

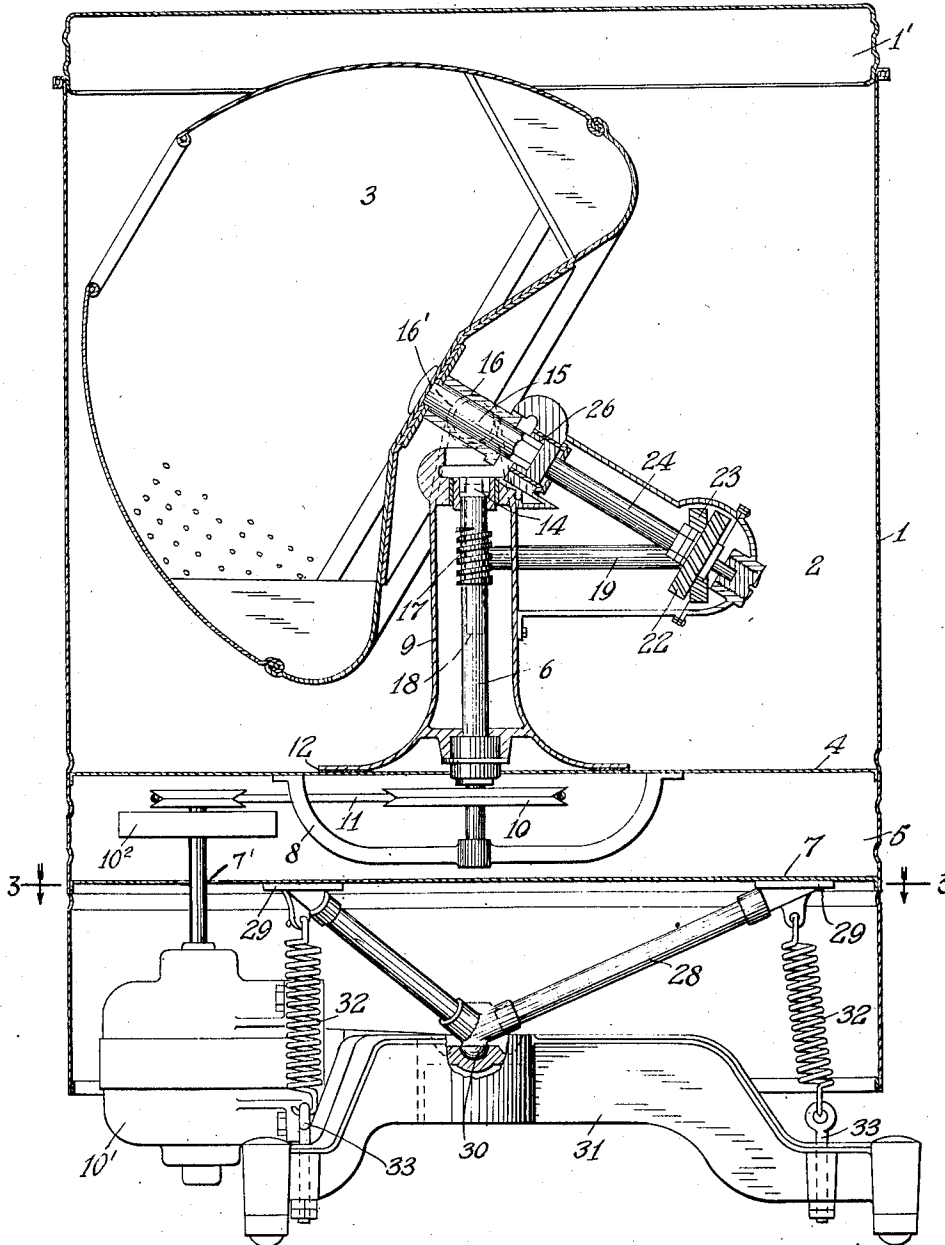
1,581,905

WASHING MACHINE

Filed Nov. 24. 1924

2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

