

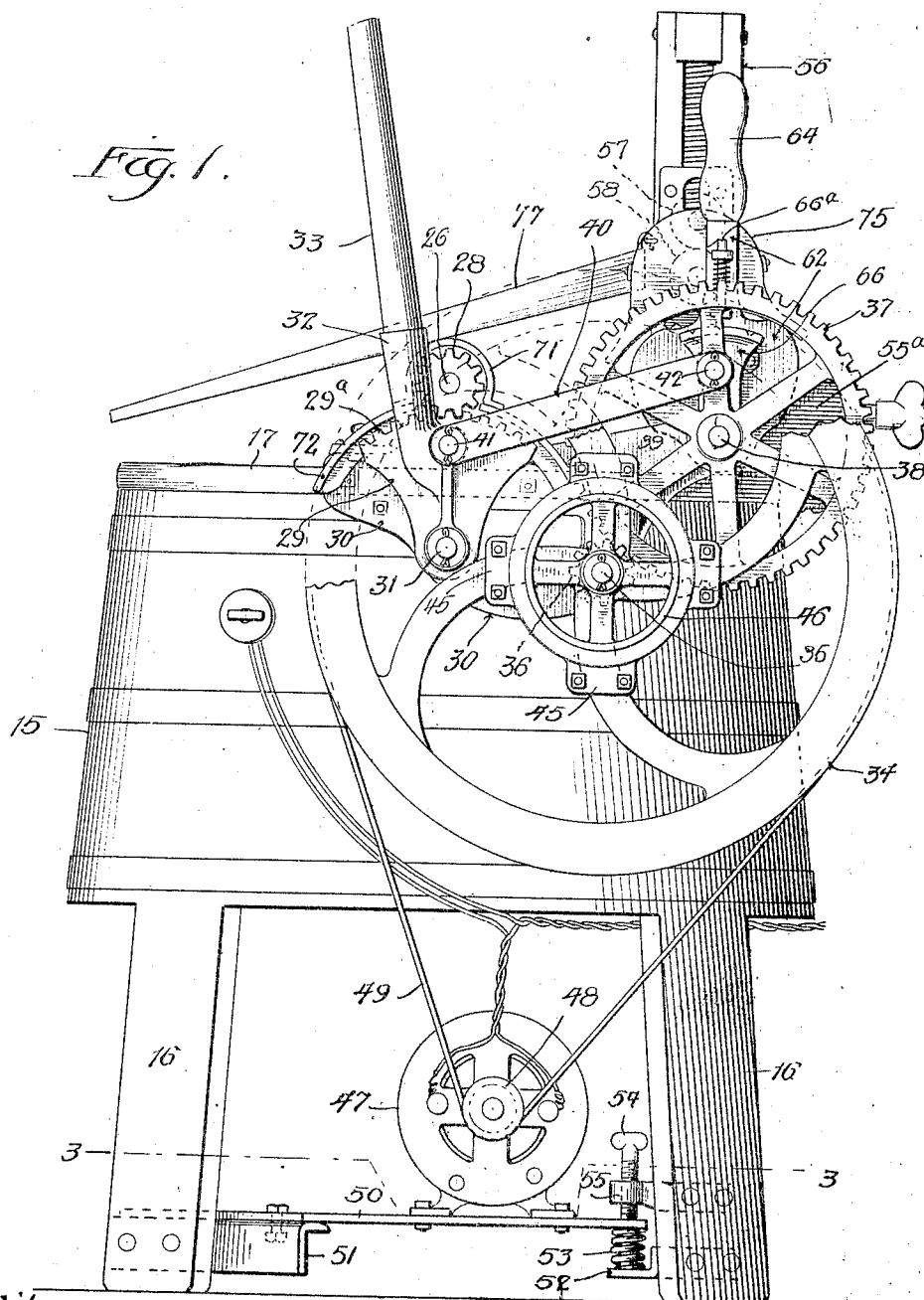
A. B. CHRISTENSEN & F. VONDRASEK.
GEARING FOR LAUNDRY MACHINERY.

APPLICATION FILED APR. 17, 1911.

1,025,684.

Patented May 7, 1912.

4 SHEETS-SHEET 1.



Witnesses:
Samuel F. Richards
Jean Agnew

Inventors:
Andrew B. Christensen
Frank Vondrasek
Charles O. Shewey
Attys

A. B. CHRISTENSEN & F. VONDRASEK.
GEARING FOR LAUNDRY MACHINERY.

APPLICATION FILED APR. 17, 1911.

Patented May 7, 1912.

4 SHEETS-SHEET 2.

1,025,684.

Fig. 2.

