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 [33] **Italy**
 [31] **12701A/68**

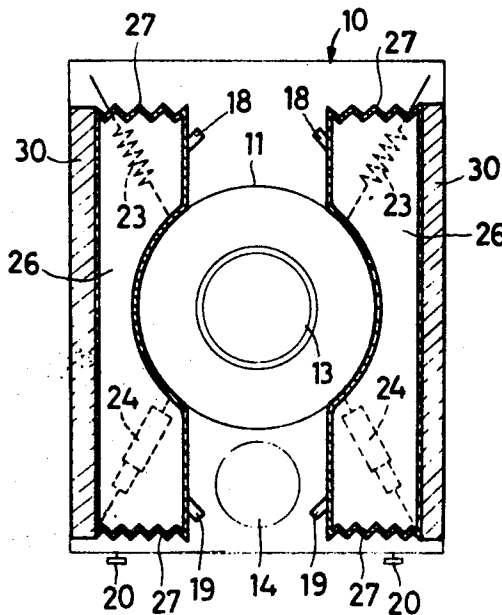
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[54] **MACHINE HAVING A ROTARY MOTION, ESPECIALLY WASHING MACHINE, FURNISHED WITH BALLAST**
8 Claims, 12 Drawing Figs.

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 [51] Int. Cl. D06f 37/22
 [50] Field of Search 68/16, 23.1, 23.2, 23.5, 24, 13; 74/573; 248/20

ABSTRACT: A machine having a unidirectional or reciprocating rotary motion, such as a washing machine, wherein a container is provided which can be charged with a ballast material, preferably water, in order to dampen the oscillations and vibrations transmitted to the whole machine during its operation, the ballast material being dischargeable to facilitate the transport and the handling of the machine.



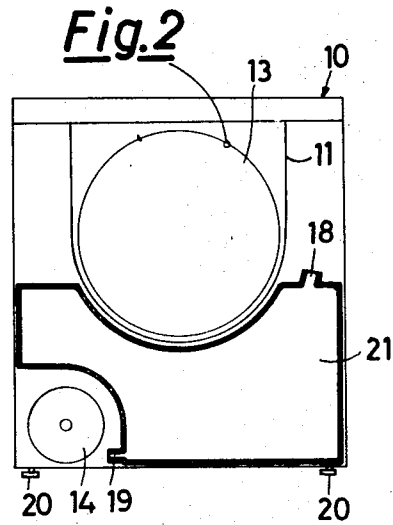
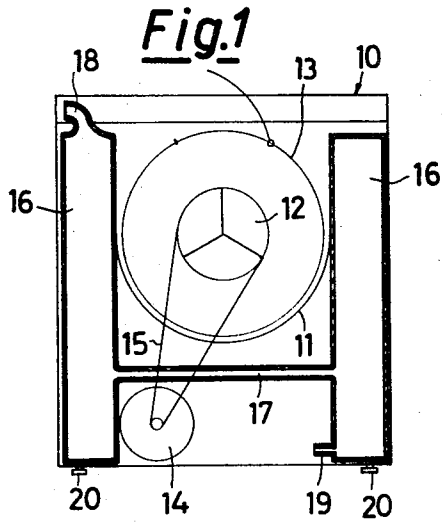