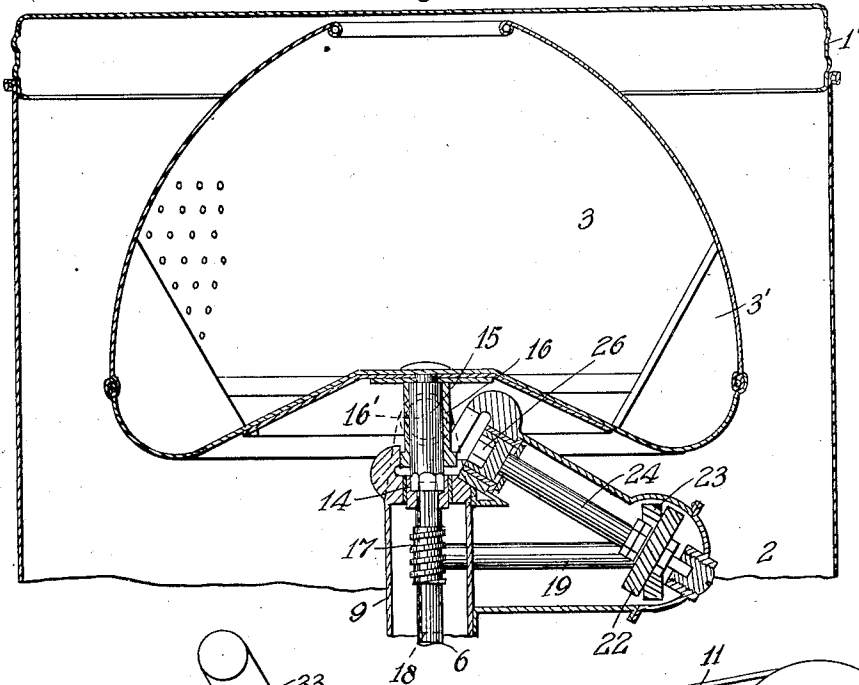


Fig. 2a

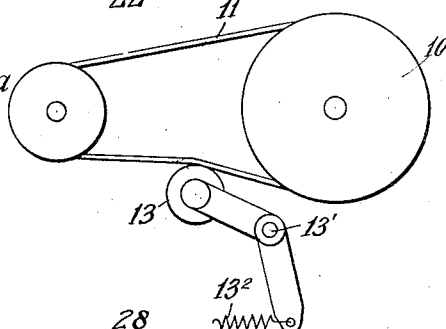
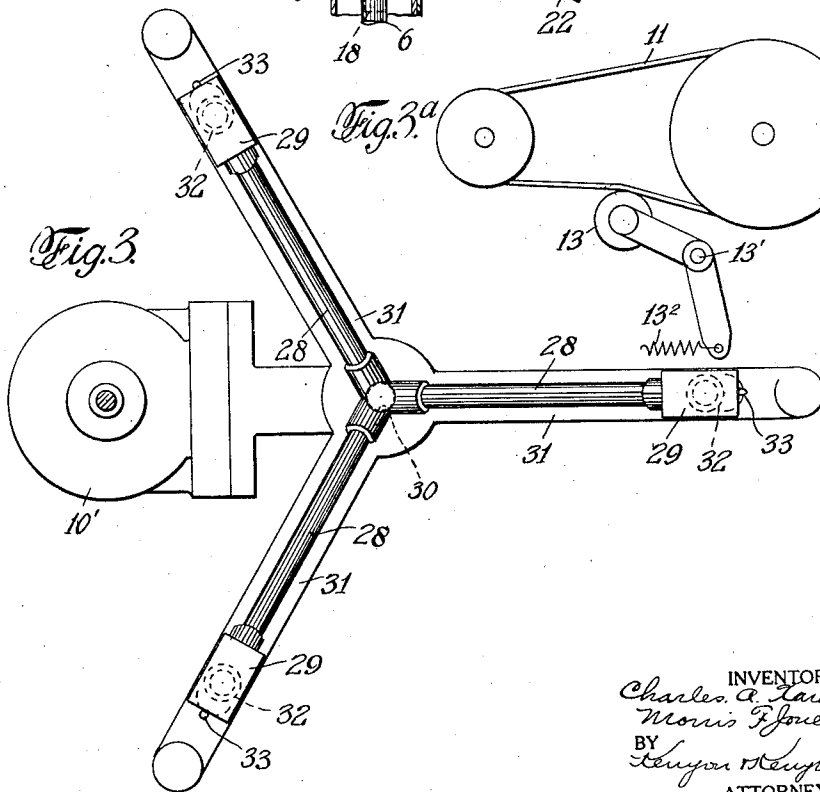


Fig. 3.



