W. G. GIBBINS, DEC'D.

H. GIBBINS, EXECUTOR.

WASHING MACHINE.

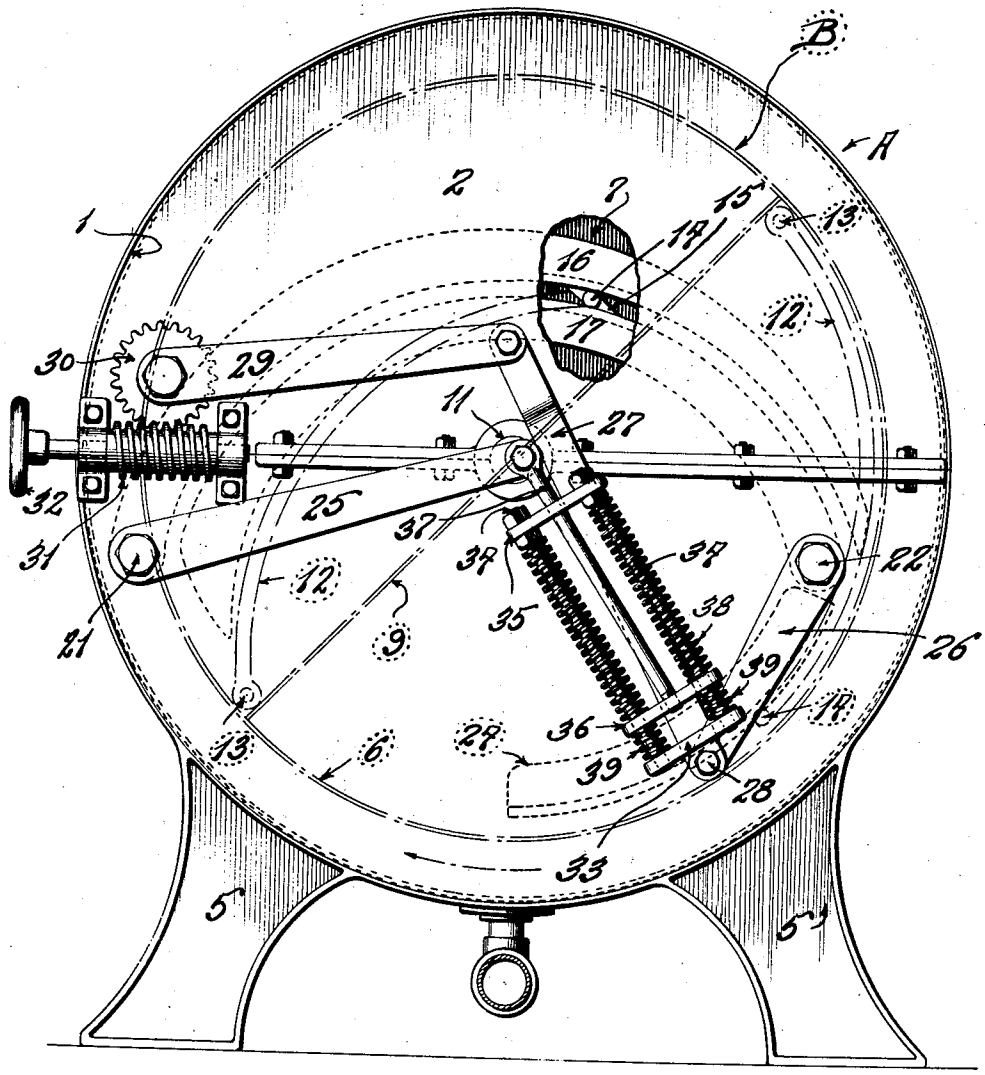
APPLICATION FILED OCT. 4, 1916.

1,304,470.

Patented May 20, 1919.

3 SHEETS—SHEET 1.

Fig. 1.