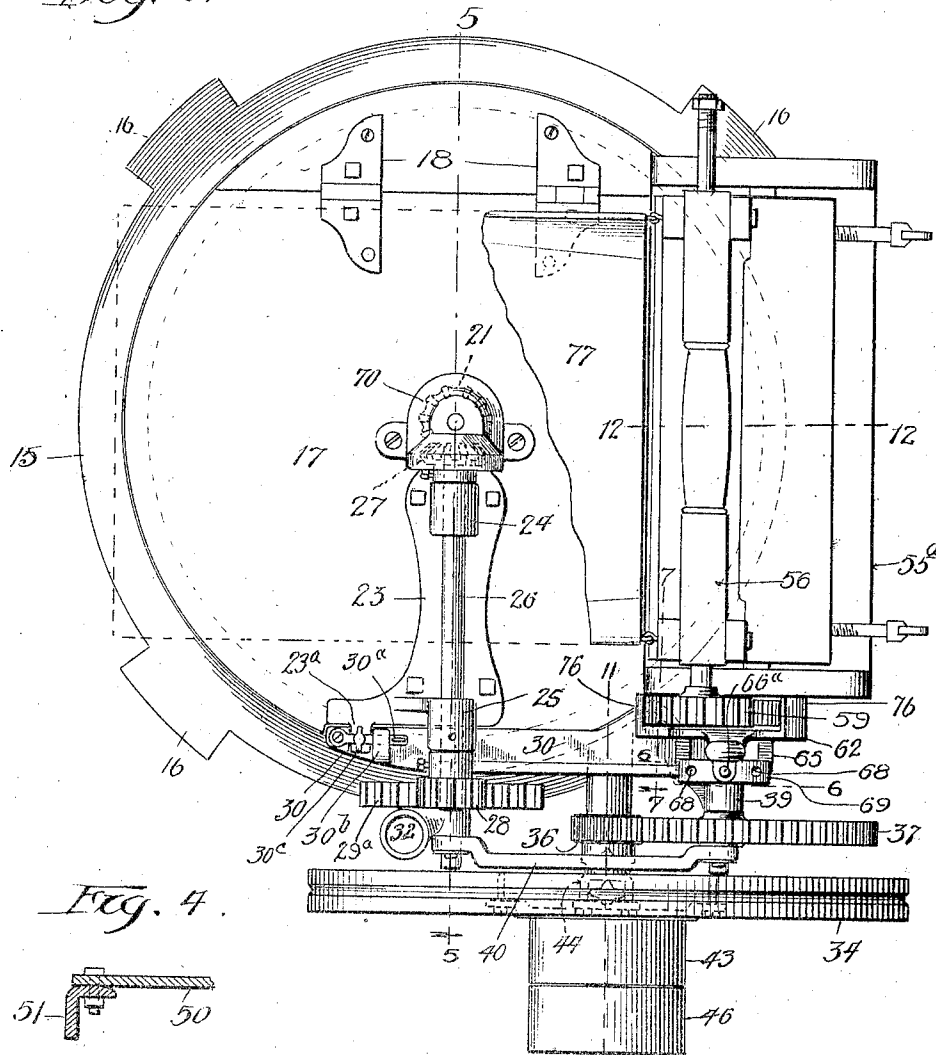


Fig. 4.

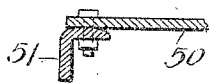
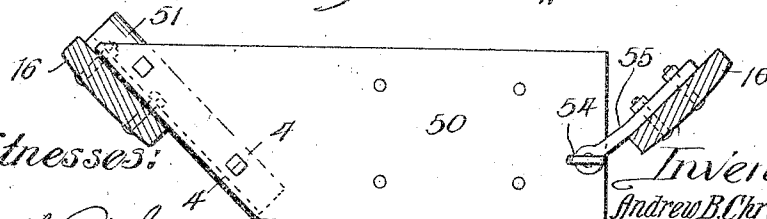


Fig. 3.



Witnesses:

Samuel F. Richards
Jean Agnew

Inventors:

