C. SHORMAN.

WASHING MACHINE.

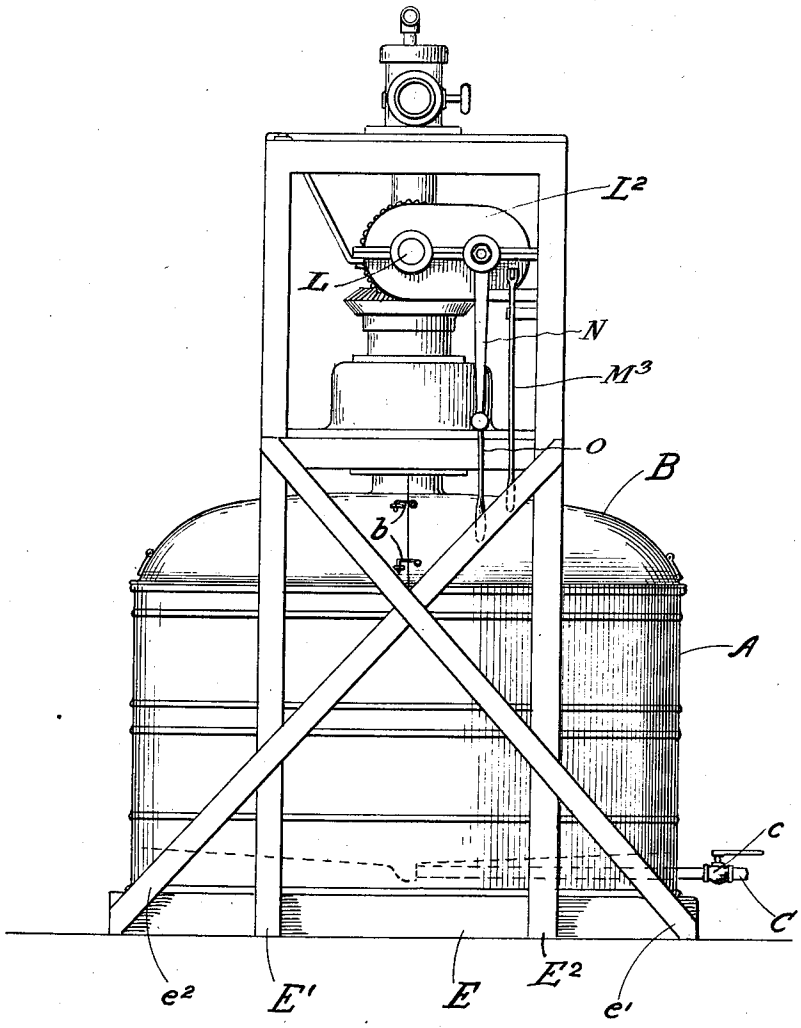
APPLICATION FILED AUG. 20, 1912.

1,165,136.

Patented Dec. 21, 1915.

4 SHEETS—SHEET 1.

Fig. 1.