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BY Knight Bros

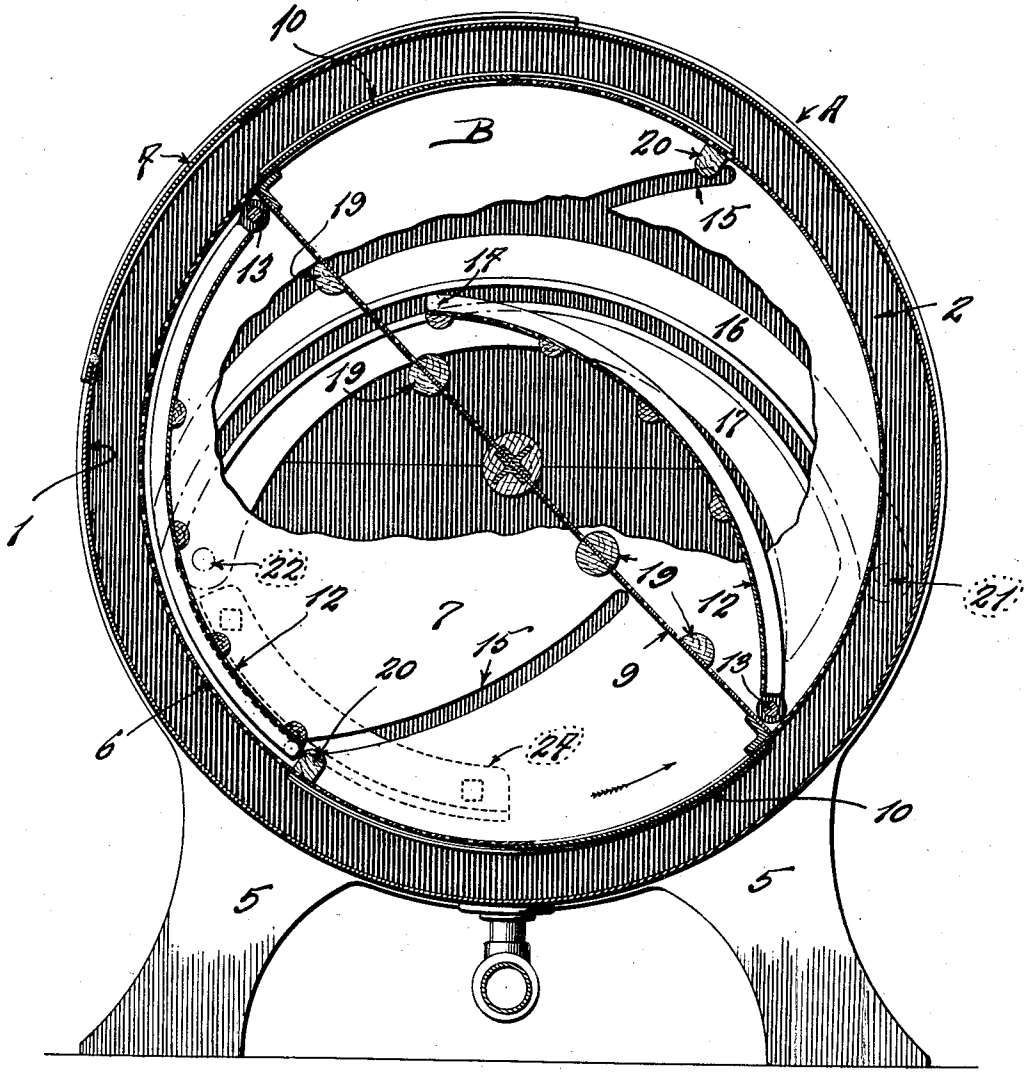
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Fig. II.



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Fig. III.

