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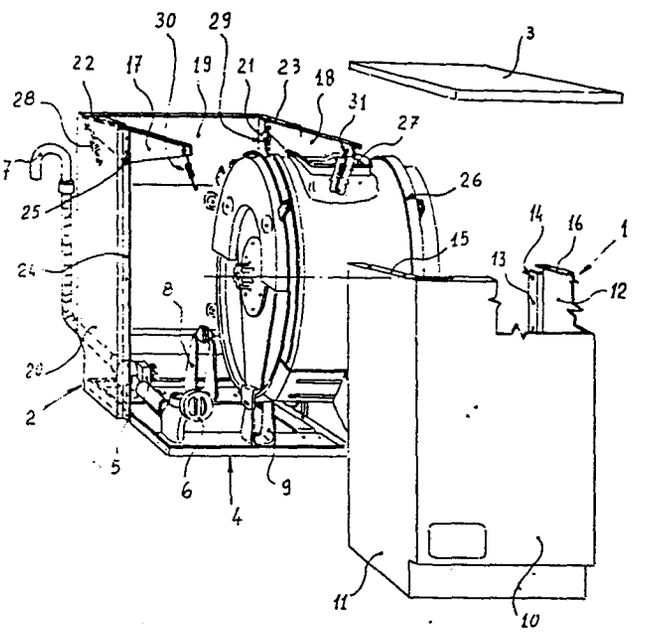
(71) Applicant: **Zanussi Elettrodomestici spa, Via Giardini Cattaneo, 3, I-33170 Pordenone-C.P. 147 (IT)**

(72) Inventor: **Cimetta, Silvano, Via Cacciatori 3, I-31100 Treviso (IT)**
Inventor: **Piai, Dino, Via Parilla, I-31015 Conegliano Treviso (IT)**
Inventor: **Regazzo, Olindo, Via Gasparinetti 5, I-31100 Treviso (IT)**

(74) Representative: **Patentanwälte Grünecker, Kinkeldey, Stockmair & Partner, Maximilianstrasse 58, D-8000 München 22 (DE)**

(54) A laundry washing machine having a composite carrying structure.

(57) In a laundry washing machine of the top-loading type having a housing mounted on a bottom structure and closed on top by a hinged cover, and a tub and drum assembly enclosed in said housing together with further operative components, the improvement of said housing being composed of at least two shell sections adapted to be releasably secured to one another and to said bottom structure, and at least two brackets releasably secured to upper portions of said shell sections so as to interconnect them, and provided with engagement means for suspending said tub and drum assembly from above, the lower portion of said tub and drum assembly being connected to vibration dempeners or the like mounted on said bottom structure. Each shell section is individually demountable for giving access to the operative components of the machine.



The present invention relates to a laundry washing machine particularly of the top-loading type having a composite support structure which is readily demountable for giving access to the various operative components of the machine.

At present laundry washing machines of the top loading type comprise a housing made of varnish-coated metal sheet and consisting of an envelope adapted to be secured to a bottom structure and bent to a configuration having three faces, namely, a pair of lateral faces, a front face and/or a rear face, one of said faces remaining open and being adapted to be subsequently closed by means of a suitable panel.

The tub and drum assembly of a machine of this type is provided with upper suspension springs adapted to be anchored at corresponding locations in the upper portion of the envelope, and with lower vibration dampeners, braking pads or the like to be connected to the bottom structure.

In another known embodiment, the tub and drum assembly is supported in a similar manner within a rigid carrying frame to which the envelope or housing of the machine is subsequently secured. The top of the housing is finally closed by a hinged cover giving access to the upwards facing loading opening of the drum, or tub, respectively.

Although laundry washing machines of the described construction operate in a satisfactory manner, they suffer from the drawback that the various operative components are installed in narrow spaces within the housing, so that access to these components is rather cumbersome even after demounting the panel and/or cover described above. This renders assembly, substitution, repair and maintenance operations on these components rather complicated.

