

No. 688,343.

Patented Dec. 10, 1901.

W. RUTHVEN.

GEARING FOR WASHING MACHINES.

(Application filed Mar. 25, 1901.)

(No Model.)

2 Sheets—Sheet 1.

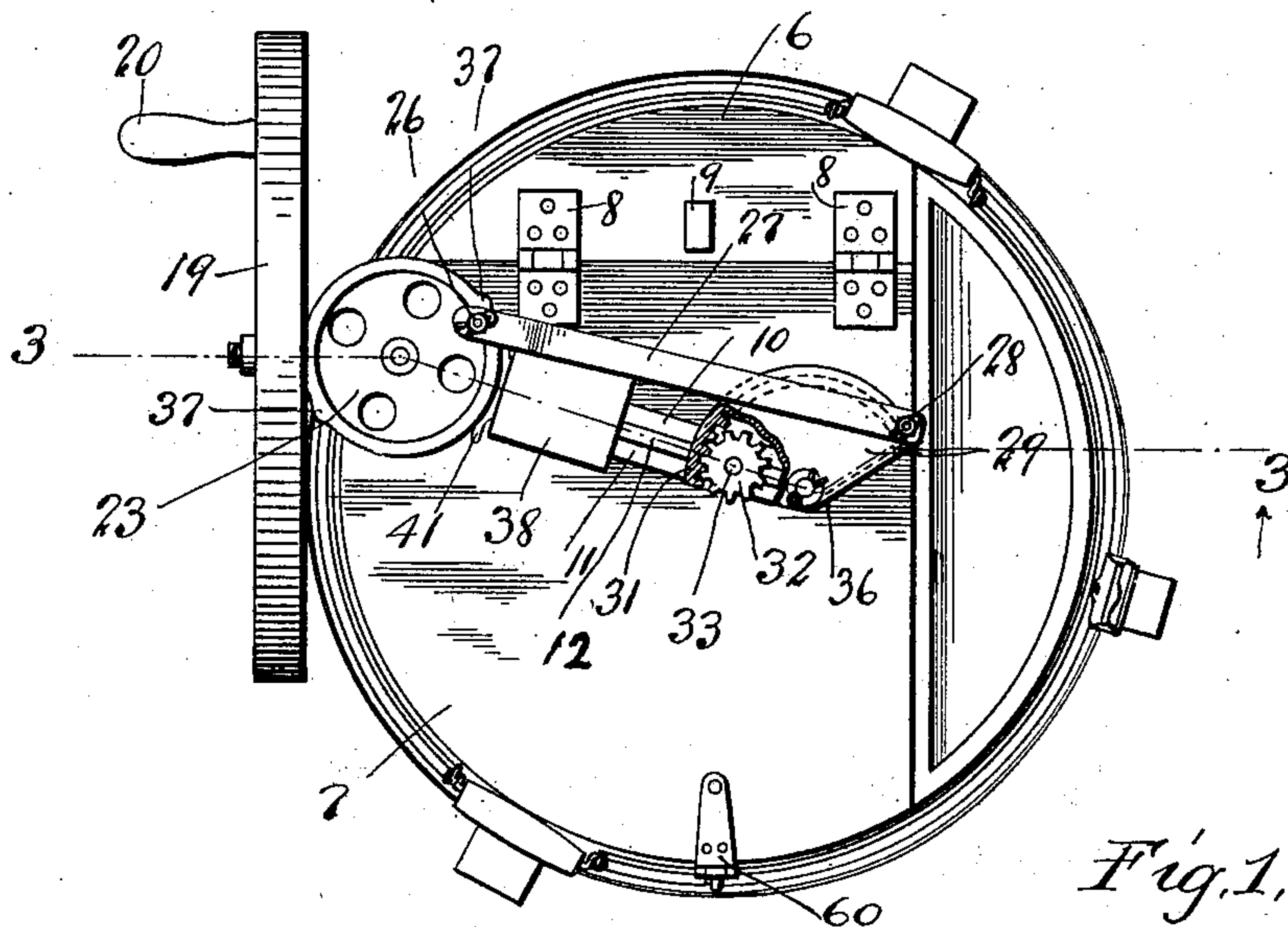


Fig. 1.