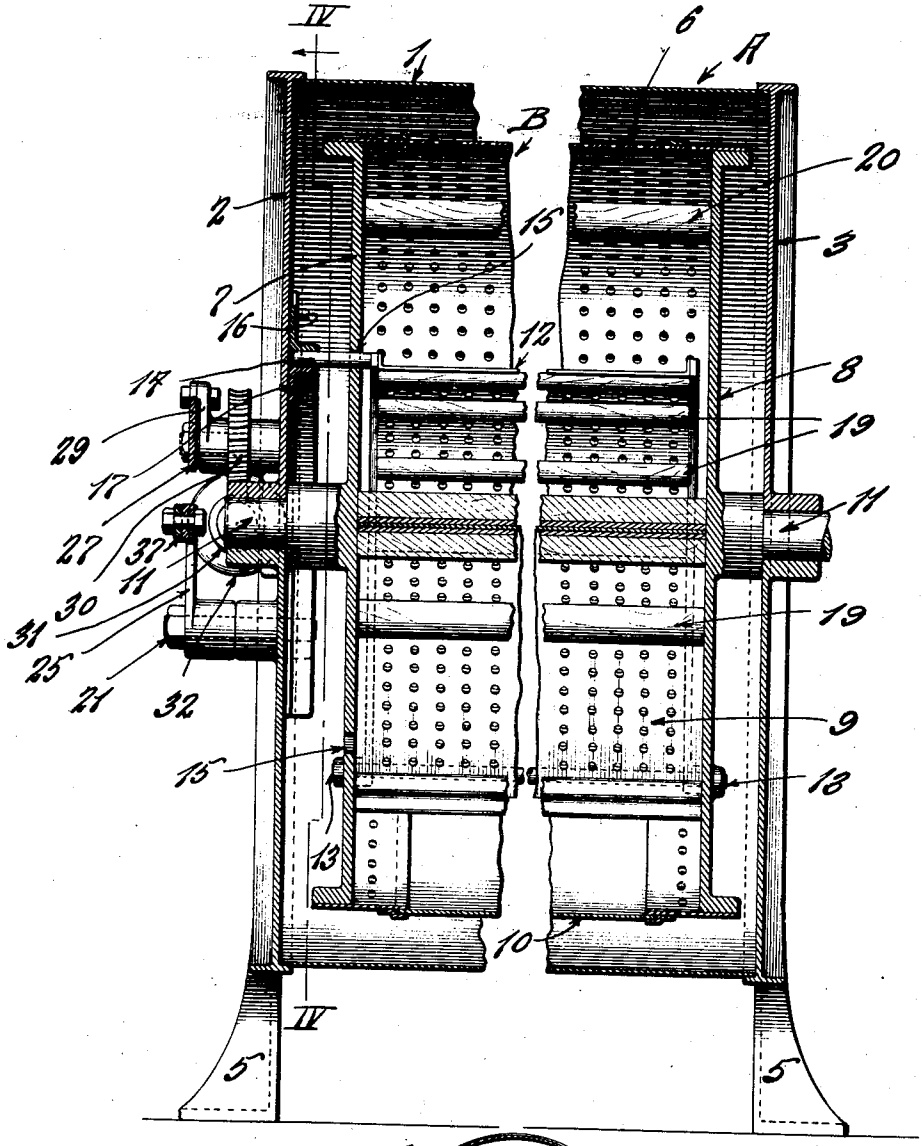
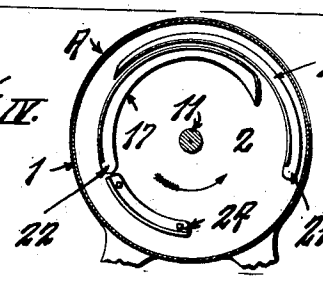


Fig. IV.



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UNITED STATES PATENT OFFICE.

WILLIAM G. GIBBINS, OF ST. LOUIS, MISSOURI; HENRY GIBBINS EXECUTOR OF SAID WILLIAM G. GIBBINS, DECEASED.

WASHING-MACHINE.

1,304,470. Specification of Letters Patent. Patented May 20, 1919.

Application filed October 4, 1916. Serial No. 123,687.

To all whom it may concern:

Be it known that I, WILLIAM G. GIBBINS, a subject of the King of Great Britain, a resident of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Washing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a washing machine of the general type shown in Patent No. 1,052,911, issued to me February 11, 1913, the present invention being in the nature of an improvement on the machine shown in said patent.