It is therefore an object of the present invention to eliminate the above noted shortcomings of known laundry washing machines of the top loading type by providing a

housing therefor having a composite structure which is of simple construction and readily demountable.

As described in detail below, the housing is substantially composed of two shell sections, namely, a front shell section and a rear shell section, adapted to be joined to one another, and a bottom structure carrying various operative components of the machine and adapted to have the shell sections releasably secured thereto.

The tub and drum assembly of the machines, together with the associated components for rotating the drum, is suspended in the described housing structure by means of upper suspension springs engaging corresponding carrier brackets secured to upper portions of said shell sections, and by means of vibration dampeners, springs or the like previously secured to said bottom structure and subsequently connected to the lower portion of the tub and drum assembly.

In this manner the tub and drum assembly as well as any other operative components of the machine are readily accessible for repair, substitution or maintenance operations after demounting one of said shell sections, the other shell section remaining in place to meanwhile act as the carrying structure for all of the components of the machine.

According to the invention there is thus provided a laundry washing machine, particularly of the top loading type, comprising an outer housing adapted to be closed by means of an upper cover, and a bottom structure adapted to have said housing releasably secured thereto, said housing and said bottom structure being adapted to enclose and support the various operative components of the machine, together with the tub and drum assembly including associated components for rotating the drum.

A laundry washing machine of the type defined above is characterized in that said housing is composed of at least

a first and a second shell section adapted to be joined to one another in an interchangeable manner, and of at least two brackets each adapted to be releasably secured to upper portions of said first and second shell sections so as to connect them to one another, each said bracket being provided with engagement means for an upper suspension of said tub and drum assembly, the latter having its lower portion connected to vibration dampeners, springs or the like mounted on said bottom structure.

The characteristics and advantages of the invention will become more clearly evident from the following description, given by way of example with reference to the accompanying drawing, the only figure of which shows a partially sectioned, exploded perspective view of a laundry washing machine according to the invention.

With reference to the drawing, there is shown a laundry washing machine of the top-loading type, having an outer housing substantially composed of two individual shell sections 1 and 2 adapted to be joined to one another in an interchangeable manner. The top of the housing is closed by a cover 3, and shell sections 1, 2 are adapted to be releasably secured to a bottom structure 4.

Bottom structure 4 is composed for instance of suitably shaped and interconnected sheet metal panels and provided with suitably located perforations for mounting various operative components of the machine thereon. Shown particularly in the drawing are a discharge pump 5 connected to a fluff filter 6 and a discharge tube 7, and a number of vibration dampeners 8 and 9 to be connected to the lower portion of a tub and drum assembly 26 of the machine.

Each of the shell sections shown is of an open box-shaped configuration formed by punching and bending of a single sheet metal blank.

In particular, shell section 1 is shaped to form a planar front wall 10 constituting the front face of the housing,

and a pair of planar portions 11 and 12 extending parallel to one another at right angles to front wall 10 so as to form respective portions of the lateral housing walls.

Each lateral wall portion 11, 12 terminates in a vertical planar rim portion 13 (only one of which is shown in the drawing) provided with a series of perforations 14.

In addition, each lateral wall portion 11, 12 is formed with a horizontal upper rim portion 15 and 16, respectively, provided with a number of perforations for releasably securing a respective bracket 17, 18 formed as a profiled sheet metal element of L-shaped cross-sectional configuration. Each bracket 17, 18 is provided with engagement means for respective upper suspensions springs of the tub and drum assembly 26.

In the same manner as descriebd above, shell section 2 is likewise formed with a planar center portion 19 constituting the rear face of the housing, and a pair of lateral planar portions 20 and 21 extending parallel to one another at right angles to center portion 19 so as to form respective lateral wall portions of the housing. Brackets 17 and 18 are disposed substantially parallel to lateral wall portions 11, 20 and 12, 21, respectively, of the housing.