WITNESSES

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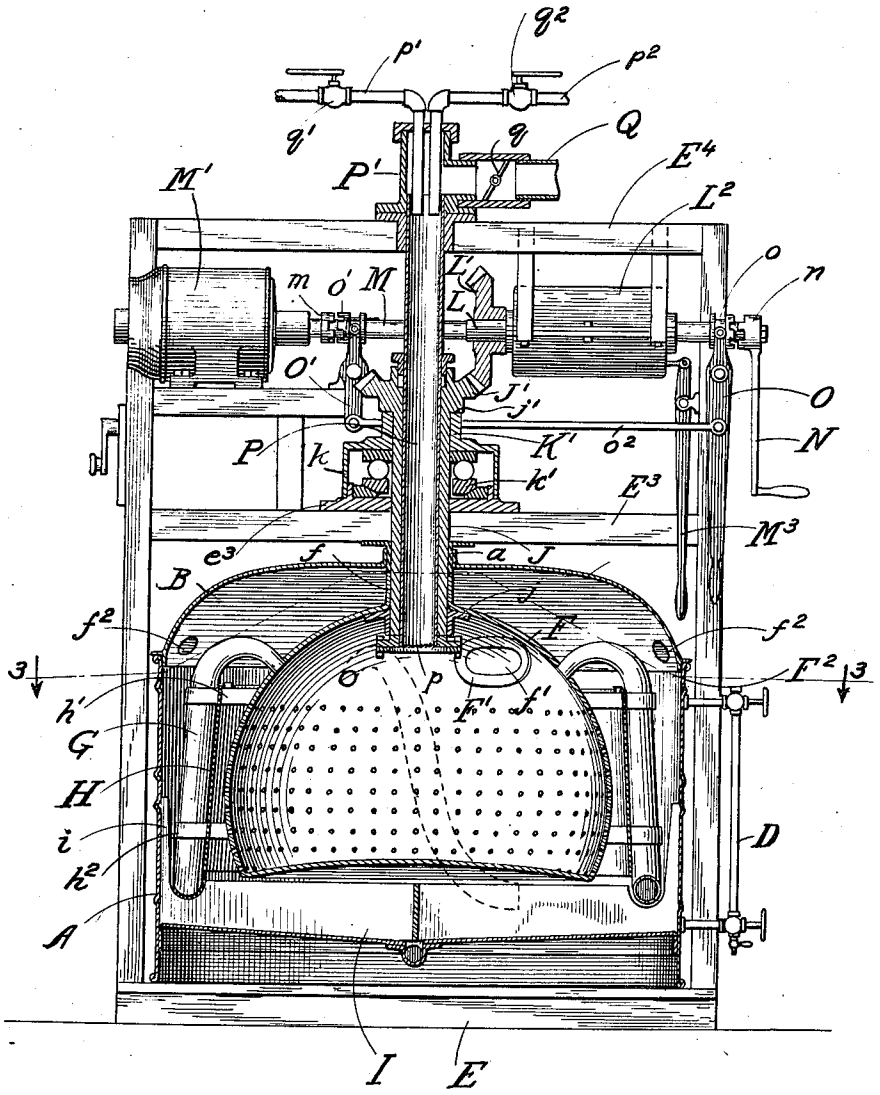
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4 SHEETS—SHEET 2.

*Fig. 2.*




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4 SHEETS—SHEET 3.

Fig. 4.

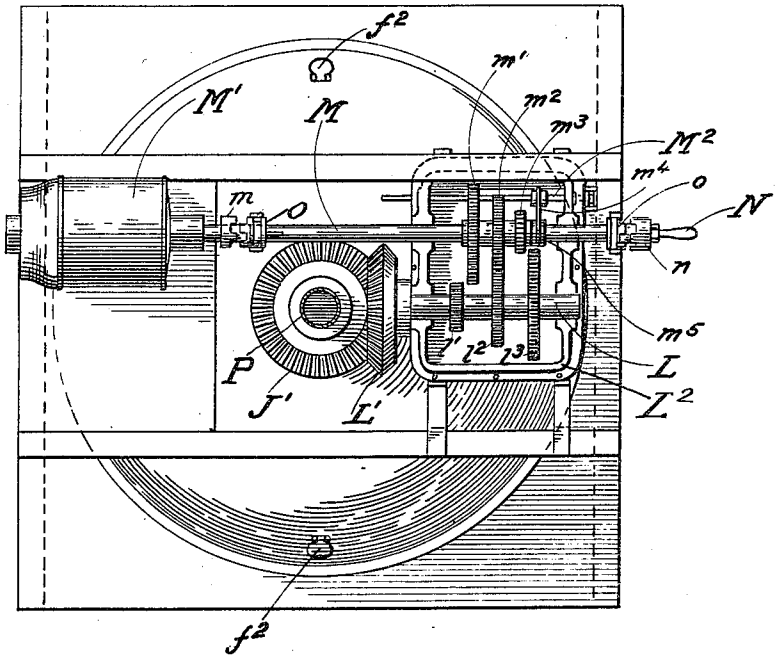
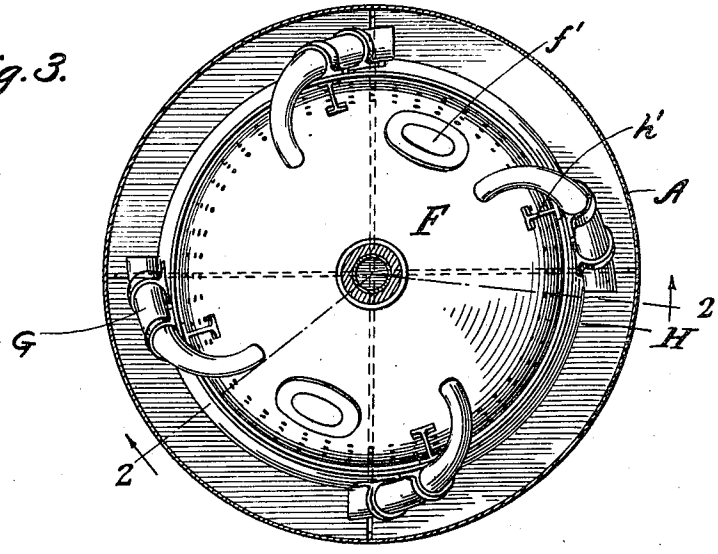