Andrew B. Christensen,
Frank Vondrasek,
by Charles O. Skoway

A. B. CHRISTENSEN & F. VONDRASEK.

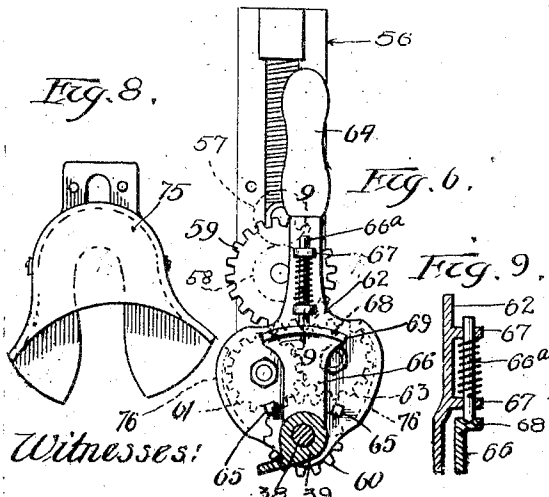
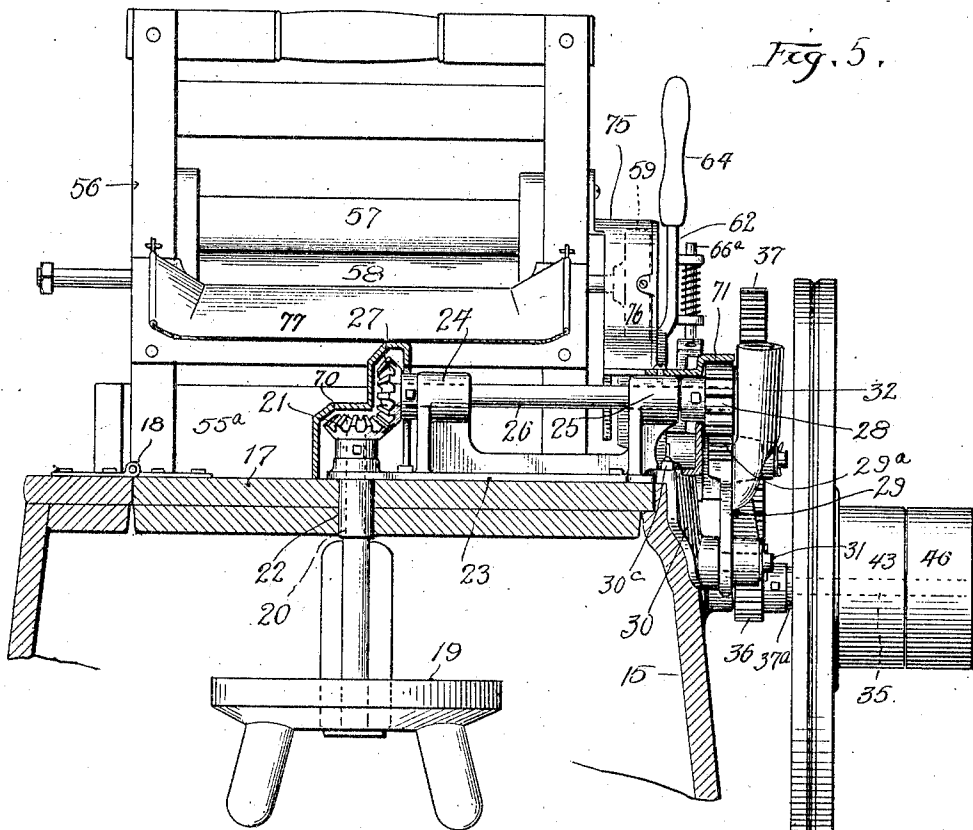
GEARING FOR LAUNDRY MACHINERY.

APPLICATION FILED APR. 17, 1911.

1,025,684.

Patented May 7, 1912.

