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54 **Drum for laundry washing machine.**

57 In conventional laundry washing machines of the top-loading type, the mounting elements of a rotatable drum housed in the washing tub are accessible only from the interior of the drum, rendering repair and maintenance operations rather cumbersome.

In a drum for a laundry washing machine of the above described type, provided with journals for its support in the tub, each journal being mounted on one side in a bearing housed in a corresponding seat of a first support releasably secured to the respective lateral wall of the tub with at least one sealing element being interposed therebetween, and connected, on the other side, to a second support secured to the respective lateral wall of said drum and cooperating with at least one further resilient sealing element concentric therewith, the invention overcomes the above noted drawbacks by providing that between said first and second supports there is disposed a further rigid support element of annular shape, provided with at least two separate cylindrical seats concentric with one another for mounting the resilient sealing elements thereon, said further support elements being further provided with respective cylindrical rim portions adapted to cooperate with said bearings for preventing axial displacement thereof.

1 Description

The present invention relates to a drum for a laundry washing machine, particularly of the top-loading type, 5 said drum being provided with lateral supports of an improved type permitting said drum to be mounted in and dismantled from the laundry washing machine in a particularly simple manner.

10 Known laundry washing machines of the top-loading type contain a drum mounted for rotation about a horizontal axis within a washing tub and provided with laterally projecting journals supported in the tub by means of bearings housed in respective seats formed in press-formed supports secured 15 to the lateral walls of the tub.

The journals themselves are connected to corresponding press-formed supports secured to the respective sidewalls of the drum, by a bolt-and-conus coupling system.

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This system permits the drum to be readily mounted in and dismantled from the tub by threading the journals into the respective supports of the drums and unscrewing them therefrom, respectively.

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Laundry washing machines of this type are additionally provided with annular spacers located within the respective supports of the tub for preventing axial displacements of the bearings during rotation of the drum.

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Located finally in the seats described above are annular seals adapted to ensure radial sealing against the respective journals of the drum for preventing leakage of the laundering liquid contained in the tub.

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Although the drums of this construction function in a satisfactory and reliable manner, they still present certain drawbacks.

1 In the first place, in order to preclude the possibility of  
the above described supports, journals and seals, which  
are in contact with the laundering liquid, being subjected  
to damage by the corrosive action of the liquid, these  
5 elements have to be made of suitable corrosion-resistant  
materials which are more expensive than non-corrosion-  
resistant materials. In addition, manufacture of the  
press-formed supports requires the execution of compl-  
ated and economically onerous processing steps. A further  
10 disadvantage is to be seen in the fact that mounting of  
the drum in the tub and dismounting it therefrom with the  
aid of the above described coupling system can only be  
carried out from the interior of the drum. As a result,  
the access to the above mounting elements of the drum for  
15 repair or replacement thereof is rendered rather difficult,  
so that this solution is not overly satisfactory in practical  
use.

It is therefore an object of the present invention to elim-  
20 inate the described drawbacks by providing a drum having an  
improved mounting system permitting the drum to be mounted  
in and dismounted from the tub of a laundry washing machine  
in a simple and efficient manner.

25 These and other objects are attained according to the invent-  
ion in a drum for a laundry washing machine, particularly of  
the top-loading type, provided with journals for its support  
in the washing tub, each said journal being mounted on one  
side in a bearing housed in a corresponding seat of a first  
30 support releasably secured to the respective lateral wall  
of said tub with at least one resilient sealing element  
being interposed therebetween, and connected, on the other  
side, to a second support secured to the respective lateral  
wall of said drum and cooperating with at least one further  
35 resilient sealing element concentric therewith.

According to the invention, a drum of the type defined above  
is characterized in that between said first and second sup-

ports there is disposed respectively a further rigid support element of annular shape, provided with at least two separate cylindrical seats concentric with one another for mounting said sealing elements thereon, said further support elements being further provided with respective cylindrical rim portions facing towards the respective bearings and adapted to cooperate with said bearings for preventing axial displacement thereof.

10 The characteristics and advantages of the invention will become more clearly evident from the following description of a preferred embodiment, given by way of a non-limiting example with reference to the accompanying drawing, the only figure of which shows a partial longitudinal sectional  
15 view of a drum according to the invention.

Shown in the drawing is a washing tub 1 of a conventional laundry washing machine of the top-loading type, containing a rotatable drum 2 provided with laterally projecting  
20 journals 3 and 4. Each journal 3, 4 has a cylindrical portion 5, 6 adapted to be received in a respective bearing 7, 8 supported in tub 1, and a conical portion 9, 10 for connection to a respective circular support 11, 12 secured to the respective lateral wall 13, 14 of drum 2.

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Bearings 7, 8 are carried in further circular supports 15, 16 formed with recessed portions 17 and 18, respectively, constituting seats for said bearings, and planar portions 19 and 20, respectively, adapted to the releasably secured  
30 to corresponding circular mounting plates 21, 22 secured to the respective lateral walls 23, 24 of the tub.

