Jan. 12, 1932. A. P. BROOKS 1,840,693

CENTRIFUGAL DRYING MACHINE

Filed Dec. 18, 1929 2 Sheets-Sheet 1

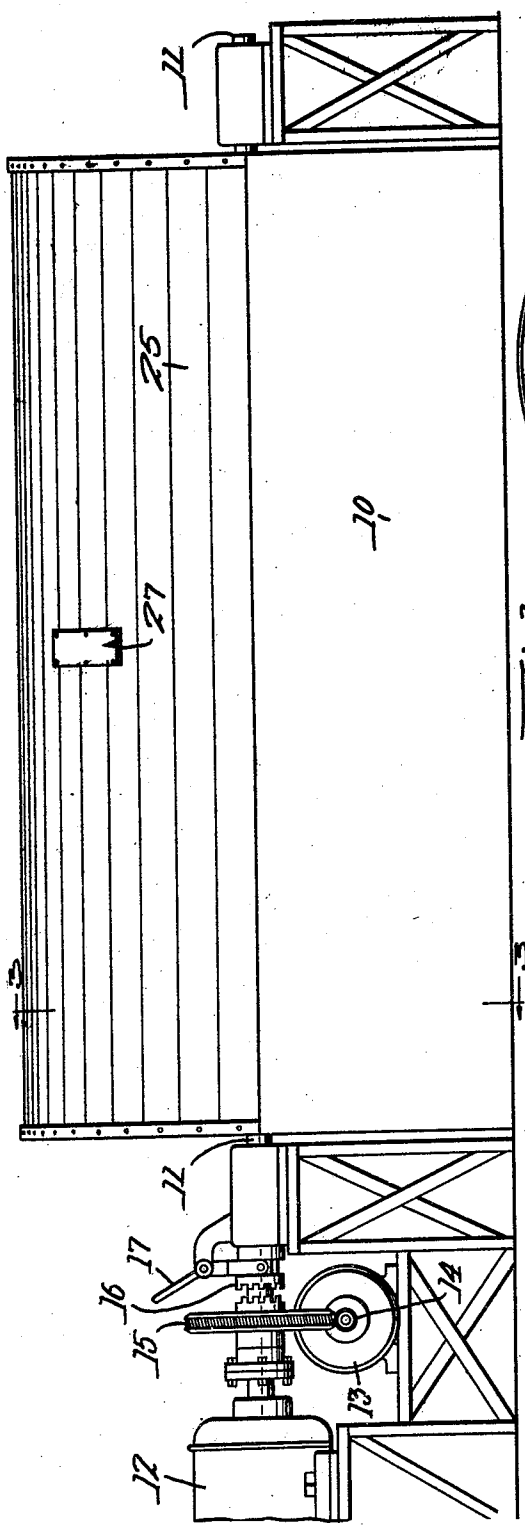


Fig. 1.

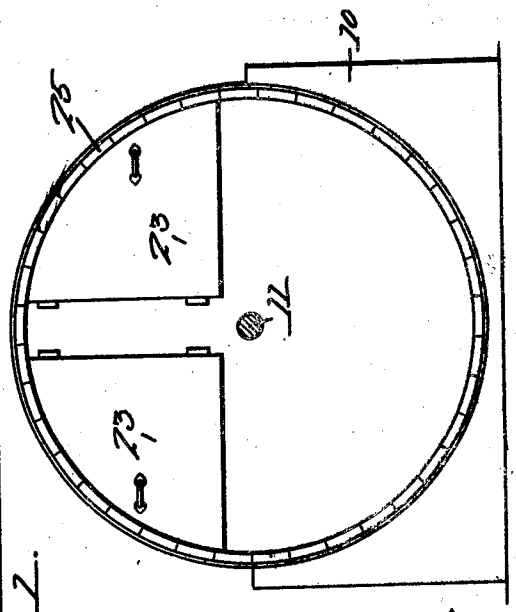


Fig. 2.

