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(54) Cooling device, particularly for the drum bearings of laundry driers.

(57) Cooling device, particularly for the drum bearings of laundry driers, including a frame (2a) supporting the drum (3) by means of bearings (4b), where at least one air passage (9) is provided for air coming from the outside, said air being adapted to cool said bearings.

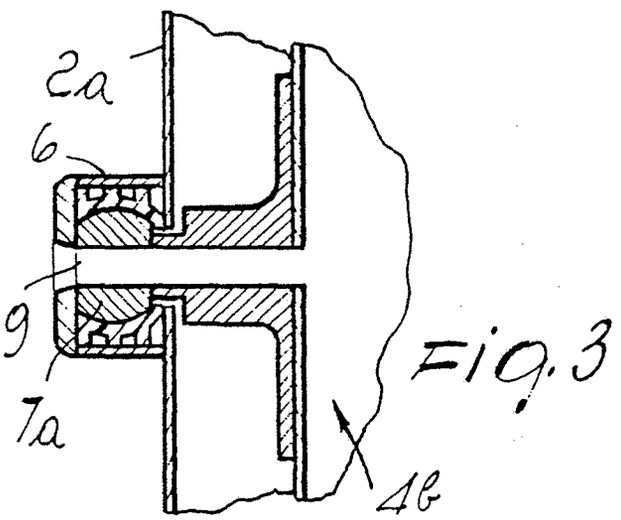


Fig. 3

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COOLING DEVICE, PARTICULARLY FOR THE DRUM BEARINGS OF LAUNDRY DRIERS

The present invention relates to a cooling device, particularly for the drum bearings of laundry driers.

Known domestic laundry driers are usually constituted by a frame or cabinet supporting a revolving drum containing laundry to be dried by means of an air circulation system.

A processor, besides controlling the various operating parameters, periodically reverses the drum rotation in order to prevent the laundry from getting entangled.

In the known machines, the revolving drum is supported in the frame by means of bearings of different types, rolling or plain bearings, such as for example plastic sleeve bearings.

These types of bearings wear out easily because of the high working temperature in which they operate.

The aim of the present invention is to provide a cooling device adapted to lower the working temperature of the drum bearings of domestic laundry driers.

Within this aim, an object of the invention is to provide a cooling device easily adaptable to known laundry driers without substantially modifying the supporting systems of the drum.

A further object of the invention is to provide a relatively simple device such as not to affect the machine production costs considerably.

The above aim, as well as these and other objects that will be more apparent later, are achieved by a cooling device, particularly for the drum bearings of laundry driers, comprising a frame supporting said drum by means of bearings, characterized in that at least one air passage is provided at each of said bearings for air coming from the outside, said air being adapted to cool said bearings.

Further characteristics and advantages of the invention will be more apparent by the following description of an embodiment of the invention, illustrated, by way of example in the enclosed drawings in which

Fig. 1 is a sectioned side view of a laundry drier;

Fig. 2 is a side view of a bearing having a device according to the invention;

Fig. 3 is a side view of a bearing having a device according to another aspect of the invention;

Fig. 4 shows a rolling bearing with a device according to a further aspect of the invention;

Fig. 5 shows a bearing with a device according to a fourth aspect of the invention.

With reference to the cited figures, it is illustrated a laundry drier 1 essentially constituted by a frame 2 supporting a revolving drum 3 adapted to contain the laundry to be dried.

At the back it is shown a drum supporting bearing 4, which, for example, can be a rolling ball bearing, as illustrated in figure 4, or a plain bearing with a plastic sleeve (figures 2 and 3) or with a brass (figure 5).

Figure 2 shows a plain bearing 4a comprising a plastic sleeve 5 housed in the support 6 and containing a pivot 7 fixed to the drum 3.

The support 6 is fixed to the frame 2 of the machine, in a per se known manner not illustrated here, and it is spaced from the wall 2a of the frame 2 to provide an air passage around the bearing 4a, by means of air intakes 8 provided on the wall 2a at pivot 7.

Fig. 3 shows a plain bearing 4b comprising a support 6 housing a sleeve 5 made of plastics, substantially similarly to the preceeding one.

In this case pivot 7a, fixed to the drum 3, is hollow since it is provided with a hole 9 for a passage of air which cools the bearing from inside.

