

Oct. 23, 1928.

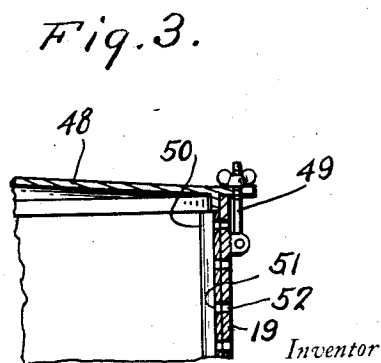
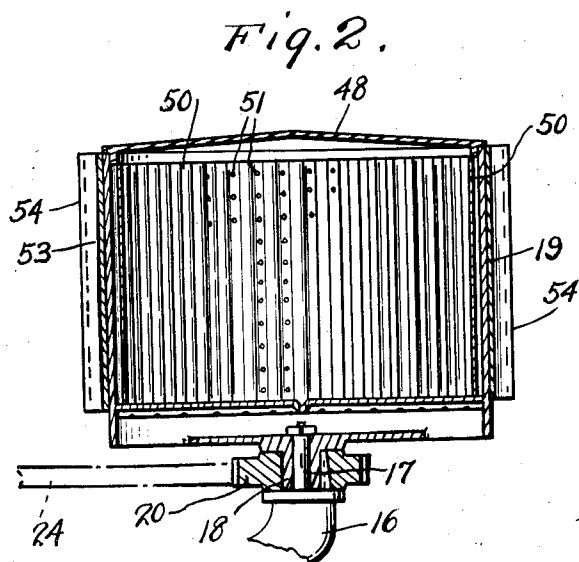
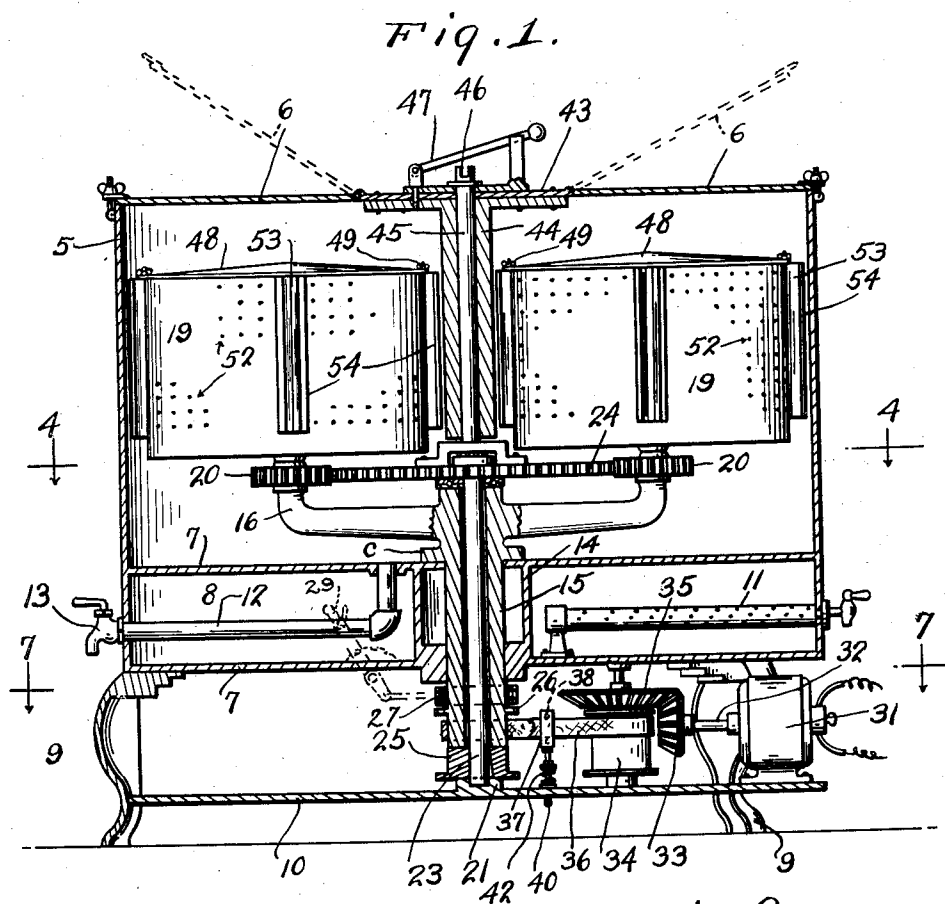
1,688,555