4 SHEETS-SHEET 3.



Witnesses:
 Fannie F. Richards
 Jean Agness

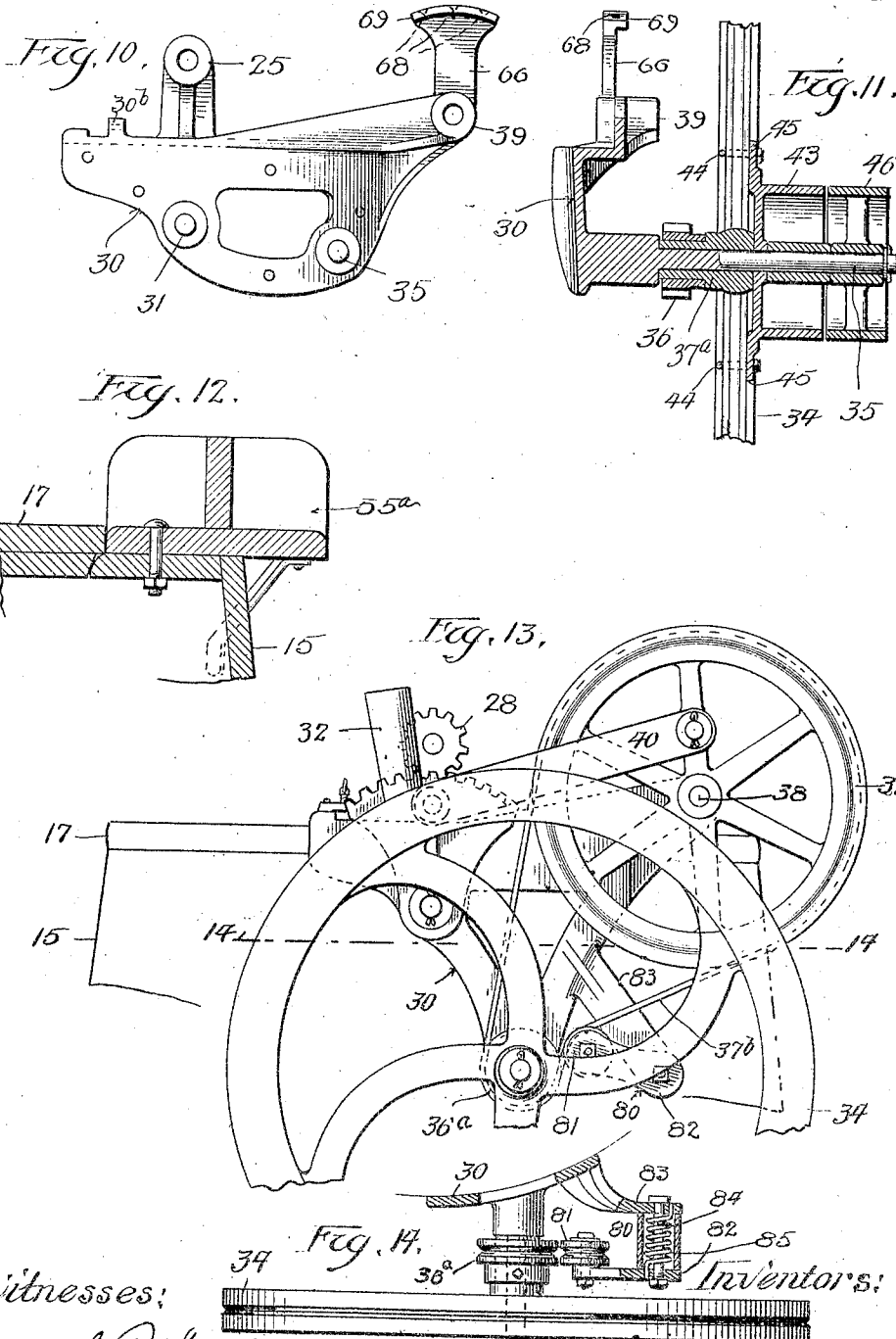
Inventors:
 Andrew B. Christensen
 Frank Vondrasek,
 Charles O. Sherwell

A. B. CHRISTENSEN & F. VONDRÁSEK.
GEARING FOR LAUNDRY MACHINERY.
APPLICATION FILED APR. 17, 1911.

1,025,684.

Patented May 7, 1912.

4 SHEETS—SHEET 4.



Witnesses:
Fannie L. Richards
Jean Agnew.

Inventors:
Andrew B. Christensen
and Frank Vondrasek,
by Charles O. Hewes
att.

UNITED STATES PATENT OFFICE.

ANDREW B. CHRISTENSEN AND FRANK VONDRASEK, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE THISTLE MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

GEARING FOR LAUNDRY MACHINERY.

1,025,684.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed April 17, 1911. Serial No. 621,734.

To all whom it may concern:

Be it known that we, ANDREW B. CHRISTENSEN and FRANK VONDRASEK, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Gearing for Laundry Machinery, of which the following is a specification.

This invention relates to gearing for laundry machinery and more particularly to improvements in gearing for that class of laundry machinery wherein is embodied gearing between the point of application of power thereto and a clothes stirrer located within a tub, and in addition thereto gearing between the point of application of the power and an associated auxiliary device, such as a wringer, mangle or the like.

One of the objects of this invention is to provide a simple, efficient and comparatively noiseless and light running apparatus of this type.

Another object is to provide means whereby the washing mechanism and auxiliary laundry mechanism may be operated either by hand or by power.

Another object is to provide gearing that may be readily applied to the ordinary clothes wringer, mangle or the like, without the necessity of changing the construction of such wringer, mangle or the like.

Another object is to provide gearing whereby the process of washing may be carried on simultaneously with that of wringing or drying the washed clothes, and having reversing mechanism incorporated therewith whereby the wringer or other auxiliary device may be run in either direction at will.

With these and other objects and advantages in view, this invention consists in certain novel features of construction, arrangement and combination of parts hereinafter set forth and more particularly defined in the appended claims.