Fig. 3

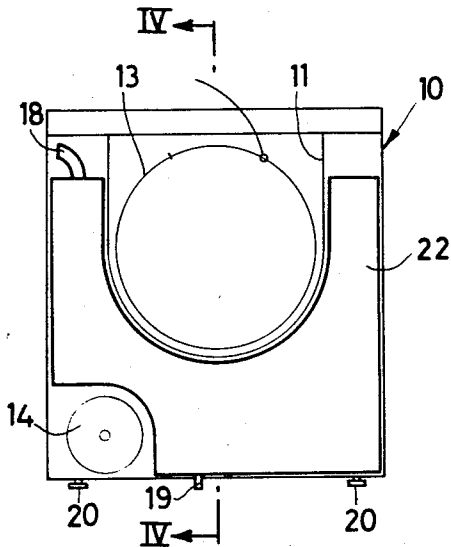
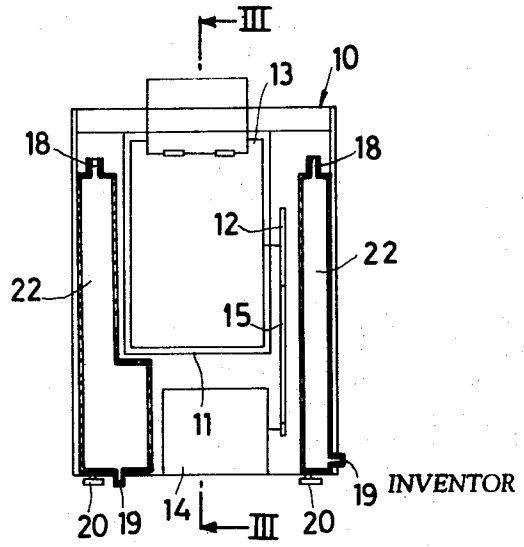


Fig. 4



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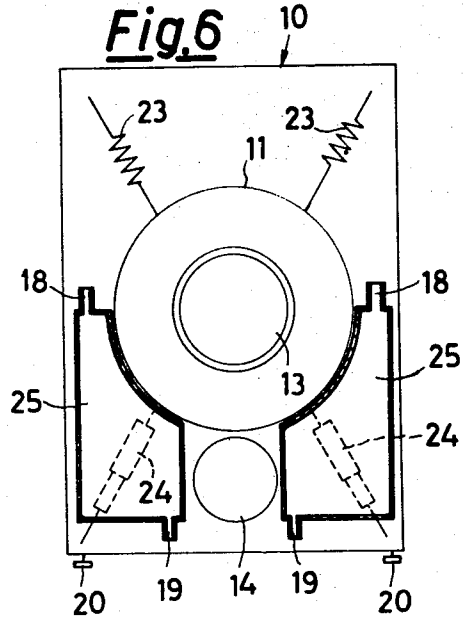
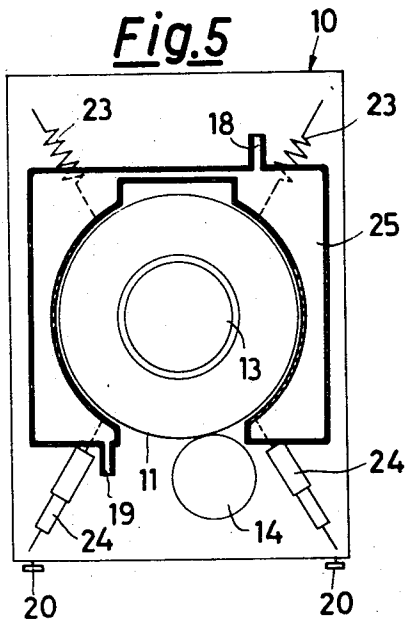


