

April 8, 1930.

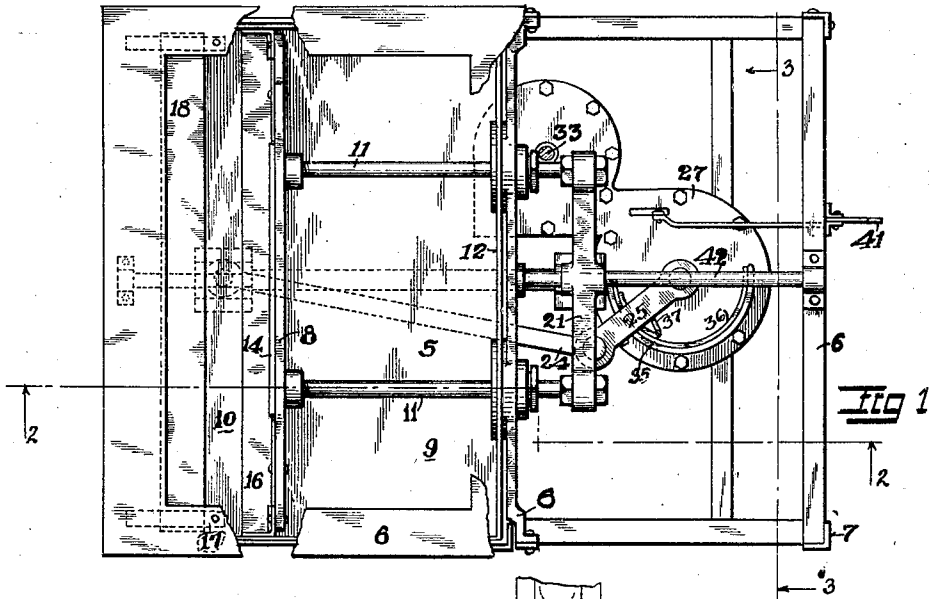
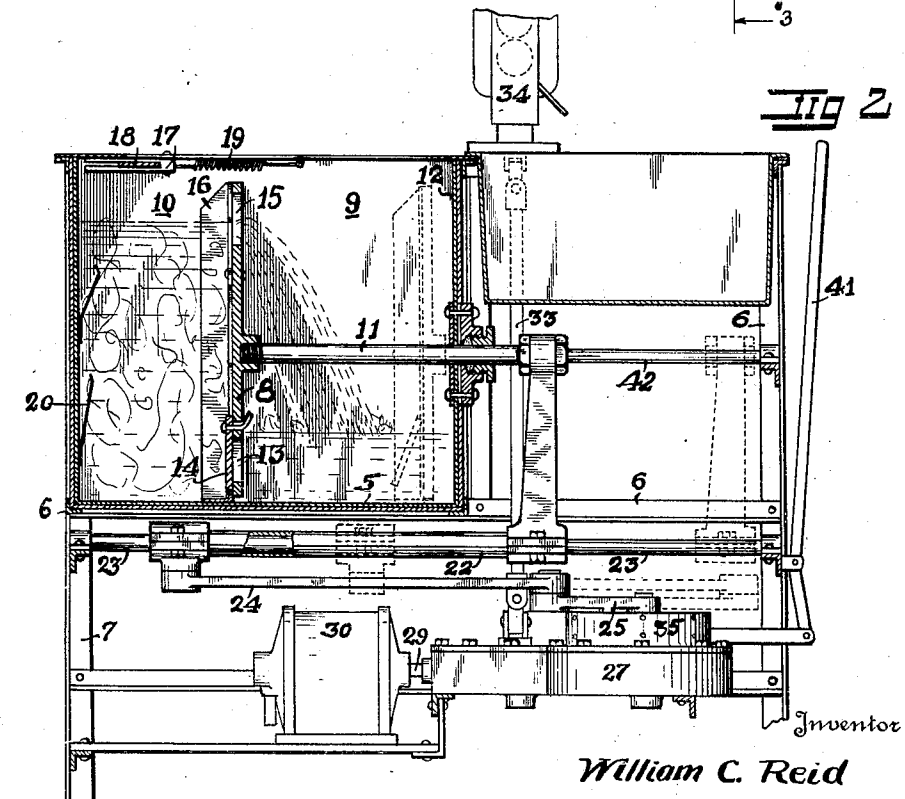
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1,753,752