One of the objects of the present invention is to produce a simple and very efficient means for squeezing the material to be washed. Another object is to provide a simple means for squeezing the material at regular intervals while it is carried by a rotating carrier. A further object is to provide means for adjusting or regulating the squeezer while the carrier is in motion.

With the foregoing and other objects in view the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings wherein is shown the preferred embodiment of the invention; however, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Figure I is a side elevation of a washing machine constructed in accordance with the invention, a portion of the liquid receptacle being broken away to show the guide cams which direct the squeezer toward and away from a portion of the rotary carrier.

Fig. II is a vertical section of the machine looking from the opposite side to that shown in Fig. I, a portion of the carrier being broken away to show the guide cams.

Fig. III is a vertical axial section taken approximately through the center of the power shaft.

Fig. IV is a vertical section, on a reduced scale, taken on line IV—IV, Fig. III.

A designates a cylindrical liquid receptacle comprising a cylindrical wall 1 and side walls 2 and 3. A door 4 (Fig. II) normally closes an opening in the cylindrical wall 1. The liquid receptacle is stationary and it is supported by legs 5.

A rotary carrier B, arranged within the liquid receptacle A, is adapted to receive the material to be washed. This carrier comprises a perforated cylindrical wall 6 and side walls 7 and 8 secured to said cylindrical wall. A perforated axial partition 9 forms part of the rotary carrier and divides it into two semi-circular compartments. 10 designates doors (Fig. II) carried by the carrier B and adapted to register with the door 4 to allow the material to be introduced into and removed from the two compartments of the carrier. A central power shaft, arranged at the axis of the rotary carrier, comprises trunnions 11 (Fig. III) extending from the side walls of the carrier and journaled in the side walls of the stationary liquid receptacle. Any suitable power mechanism may be associated with the power shaft to rotate the carrier continuously.

The means for squeezing the material to be washed comprises a pair of perforated arcuate wings 12, one to each compartment, pivoted to the rotary carrier at 13 and adapted to move toward and away from the partition 9 for the purpose of squeezing the material. Each squeezer wing 12 is provided with a pin 14 which extends through an arcuate slot 15 in the carrier wall 7. These slots are formed concentrically to the respective pivots 13 so as to allow the carrier wings to oscillate about the axes of said pivots.

Arcuate guide cams 16 and 17, secured to the wall 2 of the stationary liquid receptacle, are arranged adjacent to each other to form an arcuate slot for the reception of the pins 14 which project from the squeezer wings. The carrier turns in the direction indicated by arrows in Figs. I, II and IV, and during each revolution thereof, the pins 14 strike the cam guide 16 and enter the space between the guides 16 and 17. The squeezer wings are thus shifted toward and away from the partition 9 in response to the rotary movement of the carrier. It will be observed that the cam guides 16 and 17 are so arranged as to allow the pins 14 to travel entirely through the arcuate space between said guides. The pins 14 enter this space at the right hand side of Fig. II and pass therefrom at the left side. Obviously, this

action will cause the squeezer wings 12 to oscillate about the axes of their pivots 13.

The machine is adapted to wash filtering material such as filter cloths or pulp, and it may also be utilized in washing animal skins and more delicate material such as laces, silks, etc. The material to be washed is confined in the rotary carrier B and the cleansing liquid is confined in the lower portion of the receptacle A. After being saturated with the liquid, the material is carried upwardly on the partition 9 which travels in the direction indicated by the arrow in Fig. II. Thereafter, the material is squeezed between a squeezer wing 12 and the partition 9, the water being forced through the perforations in said parts. When a squeezer wing moves away from the partition to release the material, the partition forms an inclined slideway for the material and the latter, moving downwardly by gravity, strikes the obstructions or rubbers 19. The material then unfolds or spreads out and passes into the water at the lower portion of the receptacle B. It will be noted that the material is squeezed while it lies in a plane above the water and then permitted to unfold and absorb the water before the next squeezing operation.

When a squeezer wing 12 occupies the position shown at the left side of Fig. II, it lies concentric with the cylindrical wall 6 of the carrier and at this time a bar 20, secured to the cylindrical wall, prevents the material from passing into the space between the convex face of the squeezer wing and the cylindrical wall.