Fig. 7

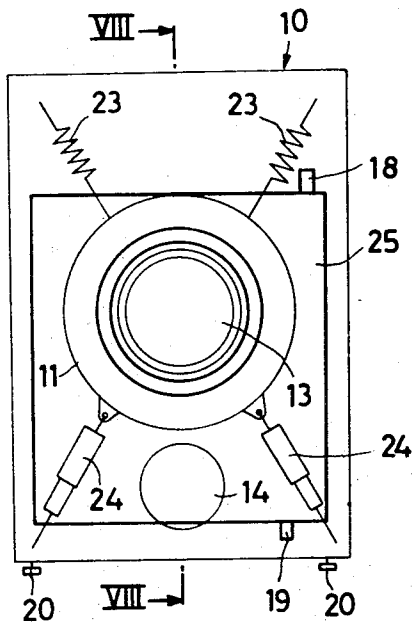
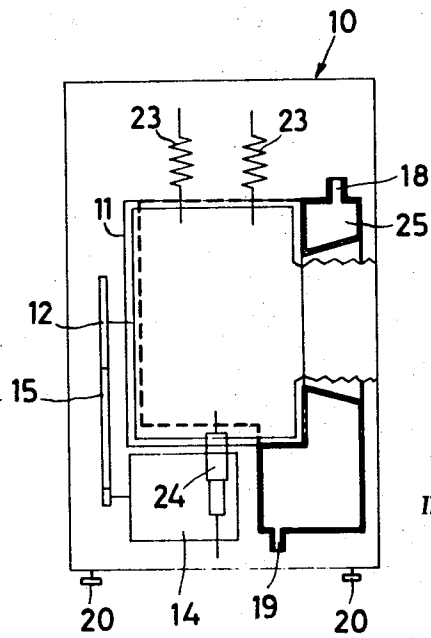
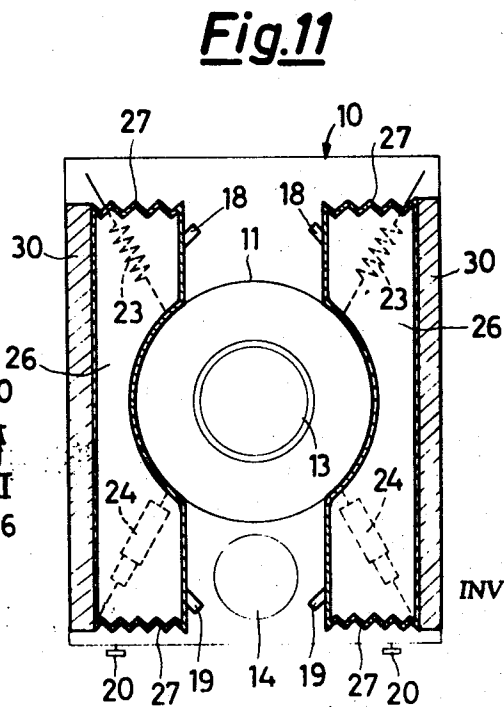
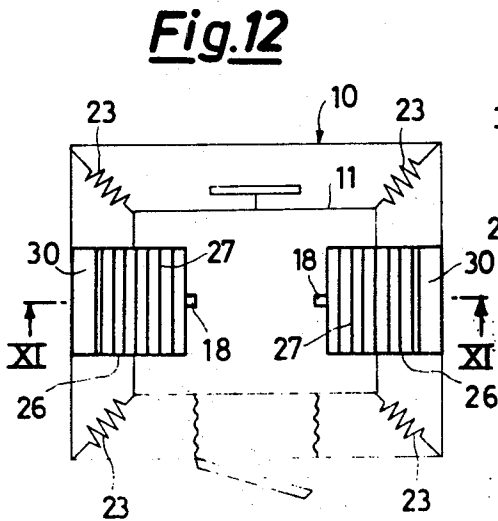
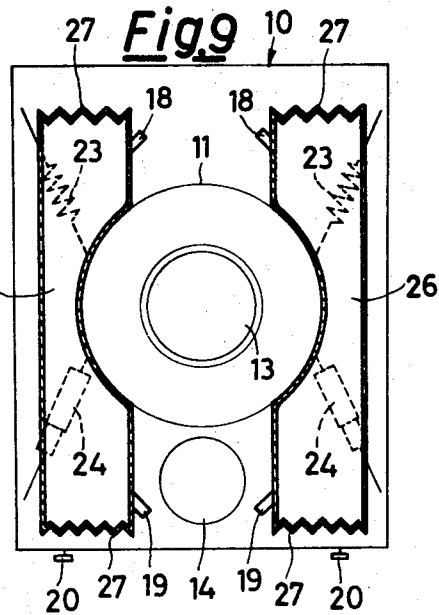
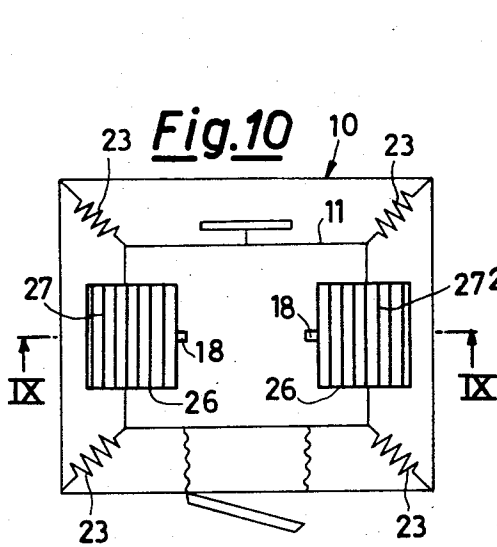