A. RANKIN

CLOTHES WASHING MACHINE

Filed Nov. 3, 1927

3 Sheets-Sheet 1



Arnold Rankin

By *Clarence A O'Brien* Attorney

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Fig. 4.

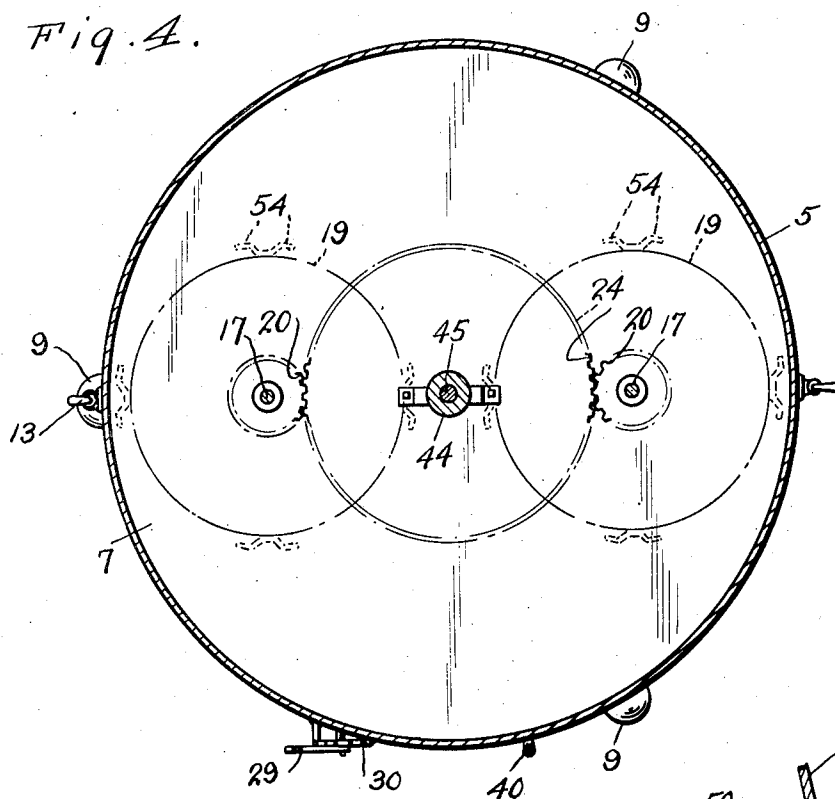


Fig. 5.

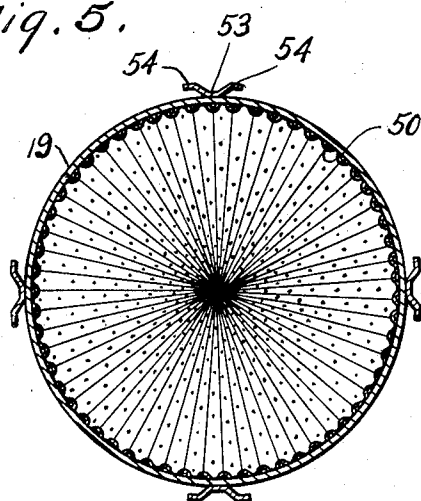
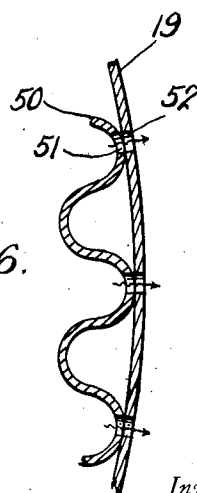


Fig. 6.