Fig. 3.




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4 SHEETS—SHEET 4.

Fig. 5.

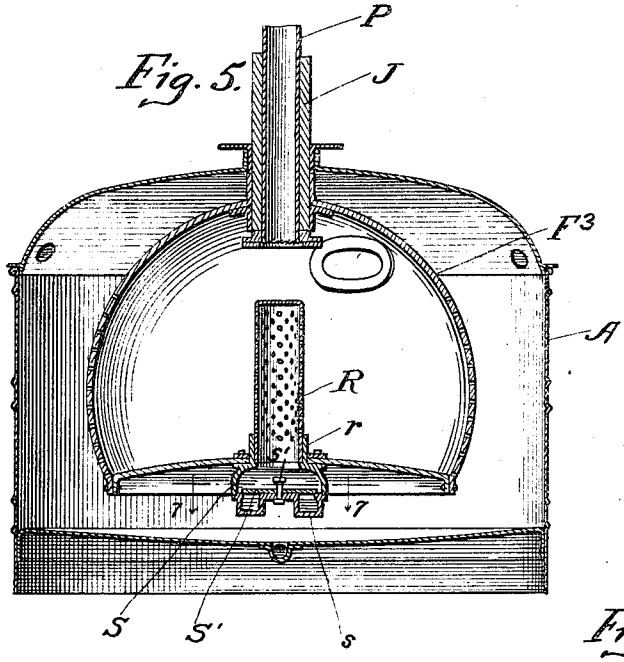



Fig. 6.

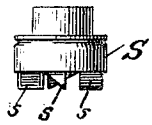



Fig. 7.

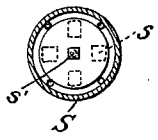
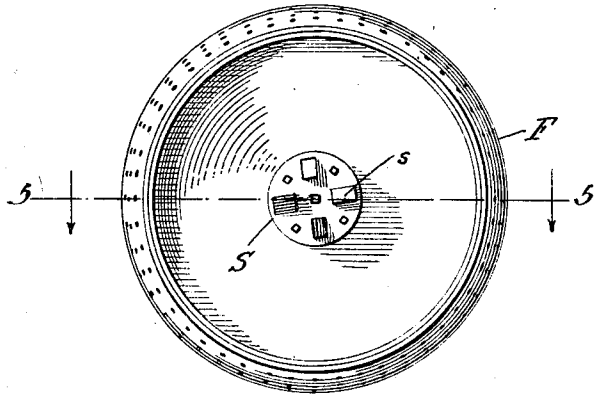



Fig. 8.




WITNESSES

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# UNITED STATES PATENT OFFICE.

CHAUNCEY SHORMAN, OF CHICAGO, ILLINOIS.

## WASHING-MACHINE.

1,165,136. Specification of Letters Patent. Patented Dec. 21, 1915.

Application filed August 20, 1912. Serial No. 716,003.

