C. J. SHIMER.

LAUNDRY MACHINE.

APPLICATION FILED FEB. 24, 1914.

1,123,408.

Patented Jan. 5, 1915.

Fig. 5

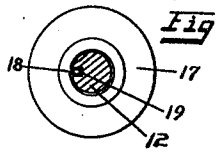


Fig. 6

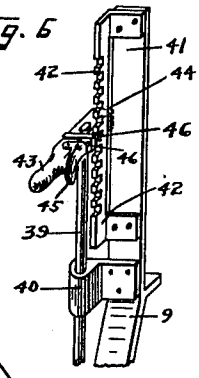


Fig. 7

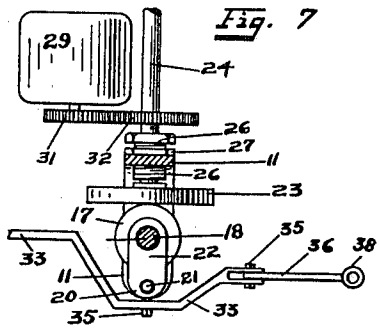


Fig. 4

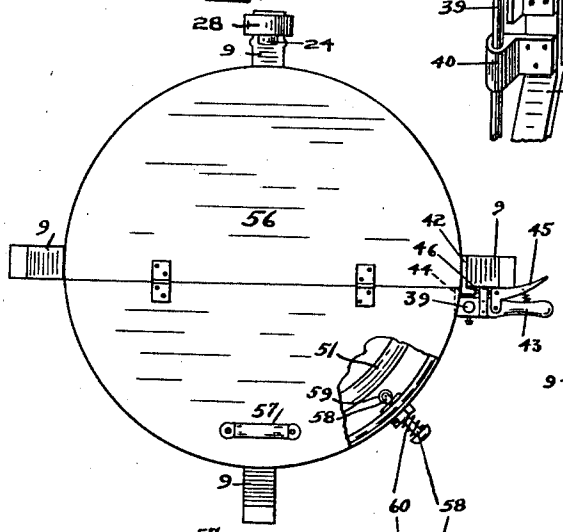
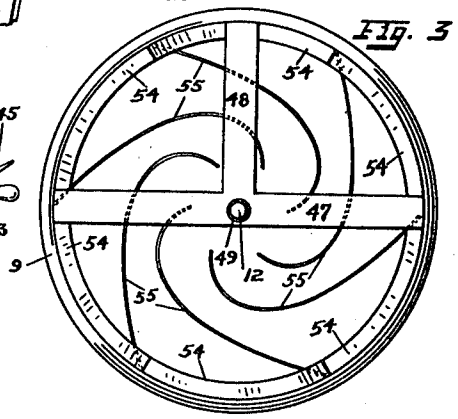
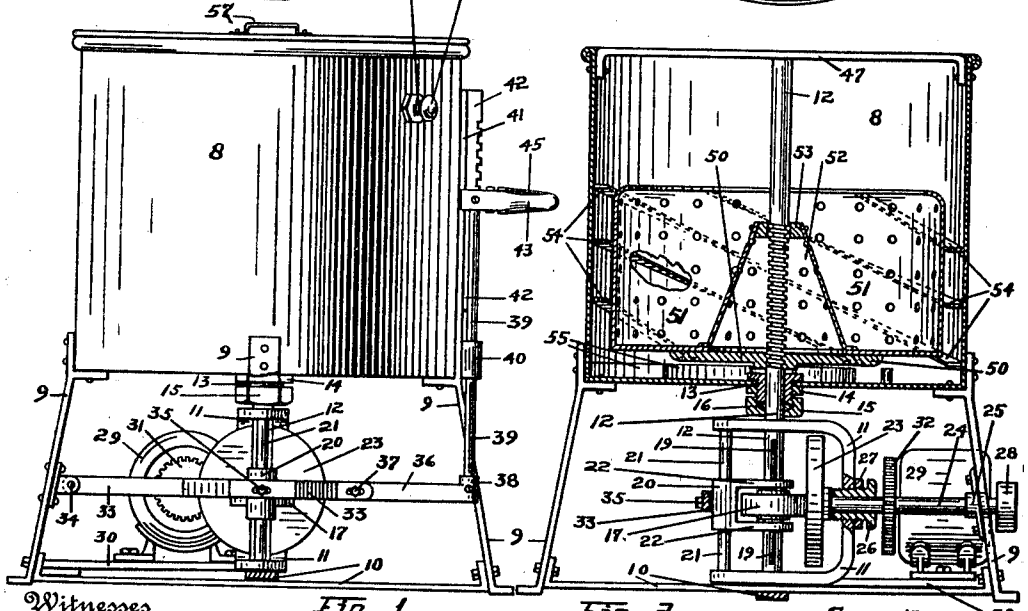


Fig. 3





Witnesses

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Fig. 1

Fig. 2

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UNITED STATES PATENT OFFICE.