The invention is clearly illustrated in the drawings furnished herewith, in which:—

Figure 1 is a side elevation of the preferred form of an apparatus embodying our invention with the fly wheel partly broken away, Fig. 2 is a plan thereof with certain gear casings removed to illustrate gearing which would otherwise be hidden from view and with a certain chute partly broken away to show parts underneath the same, Fig. 3 is

a view, partly in plan and partly in horizontal section, of a motor support and two of the legs of the washing machine tub, the section being taken on the line 3—3 in Fig. 1, Fig. 4 is a detail vertical cross section taken on the line 4—4 of Fig. 3, Fig. 5 is a view partly in elevation and partly in vertical section, the line of section being indicated at 5—5 in Fig. 2, Fig. 6 is a detail side elevation of a reversing mechanism for the wringer or mangle with its supporting bracket shown in section, the line of section being indicated at 6—6 in Fig. 2, Fig. 7 is an end elevation of parts seen in Fig. 6 with the supporting frame in vertical section, the line of section being indicated at 7—7 in Fig. 2, Fig. 8 is a side elevation of a gear casing employed at the reversing gear, Fig. 9 is a detail vertical section taken on the line 9—9 of Fig. 6, Fig. 10 is a detail side elevation of a gear supporting frame, Fig. 11 is a detail vertical section taken on line 11—11 Fig. 2, Fig. 12 is a detail vertical section of a wringer board and a fragment of the tub, the line of section being indicated at 12—12 Fig. 2, Fig. 13 is a side elevation of a modified form of power transmitting mechanism, and Fig. 14 is a horizontal section taken on the line 14—14 of Fig. 13.

Referring to said drawings 15 represents a tub of ordinary construction supported upon legs 16, and having a cover or lid 17, for closing its upper end, which cover or lid is hinged to the top of the tub by hinges 18. The lid is held in locked position upon the tub by a catch 30^a, pivoted to the upper side of a gear supporting frame 30, and arranged to be swung over a tongue 23^a, of a gear supporting frame 23, and underneath a hook 30^b, of the frame 30. A thumb screw 30^c, threaded in the catch and bearing upon the tongue, operates to securely hold the lid in closed position. Within the tub is a clothes stirrer or beater 19, of ordinary construction, carried by a stirrer shaft 20, extending up through the cover or lid 17, said shaft having secured upon its upper end a pinion 21, preferably in the form of a miter pinion. The shaft 20, is journaled in a sleeve 22, that is preferably formed integral with and projecting down from the frame 23, which is secured to the lid 17. Extending up from the base of said frame 23, are bearing brackets 24, 25, in which is journaled a horizon-

tal shaft 26, that bears a pinion 27, upon its inner end, meshing with the pinion 21. Said shaft bears upon its outer end a pinion 28, that meshes with a gear segment 29^a, of a rocker member 29, fulcrumed upon the frame 30, which is secured to the body of the tub. The exact form of pivotal connection between the rocker member and frame 30, is of course immaterial, and is here shown as comprising a bearing aperture in the rocker member turning upon a stud 31, which projects out from the frame 30. The rocker member is shown in the form of a casting having the gear segment 29^a and a handle socket 32^b, integral therewith, the socket being arranged to receive and support a handle 33.

It is evident from the foregoing that a rotary reciprocating motion may be imparted to the stirrer by rocking the rocker member back and forth upon its fulcrum, and the gearing thus far described is preferably so arranged that movement of the gear segment through one complete forward or backward stroke will turn the beater about 270 degrees.

Means are provided for storing up part of the energy expended in driving the stirrer by hand, and utilizing said stored up energy to facilitate the work, and as shown said means comprises, in general, a fly wheel 34, journaled upon a stud shaft 35, projecting out from the frame 30, and speed increasing gearing comprising a pinion 36, secured upon the hub 37^a, of the fly wheel and meshing with a large gear wheel 37, fast upon a shaft 38, journaled in a bearing bracket 39, formed upon the frame 30. The rocker member is operatively connected to an element of the speed increasing gearing, as by a link 40, which is shown as secured upon wrist pins 41, 42, carried by the rocker member 29, and gear wheel 37, respectively. The parts are so proportioned that a forward and backward stroke of the rocker member will make one complete revolution of the gear wheel and drive the fly wheel at a comparatively high rate of speed. I prefer to make the pinion 36, of brass or composition so as to reduce the noise usually caused between rapidly revolving intermeshing gears, although this is not absolutely essential.

Means are provided whereby the mechanism may be driven by power, one form of means comprising a belt pulley 43, secured to the fly wheel, in concentric relation therewith. The particular means shown for securing the belt pulley 43, to the fly wheel comprises U bolts 44, extending around the spokes of the fly wheel and passing through ears 45, formed integral with the belt pulley, nuts being threaded upon the outer ends of the bolts for clamping the belt pulley to the fly wheel.

If desired a loose pulley 46, may be jour-

naled upon the stud shaft 35, beyond the tight pulley 43, and held in place on the shaft as for instance by means of a cotter pin. This provides a tight and loose pulley arrangement, so that a continuously running belt may be used in connection therewith, capable of being shifted from one to the other to drive the machine or permit it to be stopped without necessarily stopping the belt.