WASHING MACHINE

Filed April 11, 1928

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

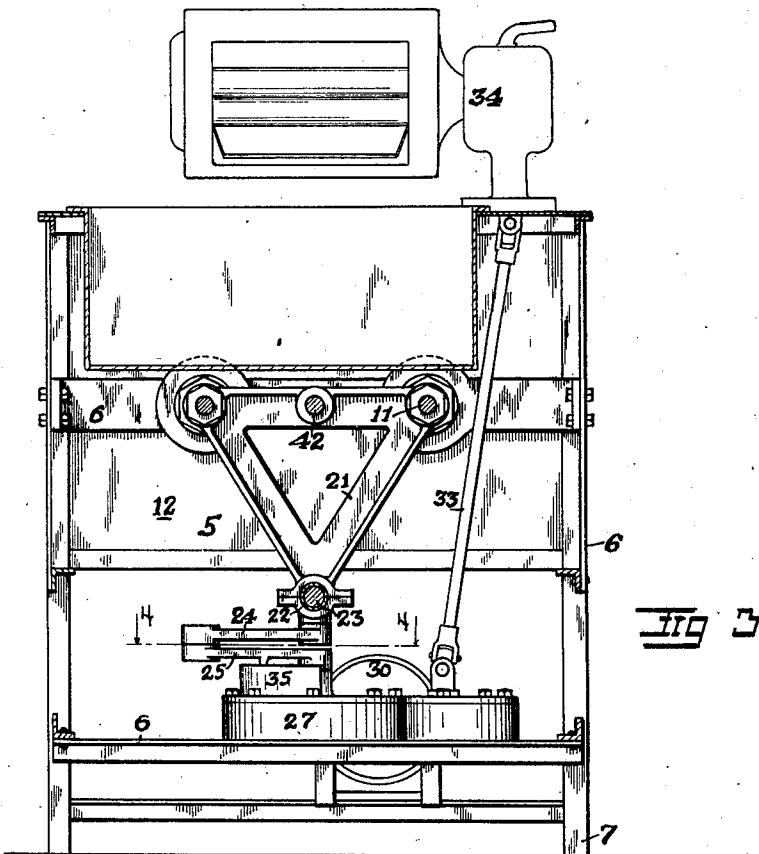
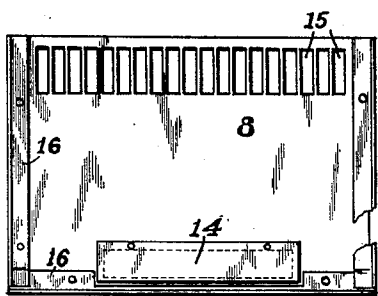