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CHARLES A. KARDELL AND MORRIS F. JONES, OF UTICA, NEW YORK, ASSIGNORS TO
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WASHING MACHINE.

Application filed November 24, 1924. Serial No. 751,768.

To all whom it may concern:

Be it known that we, CHARLES A. KARDELL, a citizen of the United States, residing in Utica, county of Oneida, and State of New York, and MORRIS F. JONES, a citizen of the United States, residing in the city of Utica, county of Oneida, and State of New York, have invented new and useful Improvements in Washing Machines, of which the following is a specification.

This invention relates to washing machines. In such machines the agitation of the clothes produces a repeated shock or blow upon the machine. This is especially true in that type of washing machine in which the clothes or other material being washed is subjected to a tumbling action, being repeatedly lifted from the washing or cleansing liquid and allowed to tumble or drop back into the same. As the wet clothes are of considerable weight, the shock or blow is considerable. In prior machines, this shock or blow produces a continual vibration or movement of the machine and a pounding action upon the floor upon which the machine is supported. A similar objection exists to a certain degree in most of the usual types of washing machines as a result of the agitation of the material being washed.

This invention also relates to washing machines which are provided with centrifugal extractors or wringers. In that type of machine, a very violent vibration of the machine occurs when the extractor basket which supports the material being treated is even slightly unbalanced, as by the uneven distribution of the loads which are placed in the basket, the usual speed of rotation of the basket during the wringing or extracting operation being very high, for example 600 revolutions per minute or more. The vibration of the extractor basket is communicated to the body of the machine; and in prior machines of this type the vibration tends to cause the machine to move violently around the floor. Where the machines are designed for washing and centrifugal wringing or drying, they have the objectionable pounding and vibratory action incidental to both of these operations.

This invention has for its principal object to overcome the difficulties or objections

referred to. Other objects, features and advantages will appear more fully in the following detailed specification and appended 55 claims.

This application is a continuation in part of an application Ser. No. 675,909, filed November 20, 1923.

The accompanying drawings forming a 60 part of this specification illustrate a machine containing one embodiment of my invention.

In the drawings,

Fig. 1 is a vertical cross-sectional view of 65 the machine showing the basket for supporting the clothes or other material in position for the washing operation.

Fig. 2 is a like view showing the basket in position for the wringing operation. 70

Fig. 3 is a view taken on the line 3—3 of Fig. 1.

Fig. 3^a is a plan view of a portion of the driving mechanism.

Referring to the drawings, a tank or con- 75 tainer 1 adapted to hold water or other cleansing liquid is provided with an upper washing and wringing chamber 2 in which the perforated basket 3 is supported. The tank 1 has a removable cover 1'. The tank 80 or container 1 thus acts as a casing for the basket 3. The chamber 2 has a liquid-tight bottom 4 beneath which is a chamber 5 containing the driving mechanism for the central operating shaft 6. The bottom 7 of the 85 chamber 5 is secured to a suitable stabilizing support which will be described more fully hereinafter.

The shaft 6 is supported in a bracket 8 attached to the under side of the liquid-tight 90 bottom 4 of the tank or container. Attached to the upper side of said bottom is a hollow standard or pedestal 9 in which the shaft 6 has a suitable bearing, said shaft being provided below the bottom 4 with a pulley 10 95 which may be driven from any suitable driving means, such as electric motor 10', by the belt 11. This belt may be maintained at a suitable tension by the belt tightener 13 pivoted at 13' and held yieldingly in engage- 100 ment with the belt 11 by spring 13². The motor shaft may be provided with a suitable clutch 10², such, for example, as shown in application for Letters Patent of the United

