

W. RUTHVEN.
GEARING FOR WASHING MACHINES.
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Fig. 1.

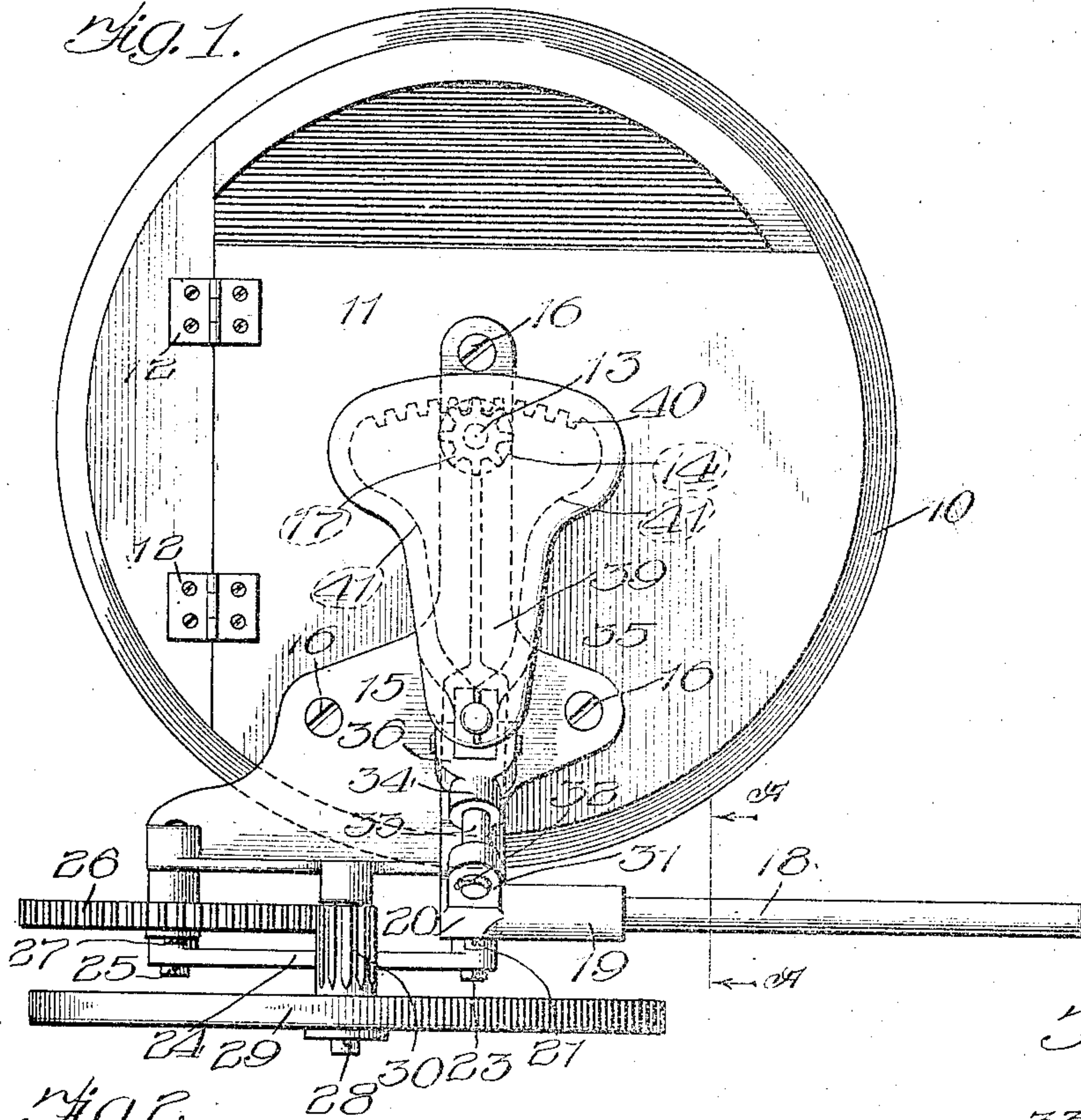


Fig. 2.