We have also shown the gearing as arranged to be driven by an electric motor 47, the pulley 48, of which is belted to the fly wheel 34, by a belt 49, trained around the motor pulley and fly wheel as shown. Said electric motor is mounted upon a supporting plate 50, one end of which is carried by an angle iron 51, secured to one leg of the tub, the other end of the plate being yieldingly supported from a bracket 52, as by a compression spring 53, interposed between the bracket and underside of the plate 50. The upper side of the angle iron 51, is rounded off to permit the plate to tilt somewhat and as the plate is yieldingly supported at its free end, much of the vibration and attendant noise is dispensed with. A set screw 54, threaded in a bracket 55, is provided for pressing the plate down against action of the spring 53, serving at the same time as a convenient means for tightening the belt 49.

When power is applied to drive the fly wheel, the mechanism referred to as the speed increasing gearing, operates as speed reducing gearing, whereby the high speed of the fly wheel is converted into a comparatively low speed to the stirrer shaft, and will hereinafter be referred to as speed converting gearing.

Secured to the top of the tub is a wringer board or support 55^a, upon which may be detachably secured an ordinary wringer, mangle or other auxiliary device containing a plurality of rolls or rotary bodies that are to be rotated in the operation of the device, it being shown here as a wringer 56. The parts are so arranged that the wringer extends parallel with the axes of the various shafts and gears, whereby the simplest form of gearing may be interposed between the gearing thus far described, and one of the wringer rollers. The wringer mechanism is arranged to be driven by an element of the speed converting gearing. As shown, the wringer has the usual rolls 57, 58, and the shaft of one of the rolls projects out beyond the ends of the wringer frame, one end having secured to it a pinion 59, and the other end being arranged for the reception of a crank or other device for turning the wringer rolls by hand, either while on the tub or detached therefrom. The shaft 38, of the gear wheel 37, has secured upon its inner end a pinion 60, that intermeshes with

a pinion 61, journaled upon and carried by a shift lever 62, said pinion 61, intermeshing, also, with a second pinion 63, journaled upon and carried by said shift lever 62.

Two stud shafts are secured upon said shift lever and directly carry the pinion 61, 63. Said shift lever is fulcrumed upon the shaft 38, and is provided with a handle 64, by means of which it may be rocked back and forth upon its fulcrum, to throw either of the pinions 61, 63, into mesh with the pinion 59, depending upon which direction it is desired to turn said pinion 59, and its associated roll 58. Stops 65, upon the shift lever 62, are provided for limiting its throw in either direction, said stops being arranged to engage with a post 66, that projects up from the bracket 39, of the frame 30. A spring pressed pin 66^a, guided in ears 67, upon the shift lever, is arranged to seat in any one of three sockets 68, formed in the face of a segmental plate 69, at the top of the post 66, said spring pressed pin acting to retain the shift lever in either of its three positions until said lever is forcibly moved in either direction by hand. The lower end of the pin is tapered and the sockets are correspondingly tapered so that the pin may be forced up and out of the socket when the lever is manually shifted.

All of the gears with the exception of the gear wheel 37, and pinion 36, are inclosed in gear casings, as shown, for the purpose of preventing injury to the attendant or others. The gear casing 70, incloses the pinions 21, 27, the gear casings 71, 72, cover the teeth of the pinion 28, and gear segment 29^a; the gear casing 75, incloses the pinion 59, and the lever 62, and its flanges 76, incloses the pinions 61, 63.

A clothes chute 77, is detachably secured to the wringer 56, and projects over the top of the tub in a downwardly inclined direction, as seen in Figs. 1 and 2, whereby clothes may be passed through the wringer from the right hand side of the tub (as viewed in Figs. 1 and 2) and delivered to the other side without contacting with the gearing above the lid.

In the operation of the machine, the rocker member 29, is rocked back and forth either manually through the instrumentality of the handle 33; or by the electric motor, or by an engine belted to the belt pulley 43. Whenever the machine is operated by hand, the belts are of course detached from the machine. The rocking of the rocker member by hand causes a consequent rotary reciprocatory motion of the stirrer shaft and stirrer and a simultaneous rotation of the fly wheel at a comparatively high rate of speed. If now it be desired to employ the associated wringer or other auxiliary laundry appliance simultaneously with the washing of the clothes with-

in the tub, the shift lever is moved over to throw either pinion 61, 63, into mesh with the pinion 59, depending upon which direction it is desired to move the clothes. For instance if the attendant desires to wring clothes from a second tub in which they have been rinsed, the clothes are inserted at the right hand side of the machine, as viewed in Figs. 1 and 2, and the lever 64, shifted to the left whereby the clothes will be moved between the rolls and deposited upon and slid down the chute 77.