CALVIN J. SHIMER, OF SIOUX CITY, IOWA.

LAUNDRY-MACHINE.

1,123,408. Specification of Letters Patent. Patented Jan. 5, 1915.

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To all whom it may concern:

Be it known that I, CALVIN J. SHIMER, a citizen of the United States, and a resident of Sioux City, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Laundry-Machines, of which the following is a specification.

This invention relates to laundry machines.

The primary object of the invention is the construction of a machine wherein material may be cleansed and the cleansing fluid then forced therefrom without necessitating handling of the material either during or between the operations.

Another object of the invention is the construction of a device of this class whereby both cleansing and wringing are accomplished by centrifugal force.

A further object is the production of a machine of this sort simple and inexpensive in construction yet thoroughly reliable in operation.

A still further object of the invention is the production in a device of this class of improved transmission and controlling mechanism requiring the application of comparatively little power in operation.

With these and several other objects in view, the invention, consisting in the construction, combination and novel arrangement of parts, will be fully understood from the following description, reference being had to the accompanying drawings which form a part of this application and in which like characters of reference indicate corresponding parts throughout the several views, of which,—

Figure 1 is an elevation of a device constructed in accordance with my invention, with one leg broken away; Fig. 2 is a central vertical section of the same taken at right-angles to Fig. 1; Fig. 3 is a plan view of the outer tub; Fig. 4 is a plan view of Fig. 1, with the cover cut away to reveal the internal characteristics; Fig. 5 is an enlarged transverse section of the upright shaft with sliding disk associated therewith; Fig. 6 is a perspective view of the controlling means; and Fig. 7 is a plan view of the transmission with portions broken away and shown in section.

Although I have illustrated the preferred embodiment of the invention, I would not be understood as being limited to the specific structure chosen for illustration, for various modifications and alterations in the details of construction and arrangement of parts may be made without departing from the spirit or scope of the invention as defined in the appended claims.

The invention contemplates, broadly, mechanism including a fluid-retaining casing inclosing a pervious member adapted to receive material to be cleansed. The latter member is normally submerged in the cleansing fluid in the lower portion of the casing, in which position the cleansing process may be performed in any preferred manner.

Means are provided for raising and rapidly rotating the pervious member above the line of the cleansing fluid, whereby the fluid is forced from the material, all of which will presently be made clear.

Referring, now, to the illustrations, 8 represents an outer tub, preferably of sheet-metal and mounted upon legs, 9, the lower portion of each of which is connected with its opposite companion by a cross-member, 10.

Upon one of the cross-members is mounted a U-shaped gear frame, 11, the arms of which are horizontally-disposed and have journaled for rotation therein an upright shaft, 12, disposed coaxially within the tub and encircled by a packing-gland, 13, between the head of which and a nut, 14, the bottom of the tub is firmly clamped. Intermediate the gland and a gland-nut, 15, engaged thereon, is inserted suitable packing, 16, which prevents leakage around the shaft.

Any suitable transmission means may be employed to impart rotation to the shaft; but, inasmuch as a gradually changeable and reversible transmission is greatly to be preferred, I employ friction-disk mechanism consisting of a disk, 17, encircling the upright shaft and movable longitudinally thereof by means of a key, or feather, 18, (Fig. 5) traveling in a groove, 19, in the shaft.

A shifting-head, 20, is slidably-mounted upon an upright guide-rod, 21, supported between the extended arms of the gear frame. The shifting-head is provided with arms, 22, which inclose the shaft 12 and freely engage opposite sides of the friction-wheel 17, the face of which engages a friction-disk, 23,

carried upon a horizontal shaft, 24, journaled in a bearing, 25, mounted upon one of the supporting legs; and a bushing, 26, threaded through the upright portion of the gear frame, and adjustably-secured therein by a lock-nut, 27, whereby the inner end of the bushing may be kept in close engagement with the hub of the disk 23, and thus insure coöperation of the two friction members.

The shaft 24 protrudes through the leg supporting it and carries on its outer end a fixed pulley, 28, for belt connection with any suitable source of power. In the form selected for illustration, however, the power is derived from an electric motor, 29, mounted upon a platform, 30, carried by the cross-members 10. The motor shaft carries a pinion, 31, intermeshed with a spur-gear, 32, fixed upon the shaft 24.

The preferred controlling means consists of a lever, 33, fulcrumed at one end, as at 34, to one of the legs and off-set near its center to pass the transmission members. The lever is secured to the shifting-head 20 by a bolt, 35, inclosed by a longitudinal slot in the lever to permit oscillation of the latter, the inner end of which is bifurcated to receive the inner end of an arm, 36, and is longitudinally slotted to inclose a bolt, 37, extending laterally through the arm. The said arm terminates in a collar, 38, secured upon the lower end of an upright rod, 39, free to move longitudinally within a bearing, 40, secured upon a leg, 9, having a portion, 41, extending upwardly adjacent the tub and upon which is mounted a rack, 42, disposed in parallelism to the adjacent rod. To the upper end of the rod is secured a lateral handle, 43, having a flange, 44, which travels intermediate the rack and tub. A lever-grip, 45, carried by the handle, controls a pawl, 46, which normally engages the rack.