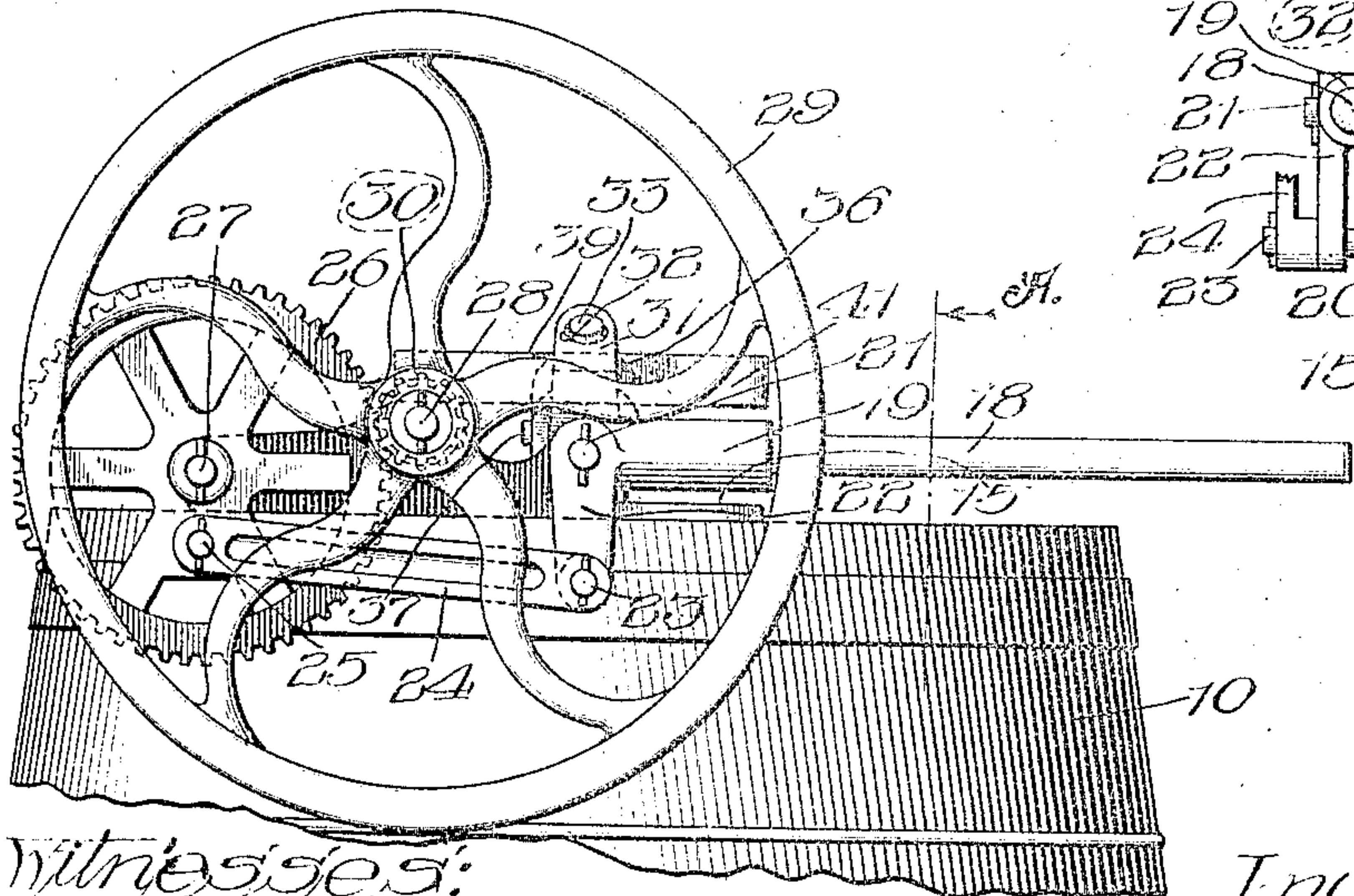