Inventor

Arnold Rankin

By *Clarence A. O'Brien*
Attorney

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Fig. 7.

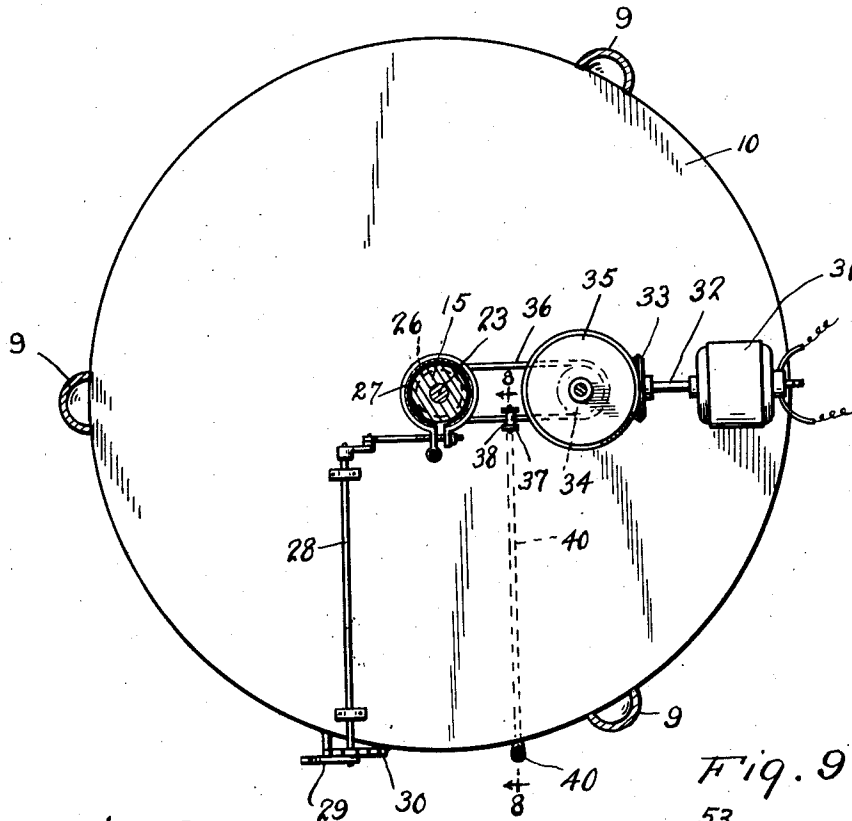


Fig. 8.

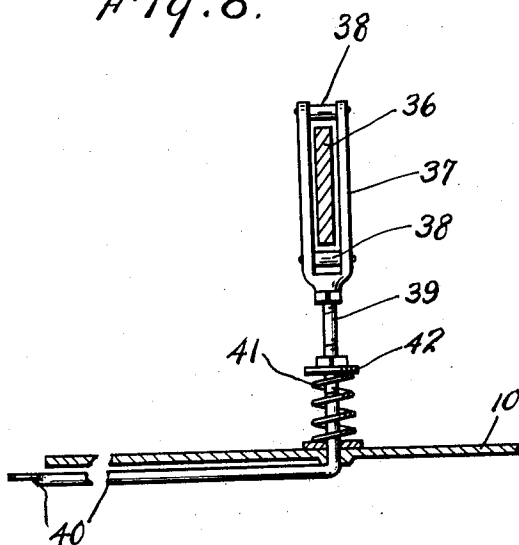
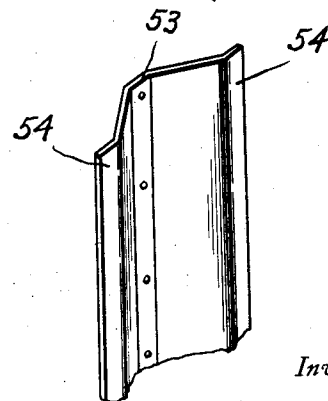


Fig. 9.