Fig. 4 illustrates a rolling bearing 4c comprising a support 10, fixed to the wall 2a of the frame 2, and balls 11 interposed between the support and pivot 12 fixed to the drum.

Pivot 12 is provided with an axial hole 13 for a passage of cooling air, in a way similar to the preceeding one.

Fig. 5 shows a plain bearing 4d comprising a brass 14, housed in a support 15 fixed to the wall 2a of the structure of the machine, and a pivot 16 fixed to the drum 3.

Pivot 16 is provided with an axial hole 17 for a passage of air and the support 15 too is provided with slots 18 at its connection with the wall 2a.

Naturally, also in the above described bearings it is possible to provide such a double passage of air by providing air intakes on the support and an axial hole in the pivot.

The air circulation needed for cooling is given by the air pressure inside the drum being lower than the air pressure outside the machine; for this reason, during the drying operation, fresh air keeps getting into the drum, through the provided intakes, hitting the exterior of the support, crossing the pivot hole and thus considerably cooling the entire rotating assembly.

It has been seen how the cooling device according to the invention achieves the intended aims and objects by allowing the support bearings of the drum of laundry driers to work in the best temperature conditions with a great advantage in terms of

longevity and reliability of these parts.

The cooling device according to the invention may have numerous modifications and variations, all within the inventive concept; furthermore, all the details may be substituted with technically equivalent elements.

The materials employed, as well as the dimensions, may be any according to the specific needs and the state of the art.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Cooling device, particularly for the drum bearings of laundry driers, comprising a frame (2,2a) supporting said drum (3) by means of bearings (4a,4b,4c,4d), characterized in that at least one air passage (8,9,13,17,18) is providcd at each of said bearings for air coming from the outside, said air being adapted to cool said bearings.

2. Cooling device, according to claim 1, characterized in that said drum (3) comprises at least one pivot (7,7a,12,16) associated to said bearing fixed to said frame by means of a support (6,10,15).

3. Cooling device, according to claim 1 or 2, characterized in that said bearing is a rolling bearing (4c).

4. Cooling device, according to one or more of the preceeding claims, characterized in that said bearing is a plain bearing (4a,4b,4d).

5. Cooling device, according to one or more of the preceeding claims, characterized in that said pivot (7a,12,16) is hollow for a passage of air from the outside to the inside of said drier, for cooling said bearing.

6. Cooling device, according to one or more of the preceeding claims, characterized in that said support (15) of said bearing is drilled for a passage of air from the outside to the inside of said drier, for cooling said bearing.