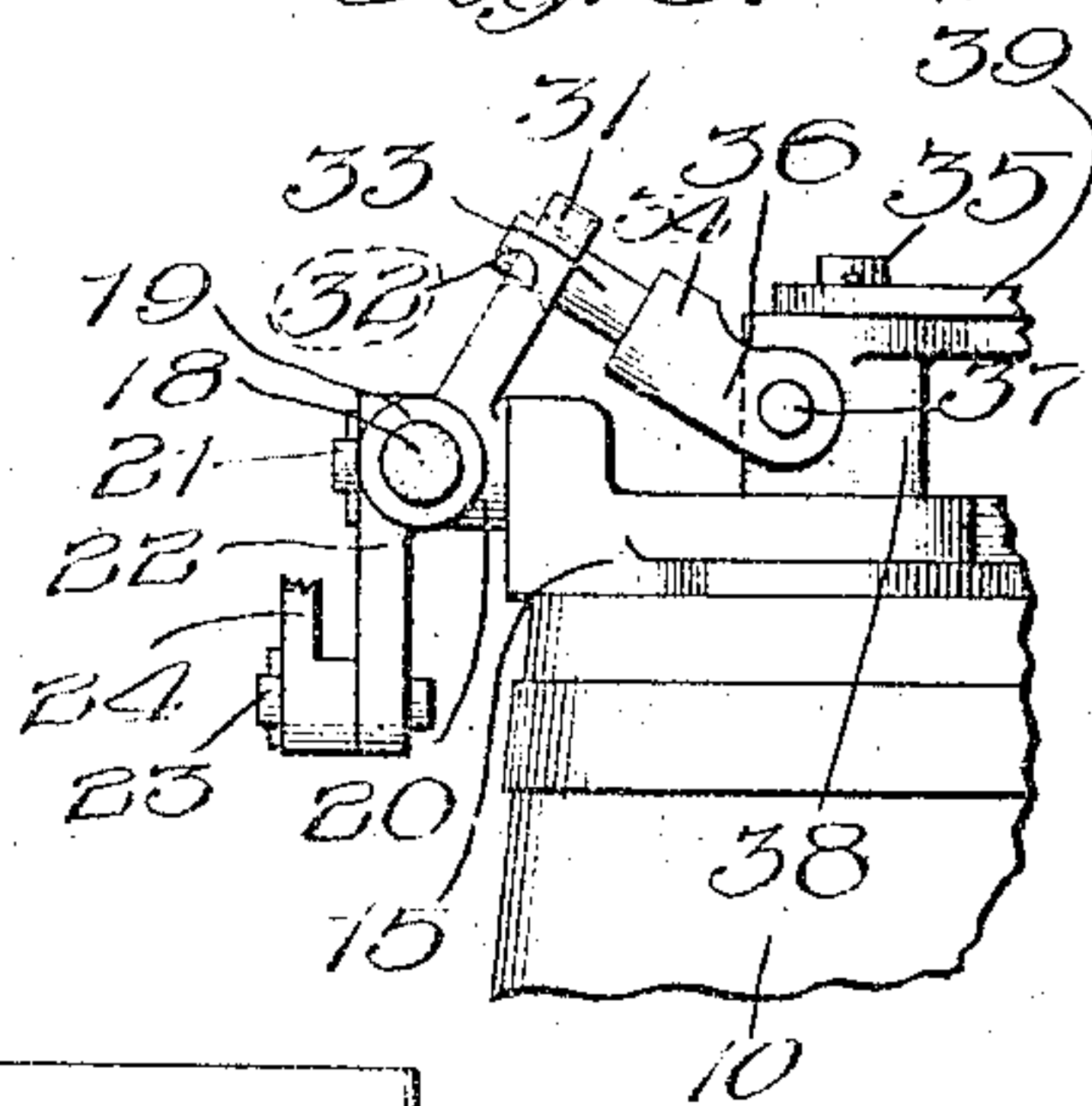


