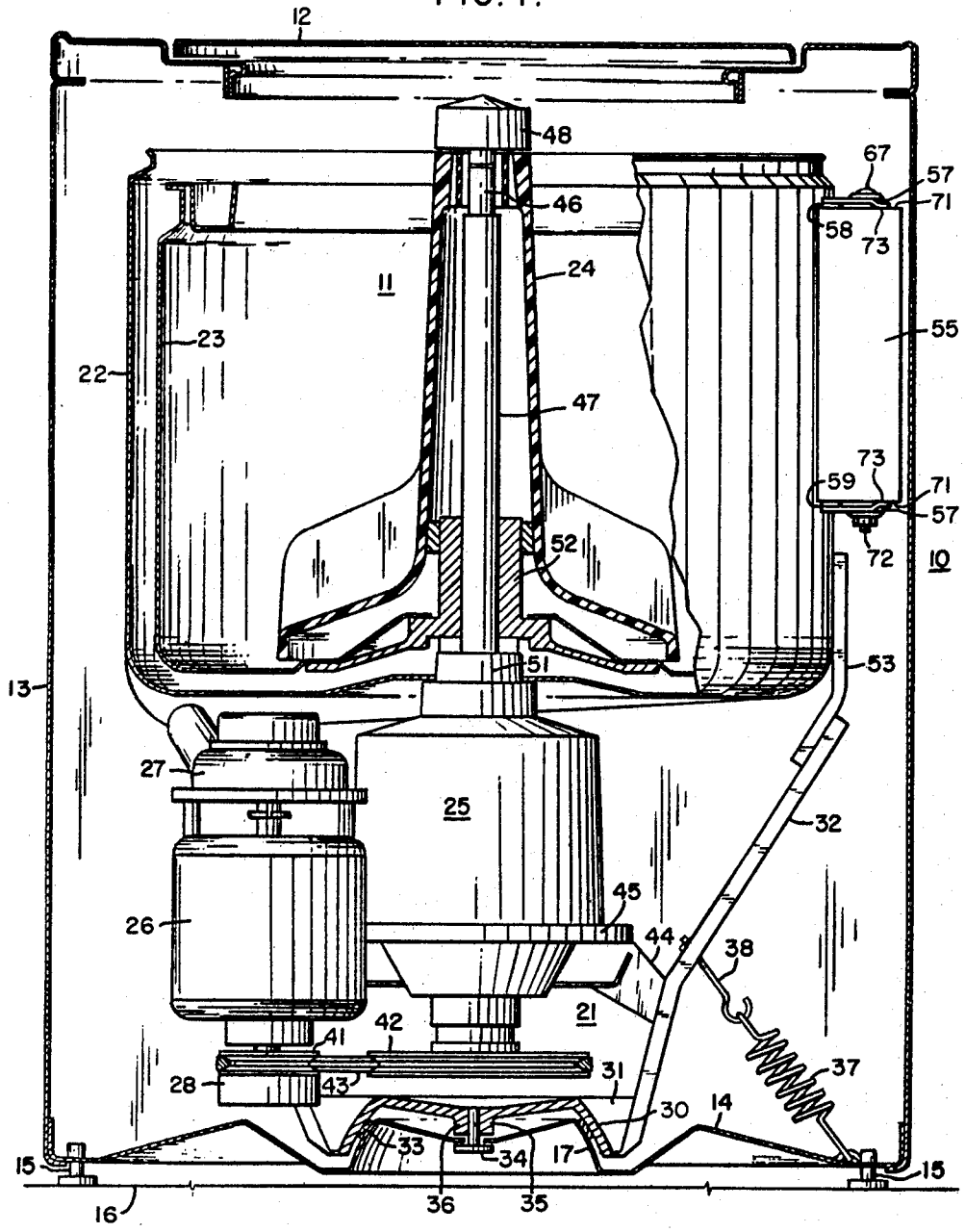
Nov. 4, 1969 W. A. WASEMANN 3,475,928

CLOTHES WASHING MACHINE

Filed Jan. 22, 1968 2 Sheets-Sheet 1

FIG. 1.