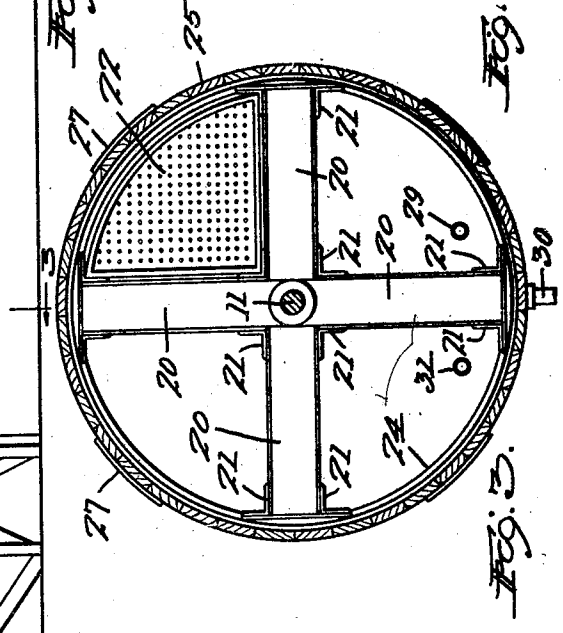


Fig. 3.

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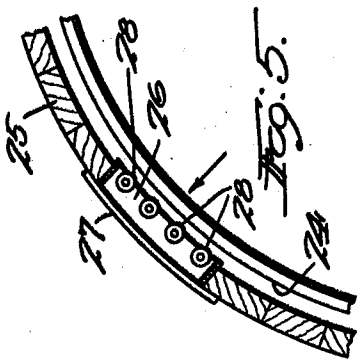


Fig. 5.

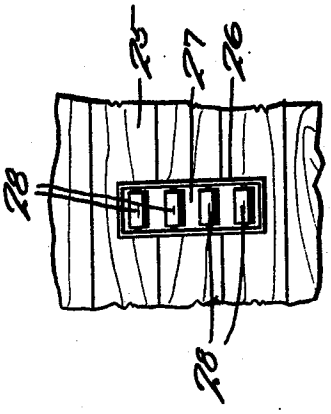


Fig. 6.

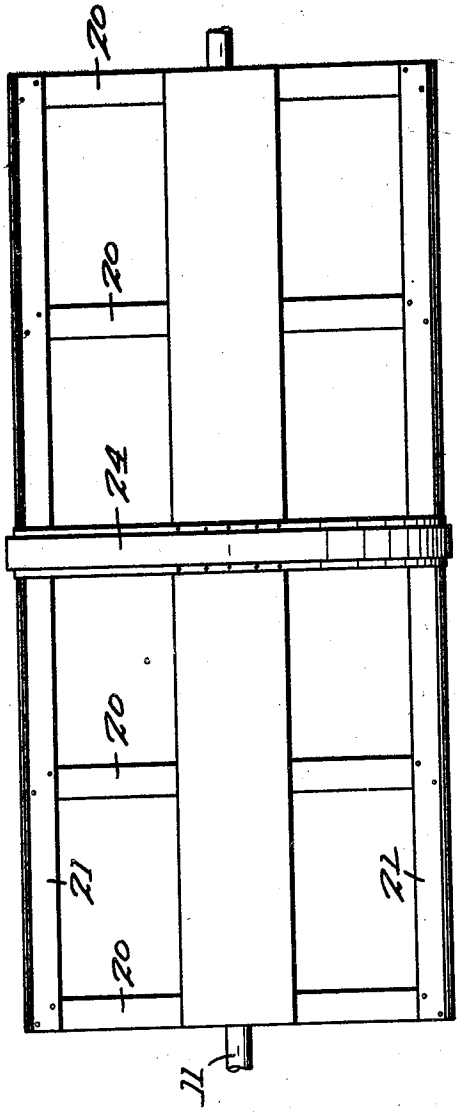


Fig. 4.