When the machine is to be driven by power, a belt is trained around the pulley 43, and around a pulley of some suitable prime mover, or the fly wheel 34, and belt pulley 48, are belted together by a belt 49, and the motor 47, set in operation. When the machine is driven by power, the pinion 36, of the fly wheel drives the gear wheel 37, which in turn reciprocates the link 40, rocking the rocker member, consequently agitating the stirrer shaft through the instrumentality of the gearing between the rocker member and stirrer shaft. The wringer or other auxiliary device may be set in motion by shifting the shift lever 64, to bring either pinion 61, 63, into mesh with the pinion 59.

In the modified form shown in Figs. 13, 14, we employ a belt 37^b, which is trained over a pulley 36^a, and a pulley 37^a, said pulley 36^a, being fast upon the hub of the fly wheel and the pulley 37^a, being fast upon the shaft 38. A belt tightener 80, is provided for taking up the slack in the belt 37^b, and as shown, comprises a pulley 81, journaled upon the end of an arm 82, fulcrumed upon a bracket 83, that extends out from the frame 30. A bolt 84, is shown as acting as a fulcrum for the arm, and a coil spring 85, one end of which is secured to the stationary arm and the other to the movable arm, is provided for yieldingly pressing said pulley 81, against the belt 37^b.

From the above it is obvious that an extremely simple form of gearing is afforded, capable of being run by hand or by power; space is economized and the parts so arranged that the lid can be raised and lowered without disconnecting any of the gearing, although the pinion 28, is of course moved out of mesh with the gear segment 29, whenever the lid is raised. This is, however, not objectionable, because the pinion again intermeshes with the segmental crank whenever the lid is lowered.

We realize that various alterations and modifications of this device are possible without departing from the spirit of our invention, and we do not therefore desire to limit ourselves to the exact form of construction shown and described.

We claim as new and desire to secure by Letters Patent:

1. In gearing for laundry machinery, the

combination comprising a support, a rocker member fulcrumed thereon and having a handle and a gear segment, a stirrer shaft operatively connected to and driven by said gear segment, a fly wheel, operative connections between said rocker member and fly wheel, including speed converting gearing, and an operating device carried by said support and operatively connected with one element of said speed converting gearing.

2. In gearing for laundry machinery, the combination comprising a support, a rotary reciprocatory stirrer shaft journaled thereon, a rocker member having a handle whereby it may be rocked manually, said rocker member being operatively connected with the stirrer shaft so as to impart rotary reciprocatory motion thereto, a fly wheel, speed converting gearing between the rocker member and fly wheel, whereby said stirrer shaft may be manually driven from said rocker member or mechanically by power applied to the fly wheel, an operating device having rotary elements and carried by said support, gearing between said operating device and an element of the speed converting gearing, including a reversing gear, whereby the rotary elements of said device may be driven in either direction.

3. In gearing for laundry machinery, the combination comprising a support, a rotary reciprocatory stirrer shaft, a fly wheel, operative connections between the fly wheel and stirrer shaft for imparting thereto a rotary reciprocatory movement, including speed converting gearing, an operating device carried by said support and having a shaft, a pinion on said shaft, a pair of intermeshing pinions, one of which is driven by an element of said speed converting gearing, and a shift lever carrying said pair of pinions and arranged to move either thereof into mesh with the pinion on said shaft of said operating device.

4. In gearing for laundry machinery, the combination comprising a support, a rotary reciprocatory stirrer shaft, a fly wheel, operative connections between the fly wheel and stirrer shaft for imparting thereto a rotary reciprocatory movement, including speed converting gearing, an operating device carried by said support and having a shaft, a pinion on said shaft, a pair of intermeshing pinions, one of which is driven by an element of said speed converting gearing, and a shift lever carrying said pair of pinions and arranged to move either thereof into mesh with the pinion on said shaft of said operating device, stops for limiting the throw of said shift lever and a spring pressed pin arranged to seat and hold the shift lever in either of its positions.

5. In gearing for laundry machinery, the combination comprising a support, a rocker member having a handle, and fulcrumed

upon said support, a fly wheel and operative connections for transforming the rocking motion of said rocker member into a continuous motion of the fly wheel, said connections including speed increasing gearing, an operating device carried by said support and having a pair of rotary elements, a pinion connected with one of said rotary elements, gearing between said pinion and one element of said speed increasing gearing, including a reversing gear, and a shift lever for throwing said gearing into mesh.

6. In gearing for laundry machinery, the combination, comprising a stationary support, a movable support hinged thereto, a rotary, reciprocatory, stirrer shaft carried by said movable support, an operating device secured to said stationary support, and containing a pair of rotary shafts, actuating mechanism for said stirrer shaft, and rotary shafts of said operating device, part of said actuating mechanism being mounted on said stationary support, and the other part being mounted on said movable support, and capable of being disconnected from the part on the stationary support, an operating lever for manually operating the machine, and a motor for mechanically operating the machine, said lever being arranged in such manner that said operating device may be operated thereby when said two parts of the actuating mechanism are disconnected from each other.