The movements of the squeezers may be adjusted or regulated to insure a most effective action in washing various quantities of material and in washing different kinds of material. To accomplish this, the guide cams 16 and 17 are pivotally connected to the stationary wall 2 at 21 and 22 respectively, and they may be adjusted about the axes of these pivots as will be presently described. By adjusting these cams toward and away from the axis of the rotary carrier, the movements of the squeezer wings may be varied or regulated. When the cams occupy their various operative positions they lie eccentrically to the axis of the rotary carrier, but they may also be adjusted to an abnormal position (Fig. IV) wherein their arcuate faces are approximately concentric with the axis of the carrier. When the guide cams 16 and 17 occupy the last mentioned positions, the pins 14 projecting from the squeezers, will travel in a circular path and the squeezers will not be deflected toward the partition 9. This is an advantage in treating material that should not be subjected to the squeezing operations. When the cams are adjusted to eliminate the squeezing action, a short arcuate retaining bar 24 forms a continuation of the cam 17 and forms part of the means for retaining the squeezers in their inoperative positions. When the pins 14, projecting from the squeezers, pass from the cam 17, they tend to swing toward the axis of the carrier, but a movement of this kind is then prevented by the stationary retaining bar 24.

The adjustable operating means, whereby the cam guides may be adjusted and held in different positions, comprises arms 25 and 26 (Fig. I) rigidly secured to the cam guides by means of the pivot bolts 21 and 22, respectively, a yieldable device connecting these arms as will be presently described, a link 27 pivoted at 28 to the arm 26, an operating arm 29 pivoted to link 27, a worm gear 30 secured to arm 29, a rotatable worm 31 meshing with said worm gear, and an operating wheel 32 secured to the worm 31. Both of the cams 16 and 17 may be adjusted simultaneously by turning the operating wheel 32, and it is important to note that this may be accomplished while the rotary carrier is in motion.

The yieldable connection between the arms 25 and 26 (Fig. I) comprises a T-shaped spring seat 33 pivoted to the arm 26, rods 34 rigidly connecting said spring seat 33 to a spring seat 35, an intermediate spring seat 36 slidably fitted to the rods 34, a connecting rod 37 securing the intermediate spring seat 36 to the arm 25, springs 38 between the spring seats 35 and 36, and springs 39 between the spring seats 33 and 36. This yieldable connecting device allows the upper cam guide 16 to move upwardly on its pivot 21, thereby preventing the parts from being injured by severe squeezing operations. When the cam guide 16 moves upwardly from the position shown in Fig. I, the arm 25, rod 37 and spring seat 36 also move upwardly so as to compress the springs 38; and when the parts are restored by the springs 38 the spring seat 36 is forced downwardly on springs 39. The long springs 38 allow the cam guide 16 to move upwardly and they serve as means for restoring said cam guide. The springs 39 serve as shock absorbers and allow the spring seat 36 to be forced downwardly without jarring or hammering the yieldable connecting device.

I claim:—

1. In a washing machine, a carrier for the material to be washed, a squeezer carried by said carrier, means for moving said squeezer toward and away from a portion of said carrier so as to squeeze said material while the carrier is in motion, said means including a guide for directing said squeezer toward and away from said portion of the carrier, and an operating device for shifting said guide to vary the movements of said squeezer, said operating device being movable independently of said carrier so as to

shift said guide while the carrier is in motion.

2. In a washing machine, a liquid receptacle, an apertured carrier rotatably arranged in said receptacle, said carrier having a partition sub-dividing it into separate compartments extending longitudinally thereof, a squeezer in each of said compartments, and means for positively moving said squeezers toward and away from said partition during rotation of said carrier.

3. In a washing machine, a liquid receptacle, an apertured carrier rotatably arranged in said receptacle, said carrier having a partition sub-dividing it into separate compartments extending longitudinally thereof, squeezers in said compartments, and means whereby said squeezers are positively moved toward said partition while the contents of the compartments are moving away from the liquid entering the rotatable carrier from said receptacle, and whereby the squeezers are moved away from said partition and held separated from the partition until the material has been immersed in the liquid.