*To all whom it may concern:*

Be it known that I, CHAUNCEY SHORMAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

My invention relates in general to laundry machinery and more particularly to washing machines.

As the cleansing of articles is accomplished by subjecting them thoroughly to water impregnated with soap, it is usual in washing machines either to agitate the articles so as to expose all portions of them to the suds, or to force the suds through the articles.

The object of my invention is to provide an improved washing machine in which the suds will be circulated through the articles by the action of centrifugal force, thereby avoiding the wear upon the articles incident to their mechanical agitation in the one type of machine, and rendering unnecessary the use of pumps to force the suds through the articles in the other type of machine.

A further object of my invention is to provide a centrifugal laundry machine adapted primarily for use in washing and rinsing articles, but also adapted for use in extracting the water and moisture from the washed articles.

A still further object of my invention is to provide an improved washing machine, which will be economical in operation, efficient in use, and comparatively simple in construction.

My invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated as embodied in a convenient and practical form, and in which—

Figure 1 is an elevational view; Fig. 2 is a vertical section taken substantially on line 2, 2, Fig. 3; Fig. 3, a horizontal section on line 3, 3, Fig. 2; Fig. 4, a plan view; Fig. 5, a central vertical section of a modified form of my invention taken on line 5, 5, Fig. 8; Fig. 6, a detail elevational view of the scoop shown in Fig. 5 detached; Fig. 7, a detail sectional view on line 7, 7, Fig. 5; and Fig. 8, a plan view of the bottom of the basket looking upwardly with respect to Fig. 5.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

Reference letter A indicates a receptacle of any suitable size and construction for containing the water impregnated with soap and for inclosing the basket, or container, in which are placed the articles to be laundried.

B designates the cover of the receptacle A, which is preferably provided with relatively movable sections to permit access to the interior of the receptacle. Any suitable fastening devices, such as hooks *b*, may be provided for holding the sections of the cover in closed relation.

C designates an outlet conduit leading from an opening in the bottom of the receptacle, and *c* a valve for controlling the discharge of water through the conduit from the receptacle.

D designates a gage for indicating the height of the water level in the receptacle.

The receptacle A is supported upon any suitable structure, such, for instance, as a base E, above which extend pairs of uprights E′ and E² suitably strengthened by braces *e′* and *e²*.

F designates a container, or basket, inclosed within the receptacle A and adapted to hold the articles to be laundried.

*f′* designates an opening through the upper portion of the wall of the basket F through which the articles may be inserted and removed, such opening being closed by any suitable cover, such, for instance, as a plate F′ opening inwardly so as to be held closed by the centrifugal action due to the rotation of the basket. Openings *f²* are preferably formed in the cover plate F′ for a purpose hereinafter described.

Located around the basket and carried thereby are a plurality of scoops G in the form of pipes communicating at their upper ends with the interior of the top portion of the basket, and curved at their lower open ends to lie adjacent the bottom of the receptacle A.

H designates a baffling plate surrounding the basket F and located between the same

and the scoops G. Suitable brackets $h'$, $h^2$ support the upper and lower portions of the baffle plate H upon the exterior of the basket. The baffle H also serves to securely support the scoops G. In order to prevent the rotation of the water within the receptacle, radially extending baffle plates I are located beneath the basket F, the ends of such baffle plates preferably extending upwardly, as shown at $i$, between the scoops G and inner wall of the receptacle A.

The basket F is supported concentrically within the receptacle A and is provided with means for imparting thereto a rotary motion about a vertical axis. In the embodiment of my invention disclosed in the drawings, I have shown the basket F as supported by a vertical sleeve J having fixed to the upper end thereof a bevel gear wheel J'. The lower end of the sleeve J extends through a concentric opening in the upper surface of the basket and is surrounded by a flange $f$ on the basket which is secured to the sleeve. The sleeve also extends through the concentric opening in the cover B of the receptacle, a flanged bearing $a$ being interposed between the sleeve and a flange formed around the opening on the receptacle cover. An annular shoulder $j'$ is formed on the sleeve beneath a gear wheel J', such shoulder resting upon an underlying circular bearing K' fixed to the sleeve. Interposed between the circular bearing K' and a bearing plate $e^3$ mounted upon the transverse beam $E^3$ of the supporting frame are suitable ball bearings $k'$. In order to suitably inclose the ball bearings, a cylindrical housing $k$ is preferably carried at the lower edge of the bearing K' and overlies a circular flange on the plate $e^3$, as clearly shown in Fig. 2.