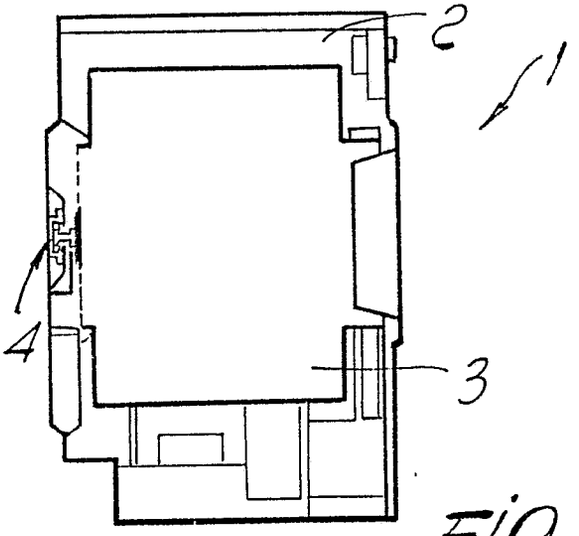


Fig.1

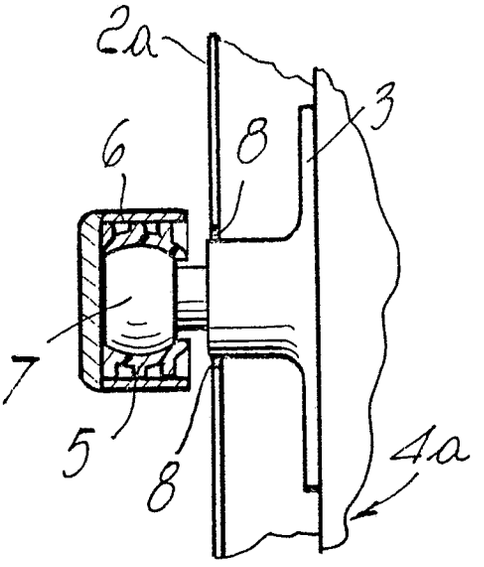


Fig.2

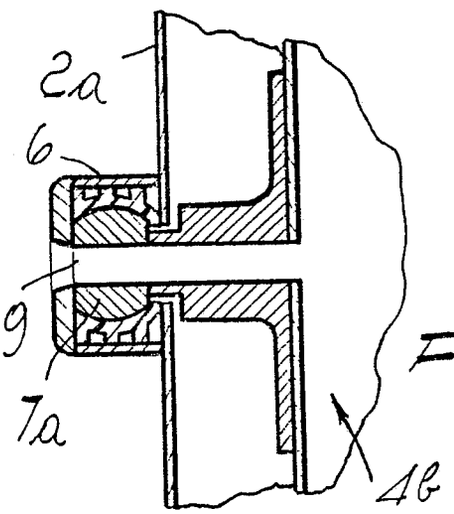


Fig.3

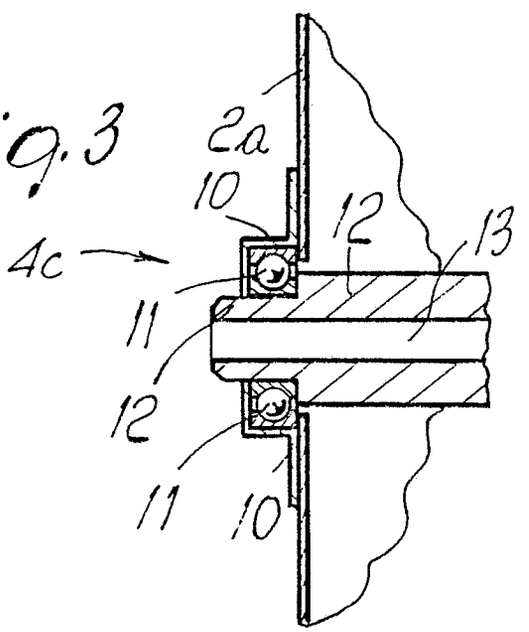


Fig.4

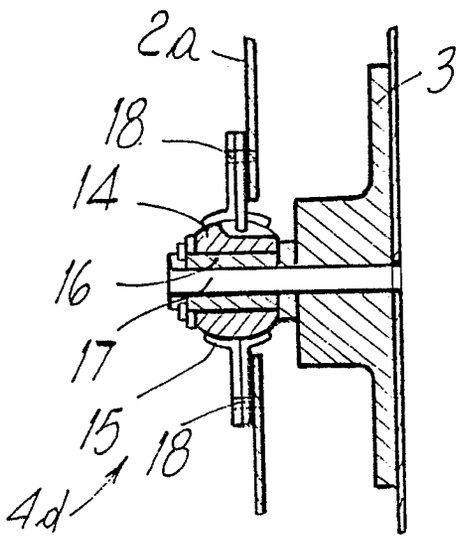


Fig.5

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EUROPEAN SEARCH REPORT

Application Number

EP 89 10 7294

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)
Y	US-A-3457656 (FOX) * the whole document *	1, 2, 4-6	D06F58/06
Y	PATENT ABSTRACTS OF JAPAN vol. 009, no. 242 (M-417)() 28 September 1985, & JP-A-60 095216 (MITSUBISHI JUKOGYO) 28 May 1985, * see the whole document *	1, 2, 4, 6	
Y	PATENT ABSTRACTS OF JAPAN vol. 010, no. 092 (M-468)() 09 April 1986, & JP-A-60 228362 (ASAHI KASEI KOGYO) 13 November 1985, * see the whole document *	5	
A	US-A-3060593 (FLORA ET AL.) * figures 3, 7 *	1	
A	LU-A-55645 (FISCHER & PAYKEL) * page 10; figure 7 *	1, 3	
A	US-A-2827276 (RACHETER) * figure 4 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	DE-U-8510620 (LICENTIA)		D06F
A	GB-A-1500032 (BURCO DEAN)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	03 AUGUST 1989	RAYBOULD B.D.J.

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
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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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