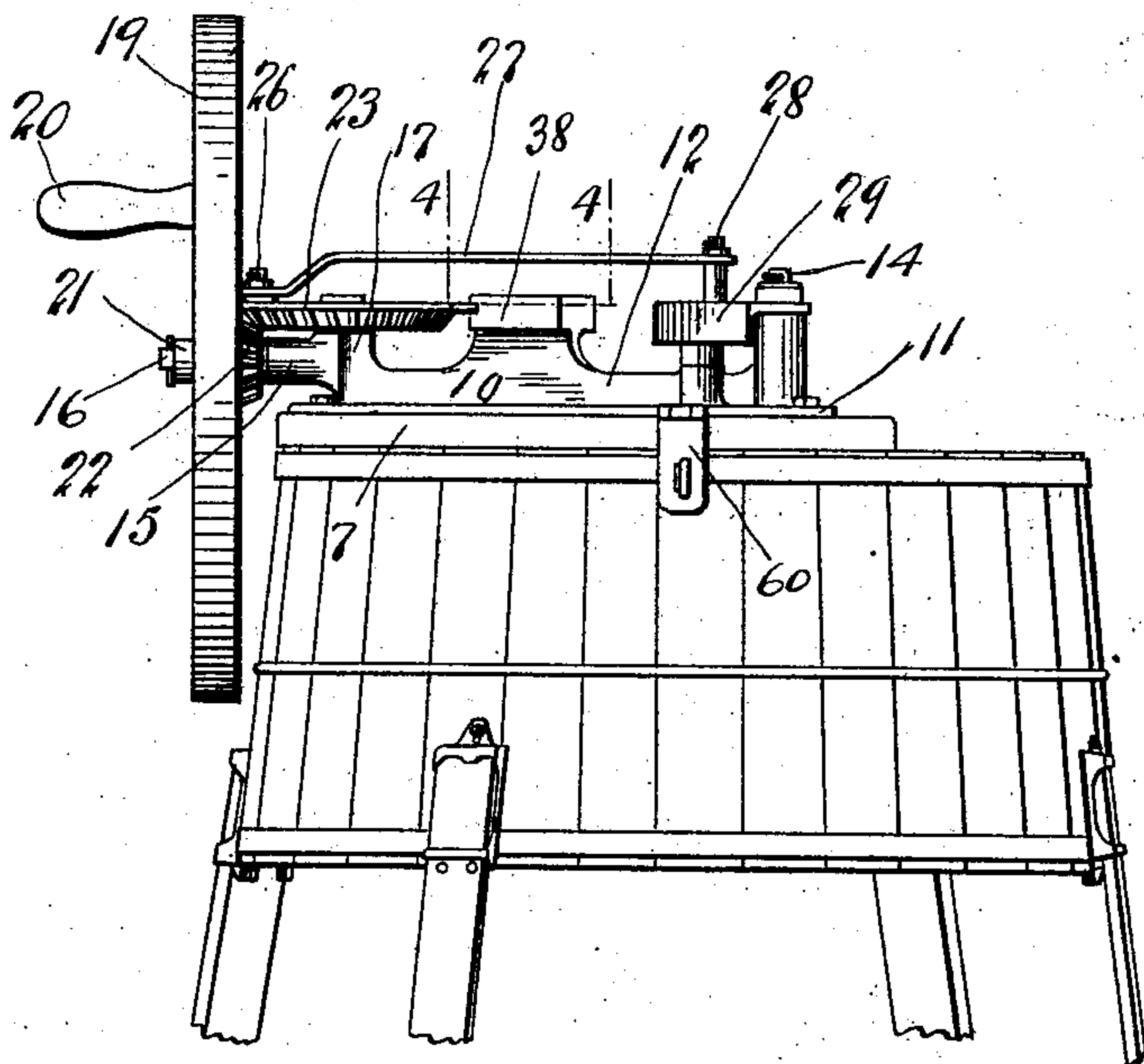


Fig. 2.

Witnesses:  
Nelson Hurlburt  
Lawrence Larsen

Inventor:  
William Ruthven  
By Coburn, McRobert & McElroy Attys.

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2 Sheets—Sheet 2.