In mesh with the bevel gear J' is a bevel gear L' fixed upon a counter-shaft L extending through and supported at its ends by the walls of a two-part gear casing $L^2$.

M designates a power shaft suitably journaled upon the supporting frame and connected with the counter-shaft L to rotate the latter through suitable gearing, preferably adapted to change the speed of rotation of the counter-shaft. I have shown such transmission mechanism as comprising a series of different sized gears $l$, $l^2$ and $l^3$ fixed upon the shaft L with any one of which is adapted to mesh a corresponding gear wheel $m'$ $m^2$ or $m^3$ splined upon the power shaft M and adapted to be moved axially thereon by any suitable means, such, for instance, as a reciprocating rod $M^2$, carrying a yoke $m^4$ engaging an annular groove in a collar $m^5$ secured to a sleeve upon which are fixed the gear wheels $m'$, $m^2$ and $m^3$. The rod $M^2$ may be reciprocated by a lever $M^3$, as shown in Fig. 2.

M' designates a motor for driving the power shaft M through the medium of a clutch $m$ into engagement with which is adapted to be moved a clutch member $o'$ splined upon the power shaft M. The power shaft M may also be rotated by hand power through the medium of a crank N loosely mounted upon the end of the power shaft and provided with a clutch $n$ with which is adapted to engage a second clutch $o$ splined upon the power shaft. The clutch members $o$ and $o'$ are provided with collars having annular grooves in which engage yokes carried upon the upper ends of levers O and O', respectively. The levers O and O' are connected by the rod $o^2$ so that when the lever O is oscillated to clutch the motor to the power shaft the crank will be unclutched, and vice versa.

P designates a tube extending concentrically through the sleeve J and terminating within the basket F, a screen $p$ being preferably provided over the lower open end of the tube. The upper end of the tube P engages within a coupling P' into which extend the ends of conduits $p'$ and $p^2$ for delivering hot and cold water through the tube to the interior of the basket, and through the perforations therein, into the receptacle A. Suitable valves $q'$ and $q^2$, respectively, are provided for controlling the supply of hot and cold water so as to produce the desired temperature.

Q indicates a conduit communicating with the coupling P' and leading from a source of hot air.

$q$ indicates a valve in the conduit Q for controlling the flow of hot air through the conduit Q to the tube P.

The operation and manner of using the embodiment of my invention above described are as follows: The cover B of the receptacle A is opened and the plate F' removed from the opening $f'$ through the top of the basket F. The articles to be laundried are then inserted in the basket F, after which the opening in the basket and the cover B are closed. Water is allowed to flow through pipes $p'$ and $p^2$ until the water in the receptacle and basket has reached the desired level. The transmission lever $M^3$ is manipulated so as to connect the counter-shaft with the power shaft through the gears which will impart to the counter-shaft such speed as will rotate the basket with the desired velocity. The clutch lever O is then operated so as to couple the motor to the power shaft, or when the machine is to be operated by hand power, so as to connect the crank N with the power shaft. The meshed bevel gears L' and J' rotate the vertical sleeve J and with it the basket F. The centrifugal force resulting from the rotation of the basket will throw the water outwardly through the perforations in the basket against the inner surface of the baffle plate H. The baffle plate de-