WITNESSES

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CLOTHES WASHING MACHINE

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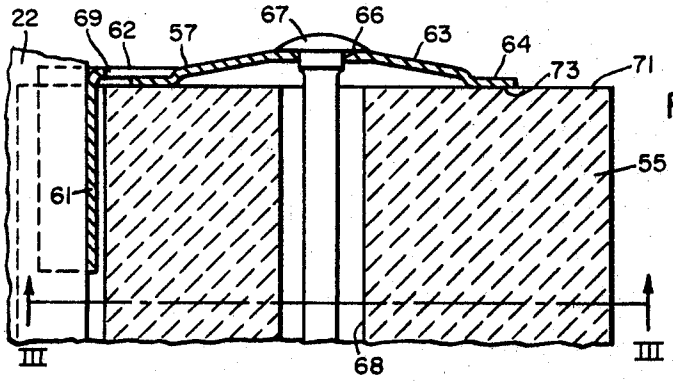


FIG. 2.

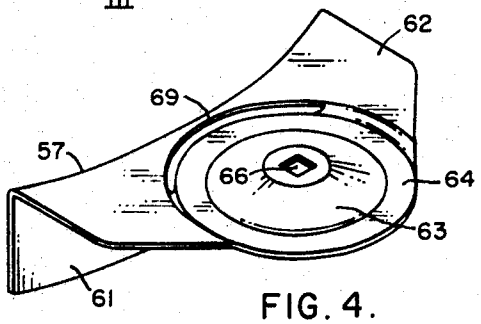


FIG. 4.

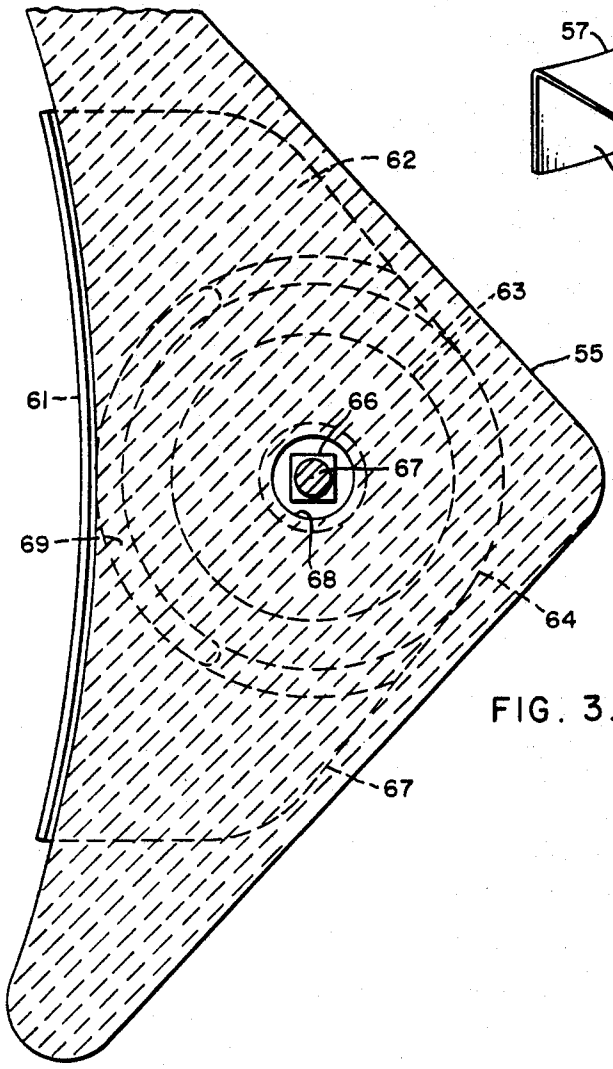


FIG. 3.

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3,475,928

CLOTHES WASHING MACHINE

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U.S. Cl. 68—23.2 5 Claims

ABSTRACT OF THE DISCLOSURE

An inertia weight and mounting structure for securing the weight to the non-rotating tub of an upright type washing machine. The weight is a preformed concrete brick or block having a longitudinal bore therethrough for receiving a fastening bolt extending through a pair of brackets attached to the outer tub, at points thereon such that the portions contacting the ends of the brick are initially spaced a greater distance than the maximum tolerance dimensions of any one brick. The brackets are so constructed as to deform to provide intimate contact and uniform pressure between the brick ends and the contacting surfaces of the brackets when the bolt is tightened the required amount.

BACKGROUND OF THE INVENTION

This invention relates, in general, to top loading type washing machines and, more particularly, to an inertia weight and structure for mounting the weight to the non-rotating tub of the machine.

The type of inertia weight herein contemplated comprises a preformed brick or concrete block which is to be utilized in lieu of the commonly employed concrete weight which is fabricated by pouring concrete into a mold after the latter has been attached to the tub. By using the preformed weight it is possible to eliminate expensive assembly delays inherent in the aforementioned procedure.