Lateral wall portions 20 and 21 are likewise formed with horizontally extending upper rim portions 22 and 23, respectively, and with vertically extending planar rim portions 24 provided with perforations 25, only one of the latter being shown in the drawing. The vertically extending planar rim portions of the two shell sections 1 and 2 are aligned with one another so as to permit the two shell sections to be releasably interconnected. The described laundry washing machine is assembled in the following manner:

The above described operative components are mounted on bottom structure 4, possibly together with further oper-

ative components of the machine. Brackets 17 and 18 are releasably secured inside one of the shell sections, for instance shell section 2, whereupon the respective shell section is secured to bottom structure 4.

Subsequently the tub and drum assembly 26, including a tub having an upwards facing opening 27 and enclosing a rotatable drum (not shown), together with actuating means (not shown) for rotating the drum, is introduced into shell section 2 and suspended from brackets 17 and 18 by conventional suspension springs 28, 29, 30, 31 engaging corresponding engagement means formed on the brackets and the upper portion of the tub and drum assembly.

Finally the remaining shell section 1 is secured to the described structure, and cover 3 is mounted on the upper portion of the thus formed housing.

A first important advantage of the laundry washing machine according to the invention results from the fact that its composite structure is adapted to be readily and quickly assembled by the use of largely pre-assembled components.

In addition, this structure facilitates access to the various operative components of the machine for repair, substitution and maintenance operations after demounting one of the described shell sections. In this case the remaining shell section, the brackets and the bottom structure act as the carrying structure for all of the operative components of the machine.

The possibility of demounting one of the shell sections, for instance the front section, from the carrying structure of the machine also permits the employ of shell sections of different appearance, so that different models of the laundry washing machine may be assembled without having to use a different housing for each model, as is presently the case.

A further advantage of this machine results from the fact that the shell sections do not require any welded connections for securing them to one another or to the bottom structure or for securing the brackets to the shell sections, such connections being advantageously accomplished by the use of srews, bolts or the like.

This permits the employ of advanced technologies for the surface treatment of the sheet metal components, and/or the employ of pre-coated sheet metal blanks which do not require any subsequetn surface treatment, resulting in considerable technical and economical advantages.

GRÜNECKER, KINKELDEY, STOCKMAIR & PARTNER

PATENTANWÄLTE
EUROPEAN PATENT ATTORNEYS

A GRÜNECKER DIPL. ING.
DR H KINKELDEY DIPL. ING.
DR W. STOCKMAIR DIPL. ING. AE E. U. ALTE...
DR K SCHUMANN, DIPL. PHYS.
P H JAKOB DIPL. ING.
DR G BEZOLD DIPL. CHEM.
W MEISTER, DIPL. ING.
H HILGERS DIPL. ING.
DR H MEYER-PLATH, DIPL. ING.
DR M BOTT-BODENHAUSEN, DIPL. PHYS.
DR U KINKELDEY, DIPL. BIOL.

* LICENCIÉ EN DROIT DE L'UNIV. DE GENÈVE

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MAXIMILIANSTRASSE 58

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A Laundry Washing Machine Having a Composite Carrying Structure

Patent Claims

1. A laundry washing machine, particularly of the top-loading type, comprising an outer housing adapted to be closed by an upper cover, and a bottom structure adapted to be releasably secured to said housing, said housing and said bottom structure being adapted to enclose and support the various operative components of the washing machine, including a tub and drum assembly with the associated components for rotating the drum, characterized in that said housing is composed of at least a first and a second shell section (1, 2) adapted to be connected to one another in an interchangeable manner, and at least two brackets (17, 18) adapted to be releasably secured to upper portions of said first and second shell

sections (1, 2) so as to connect them to one another, said brackets being provided with engagement means for suspending said tub and drum assembly (26) from above, the latter having its lower portion connected to vibration dampeners (8, 9), springs or the like mounted on said bottom structure (4).

2. A laundry washing machine according to claim 1, characterized in that said brackets (17, 18) are disposed substantially parallel to the sidewalls (11, 20; 12, 21) of said housing and are each formed as a metal element of L-shaped cross-sectional configuration.