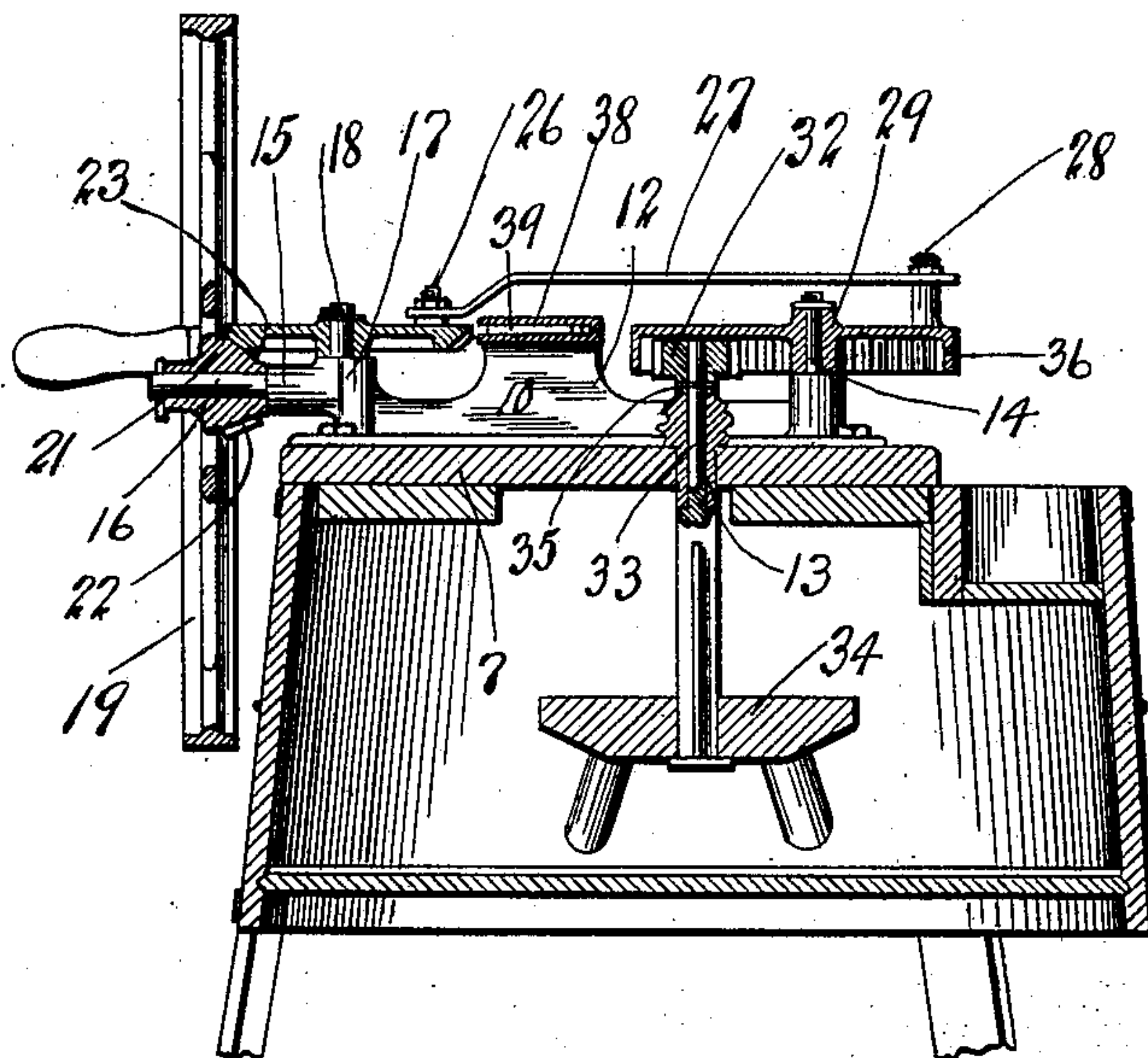


Fig. 3.