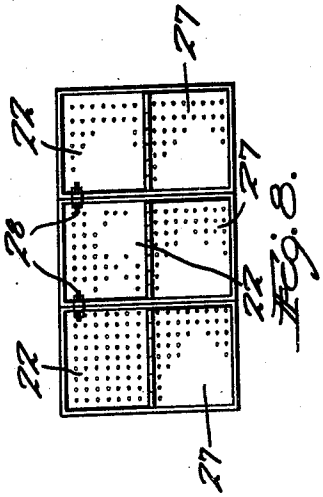


Fig. 8.

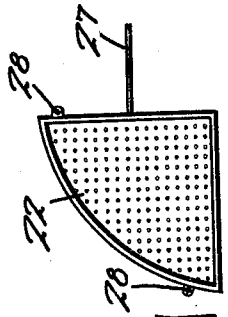


Fig. 7.

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UNITED STATES PATENT OFFICE

ALBERT P. BROOKS, OF BOSTON, MASSACHUSETTS

CENTRIFUGAL DRYING MACHINE

Application filed December 18, 1929. Serial No. 415,043.

This invention relates to a laundry drying machine.

The principal objects of this invention are to provide a practical machine of very large capacity for drying laundry by centrifugal action, rotating on a horizontal axis; to provide a machine of this kind having means by which it is loaded and unloaded in a minimum of time for quantity production; to provide means whereby any excessive vibration of the machine at the center due to centrifugal force will be mitigated and controlled and to provide means by which the machine can be operated for washing at a slow speed and for drying at a high speed in a very simple and convenient manner.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a side view of a machine constructed in accordance with this invention;

Fig. 2 is an end view thereof;

Fig. 3 is a transverse sectional view of the same on the line 3—3 of Fig. 1;

Fig. 4 is a plan of the rotating frame, separate from the rest of the device, showing the ring at the center for mitigating the vibrations;

Fig. 5 is a transverse sectional view of a portion of the machine showing the ring and rolls for the last named purpose;

Fig. 6 is an inside elevation looking in the direction of the arrow in Fig. 5;

Fig. 7 is an end view of one of the containers for the laundry, and

Fig. 8 is a side view showing a unit formed of three of these containers secured together.

On October 1, 1929 I was granted Patent No. 1,730,338 on a washing machine.

This invention relates to additional features of said washing machine adapted to fit it for extracting water from the laundry after it has been washed. I have shown a combined washing and extracting machine. This, in the form shown, involves an outside wall or casing 10 enclosing the lower part of the machine and carrying a stationary tub or barrel 25. At the top of this wall or casing is a longitudinal shaft 11 supported in suitable bearings and having at one end a motor 12 of practically the slowest type now known and adapted to operate the machine at a little over three hundred revolutions per minute which is suitable for extracting. I also provide an additional motor 13 running at such speed that when reduced by a worm 14 and worm wheel 15 it will operate the shaft 11 at about thirty revolutions per minute, which is a suitable speed for a washing machine of this type. The way these motors run the machine is very simple. The worm wheel 15 is free on the shaft 11 and can be clutched to it by a clutch section 16 operated by a handle 17. When so clutched and the power is cut off from the motor 12, the motor 13 runs the motor 12 but no harm is done because the wires are disconnected. However, when the extracting is to be done the clutch 16 is opened and the motor 13 is entirely disconnected mechanically from the machine and of course, is disconnected from the power electrically. This is one way of operating the shaft 11 at two speeds for the two purposes intended.

On the shaft 11 is a framework consisting of four arms 20, each made up of metal and having angle irons 21 in various places as indicated. It will be seen that these angle irons provide four spaces in the machine into which containers 22, of sector shape and having a right angle at the center, can be introduced longitudinally through a pair of doors 23 at one end of the barrel 25. These containers are guided accurately and supported by the angle irons and the machine is capable of holding a large number of them in the form illustrated.