4. In a washing machine, a liquid receptacle, an apertured carrier rotatably arranged in said receptacle, said carrier having a partition sub-dividing it into separate compartments extending longitudinally thereof, squeezers in said compartments, and means for positively moving said squeezers toward and away from said partition while the material being washed is above said partition.

5. In a washing machine, a carrier for the material to be washed, an arcuate wing providing a squeezing device for squeezing the material carried by said carrier, operating devices including cams for directing said squeezing device toward and away from a portion of said carrier, and means for securing said cams in different operative positions to vary the movements of said squeezing device.

6. In a washing machine, a carrier for the material to be washed, a squeezing device for squeezing the material carried by said carrier, operating devices including cam guides for directing said squeezing device toward and away from a portion of said carrier, pivotal supports for said cam guides, and means for securing said cam guides in different operative positions to vary the movements of said squeezing device.

7. In a washing machine, a carrier for the material to be washed, a squeezing device for squeezing the material carried by said carrier, operating devices including guides for directing said squeezing device toward and away from a portion of said carrier, and means for adjusting said guides simultaneously to vary the movements of said squeezing device.

8. In a washing machine, a carrier for the material to be washed, a squeezing device for squeezing the material carried by said carrier, operating devices including connected guides for directing said squeezing device toward and away from a portion of said carrier, and an adjusting device operable to move the connected guides simultaneously.

9. In a washing machine, a carrier for the material to be washed, a squeezer carried by said carrier, means for moving said squeezer toward and away from a portion of the carrier so as to squeeze the material carried thereby, said means including a squeezer guide adapted to occupy various operative positions so as to vary the movements of said squeezer and also adapted to occupy an abnormal position wherein it will retain said squeezer in an inoperative position, and means for retaining said squeezer guide in its different positions.

10. In a washing machine, a carrier for the material to be washed, a squeezer carried by said carrier, means for moving said squeezer toward and away from a portion of the carrier so as to squeeze the material carried thereby, said means including an arcuate squeezer guide adapted to occupy various operative positions wherein it lies eccentrically relative to the axis of said carrier, and also adapted to occupy an abnormal position wherein its arcuate face is approximately concentric relative to said axis, and means for securing said arcuate squeezer guide in said positions.

11. In a washing machine, a carrier for the material to be washed, a squeezer carried by said carrier, means for moving said squeezer toward and away from a portion of the carrier so as to squeeze the material carried thereby, said means including an arcuate squeezer guide adapted to occupy various operative positions wherein it lies eccentrically relative to the axis of said carrier, and also adapted to occupy an abnormal position wherein its arcuate face is approximately concentric relative to said axis, means for securing said arcuate squeezer guide in said positions, and a squeezer retainer associated with said squeezer guide to retain the squeezer in its inoperative position.

12. In a washing machine, a carrier for the material to be washed, a squeezer carried by said carrier, means for moving said squeezer toward and away from a portion of the carrier so as to squeeze the material carried thereby, said means including an arcuate squeezer guide adapted to occupy various operative positions wherein it lies eccentrically relative to the axis of said carrier, and also adapted to occupy an abnormal position wherein its arcuate face is approximately concentric relative to said axis, means for securing said arcuate squeezer guide in said positions, and a squeezer retainer associated with said squeezer guide to retain the squeezer in its inoperative position, said

squeezer retainer being a stationary member arranged concentrically to said axis so as to form a continuation of said squeezer guide.

13. In a washing machine, a rotary carrier for the material to be washed, a squeezer carried by said carrier, means for moving said squeezer toward and away from a portion of said carrier so as to squeeze the material carried thereby, said means including an arcuate squeezer guide, a pivotal support for said guide, the latter being movable to different positions about the axis of said pivotal support so as to vary the movements of said squeezer, means for retaining said squeezer guide in an abnormal position wherein its arcuate face is approximately concentric relative to the axis of said carrier.

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