Inventor

Arnold Rankin

By *Clarence A. O'Brien*
Attorney

UNITED STATES PATENT OFFICE.

ARNOLD RANKIN, OF PORTLAND, OREGON.

CLOTHES-WASHING MACHINE.

Application filed November 3, 1927. Serial No. 230,772.

This invention relates to new and useful improvements in clothes washing machines, and aims to provide a highly novel and extremely efficiently operating device, whereby clothes may be rapidly washed, and whereby the moisture may be discharged therefrom after the washing operation so that the combined washing and wringing function may be carried out through the medium of the present machine.

Broadly, the device consists of a water chamber together with two or more clothes chambers mounted therein, means being provided for causing the revolving of the clothes chambers within the water chamber and the simultaneous rotation of the clothes chambers on their own axes during their revolution within the chamber. Furthermore, means is provided for permitting the water in the water chamber to pass into and exhaust from the clothes chambers so that the clothes therein will become thoroughly washed. Furthermore, means is provided whereby the clothes chambers may be rapidly rotated within the water chamber after the same has been drained and after washed clothes have been disposed within the clothes chambers so that the water will be thoroughly wrung therefrom.

One of the most important objects of this invention is to provide a clothes washing machine that is, when considering the possibilities of the device, of exceedingly simple construction and inexpensive of manufacture, the same embodying but few parts, and these so correlated as to reduce the possibility of disarrangement to a minimum.

With the foregoing and other objects in view as the nature of the invention will be better understood, the same comprises the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the accompanying drawings wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a detail horizontal section through my improved washing machine.

Figure 2 is a detail section through one of the clothes containers.

Figure 3 is a fragmentary section through one of the containers for disclosing the means whereby the lids of the containers are rigidly secured thereto.

Figure 4 is a detail horizontal section taken substantially upon the line 4—4 of Figure 1

and looking downwardly in the direction of the arrows.

Figure 5 is a horizontal section through one of the clothes containers, and

Figure 6 is an enlarged fragmentary horizontal section for more clearly disclosing the corrugated lining upon the interior thereof together with the means whereby the water from the main water chamber may enter and exhaust from the clothes container.

Figure 7 is a detail horizontal section taken substantially upon the line 7—7 of Figure 1 looking downwardly in the direction of the arrows.

Figure 8 is an enlarged fragmentary section through the floor of the machine, and through the drive belt for disclosing in side elevation a belt shifting mechanism that affords an essential feature of the device, and

Figure 9 is an outer side perspective of one of the agitator wings associated with the outer sides of the clothes containers.

Now having particular reference to the drawings, my novel clothes washing machine consists of a cylindrical water tank 5 having a pair of hinged lids 6—6 at its upper end and constructed with a pair of spaced walls 7—7 at its lower end for providing a circular chamber 8 therebetween. This tank is supported upon a plurality of rigidly attached legs 9 within which is a circular wall 10. Arranged horizontally within the chamber 8 between the spaced walls 7—7 is a suitable burner or heating device 11, while leading from the main bottom wall of the said tank and arranged within the chamber 8 is a horizontal drain pipe 12 that projects through the side wall of the tank and is equipped at this end with a suitable faucet 13. Formed vertically within the center of the chamber 8 is a bearing collar 14, while mounted for rotation vertically therethrough is a hollow shaft 15, the upper end of which projects into the tank 5 and that is equipped at its upper end with two or more radiating arms 16—16, the outer ends of which are upturned as clearly disclosed in Figure 1. The end of each upturned portion of the arms 16 equipped with a vertical pin 17 upon which is rotatably arranged a collar 18 formed integral with the lower end of a circular clothes chamber 19. Furthermore, each collar 18 has keyed thereto a spur gear 20 for a purpose presently to be described.