It is well known that brick and concrete structures are high in compressive strength and very low in tensile and bending strength. Consequently, any apparatus for mounting of the brick or block must provide uniform pressures between mating surfaces. Due to the vibrations and high inertia forces resulting from spinning of unbalanced loads in a washing machine the pressures developed between the mounting apparatus and the brick or blocks are quite large, accordingly, any lack of uniform contact between mating surfaces is quite critical.

Accordingly, it is the general object of this invention to provide a new and improved washing machine of the top loading type.

It is a more particular object of this invention to provide a new and improved inertia weight and structure for mounting the weight on the non-rotating tub of a top loading type washing machine.

Another object of this invention is to provide apparatus for mounting an inertia weight in a top loading washing machine, which apparatus applies uniform compressive forces to the weight and uniform contact between the weight and the apparatus.

Still another object of this invention is to provide, in a top loading washing machine, inertia weight mounting structure which will accommodate weights of different dimensions.

Yet another object of this invention is to provide a new and improved inertia weight and mounting structure therefor which can be inexpensively manufactured and which results in minimizing expensive time delays in assembly.

SUMMARY

Briefly, the above-cited objects are accomplished by providing a pair of substantially L-shaped brackets which are preferably spot welded to the outer wall of the non-rotating tub of a top loading washing machine. An inertia weight in the form of a preformed brick or concrete block is insertable between the vertically spaced apart brackets and has a longitudinal bore therethrough for receiving an elongated bolt. The bolt extends through apertures in the brackets. In assembly, the brackets are located so that the dimension between surfaces thereof which contact the weight is slightly greater than the maximum tolerance dimension of any one weight. This permits easy insertion of the weight between the brackets.

Each bracket has a horizontally extending member having a centrally located frusto-conical portion bounded by a flat washer portion. The washer portion is offset from the remainder of the horizontally extending member so that only the washer portion contacts the weight. An arcuate slot in the horizontally extending member intermediate a segment of the washer and the vertical portion of the bracket minimizes the area of attachment between the segment of the washer and the remainder of the horizontal member. The foregoing permits the flat washer to assume whatever angle is necessary for intimate contact and uniform pressure between the washer and the weight.

These and other objects and advantages of the present invention will become more apparent when considered in view of the detailed description and drawings.

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a side elevational view, partly broken away and in section, of a top loading washing machine representing the invention;

FIG. 2 is a fragmentary view of a non-rotating tub with an inertia weight attached thereto;

FIG. 3 is a cross-sectional view taken on the line III—III of FIG. 2; and

FIG. 4 is a perspective view of a bracket forming a part of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1 of the drawings, a washing machine shown therein comprises a cabinet **10** and an operating unit **11** disposed inside the cabinet. The cabinet **10** may be of the usual construction having a cover **12**, side walls **13** and a bottom wall **14**. Adjustable feet **15** are provided in the bottom wall **14** for supporting the cabinet on a floor or base **16**. The bottom wall **14** has an integrally formed dome portion **17** for a purpose which will be described hereinafter.

The operating unit **11** comprises a frame **21**, a non-rotatable tub **22** supported by the frame **21**, a spinner basket **23** rotatably mounted inside the tube **22**, an agitator **24** disposed inside the spinner basket **23**, a transmission gear unit **25**, a motor **26**, a pump **27** and a clutch **28**. The frame **21** comprises a base **31** and three upwardly and outwardly extending braces **32**, only one of which is shown in the drawing. The braces **32** are disposed 120° apart. The base **31** includes an inverted cup portion **30** which rests upon the dome **17** to pivotally support the operating unit in the cabinet. A ring of friction material **33** is disposed between the dome **17** and the cup **32**.

The oscillating movement of the operating unit on the dome **17** may be limited by a pin **34** which extends through an enlarged opening **35** in the top of the dome **17** and is secured in a boss **36** on the cup **32**. Three centering springs **37** are connected between the brace members **32** and the bottom wall **14** of the cabinet to bias the operating unit **11** to an upright position in the cabinet. The tension of

the springs 37 may be adjusted by means of threaded hooks 38 extending through the brace members 32.

The motor 26 may be attached to the supporting frame 21 by any suitable means, such as a bracket (not shown). One end of the motor shaft is connected directly to the pump 27 to drive the pump and the other end of the motor shaft is connected to the transmission unit 25 through the clutch 28, pulleys 41 and 42 and a belt 43.