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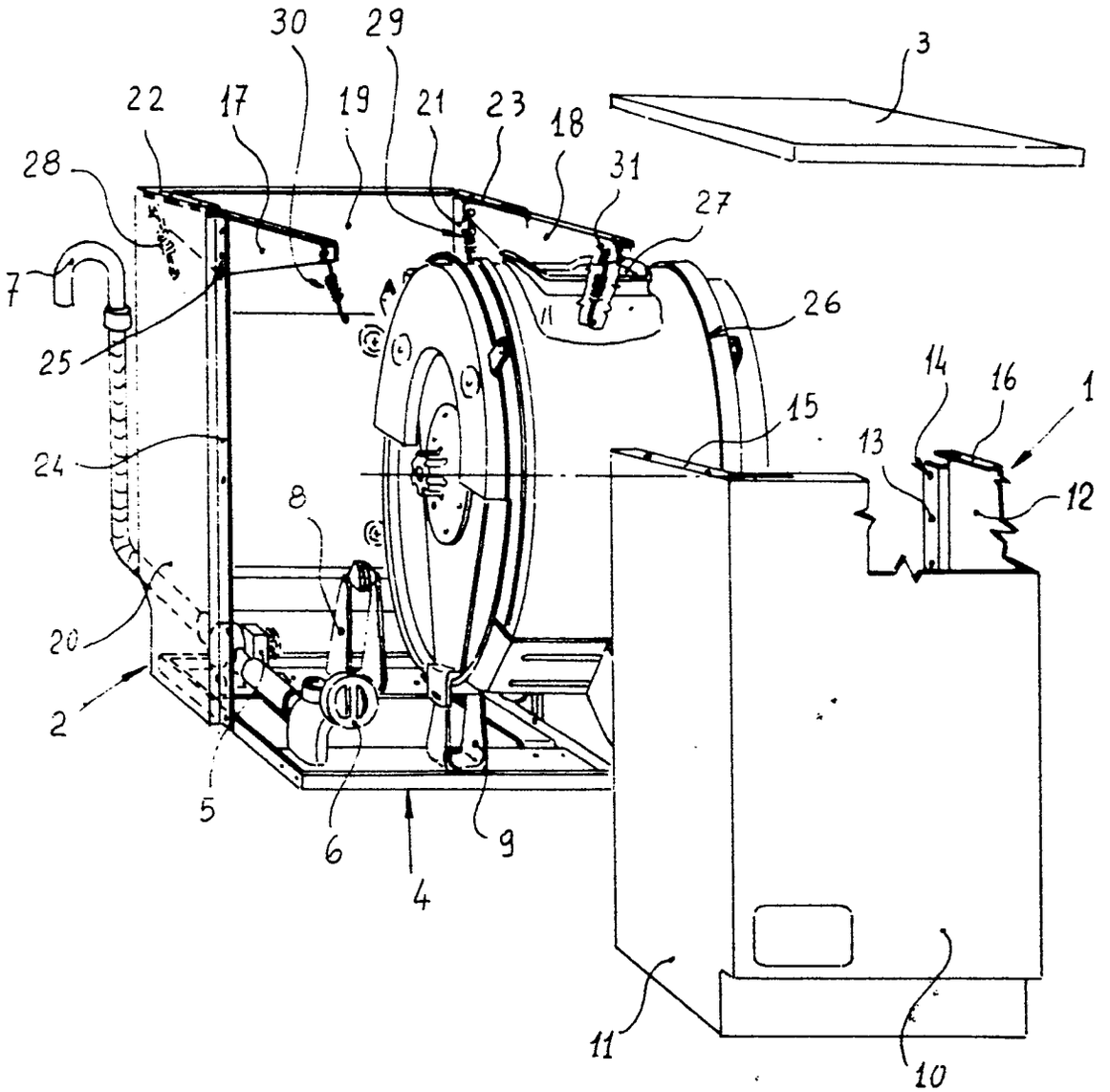
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