Journalled at its lower end within a suitable bearing 21 provided at the center of the wall

10 between the tank legs 5 is a vertically extending shaft 23 rotatable through the hollow shaft 15 as clearly indicated in Figure 1. The upper end of this shaft 23 projects beyond the inner end of the hollow shaft 15 and has keyed thereto a relatively large gear 24 that has mesh with the gears 20 of the two clothes containers 19. The lower end of the hollow shaft 15 terminates within the lower end of the shaft 23, while keyed to the shaft 23 beneath the shaft 15 is a belt pulley 25 flanged at its lower end as disclosed. Above the lower end of the hollow shaft 15 there is formed a flange 26 while that portion of the shaft 15 beneath said flange affords a belt pulley.

In order to prevent the rotation of the shaft 23 there is provided a brake band 27 surrounding the same above the flange 26, this band being equipped internally with a suitable lining and of a normally expanded nature. However, there is provided suitable means as indicated generally by the reference character 28 in Figure 7 to contract this band whenever it is desired to prevent the rotation of the shaft 15, said means 28 including a hand lever 29 arranged at the outside of the tank 5 and having a suitable spring detent for cooperation with a toothed segment 30 whereby the lever may be locked in various positions.

Arranged upon the wall 10 between the legs 9 of the tank 5 adjacent the edge thereof is an electric motor 31, the inner end of the armature shaft 32 of which is equipped with a small bevel gear 33. Suitably mounted for rotation between the lower wall 7 of the tank 5 and the wall 10 adjacent the motor 31 is a vertically extending belt drum 34 equipped with a large bevel gear 35 having permanent mesh with the motor shaft gear 33. Surrounding this drum 34 is an endless belt 36 that is also adapted for engagement around the pulley provided at the lower end of the hollow shaft 15, as well as the belt pulley 25 at the lower end of the shaft 23. In order to shift the belt from the shaft 15 to the pulley 25 or vice versa, there is provided a belt engaging yoke 37 arranged over one flight of the belt, which yoke is provided within its upper and lower ends with anti-friction rollers 38—38, see Figure 8. This yoke 37 is arranged upon the upper end of a vertical stem 39 that is movable through an opening in the wall 10 between the tank legs 9. Beneath the wall 10 said stem is bent outwardly at right angles and is equipped at its outer end with a head 40 engageable by the foot of the operator so that the stem, and consequently the yoke 37 may be depressed. For normally maintaining the yoke in raised position so as to maintain the belt 36 upon the lower end of the shaft 13 an expansible coil spring 41 is disposed around the stem 39 between the wall 10 and a plate 42 arranged adjustable on the stem.

At the top side of the tank 5 the same is formed centrally with a stationary wall 43,

while secured to the under side thereof and depending therefrom is an elongated shaft bearing collar 44, rotatable within which is a vertical shaft 45 the upper end of which projects through the wall 43 of the tank 5 and is formed at said upper end with a slot 46. The lower end of this shaft 45 is suitably anchored to the gear 24 carried by the shaft 23 and by reason thereof effects a continuation of said shaft as clearly disclosed in Figure 1.

Pivoted to the top wall 43 of the tank 5 is a latch blade 47 adapted for engagement within the slot 46 of the shaft 45 to effect a positive lock for said shaft and consequently the shaft 23.

Each of the clothes containers 19 is open at its top side and equipped with a suitable slip type lid 48 adapted to be locked in position upon the container through the medium of a suitable locking means preferably of the character indicated in Figure 3, designated generally by the reference character 49. The bottom wall of each container is corrugated and formed with perforations, while the side wall of each container is lined with corrugated sheet metal 50, the portions of the lining contacting the container, being formed with perforations 51 which register with perforations 52 in the side wall of the container so that the water within the tank 5 may enter and discharge into and from said clothes container. The side walls of the clothes containers 19 are provided externally with vertically extending and suitably spaced agitator wings 53, preferably formed of stiff sheet metal pressed inwardly intermediate their longitudinal edges so as to form side wings 54—54 having spaced relation with the side walls of the containers as clearly disclosed in Figure 5.