States of Charles A. Xardell, Ser. No. 735,111, filed Aug. 30th, 1924, to cause the washing mechanism to be automatically clutched to the motor shaft when the latter has attained a desired speed. The vertically arranged shaft of the driving motor (10'), extends upwardly through an opening (7') in the bottom wall (7) of the container (1). This opening is sufficiently large to permit tilting movement of the container (1) relative to the base or support in all directions, without interference from the shaft of the driving motor. A liquid-tight joint is formed between the bottom of the hollow standard or pedestal 9 and the bottom 4. To this end a gasket 12 of leather, rubber or other suitable material may be secured between the said standard and bottom. To permit the shaft 6 to be detachably connected with the basket 3, the said shaft is provided at its upper end with a socket 14 of irregular cross-section, for example, hexagonal, and the lower end of the shaft 15 secured to the bottom of the basket coaxially therewith is of a corresponding irregular cross-section and adapted to fit into said socket. The shaft 15 is fitted to slide in a trunnion sleeve 16 for a purpose which will be hereinafter described.

The shaft 6 when connected with the shaft 15 through the socket 14 serves as a means for rotating the basket at a high speed for the wringing operation.

To provide means for rotating the basket at a slower speed during the washing operation, the shaft 6 has secured thereto a worm 17 meshing with the worm wheel 18 on a horizontal shaft 19 journaled in the standard 9. The shaft 19 is provided with a helical gear 23 meshing with a similar helical gear 22 on an inclined shaft 24 supported by the standard 9. The inclined shaft 24 is provided with a socket 26 of the same cross-section as the shaft 15, so that the latter shaft may be operatively connected with said shaft 24. When it is desired to shift the basket from either of its operative positions (that is, the positions for washing and wringing) to the other, the basket is lifted so as to disengage the shaft 15 from the socket 14 or 26 whereupon the basket and the shaft 15 secured thereto are tilted about the horizontal axis 16' of the trunnion 16 to a position with the shaft 15 in alignment with the desired socket after which the basket is lowered to cause the clutching of the shaft 15 with the socket. The shaft 15 may thus be operatively connected either with the socket 26 to be driven about an axis at an acute angle to the vertical at a relatively slow speed for washing or with the socket 14 to be driven about an upright axis at a relatively high speed for drying. In the device shown the basket is rotated in a single direction dur-

ing the washing operation, but by suitable mechanism (not shown) the basket may be oscillated or reciprocated about its axis during the washing operation.

When the basket is in the washing position it dips into the washing or cleansing fluid as shown in Fig. 1, its axis of rotation being inclined or at an acute angle to the vertical. The basket is provided with vanes or wings 3' which serve, upon the rotation of the basket during the washing operation, to repeatedly move the clothes through and lift the same out of the washing liquid and thereupon to permit them to fall or drop back into the washing liquid, the clothes being agitated by a tumbling action. During the drying operation the basket 3 as shown in Fig. 2 is arranged entirely above the water or other cleansing liquid in the tank 1, the moisture being extracted from the material in the basket by centrifugal action.

For eliminating the above mentioned objectionable effects of the shocks from the tumbling clothes and of the vibration resulting from unbalanced condition of the basket, I provide a shock eliminating support upon which the tank or container is yieldably supported. This support, as shown, comprises a spider 28, the arms of which are secured to the bottom 7 of the tank or casing 1, as by brackets 29. The hub or central part of the spider has a universal or ball and socket connection 30 with a supporting base 31. The base may be formed with a number of legs arranged to rest on the floor. As shown the base has the same number of legs as the spider has arms. The tank or container 1 is thus supported for universal movement at a single point 30 below the bottom thereof and in line with the axis of rotation of the shaft 6. To the brackets 29 are connected the upper ends of spiral tension springs 32, the lower ends of which are adjustably attached to the legs of the base by means of bolts 33 passing through the legs and having nuts on their lower ends bearing against the under side of the legs. The springs 32 serve to yieldingly hold the tank or container 1 and the parts connected thereto in proper relation to the base 31. By adjustment of the tension of the said springs by means of the bolts 33, the resistance of the springs 32 to the movement of the tank 1 with respect to the base may be varied to provide for the varying loads in the machine and also to equalize the tension of the springs.

