
13. Laundry dryer according to any of the preceding claims, **characterized in that** said drum (1) comprises three of said at least a lifter (2) in order to define a triangular enclosed chamber adapted to encapsulate items to be dried and to prevent the latter to come into contact with the drum (1). 40
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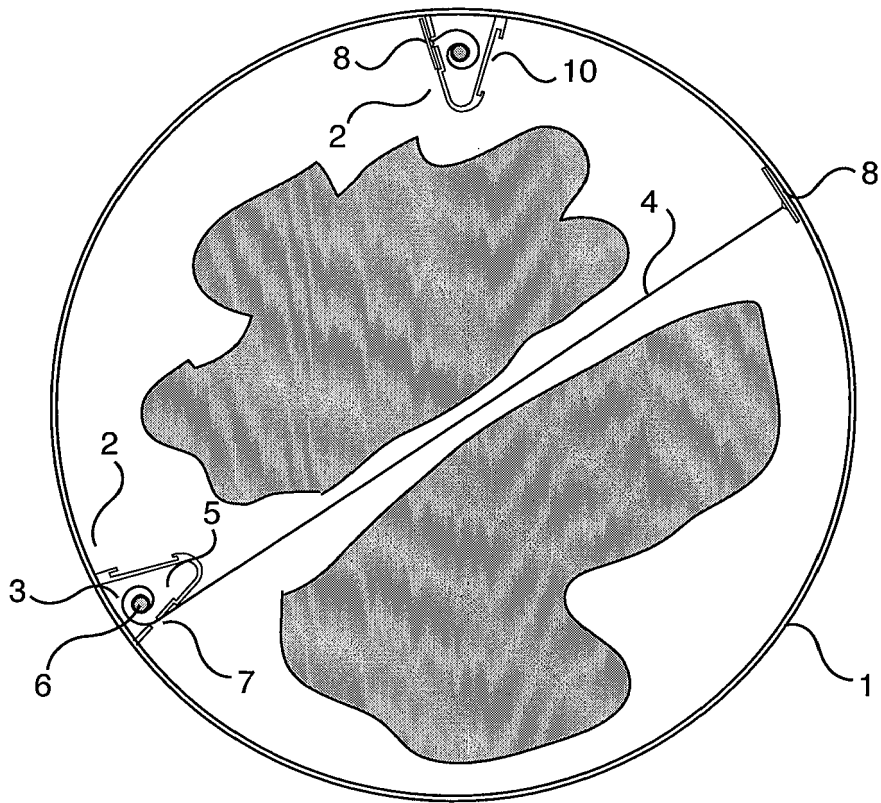


fig 1

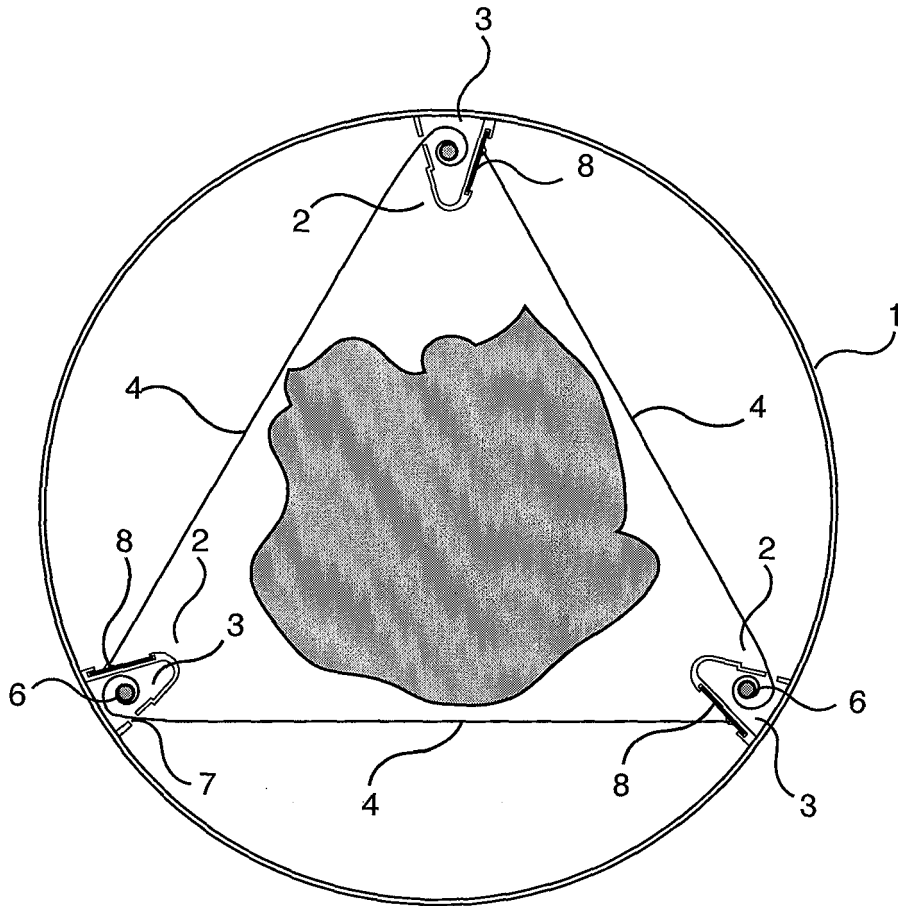


fig 2

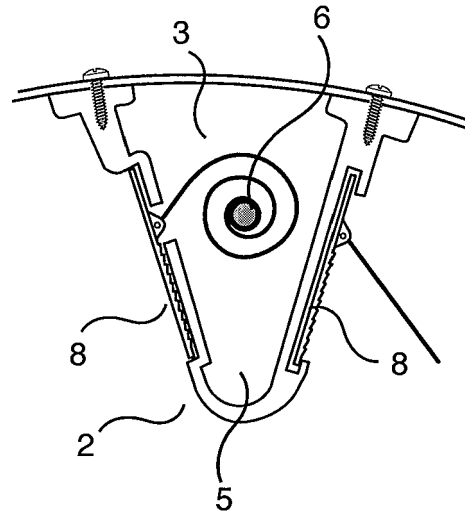


FIG 3

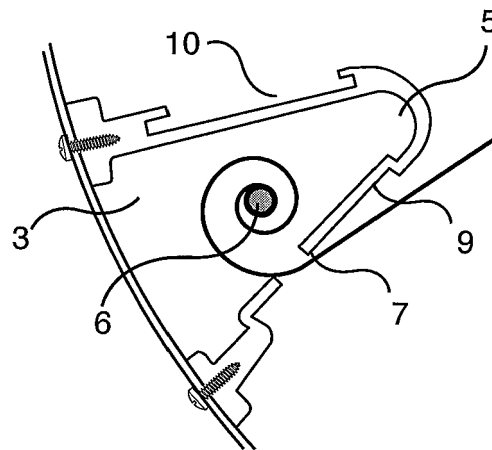


FIG 4



DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
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The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 18 November 2005	Examiner Falkentoft, C	
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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