Fig. 8



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MACHINE HAVING A ROTARY MOTION, ESPECIALLY WASHING MACHINE, FURNISHED WITH BALLAST

This invention relates to machines having a unidirectional or reciprocating rotary motion, such as for example washing machines, furnished with ballast in order to limit the oscillations and vibrations transmitted by the moving parts to the whole machine during its operation and in order to facilitate at the same time its transport. In order to limit such oscillations and vibrations the technique is known of increasing the weight of the machine by fixing blocks of ballast to its parts, such as for example cement or cast iron.

The drawbacks encountered in such applications are obvious and can be summarized as the considerable increase in weight of the machine which causes large difficulties in the task of the workers during the operations of packing, transport and installation of the machine itself.

What is required in fact is to provide it with means able to limit the oscillations and vibrations transmitted by the moving parts, means which however must not provoke an excessive increase in weight of the machine itself.

The object of this invention is that of obviating the drawbacks mentioned above by providing a means able to limit the oscillations and vibrations of the machines or of their members during their operation by increasing their weight, the said weight being easily eliminated for any eventuality.

This problem is resolved according to the invention by fixing to the machine or forming in its walls at least one container which can be filled with ballast material in order to dampen its oscillations and vibrations and at the same time to facilitate its transport.

For example in washing machines with fixed tanks such a container can be fixed to the machine in any position, while in washing machines with oscillating tanks such a container must be arranged so as to act only on the oscillating tank itself. Instead of a single container a higher number can be installed without anything changing, at least in the concept.

The advantages offered by the invention derive principally from the fact that the container or containers can be filled (and naturally emptied) with ballast material, water for preference because it is more easily obtainable, more easily introduced and more easily discharged than other ballast materials.

During the operation of the machine the container or containers are filled with such a ballast material so that the oscillations of the tank are limited in the case of washing machines with oscillating tanks, or of the entire machine in the case of washing machines with fixed tanks.

On the other hand for transporting it is sufficient simply to empty the container or containers so rendering the machine light and hence easily transportable.

On arrival at the place of successive utilization the containers are once again filled with ballast material.

Some washing machines with fixed and oscillating tanks furnished with means according to the invention will now be described by way of example in order to better illustrate the characteristics of this invention.

The description will be made with reference to the accompanying drawings in which:

FIG. 1 is a diagrammatic sectional view of a washing machine with a fixed tank furnished with two containers according to the invention;

FIG. 2 is a diagrammatic sectional view of a washing machine with a fixed tank furnished with one container according to the invention;

FIG. 3 is a sectional diagrammatic view through the line III-III of FIG. 4 of a washing machine having a fixed tank furnished with two other types of container;

FIG. 4 is a diagrammatic sectional view through the line IV-IV of FIG. 3;

FIG. 5 is a diagrammatic sectional view of a washing machine with an oscillating tank furnished with one tank according to the invention;

FIG. 6 is a diagrammatic sectional view of a washing machine with an oscillating tank furnished with two containers according to the invention;

FIG. 7 is a diagrammatic view in elevation of a washing machine with an oscillating tank furnished with another type of container according to the invention;

FIG. 8 is a diagrammatic sectional view through the line VIII-VIII of FIG. 7;

FIG. 9 is a sectional diagrammatic view through the line X-X of FIG. 10 of a washing machine with an oscillating tank furnished with two elastically deformable containers;

FIG. 10 is a plan view of FIG. 9;

FIGS. 11-12 are two variations of FIGS. 9-10.