During the washing operation the tank 5 is obviously filled with water together with a suitable quantity of soap, while said water is brought to the proper temperature through the medium of the heating unit 11. The belt 36 has engagement with the hollow shaft 15 and obviously the operation of the motor 31 will cause the rotation of said shaft 15. The latch blade 47 is dropped into engagement with the shaft 45 for preventing rotation of the said shaft 45 and the shaft 23 for consequently maintaining the large gear 24 stationary. The rotation of the shaft 15 will cause the water containers to revolve within the water tank 5 and at the same time intermeshing of the gears 20 of the water containers with the stationary gear 24 will cause the rotation of the containers upon their own axes. A movement in one direction is maintained for a slight length of time after which the movement is reversed by reversing the rotation of the motor 13 which is of the reversible type. During this operation the water within the tank 5 will flow into and from the containers 19 causing the proper

washing of the clothes therein. In order to stop the rotation of the container immediately after the motor 31 is stopped, the brake mechanism is applied in a manner previously described. After the washing operation the water is drained from the tank 5 whereupon the containers in which the wet clothes are contained, are rotated to expel by centrifugal motion as much water as is possible, so that the clothes will dry more readily when placed on a line or like structure. The belt 36 is then forced downwardly into engagement with the pulley 25 of the shaft 23. The latch blade 47 is released, and the brake mechanism 28 actuated to lock the shaft 15. The gear 24 will then be caused to rotate by the operation of the belt 36, and the rotation thereof will cause the rapid rotation of the containers 19 resulting in the centrifugal separation of all water from the clothes within the containers 19.

In view of the foregoing description when considered in conjunction with the accompanying drawings, it will be apparent that I have provided a highly novel, simple, and extremely efficiently operating clothes washing and wringing mechanism that is well adapted for all the purposes heretofore designated. Even though I have herein shown and described the invention as consisting of certain detail structural elements it is nevertheless to be understood that certain changes may be made therein without affecting the spirit and scope of the appended claims.

Having thus described the invention, what I claim as new is:—

1. In a clothes washing machine of the character described, a water tank, a shaft journaled through the bottom of the tank, a hollow shaft surrounding said first mentioned shaft and projecting into said tank, radiating arms upon the upper end of the hollow shaft, clothes containers mounted for

rotation upon the ends of said arms, a driving connection between the upper end of the first mentioned shaft and said clothes containers, which clothes containers are provided with perforations, a single power unit and means whereby either shaft may be independently operated, and means whereby either shaft may be prevented from rotation.

2. In a clothes washing machine of the character described, a water tank, a shaft journaled through the bottom wall of the tank, a hollow shaft disposed around said first mentioned shaft, means whereby said shafts may be independently operated, a plurality of radiating arms upon the upper end of the hollow shaft, perforated clothes containers mounted for rotation upon said arms, a master gear upon the upper end of the first mentioned shaft, small spur gears arranged beneath said clothes containers and keyed thereto, said gears having mesh with the master gear, and means whereby either shaft may be locked against rotation.

3. In a clothes washing machine of the character described, a water tank, a shaft mounted for rotation through the bottom wall of the tank, radiating arms upon the upper end of the shaft, vertically arranged perforated clothes containers mounted for rotation upon the ends of the arms, means whereby said hollow shaft may be rotated for causing the circular movement of the clothes containers within the tanks, and means whereby said clothes containers may be revolved on their own axes during their circular movement within the tank, and means for preventing the circular movement of the clothes containers within the tank and for imparting rotation thereto upon their own axes.

In testimony whereof I affix my signature.

ARNOLD RANKIN.