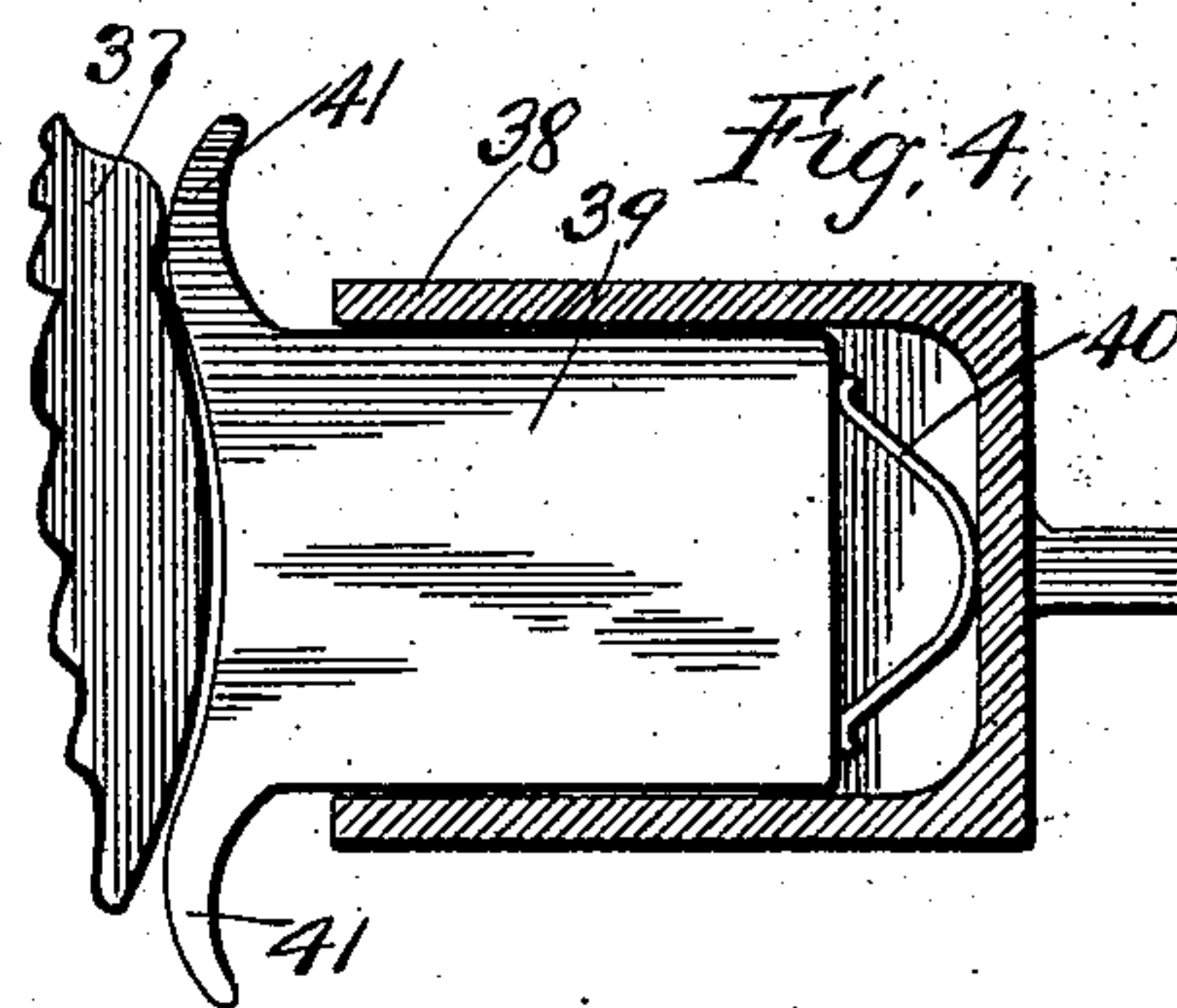


Fig. 4.

Witnesses:

Watson Hurlburt,  
Lawrence Larsen

Inventor:

William Ruthven

By Coburn, McRoberts & McElroy Attys.



# UNITED STATES PATENT OFFICE.

WILLIAM RUTHVEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO NEW CENTURY WASHING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## GEARING FOR WASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 688,343, dated December 10, 1901.

Application filed March 25, 1901. Serial No. 52,672. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM RUTHVEN, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gearing for Washing-Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in washing-machines of the type where continuous rotary movement of the operating-handle is transformed into a reciprocating movement of the stirrer-shaft, and it is intended, among other things, to produce a machine in which the operative parts are mounted upon a single bracket, and the mechanism to change the rotary movement of the handle into the reciprocatory movement of the stirrer is simple in construction, compact in organization, and readily assembled.