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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GEARING FOR WASHING-MACHINES.

935,552.

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To all whom it may concern:

Be it known that I, WILLIAM RUTHVEN, a citizen of the United States, and 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 full, clear, and exact specification.

My invention is concerned with a novel mechanism primarily designed for transforming the swinging movement of the operating lever of a washing machine into the reciprocating rotary movement of the stirrer or beater shaft and the continuous high-speed rotary movement of the fly wheel associated therewith to give evenness and ease of operation to such machines despite the reciprocating movement of the main parts thereof.

To illustrate my invention, I annex hereto a sheet of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which,—

Figure 1 is a top plan view of a machine embodying my invention; Fig. 2 is a side elevation of the same; and Fig. 3 is a detail view in section on the line A—A of Figs. 1 and 2.

My invention is adapted to be employed in connection with a tub 10 of the ordinary construction, which is supported at a suitable height by legs, not shown, and which has the lid 11 hinged thereto, as at 12, and the entire gearing is preferably carried by said lid, so that when it is raised the gearing moves with it. The beater shaft, the upper end of which is indicated in dotted lines at 13, is journaled in the bearing indicated by dotted lines at 14, formed near the inner end of the bearing casting 15, which is secured to the lid in any suitable manner, as by the screws or bolts 16. This beater shaft carries on the upper end the pinion 17, likewise indicated in dotted lines in Fig. 1.

The handle 18 is secured in the socket 19 of the lever casting 20, which has the bearing aperture by which the lever is mounted to swing on the bearing pin 21 projecting horizontally from one corner of the casting 15. This lever casting 20 has projecting downwardly therefrom the arm 22 carrying the eccentric pin 23, which has the link 24 pivoted thereon at one end, the other end of said link being pivoted upon the eccentric bearing pin 25 secured to the gear wheel 26,

which is mounted on the horizontal bearing pin 27 projecting from the end of the casting 15. The intermediate remaining horizontal bearing pin 28, likewise projecting from the casting 15, has journaled thereon the fly wheel 29, the hub of which has secured thereto or formed integrally therewith the pinion 30, which meshes with the gear wheel 26, so that as the handle or lever 18 is swung, the fly wheel 29 will be rotated at a high rate of speed to furnish the necessary momentum for an even and easy operation of the machine. The lever casting 20 likewise has formed thereon, opposite to the arm 22, another arm 31, which contains a bearing socket 32, the arm 31 being set at the proper angle to the bearing stud 23, and the socket 32 being set at the proper angle in the arm 31 so that it can cooperate with the bearing pin 33 extending into the socket and carried by the jointed portion 34 of a lever which is pivoted on a bearing stud 35 projecting vertically upward from the frame casting 15. This jointed lever consists of the outer jointed portion 34, which has the yoke-shaped inner end 36 by which it is pivoted upon the pin 37 passing through the squared socket 38 of the portion of the lever that has no vertical movement. This last mentioned portion 39 of the lever extends to the center of the machine, and is provided with the segmental teeth 40, indicated in dotted lines in Fig. 1, which are preferably located beyond the pinion 17 with which the teeth engage, and a downwardly projecting flange 41, indicated by dotted lines in Fig. 1, is preferably provided to strengthen the portion 39 of the lever and inclose the meshing teeth, so that there is no danger of anything being caught therein.