FIG 5

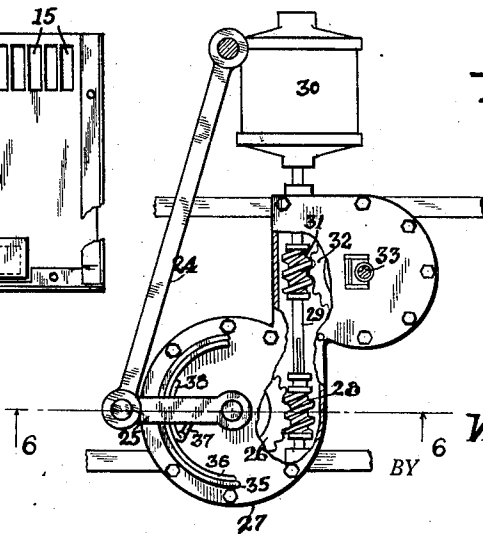


FIG 4

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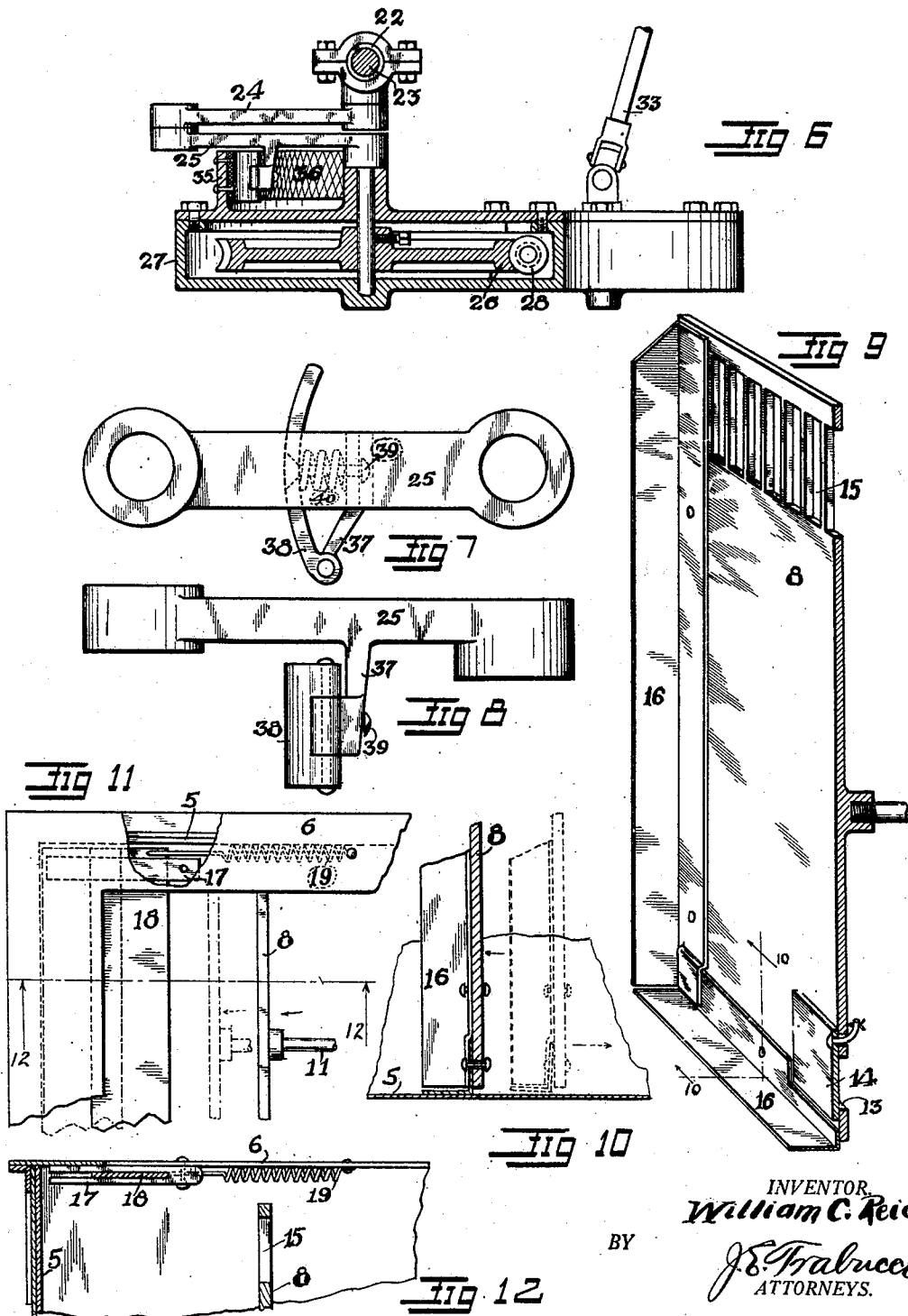
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WASHING MACHINE

Filed April 11, 1928

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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WASHING MACHINE

Application filed April 11, 1928. Serial No. 269,255.