My improvements are fully illustrated in the accompanying drawings, in which the same numerals of reference designate the same or like parts in the several views, of which—

Figure 1 is a plan view of my invention attached to a tub, certain parts being broken away for the purpose of better illustration and showing the parts in the positions assumed when the pitman is at the outer end of its stroke. Fig. 2 is a side elevation of the same, the parts being in the positions assumed when the pitman is at the inner extremity of its stroke. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 2.

While I may employ my invention in connection with any desired shape of tub, I preferably employ one the body of which is of a circular shape and which is provided with a cover 6, a portion of which is made up of a lid 7, which is pivoted at one side thereof by means of the usual hinges 8. A suitable stop 9, which I preferably construct of a piece of scrap-iron curved into the desired shape, is so located that when the lid is opened it rests against the stop, being held securely thereto by the weight of the mechanism secured upon the lid. Securely bolted to the lid 7 is the

bracket or framework 10, which consists of a horizontal flange 11, provided with a vertical web 12 and having a bearing 13 and a vertical stub-shaft 14, suitably spaced apart at one end thereof. The opposite end of the bracket is provided with a horizontal stud or lug 15, supporting a stub-shaft 16, and with a vertical stud or lug 17, supporting a suitable vertical stub-shaft 18. The stud 15 is disposed at a slight angle with reference to the plane of the web 12, and on its stub-shaft 16 is journaled a heavy fly-wheel 19, which may be provided with a handle 20 or which may be run by power. The hub 21 of the fly-wheel is provided with a bevel gear-pinion 22, which is preferably located next to the bearing-stud 15 and which meshes with a second and larger bevel gear-pinion 23; the slightly-elongated hub of which is mounted on the vertical stub-shaft 18. The gear-wheel 23 is provided with an eccentric-pin 26, upon which is pivoted one end of a link or pitman 27, the other end of which is similarly pivoted to an eccentric or crank pin 28 on a segmental gear 29. The segmental gear 29 is mounted on the stub-shaft 14 and is provided with a spur-gear on the inner wall of the depending flange 31 thereof, with which meshes a pinion 32, secured upon the upper end of the reciprocating shaft 33, which extends down into the tub through the elongated bearing 13 and has secured upon it the stirrer 34. The bearing 13 preferably projects downwardly through the top and also projects upwardly above the line of the web 12, and the stud of the stub-shaft also projects above the line of the web and somewhat above the end of the bearing 13, whereby the gear 29 and the pinion 32 are brought into operative relation when assembled thereon. The pinion 32 has a collar 35, which fits snugly on the shaft 33, to which it is secured by a suitable pin and which rests upon the upper end of the bearing 13, and thus serves as a bearing-face for the shaft and pinion. The gear 29 has a suitable elongated hub to form a suitable bearing on the stub-shaft 14. The crank-pin 28 is farther from the center of its gear-wheel 29 than is the corresponding pin 26 from the center of its associated wheel 23, so that the former does not pass the plane com-



mon to the centers of the two wheels, but moves back and forth through a short arc of the circle of the periphery of its wheel. This is clearly shown in Figs. 1 and 2, where the relative positions of the parts are shown at the beginning of the stroke of the pitman in Fig. 1 and at the end or extreme position thereof in Fig. 2. The rotation of the gear-wheel 23, imparted to it by the bevel-gear secured upon the driving-wheel, will cause the segmental gear 29 to reciprocate within the limits of its movement and impart a rocking or reciprocating rotary movement to the shaft 33, thereby transforming the continuous rotary motion of the driving-wheel into reciprocating rotary motion of the stirrer-shaft.

