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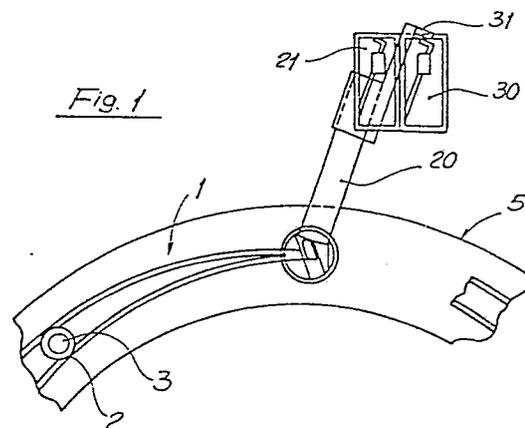
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54 **Driving assembly for opening the port-hole door of washing machines and the like.**

57 The present invention relates to a driving assembly or unit for opening the port-hole door of washing machines and the like, comprising a rocker lever (1) housed inside the port-hole door frame of the washing machine and adapted to swing about a middle portion thereof: the rocker lever, at one end thereof, being provided with a hook member removably engageable with a recess (11) provided on the washing machine cabinet and operatively cooperating, at the other end thereof, with a driving small block (20) driven by push buttons (21) arranged at the top of the washing machine cabinet.



**Description****DRIVING ASSEMBLY FOR OPENING THE PORT-HOLE DOOR OF WASGHING MACHINES AND THE LIKE****BACKGROUND OF THE INVENTION**

The present invention relates to a driving assembly or unit for opening the port-hole door of washing machines and the like.

As is known, a main problem in making washing machines is that of properly articulating the front port-hole door of the machine so as to allow for said port-hole door to be opened either rightward or leftward, depending on the requirements.

This problem, mainly in washing machines having the door opening push-button arranged at the top of the machine cabinet, can be hardly solved, since it is necessary to completely replace all of the door opening mechanisms which, in commercially available embodiments, are arranged inside the machine cabinet and engage with a hook or the like member associated with the port-hole.

The solution of this problem is moreover compounded by the fact that, usually, it is necessary to provide safety devices adapted to prevent the door from opening as the washing machine is in operation.

Known solutions to that problem, on the other hand, have a comparatively high cost, since they use two different driving assemblies for right ward or leftward opening purposes.

**SUMMARY OF THE INVENTION**

Accordingly, the task of the present invention is to overcome the above mentioned drawbacks, by providing a driving assembly or unit for opening the port-hole door of washing machines and the like, which affords the possibility of modifying, in the washing machine making shop, the port-hole door opening direction, without the need of carrying out complex structural modifications.

Within the scope of the above mentioned task, a main object of the present invention is to provide such a driving assembly the component elements of which can be efficiently standardized so as to afford the possibility of changing the washing machine port-hole door opening direction by simply modifying the installation of said component elements.

Another object of the present invention is to provide such a driving assembly which is very safe and reliable in operation and can be assembled in a quick way at a comparatively low cost.

According to one aspect of the present invention, the above mentioned task and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a driving assembly for opening the port-hole door of a washing machine and the like, characterized in that said driving assembly comprises a rocker lever housed inside the frame of the port-hole of said washing machine and adapted to swing about a middle portion

thereof, said rocker level being provided, at one end thereof, with a hook member removably engageable in a recess formed on said washing machine cabinet and, at the other end thereof, cooperating with a driving small block adapted to be driven by push buttons arranged on the top of said washing machine cabinet.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed description of a preferred though not exclusive embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic front partially cross-section view illustrating the rocker lever included in the driving assembly according to the invention, which rocker lever is coupled with a driving small block;

Figure 2 is a front partially cross-sectioned view of the rocker lever, with a different mutual arrangement of the driving push buttons;

Figure 3 is a top plan view of the subject rocker lever;

Figure 4 is a cross-sectional view illustrating the arrangement of the driving small block, the port-hole door being opened;

Figure 5 illustrates the mentioned driving small block with the port-hole door in a closure position;

Figure 6 shows a hook member during the opening operation;

Figure 7 is a cross-sectional view showing the hook member with the port-hole door in a closed position; and

Figure 8 is a schematic view showing the frame which defines the coupling recess of the hook member and the frame housing the door hinge.

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

With reference to the Figures of the accompanying drawings, the driving assembly or unit for opening the port-hole door of washing machines and the like, according to the invention, comprises a rocker lever, indicated overall at the reference number 1, which, at the middle portion thereof, is provided with a bush 2 for pivoting said lever on a corresponding pin 3 arranged inside the region defined by the frame 4 of the port-hole 5.

More specifically, the frame 4 is peripherally applied to a glass holder ring member 6 which, at its middle portion, supports a glass plate, indicated overall at the reference number 7, of conventional configuration.