7. In gearing for laundry machinery, the combination comprising a support, a stirrer shaft, gearing for imparting rotary reciprocatory motion to said stirrer shaft, including a pulley, a motor belted to said pulley and a supporting plate carrying said motor and hinged to said support at one end, a spring for yieldingly supporting said plate at the other end, and a stop above the plate for limiting its upward swing.

8. The combination with a support having supporting legs, of a stirrer shaft, and gearing for imparting rotary reciprocatory motion thereto, including a belt pulley, and an electric motor belted to said pulley, a supporting plate for said motor, a bracket carried by one of said legs and pivotally supporting one end of said plate, a second bracket carried by another of said legs and forming a support for a spring, a compression spring interposed between said plate and second named bracket, and an adjustment screw bearing against the upper face of said plate, to limit its upward swing.

9. In combination, a support, a stirrer shaft carried thereby, a rocker member, fulcrumed thereon, for agitating said stirrer shaft, a fly wheel journaled upon said support, operative connections between the rocker member and fly wheel for transforming the rocking motion of the rocker member into a continuous rotary motion of the

fly wheel, said connections including speed converting gearing, and an operating device carried by said support and driven by an element of the speed converting gearing.

5 10. In combination, a support, a stirrer shaft carried thereby, a rocker member fulcrumed thereon, for agitating said stirrer shaft, a fly wheel journaled upon said support, operative connections between the
10 rocker member and fly wheel for transforming the rocking motion of the rocker member into a continuous rotary motion of the fly wheel, said connections including speed
15 converting gearing, an operating device carried by said support, and having a pair of rotatory elements, a train of gears between one of the rotary elements of said operating
20 device and an element of said speed converting gearing, including a pair of oppositely rotating pinions, and a shift lever for shifting either of said pair of pinions into mesh with a companion pinion on one of said rotary
25 elements, whereby the latter may be rotated in either direction by shifting the proper one of the pair of pinions into mesh.

11. In combination, a rotary shaft, a pinion thereon, a pair of bodily movable intermeshing pinions, one of which is in mesh with said first mentioned pinion, an operating
30 device containing a pair of rotary elements, a pinion connected with one of said rotary elements arranged to intermesh with either of said pair of pinions, and a shift lever for throwing either one of said pair of
35 pinions into mesh with said pinion of said rotary element.

12. In combination, a support, a rotatory wheel, journaled thereon, a rocker member fulcrumed on said support, a link connection
40 between said wheel and rocker member for transforming the motion of one into that of the other, a rock-shaft actuated by the rocker member, a rotary reciprocatory stirrer shaft actuated by said rock shaft, a
45 pinion driven by said wheel, a pair of bodily movable intermeshing pinions one of which is in mesh with said first mentioned pinion, an operating device carried by said support and containing a pair of rotary elements, a
50 pinion connected with one of said rotary

elements and arranged to intermesh with either of said pair of pinions, and a shift lever for throwing either one of said pair of pinions into mesh with said pinion of said rotary element.

13. In combination, a stationary support
55 having a movable portion hinged to the top thereof, a stirrer shaft journaled in said movable portion of said support, a horizontal rockshaft journaled upon said movable
60 portion of said support and extending at right angles to the axes of the hinges, intermeshing pinions on said stirrer shaft and rockshaft, a rocker member arranged to rock the rockshaft, a fly wheel, operative connections
65 between the rocker member and fly wheel for transforming the motion of one to that of the other, and including speed converting gearing, an operating device carried by the stationary portion of said support
70 and extending parallel with said rockshaft, said operating device having a pair of rotary elements, a pinion connected with one of said rotary elements and driven from one element of the speed converting gearing.

14. In combination, a stationary support
75 having a movable portion hinged thereto at the top thereof, a stirrer shaft journaled in the movable portion of said support, a horizontal rockshaft actuating said stirrer shaft
80 and extending at right angles to the axes of the hinges, an operating device carried by the stationary support and extending parallel with said rockshaft and to one side of said movable portion of said support, and
85 operating mechanism at one side of the support, for actuating the rockshaft and operating device, said mechanism being arranged at right angles to the rockshaft and operating device and moving through a vertical
90 plane.

In witness whereof, we have hereunto signed our names at Chicago, Cook county, Illinois, this 5th day of April 1911.

ANDREW B. CHRISTENSEN.
FRANK VONDRASEK.

Witnesses:

WILLIAM A. HEINRICHS,
AUG. CLAUSEN.