In the operation of this class of machines the resistance imparted by the stirrer to the driving-wheel is somewhat less at the moment that the pin 26 approximates the dead-center of its shaft than when the pin has passed this point. In order to compensate for this and provide for substantially uniform action of the parts, I prefer to provide a suitable brake mechanism, which shall exert its force upon the parts as the pitman-rod approximates the inner and outer ends of its stroke. To accomplish this, I provide the gear-wheel 23 with oppositely-disposed projections or lugs 37, which are arranged upon the wheel in such relation as to take against a brake device at the moments that the pitman approximates the inner and outer ends of its stroke. A suitable box or housing 38 is mounted upon the bracket in proximity to the gear-wheel 23 and is provided with any suitable form of bearing device, which shall exert a slight pressure upon the lugs 37 as they pass the same. This is readily and conveniently accomplished by mounting a plunger 39 within the housing, which is held toward the wheel 23 and in the path of the lugs 37 by means of a suitable spring 40 of any desired form. The organization of the parts is such that the contact-face of the plunger does not bear upon or against the gear-wheel 23, but is engaged and compressed against the force of its spring by the lugs 37, the face of the plunger being provided with suitable outturned flanges 41 to provide for the smooth working of the parts. It is to be noted that all of the working parts of the mechanism above described are mounted upon a single bracket or bearing-plate and that these parts are assembled upon the same in a simple and efficient manner and in such relation that the gear-wheels are in horizontal position, whereby the parts are more compactly organized and are arranged with but few vertical elements.

It is obvious that changes may be made in the details of various of the parts without departing from the scope of the present invention, and I do not desire to be understood as limiting my invention to the specific details of construction disclosed, as the latter may be varied within the scope of my invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a washing-machine, the combination of a bracket having a vertical bearing near its inner end and a horizontal shaft at its outer end, a shaft mounted in said bearing, a drive-wheel having a bevel-gear journaled on said horizontal shaft, and connections between said wheel and shaft including a pinion and a segmental gear having a pitman for transforming the continuous rotary movement of said wheel into a reciprocating rotary movement of the shaft.

2. In a washing-machine, the combination of a bracket, having a vertical bearing and a shaft near its inner end and angularly-disposed shafts at its outer end, bevel-gears on the latter shafts, a shaft mounted in said inner bearing and having a pinion, a segmental gear on said inner shaft meshing with said pinion, and connections between the bevel-gear and segmental gear for transforming the continuous rotary movement of said bevel-gear into a reciprocating rotary movement of the shaft.

3. In a washing-machine, the combination of a bracket having a horizontal and a vertical stub-shaft at its outer end and a vertical bearing and stub-shaft at its inner end, a drive-wheel on said horizontal shaft and having a bevel-gear, an intermeshing bevel-gear on the outer vertical shaft having a crank-pin, a shaft mounted in the inner bearing and having a pinion, an internally-toothed gear on the inner stub-shaft meshing with said pinion and having a crank-pin set at a greater distance from its center than the pin of the bevel-gear is set from its center, and a pitman connecting said pins.

4. In a washing-machine, the combination of a support and a frame secured thereto and extending beyond the edge thereof, a drive-wheel mounted on the outer end of said frame and having a bevel-gear, a horizontal bevel-gear mounted on said frame above the gear of the drive-wheel and with which it meshes, a crank-pin on said horizontal gear, a shaft mounted in said frame near its inner end and having a pinion, an internally-toothed segmental gear on said frame meshing with said pinion having a crank-pin, and a pitman connected with said pin, the arrangement being such that continued rotation of the drive-wheel causes the pin of the segmental gear to reciprocate in the arc of a circle less than one-half the circumference of said segmental gear to transmit reciprocating rotary motion to the shaft.

5. In a washing-machine, the combination of a bracket carrying a drive-wheel at one end and a shaft near the other end, a bevel gear-wheel mounted upon the bracket and driven by the drive-wheel, connections between said gear-wheel and shaft for transforming the continuous rotary movement of said gear-wheel into a reciprocating rotary movement



of the stirring-shaft, and a brake on the bracket engaging said gear-wheel at predetermined points.

6. In a washing-machine, the combination  
5 of a bracket, a vertical drive-wheel carrying a bevel-gear, a shaft mounted in the bracket, a bevel gear-wheel mounted on the bracket and engaging the bevel-gear of the drive-wheel, oppositely-disposed lugs on said bevel  
10 gear-wheel, connections between said bevel

gear-wheel and said stirring-shaft for transforming the continuous rotary movement of said gear-wheel into a reciprocating movement of the shaft, and a brake device mounted on the bracket in the path of said lugs.

WILLIAM RUTHVEN.

Witnesses:

J. McROBERTS,  
LAWRENCE LARSEN.