A main feature of the present invention is that the mentioned lever substantially extends within a circumference sector in such a way that the end portions of said lever are arranged at 90° with respect to the circumferential extension of the port-hole.

At one end thereof, the rocker lever 1 is provided with a hook member 10 which is removably engaged in a recess 11, defined by a frame or template 12 the shape of which substantially corresponds to that of the template 14 for the port-hole hinge.

At the other end thereof, the rocker lever 11 is provided with a lug 15 which projects, through a shaped slot, from the port-hole and penetrates inside the washing machine cabinet 13 as clearly shown in Figure 5, at the top portion of the port-hole.

With the mentioned lug 15 which, at its free end, is provided with a slanted bevel 16, cooperates a driving small block 20, displaceable in a vertical plane and which, at its top end, cooperates with a driving push-button 21 for opening the port-hole door; this push-button is provided, in its inside, with a sliding slanted surface 22 adapted for engaging with the top end of said small block 20 as the port-hole door is in a closed condition.

Adjoining the port-hole door opening push button 21 there is provided an on/off switching push button, indicated at 30, which is operatively coupled to the push-button 21: in other words, the small block 22 is provided with a lug 31 engaging the push-button 30 so as to prevent the small block from sliding, even if the push button 21 is actuated, if the push-button 30 has not been previously actuated in order to electrically disenergize the washing machine.

Accordingly, the port-hole door can be opened exclusively upon disengaging the electrical contacts and, hence, after having actuated the push-button 30 it will be possible to actuate the push-button 21 in order to cause the small block 20 to downwardly displace because of the coupling of the sliding slanted surface 22 with the top end of said small block 20.

In this connection it should be apparent that the small block 20 engages, at its bottom end, with the lug 15 so as to cause the rocker lever 1 to swing about its middle portion with the consequent rotation of the hook member 10 which, in this condition, can disengage from the template 12 coupling recess 11.

Thus, owing to the disclosed arrangement, the possibility is afforded of mounting a rocker lever assembled in the reverse position, that is in the right sector, instead of the left section, as is shown in the drawings, in order to afford the possibility of opening the port-hole door in the other direction.

More specifically, with the arrangement shown in the drawings, the port-hole door has its hinge arranged at a right position and the hook member at a left position and, accordingly, the door will be opened by a clockwise rotation.

By mounting the rocker lever on the other sector, it will be possible to mount the hinge at a left position and the hook member at a right position with the consequent possibility of opening the port-hole door in the anti-clockwise direction.

From the above disclosure it should be apparent that the invention fully achieves the intended task and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

### Claims

1. A driving assembly for opening the port-hole door of a washing machine and the like, characterized in that said driving assembly comprises a rocker lever housed inside the frame of the port-hole of said washing machines and adapted to swing about a middle portion thereof, said rocker lever being provided, at one end thereof, with a hook member removably engageable in a recess formed on said washing machine cabinet and, at the other end thereof, cooperating with a driving small block adapted to be driven by push-buttons arranged on the top of said washing machine cabinet.

2. A driving assembly, according to Claim 1, characterized in that said rocker lever has a curved shape.

3. A driving assembly according to the preceding Claims, characterized in that said rocker lever substantially extends for 1/4 of circumference.

4. A driving assembly according to one or more of the preceding Claims, characterized in that said rocker lever is housed in the region defined by the port-hole frame applied to the glass holder ring.

5. A driving assembly according to one or more of the preceding Claims, characterized in that said rocker lever, at the end thereof cooperating with said driving block, is provided with a lug adapted to be introduced inside said washing machine cabinet and having, at its free end, a lead-in bevel.

6. A driving assembly according to one or more of the preceding Claims, characterized in that said driving block cooperates, at its top end, with a sliding slanted surface formed on an opening push-button arranged at the top of said washing machine cabinet.

7. A driving assembly according to one or more of the preceding Claims, characterized in that said driving block is provided with a lug cooperating with an electrical on/off switching push-button adapted to prevent said opening push-button from being actuated.

8. A driving assembly according to one or more of the preceding Claims, characterized in that said lug is arranged, with respect to said port-hole, at the top middle zone at said push-buttons.

9. A driving assembly according to one or more of the preceding Claims, characterized in that said opening push-button is adapted to

cause said driving block to translate.

10. A driving assembly according to one or more of the preceding Claims, characterized in that said engaging or coupling recess is formed on a hook member template affixed to said washing machine cabinet, there being moreover provided a further template for the hinge of said port-hole door having a symmetrical shape

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with respect to said hook member template.

11. A driving assembly according to one or more of the preceding Claims, characterized in that said rocker lever can be differently arranged in the region defined by said port-hole frame in order to allow for said door to be opened either rightward or leftward.