It will be obvious that with a long machine like this there might be vibrations of the shaft when rotated at about three hundred revolutions per minute and to mitigate the effects of these vibrations I provide on the arms 20 of the rotating frame a track 24. This, of course, passes around the outside of the projecting parts of this frame. The whole thing is contained in the stationary tub or barrel 25 which is carried by the casing 10 and closed at both ends. This barrel is shown as being formed of wooden staves but can be made in any desired way.

On the interior of this barrel 25 located at intervals around its circumference are boxes 26 secured to the outside of the barrel by plates 27 and provided with a series of rolls 28 adapted to engage the ring 24 when it rotates out of true and prevent it from moving out more than a small fraction of an inch. This keeps the rotating frame rotating practically on a center when it is out of balance and it has been found in practice that the machine will operate effectively even if loaded in an unbalanced condition.

The receptacles 22 for the laundry are made of perforated metal or wood or woven wire structure as may be desired but they are free in any event to take water in and release it. Each one is provided with a swinging door 27 of the same material preferably, through which they are loaded. I prefer to unite two or three of these receptacles by means of bolts 28 as shown in Fig. 8 to constitute a single unit.

The method of operation is to bring the parts to a stop with two of the arms 20 in horizontal position. The doors 23 are then opened and the upper two sections of the rotating frame loaded with receptacles containing the individual washings and then the shaft 11 is turned around 180° and the other two sections loaded. If convenient, they are loaded with units as shown in Fig. 8 comprising two or more of the receptacles secured together. These receptacles are brought down to the loading end of the device outside in any desired way and introduced in a very short period of time. When the machine is all loaded, the two doors 23 are closed and locked and the machine is started up by the employment of the motor 13. Washing water is introduced through a pipe 29 and after enough rotations it is discharged through a pipe 30. Then rinsing water is introduced one or more times through a pipe 31 and then discharged through the pipe 30.

At this time the clutch 16 is disengaged, the motor 13 shut off and the motor 12 connected with the power. This rotates the frame at about three hundred revolutions per minute which is sufficient to throw the water out of the clothing and against the side walls of the stationary barrel 25. If the rotation is sufficient to bring the shaft 11 out of true the rollers 28 would limit its eccentric motion and keep the machine rotating on practically a central axis. The rotation of the frame containing the several individual washings is continued long enough to dry them so that they can be put into a mangle immediately and ironed. The pipe 30 is left open all this time to keep the barrel 25 drained out, although it is closed at practically all other times except those that have been mentioned.

By this procedure it will be seen that a large number of family washings can be washed and dried at a minimum of time and each washing kept entirely separate. The rotation to effect drying on a horizontal axis is responsible for the fact that the machine can be made of extremely large capacity and its capacity is greatly increased by the provision of the ring around the frame and the rollers around the barrel or casing.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited in this respect but what I do claim is:—

1. In a laundry drying machine, the combination of a stationary barrel of cylindrical shape, a rotary frame entirely surrounded by the barrel and having means for supporting laundry receptacles, said frame having means for holding the receptacles, means for rotating the frame at a suitable speed for extracting, bearings for said frame outside the ends of said barrel, a circular ring mounted on the frame at a point between its ends and a plurality of series of rolls mounted in the wall of said barrel in a position to be engaged by said ring when it rotates out of true but normally not touching the ring.

2. In a centrifugal extracting machine for laundry purposes, the combination of a horizontal shaft, a stationary barrel through which the shaft passes, a frame secured to the shaft, means on the frame for supporting a series of individual washings, said frame having a ring of metal surrounding it at a point between its ends and extending beyond the frame at all points, a series of boxes spaced apart around the barrel and opening on the inside thereof, and a series of rollers mounted on stationary axes near together in each box in position to be engaged by the ring if the ring rotates out of true, for the purpose described but normally out of engagement with the ring.

In testimony whereof I have hereunto affixed my signature.

ALBERT P. BROOKS.