While the shocks or blows resulting from the dropping of the clothes or other material during the washing operation are transmitted to the casing 1, the latter is yieldable with respect to the base 31, and the shocks or blows are absorbed or eliminated so as not to cause an objectionable pounding or movement of the machine on

the floor. In the wringing operation the rapidly rotating basket 3 and the tank 1 are movable laterally about the joint 30 and there is no objectionable vibration of the base 31 due to unbalanced condition of the rotating basket, the tank or container being permitted to have a balancing circulatory or gyratory movement very much like the movement of a spinning top. During this movement of the tank relatively to the base, the belt tightener moves automatically to maintain an effective driving connection between the motor (which, as shown, is carried by the base 31) and the mechanism carried by the tank.

It is to be understood that this invention is not limited to the type of machine described above and that the embodiment of the invention described is merely illustrative. The invention is capable of embodiment in other forms and may be modified within the scope of the appended claims without departing from the spirit of our invention.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination of a casing adapted to hold cleansing liquid, means within said casing for repeatedly lifting the materials to be cleansed out of and allowing the same to drop into the cleansing liquid, and a shock absorbing support for said casing including a base having a connection with the casing allowing universal tilting movement of the casing with respect to said base.

2. The combination of a casing adapted to hold cleansing liquid, a perforated basket rotatable about an inclined axis and arranged within said casing for repeatedly lifting the materials to be cleansed out of and allowing the same to drop into the cleansing liquid, a support for said casing including a base having a universally jointed connection with said casing arranged axially below the latter, and springs arranged about said connection and tending to hold said casing in a definite position relative to said base.

3. In a washing machine, the combination of a basket for the material to be washed, means for rotating the same about an axis at an acute angle to the vertical, a base, and shock absorbing means supporting said basket from said base and including a universally jointed connection and shock absorbing springs between said basket and base.

4. The combination of a casing adapted to hold cleansing fluid, a rotating supporting element for material to be cleansed or dried arranged within said casing, and a support for said casing and said supporting element having a connection with said casing allowing tilting movement of the latter

relatively to said support, and means tending to yieldingly hold said casing in a definite position with respect to said support.

5. The combination of a casing adapted to hold cleansing liquid, cleansing mechanism in said casing adapted to move the material to be cleansed in the cleansing liquid, and a shock absorbing support for said casing comprising a base on which the casing has a bearing permitting universal tilting movement of the casing relatively to said support.

6. The combination of a casing adapted to hold cleansing liquid, cleansing mechanism in said casing adapted to move the material to be cleansed in the cleansing liquid, the said mechanism being supported within and capable of movement independent of the casing, a support for said casing comprising a base on which the casing has a bearing permitting tilting movement of the casing relatively to said support, and adjustable spiral tension springs coacting with said support and tending to yieldingly hold said casing in a definite position with respect to said base.

7. The combination of a casing, washing and drying mechanism within said casing including a clothes container mounted for rotation about an axis at an angle to the horizontal, and a stabilizing support for said casing comprising a spider having a plurality of radial arms, a base on which the central part of said spider has a universal joint bearing and a series of springs connecting said casing with fixed parts of said base.

8. The combination of a casing adapted to hold a cleansing liquid, means for moving the material to be cleansed in the cleansing liquid and for rotating the material for wringing or drying, and shock absorbing supporting means for said casing including a base upon which said casing is yieldably supported to permit universal tilting movement.

9. The combination of a casing adapted to hold cleansing liquid, washing mechanism in operative relation to said casing, the said mechanism being mounted for rotation within the casing, with its axis of rotation inclined to the horizontal, and yielding shock absorbing supporting means for said casing to permit tilting thereof in all directions.

10. The combination of washing mechanism, shock absorbing supporting means therefor including a base upon which said mechanism is yieldably supported and a motor supported by said base and yieldably connected with said mechanism to drive the same while permitting tilting movement of said mechanism relatively to said base.

11. The combination of washing mech-

anism producing vertical shocks at a position to one side of the vertical axis thereof, a support for said mechanism to permit tilting thereof in all directions including a
5 base having a universally jointed connection with said mechanism arranged below the latter at the axis thereof, and yielding means arranged about said connection and

tending to hold said mechanism in a definite position relative to said base.

In testimony whereof, I have signed my name to this specification.

MORRIS F. JONES.

In testimony whereof, I have signed my name to this specification.

CHARLES A. XARDELL.