The transmission gear unit 25 is attached to the brace member 32 of the frame by arms 44 which extend from the lower portion 45 of the gear unit housing. The gear unit 25 drives the agitator 24 through a shaft 46 which is disposed inside a hollow shaft 47. The agitator 24 is supported by the shaft 46 and is attached thereto by means of a cap screw 48.

The hollow shaft 47 extends from a bearing housing 51 of the gear unit which extends through the bottom of the tub 22. The shaft 47 drives the spinner basket 23 which is supported by a hub portion 52 secured to the shaft 47. The tub 22 is attached to the brace members 32 by extension members 53.

In accordance with the usual practice the agitator 24 is oscillated back and forth by the gear unit during the washing operation. During the spinning or centrifuging operation the spinner basket 23 is rotated at a relatively high speed to extract liquid from the clothes by centrifugal force.

In order to reduce the amplitude of gyrations of the operating unit 11 about its pivotal support during the spinning operation, an inertia weight 55 is rigidly attached to the non-rotating tub 22. The weight 55 constitutes a preformed brick or concrete block which as shown in FIG. 3, has a substantially triangular cross section and has an arcuate wall 56 which conforms to the shape of the tub 22.

The weight 55 is attached to the tub 22 by means of a pair of spaced apart brackets 57 which are spot welded or otherwise suitable fastened to the tub 22 at locations indicated at 58 and 59. Each bracket comprises a vertical member 61 and a substantially horizontal member 62, the former of which has a shape complementary to the tub 22 and is secured to the tub. The horizontal member 62 has a frusto-conical portion 63 and a flat washer portion 64, the portion 63 having an aperture 66 for insertion of an elongated bolt 67. The weight 55 is provided with a longitudinal bore 68 permitting mounting of the weight on the bolt 67. Each segment of the washer portion 64 closest the vertical member 61 is separated from the member 61 by an arcuate slot 69 thereby minimizing the area of connection between the washer and the rest of the horizontal member 62. The washer portion 64 is offset from the rest of the horizontal member 62 such that the washer occupies a depressed position. This insures that only the washer 64 contacts the end 71 of the weight 55.

A nut 72 fits the lower end of the bolt 67 and serves to tighten the washers 64 down on the ends 71 of the weight 55. Whatever the longitudinal dimension of the weight the washers will assume the necessary angle to provide intimate and uniform contact between the undersides 73 of the washers 64 and the surfaces of the ends 71 of the weight 55.

Since numerous changes may be made in the above-described apparatus and different embodiments of the invention may be made without departing from the spirit thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings

shall be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In a washing machine, in combination,
a cabinet,
an operating unit disposed inside the cabinet, said unit comprising:
a frame,
a non-rotatable tub supported by said frame,
a spinner basket rotatably mounted inside said tub,
an agitator disposed inside said spinner basket,
a transmission unit supported by said frame,
a motor for driving the agitator and the spinner basket at different speeds through the transmission unit,
means for pivotally mounting the frame in the cabinet,
centering springs biasing the operating unit to an upright position,
a preformed weight having one wall thereof having a configuration conforming to the contour of the outer wall of said non-rotatable tub,
and means for attaching said weight to said non-rotatable tub at a location adjacent the top thereof and directly opposite the position said motor occupies relative to said tub.

2. Structure as specified in claim 1, wherein said attaching means comprises;
a pair of spaced apart L-shaped brackets secured to said tub and an elongated bolt and nut therefor;
said bolt being insertable through said brackets and a longitudinal bore through said weight when said weight is disposed between corresponding members of said brackets.

3. Structure as specified in claim 2, wherein said corresponding members each comprises a flat washer portion and a frusto-conical portion, the former of which is adapted to contact the end of the weight.

4. Structure as specified in claim 3, wherein said corresponding members are substantially horizontally disposed and are provided with arcuate slots intermediate the flat washer portion and the complementary portion of the bracket to thereby minimize the area of connection between the washer portion and the rest of the horizontal members whereby the washer portion can assume the necessary angle to provide intimate and uniform contact between the washer and the end surface of the weight regardless of its dimension as long as it is within predetermined tolerances.

5. Structure as specified in claim 4, wherein said flat washer portion is offset from the remainder of said horizontally disposed member whereby it is assured that only the underside of said flat washer contacts said end surface of said weight.

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ROBERT L. BLEUTGE, Primary Examiner

U.S. Cl. X.R.

68—23.3; 210—364