flects the water downwardly. The curved tubular scoops G being submerged at their lower ends, the water passes into them and is drawn upwardly through them into the basket F by the suction created through centrifugal action and is then discharged radially through the articles in the basket, and out of the holes in the basket by centrifugal force. The fixed radial baffle plates I prevent the water rotating with the basket, and hence insure the movement of the lower ends of the tubular scoops relatively to the water in the receptacle. The suds, or water impregnated with soap, consequently is forced outwardly by centrifugal force through the articles in the basket and is thence lifted upwardly into the top of the basket by centrifugal action. The articles are, therefore, speedily cleansed by the passage of the suds through them. After the articles have been sufficiently washed, the suds may be drawn off through the outlet conduit C and fresh water supplied to the basket and receptacle, after which the basket may be again rotated so as to rinse the articles by circulating water through them by the centrifugal action. After the articles have been rinsed, the water is then drawn off and the basket rotated, preferably at higher speed, to extract the water from the laundried articles, through centrifugal action. This operation may be expedited by hot air supplied through the conduit Q. In this operation the valve $q$ is opened, and, preferably, openings $f^2$ through the cover of the receptacle are also opened, so that the centrifugal action of the rotating basket will draw the hot air through the tube P and throw the same radially through the articles, after which the air passes out through the openings $f^2$ in the cover of the receptacle.

In Figs. 5 to 8, inclusive, I have shown a modified embodiment of my invention in which the tubular scoops are omitted and a central inlet perforated conduit R provided within the basket F. The conduit R extends upwardly through the lower wall of the basket and is secured thereto in any suitable manner, as by means of a flanged collar $r$. Located below the bottom of the basket and communicating with the conduit R is a chamber S from which depend a plurality of inclined scoops $s$. S′ designates a plate within the chamber S overlying the inlets from the scoops. $s'$ indicates a post upon which the plate S′ is centered.

The operation of the embodiment of my invention shown in Figs. 5 to 8 is similar to that above described in connection with Figs. 1 to 4, except that the water is lifted upwardly within the center of the basket. The water is thrown outwardly through the perforations in the basket and is scooped up by the scoops $s$ and drawn past the valve plate S′ through the perforated central conduit R into the center of the basket.

From the foregoing description it will be observed that I have invented an improved laundry machine, in which the suds are circulated through the articles by centrifugal action, thereby quickly cleansing the articles without agitating them and without the necessity of employing pumps to circulate the suds. It will be further observed that my improved machine may also be used for rinsing the washed articles, and also for drying them in the manner commonly done by the use of centrifugal extractors.

While I have described more or less in detail the specific form in which I have illustrated my invention as embodied, yet I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, proportion of parts, and substitution of equivalents, as circumstances may require, or as may be deemed expedient.

What I claim is:

1. In a centrifugal washing machine, the combination with a tank, of a perforated rotary basket within said tank, a conduit carried by said basket and leading thereinto at a point nearer its axis of rotation than and above the plane of the perforations therethrough, said conduit extending from a point adjacent the bottom of said basket, driving means for rotating said basket at high speed, and baffles fixed to said tank beneath said basket, whereby water will be discharged readily by centrifugal action through the perforations of the basket and returned through said conduit to the interior of the basket.

2. In a centrifugal washing machine, the combination with a tank, of a rotary basket within said tank having outlets therefrom, a conduit carried by and leading into said basket at a point nearer its axis of rotation than said outlets and extending from a point adjacent the bottom of said tank, a baffle plate surrounding said basket for directing the water discharged by centrifugal action from the basket toward the bottom of said tank, driving means for rotating said basket at high speed, and fixed baffles in the bottom of said tank beneath said basket, whereby water will be discharged by centrifugal action through the perforations in said basket and returned through said conduit to the interior of the basket, so as to continuously circulate through the articles in the basket.

3. In a centrifugal washing machine, the combination with a tank, of a perforated rotary basket within said tank, a vertical hollow shaft extending at its lower end through and rigidly secured to the top of said basket, means for supporting said shaft and thereby supporting said basket, means for imparting rotary motion to said hollow

shaft so as to rotate the basket secured thereto, a tube concentrically extending through said hollow shaft and terminating at its lower end within the top of said basket, and means for supplying water through said tube to the interior of said basket.

In testimony whereof, I have subscribed my name.

CHAUNCEY SHORMAN.

Witnesses:
GEO. L. WILKINSON,
A. L. WALTON.