Interposed between respective associated circular supports 11, 15 and 12, 16 are further support elements 25, 26 of  
35 annular shape, formed of a suitable rigid material such as Hostaform or a similar thermoplastic material. Each support element is formed with two separate seats concentric with one another for mounting a pair of annular seals 27, 28

1 and 29, 30, respectively. The support elements are further formed with respective cylindrical rim portions 31, 32 dimensioned to fit into the seats of bearings 7, 8 and projecting thereinto into engagement with the respective 5 bearing.

Cylindrical rim portions 31 and 32 thus form a stop for the respective bearing 7 and 8, respectively, to prevent axial displacement thereof during rotation of the drum.

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Drum 2 is mounted in tub 1 by initially introducing journal 3 together with bearing 7 into support 15 and positioning support element 25 with its two seals 27 and 28, so that cylindrical rim portion 31 of the support element partially 15 projects into recessed portion 17 of support 15.

Subsequently support 15 is secured to the respective circular mounting plate 21 of tub 1 by means of a series of bolts 33, and journal 3 is secured to circular support 11 20 of drum 2 by means of a threaded bolt 34 penetrating corresponding holes in lateral wall 13 of drum 2 and support 11 and threaded into a threaded bore 35 of journal 3, so that a head 36 of bolt 34 is tightened onto support 11 with a sealing disk 37 of a suitable material interposed there- 25 between.

For preventing possible axial displacement of journal 3 relative to support 15, a resilient lockign ring 38 of conventional type is secured to the free end thereof.

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In this manner annular seals 27 and 28 are retained under axial compression against the outwards curled rim 39 of lateral tub wall 23, and under radial compression, respectively, against drum support 11, by the action of an annular 35 spring 40 seated in a corresponding groove of seal 28, so as to ensure hermetic sealign of the tub.

As a result, support element 25 is securels retained in

1 position, with its cylindrical rim portion 31 engaging bearing 7 so as to prevent axial displacement thereof.

On the other hand, journal 4 together with bearing 8 is introduced into circular support 16, and support element 26 together with seals 29 and 30 is positioned in the same manner as described above.

In this case, journal 4 is formed with an extension 41 for mounting a pulley 42 thereon. Pulley 42 cooperates with a V-belt driven by the motor of the machine, both of which are not shown in the drawing.

Circular support 16 is secured to mounting plate 22 of tub 1 by means of a series of bolts 43, while journal 4 and pulley 42 are secured to circular drum support 12 by means of a threaded bolt 44 engaging a threaded bore 45 of journal 4, so that a head 46 of the bolt is tightened down onto the outer face of pulley 42. In this manner a hub portion 47 of pulley 42 is biased into engagement with bearing 8, so as to prevent any axial displacement thereof.

For ensuring proper transmission of the driving force to drum 2, journal 4 is advantageously welded to support 12 of the drum.

As in the former case, mounting support 16, journal 4 and pulley 42 in the manner described ensures the correct positioning of support element 26 and the compression of seals 29 and 30 against a rim 48 of the tub and support 12 of the tub, respectively, with the aid of an annular retaining spring 49.

Consequently also on this side of the drum the mounting arrangement described ensured hermetic sealing of the tub.

The advantages achieved by the drum according to the invention are obvious from the above description.

1 In the first place, as journal 3 and 4 no longer come into  
contact with the laundering liquid as in the case of con-  
ventional laundry washing machines, they may be made of  
less expensive metallic materials which may be non-corrosion-  
5 resistant, with the resultant savings of more expensive  
corrosion-resistant materials.

In addition, all of the employed supports may be formed of  
sheet metal the processing of which is less complicated than  
10 that of the materials employed in present machines.

The employ of the above described support elements permits  
the seals for sealing the tub to be correctly positioned  
and results in a compact drum mounting structure, permitting  
15 the drum itself to be housed in a laundry washing machine  
having reduced dimensions. Finally, the described drum is  
readily accessible from the exterior of the drum for repair,  
maintenance or replacement of the above described drum  
mounting elements, due to the fact that the supports 15 and  
20 16 giving access to these mounting elements may be released  
from the respective lateral walls 23 and 24 of the tub  
from the exterior thereof, resulting in the described sol-  
ution being highly satisfactory in practical use.

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Drum for a Laundry Washing MachinePatent Claim

25 A drum for a laundry washing machine, particularly  
of the top-loading type, provided with journals for its  
support in the washing tub, each said journal being mounted  
on one side in a bearing housed in a corresponding seat of  
a first support releasably secured to the respective later-  
30 al wall of said tub with the interposition of at least one  
resilient sealing element, and connected, on the other side,  
to a second support secured to the respective lateral wall  
of said drum and cooperating with at least one further  
resilient sealing element concentric therewith, character-  
ized in that between said first and second supports (11, 15;  
35 12, 16) there is disposed respectively a further rigid  
support element (25, 26) of annular shape, provided with  
at least two separate cylindrical seats concentric with

lone another for mounting said sealing elements (27, 28; 29, 30), said further support elements (25, 26) being further provided with respective cylindrical rim portions (31, 32) facing towards said bearings (7, 8) and adapted to cooperate with said bearings (7, 8) for preventing axial displacement thereof.

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