Across the top of the tub extends a cross-brace, 47, formed integrally with an intermediate brace, 48. An opening, 49, is provided in the former member to receive the upper end of the upright shaft, 12, and prevent lateral movement thereof. The portion of the shaft 12 in the lower part of the tub is threaded and carries a spider, 50, in threaded engagement therewith and supporting a tub, 51, having a perforated periphery and firmly secured upon the said spider.

Within the tub and coaxial therewith is a conically-shaped tube, 52, having a perforated periphery and firmly secured to the bottom of said tub. The bottom of the inner tub is cut out within the cone. The upper end of the cone is secured to a collar, 53, freely encircling the shaft 12.

On the inner periphery of the outer tub are secured helically-inclined guide vanes, 54; and the bottom of the said tub is equipped with scroll-shaped guide vanes, 55, which approach the center from the periphery in curves of gradually decreasing radii.

The fixed tub is provided with a cover, 56, half of which is fixed and the opposite half of which is hinged thereto and provided with a handle, 57.

In practical operation the clothes are placed within the rotatable tub and sufficient cleansing fluid introduced to cover them. Power is then applied to the shaft 24 and the controlling means operated to move the disk 17 toward the periphery of its companion and thereby impart rotation to the upright shaft and inner tub. Since the cleansing process is performed in the lower portion of the outer tub, it is clear that rotation of the threaded shaft must not be in a direction to raise the inner tub. As the tub is rotated the cleansing fluid is forced outwardly by centrifugal force through the perforations of the revolving tub and, by virtue of the side and bottom guide veins, is whirled downwardly and inwardly where it is received within and thrown radially from the perforated cone. A constant circulation of the fluid through the clothes is thus produced, the pressure varying according as the speed of the tub. The cleansing process being completed, the controlling lever is operated to rotate the threaded shaft in the opposite direction whereby the inner tub will be raised until the supporting spider reaches the top of the threaded portion of the shaft, in which position the inner tub is above the level of the fluid and is rapidly rotated until the fluid has been eliminated from the clothes.

Obviously, if the machine is suddenly stopped, during or after completion of the wringing process, the tendency of the tub, due to its momentum, would be to follow down the threaded shaft and again enter the fluid. To prevent such an occurrence any suitable means may be employed, preferably a brake consisting of a push-rod, 58, penetrating the outer tub and carrying on its inner end a friction-roller, 59, positioned to engage the revolving tub and held normally in spaced relation thereto by a compression spring, 60, interposed between the outer tub and the head of the push-rod.

Although the device of my invention finds its greatest employment in laundrying with soap and water, still its advantages as a dry cleaner are readily apparent, particularly inasmuch as the goods are both cleaned and dried before removal from the machine, thus conserving the gasolene.

Since the more particular feature of the invention, which I desire to protect broadly herein, resides in an embodiment wherein the cleansing is performed in the lower portion of a fluid-retaining structure, and the

wringing in the upper portion, I do not wish to be restricted to the specific cleansing mechanism presented.

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

1. In a machine of the class described an upright cylindrical casing, a pervious member rotatable coaxially therewithin and movable to and between upper and lower positions therein, and means for rotating and moving said pervious member to and between said positions.

2. In a machine of the class described a fluid-retaining member; a threaded shaft rotatably-mounted therein; a pervious member mounted in threaded engagement upon said shaft, said pervious member being adapted to receive material to be cleansed and movable, by rotation of said shaft, to and between upper and lower positions in said fluid-retaining member; means for cleansing the material; and means for rotating said shaft whereby the pervious member is raised and revolved above the level of the cleansing fluid.

3. In a machine of the class described an upright cylindrical fluid-retaining casing; a threaded shaft mounted rotatably and coaxially therein; a tub having a central bottom opening, a pervious periphery and a pervious tube inclosing said opening; a threaded connection between said shaft and tub; means for rotating said shaft whereby the tub is revolved in the lower portion of the casing; means for guiding the fluid downwardly and inwardly of the casing; and means for reversing the direction of rotation of said shaft whereby the tub is raised and revolved above the level of the fluid.

4. The combination with an outer upright tub having guide vanes on the inner periphery and bottom thereof and an inner pervious tub, of an upright threaded shaft mounted rotatably within and encircled by said tubs; a threaded connection between said tub and shaft; and reversible means for rotating said shaft.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CALVIN J. SHIMER.

Witnesses.
MILTON S. CRANDALL,
GEO. M. KELLOGG, JR.