This invention relates to improvements in washing machines of the reciprocating plunger type wherein is embodied a motor driven mechanism adapted to agitate the clothes to be cleansed.

5 An object of my invention is to provide a novel washing machine having a plunger adapted to move backwardly and forwardly with reciprocating motion inside an inclosure, whereby the clothes contained therein may be
10 subjected to a compressing and releasing action while washing fluid is forced there-through.

15 Another object of my invention is to provide a washing machine wherein is embodied suitable mechanism for actuating a plunger backwardly and forwardly within an enclosure, whereby the washing fluid contained therein is caused to move in a complete cycle
20 in such a manner that successive charges of the fluid are forcibly circulated through the clothing to be cleansed.

25 A still further object of my invention is to provide a washing machine having embodied therein novel means for smoothly operating a plunger backwardly and forwardly with reciprocating motion, whereby the water located in an enclosure may be so agitated as to thoroughly cleanse the objects located in
30 the enclosure.

Other objects more or less apparent will present themselves or will be specifically pointed out in the description to follow.

In the accompanying drawings:

35 Fig. 1 is a top plan view of a washing machine embodying my invention, showing a part of the top broken away and the operating mechanism thereof;

40 Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

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

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 3;

45 Fig. 5 is a face view of the plunger;

Fig. 6 is an enlarged sectional view taken on the line 6—6 of Fig. 4;

Fig. 7 is a detail side view of the crank arm which carries the braking device;

Fig. 8 is a top view of the said arm;

Fig. 9 is a perspective view of a part of the plunger; 50

Fig. 10 is an enlarged sectional view of the plunger taken on the line 10—10 of Fig. 9;

Fig. 11 is a side view of a fragmentary part of the safety plate mechanism showing the extreme position of the same in dotted lines; and 55

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 11. 60

Referring to the drawings, the numeral 5 designates a receptacle of any particular shape mounted on a frame 6 having suitable corner supporting posts 7 secured thereto.

Mounted in the receptacle 5 is a vertically disposed plunger 8 having its bottom and side edges positioned adjacent the corresponding walls of the receptacle so that the latter is divided into two compartments 9 and 10. The plunger 8 is so arranged as to move horizontally across the inside of the receptacle, and is preferably secured to actuating guides 11 which movably extend through the rear side wall 12 of the receptacle and suitable bearings located in the frame 6. The displacement of the plunger causes a variation in the size of the compartments 9 and 10, and the latter, which is located at the forward end of the receptacle, is adapted to serve as the washing chamber for the clothes to be
80 cleansed.

To permit the movement of the liquid from compartment 9 into compartment 10 when the plunger is carried backwardly toward the rear wall 12, I have provided an opening 13 in the lower part of the plunger which is closed at certain intervals by a hinged door or valve 14. When the plunger is moved forwardly, the door remains shut and the liquid in compartment 10 is forced upwardly 90

through the clothes into compartment 9, and when the plunger is moved backwardly the door is opened to permit the liquid to flow through the opening 13 back into compartment 10. At the upper part of the plunger I have provided a plurality of vertical slots 15, through which the liquid in compartment 10 may pass. The purpose of the slots is to allow some of the water in compartment 10 to pass into compartment 9, and at the same time prevent the clothes located in the former from passing over the top edge of the plunger when the plunger is moved to an extreme forward position.

To prevent the passing of liquid from compartment 10 into compartment 9 between the edges of the plunger and the side walls of the receptacle 5, I have secured shoes 16 to the plunger at points adjacent the side and bottom edges thereof. The shoes 16 are preferably constructed from a flexible material such as sheet copper, and are so positioned that they closely fit against the side and bottom walls of the receptacle, thereby sealing the space between the plunger and the said sides of the receptacle. The shoes upon moving with the plunger in a forward direction are firmly pressed against the sides of the receptacle 5 by the pressure of the compressed fluid against them, thereby preventing any clothes from jamming between the edges of the plunger 8 and the sides of the receptacle.