FIG. 1 shows a washing machine 10 whose tank 11 is rigidly fixed to the housing of the machine.

A pulley 12 is keyed on to the shaft of the basket 13 which receives its motion from the motor 14 by means of a belt drive 15.

Between the tank 11 and the two lateral opposite walls of the washing machine are arranged two containers 16 connected by means of a manifold 17, said containers being provided with a union 18 for the emission of ballast material and a discharge plug 19. In addition the washing machine rests on feet 20 which absorb the residual vibrations.

FIG. 2 shows a washing machine 20 with a fixed tank as in FIG. 1 where a container 21 shaped so that it hugs the lower part of the tank 11 is arranged between the bottom surface of the housing and tank itself.

FIGS. 3 and 4 show a washing machine 10 with a fixed tank as in FIGS. 1 and 2 but provided with two containers 22 arranged between the tank 11 and the two opposite lateral walls of the washing machine, and shaped so as to hug the lower and lateral parts of the tank 11.

FIG. 5 shows a washing machine 10 whose oscillating tank 11 is suspended from the housing by means of upper springs 23 and shock absorbers 24.

A container 25 formed so that it hugs substantially the whole of the tank is arranged between the tank 11 and the two lateral opposite walls of the washing machine, and rigidly fixed to the tank itself.

FIGS. 6-7-8 are other examples of fixing one or more containers rigidly to the oscillating tank of the machines which however do not change the concept of the invention and are not intended to represent any limitation on it.

FIGS. 9-10-11-12 illustrate a washing machine 10 also with two elastically deformable containers 26 fixed rigidly to the oscillating tank 11 and placed between the tank itself and the opposite walls of the housing. By introducing ballast material into the containers 26, a certain weight acts on the tank so limiting oscillations.

The containers are of a material such that, on the introduction of ballast material (preferably water), they do not deform or at least they deform very little. However on the introduction of light and expansible fluid such as air at high pressure, the containers deform and are pushed against the opposite lateral walls of the housing, if necessary with the interpositioning of distance pieces or spacers 30 (FIGS. 11-12). In this situation any movement of the tank is impeded.

In this way the machine can be easily transported without any risk of damaging the oscillating tank. It is evident that in such conditions the weight of the machine is very limited.

The container can be provided with heating means for using the ballast water as hot water for the washing processes. In this case the container is connected to the feed pipe and to the wash tank.

I claim:

1. A washing machine comprising a housing, a wash tank mounted within said housing for oscillatory movement, and container means for selectively dampening oscillations and vibrations of said washing machine during the normal operation thereof and retarding movement of said tank relative to said housing during transport.

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2. The washing machine of claim 1 wherein said container means has means for selectively filling the same with and removing therefrom a ballast material for effecting said dampening of oscillations and vibrations and a lightweight medium under pressure for effecting said tank retarding movement.

3. The washing machine of claim 2 wherein said container means is in the form of a deformable container fixed relative to said housing and normally closely spaced from said tank, said container when filled with ballast material being spaced from said tank and when filled with a medium under pressure being in contact with said tank.

4. The washing machine of claim 2 wherein said lightweight medium is compressed air.

5. A machine as claimed in claim 2 in which said ballast material is water.

6. A washing machine as claimed in claim 2 in which means are provided for heating water stored as ballast material in said container so as to be utilizable in wash processes of said washing machine, said wash tank having coupled thereto a

water feedpipe, and said container being in communication with said water feedpipe and said wash tank for supplying wash water from said container to said wash tank.

7. The washing machine of claim 1 together with removable spacers disposed between said container means and said housing remote from said tank when said container means is operative to retard movement of said tank.

8. A washing machine comprising a housing, a wash tank mounted within said housing for oscillatory movement, and container means for storing water as ballast for dampening oscillations and vibrations of said washing machine during the normal operation thereof, and means for heating water stored as ballast material in said container so as to be utilizable in wash processes of said washing machine, said wash tank having coupled thereto a water feedpipe, and said container being in communication with said water feedpipe and said wash tank for supplying wash water from said container to said wash tank.

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