Slidably positioned inside supporting guide members 17 which are secured to the top of the frame 6 is a top cover plate 18, which is adapted to partially close the open top of the receptacle. Springs 19 which are each secured at one of their ends to the frame 6 and at their opposite ends to the cover plate, serve to flexibly and normally maintain the said cover plate over the top of the receptacle. In the event the operator of the washing machine happens to have her arm inside the receptacle when the plunger is moved forwardly, she is not particularly in danger of injury, owing to the fact that the top cover plate 18 is adapted to move forwardly upon the distention of the springs 19.

A plurality of leaf springs 20 secured to the forward wall of the receptacle serve to push the clothes backwardly after the plunger moves from an extreme forward position toward the rear wall 12.

Secured to the ends of the guides 11 is a triangular shaped member 21 which is securely clamped at its lower end to the end of a pipe 22 by bolts or other suitable means. The pipe 22 movably extends around a horizontally disposed guide rod 23 which is suitably secured to the frame 6. The opposite ends of the pipe 22 is pivotally attached to an end of an operating arm 24, while a crank arm 25 is pivotally attached to the opposite end of the said arm. The crank arm 25 is

secured to a gear 26 which is located inside a casing 27, and a worm gear 28 secured to a motor shaft 29 meshes with the gear 26, thereby enabling the motor 30 to move the crank arm in a circular direction.

Also located on the motor shaft 29 is a worm gear 31 which, through a gear 32, turns the rod 33 to operate a clothes wringer 34.

Located on top of the casing 27 is a semi-circular projection 35 which, through pins, has a brake lining 36 secured to its inside surface. The crank 25 is provided with a downwardly extending projection 37 to which is pivotally attached, as by a pin, a brake shoe 38. The brake shoe is movably attached to the projection 37 at its central part by a pin 39 having a spiral spring 40 located around the same, which spring normally maintains the brake shoe in firm contact with the brake lining 36. The brake shoe in resiliently contacting with the brake lining, places a load on the motor and causes the motor to smoothly operate the plunger backwardly and forwardly without any sudden or jerky motion.

A lever 41 pivotally attached on the frame 6 and suitably connected to the operating gears located inside the casing 27, serves as a means for starting and stopping the operation of the machine.

A horizontally extending guide rod 42 secured to the frame 6 and having the triangular member 21 slidably mounted thereon serves as a means for properly supporting the latter in an operating position.

When the machine is to be operated, suitable cleansing fluid is placed in the receptacle 5 to approximately half fill the same. The gears 28 and 26 are commenced to operate by manipulating the lever 41, thereby causing the plunger 8 to move backwardly and forwardly through its connection with the above-described operating mechanism. As the plunger moves forwardly the door 14 is closed and the fluid in compartment 10 is raised through and around the clothes while the latter are being raised and compressed. When the plunger is about to complete its forward stroke, the rising fluid passes through the slots 15 in the plunger and falls into compartment 9. After the plunger completes its forward stroke and commences to move backwardly the leaf springs 20 push the compressed clothes backwardly, thereby separating them so the fluid can again pass through them. As the plunger moves backwardly, the fluid in compartment 9 forces the door 14 open, thereby allowing the fluid to pass into compartment 10 through the opening 13 in the plunger.

It is apparent to those skilled in the art that my improved washing machine may embody forms or constructions other than that illustrated and described, so for this and other apparent reasons it is my desire to have

the appended claim define the limits my invention may assume.

Having described my invention, what I claim is:

5 In a washing machine, a receptacle adapted to contain washing fluid and articles to be cleansed, a plunger located in the receptacle and adapted to move with reciprocating motion backward and forward, a motor-driven mechanism for actuating the plunger, and
10 a braking mechanism for giving the motor a load at all times, whereby the plunger may be smoothly operated backward and forward.

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