The operation of the complete apparatus will be readily apparent, as it will be seen that when the lever 18 is reciprocated, the link connections with the spur gear wheel 26 and the fly wheel 29 will cause the latter to be rotated at a high rate of speed, and at each reciprocation of the lever 18, the jointed arm 34 of the jointed lever will swing through a curved arc made up by the horizontal movement upon the bearing stud 35 and the vertical movement on the bearing stud 37, which vertical movement, of course, is necessary to accommodate the rising and falling of the position of the socket 32 as the lever 18 is reciprocated. The portion 39 of the jointed lever, of course, is swung through

a proper angle, and causes the reciprocatory rotation of the stirrer shaft 13 in the customary manner.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

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

1. In a device of the class described, the combination with a frame 15 having bearing pins 27, 28, 21 and 35, and a bearing 14, of a stirrer shaft journaled in the bearing 14, a pinion 17 on its upper end, a lever pivoted on the pin 21 and having the arm 31 with the socket 32 therein and another arm 22 with the eccentric pin 23, a jointed transmission lever pivoted on the pin 35 and having gear teeth at its inner end meshing with the pinion, and the jointed arm at its outer end having a pin 33 engaging the socket 32, a gear wheel pivoted on the pin 27 and having an eccentric pin 25, a link connecting the pins 23 and 25, and a fly wheel having a pinion 30 formed on the hub thereof mounted on the pin 27 and meshing with the gear wheel, substantially as and for the purpose described.

2. In a device of the class described, the combination with a frame having a horizontal bearing stud thereon, a vertical bearing aperture therein, and a vertical bearing stud between the horizontal stud and the vertical aperture; of a stirrer shaft journaled in the bearing aperture, a pinion on said shaft; a jointed transmission lever having gear teeth at one end meshing with the pinion; a fly wheel, a pinion secured to the fly wheel, a gear wheel meshing with the fly-wheel pinion, a pitman connected to the gear wheel; and a three-armed lever fulcrumed on the horizontal bearing stud, one arm connected with the jointed transmission lever, another with the pitman, and the third being for the handle.

3. In a device of the class described, the combination of a stirrer shaft and a pinion thereon, of a jointed transmission lever having gear teeth at one end meshing with said pinion, a fly wheel, a pinion secured to the fly wheel, a gear wheel meshing with the fly-wheel pinion, a pitman connected to the gear wheel; and a three-armed lever, one arm connected with the jointed transmission lever, another with the pitman, and the third being for the handle.

4. In a device of the class described, the combination with a stirrer shaft and a pinion thereon, of a jointed transmission lever having gear teeth at one end meshing with said pinion, a fly wheel, a pinion secured to

the fly wheel, a gear wheel meshing with the fly-wheel pinion, an eccentric pin on said gear wheel, and a three-armed lever, one arm connected with the jointed transmission lever, another with the eccentric pin on the gear wheel, and the third being for the handle.

5. In a device of the class described, the combination with a stirrer shaft and pinion secured thereon; of a jointed transmission lever; a fly wheel, a pinion secured to the fly wheel, a gear wheel meshing with the fly-wheel pinion having an eccentric pin; a three-armed lever, one arm connected with the eccentric pin on the gear wheel, a second one being connected to the jointed transmission lever, and the third being for the handle, substantially as and for the purpose described.

6. In a device of the class described, the combination with a stirrer shaft and pinion carried thereby, of a three-armed lever, one arm having a socket, the second being adapted to be connected to the fly-wheel gearing, and the third serving for the handle, a jointed transmission lever having gear teeth at one end meshing with said pinion, and a pin at the other end engaging the socket on the three-armed lever, a fly wheel, and connections between the second arm of the operating lever and the fly wheel for rapidly rotating the latter.

7. In a device of the class described, the combination with a stirrer shaft, of a three-armed operating lever, one arm having a socket, the second adapted to be connected with the fly-wheel gearing, and the third for the handle, a jointed transmission lever having a pin at one end engaging the socket, gearing between the other end of said lever and the stirrer shaft, so that the reciprocation of the lever gives the stirrer shaft a reciprocatory rotation, a fly wheel, and connections between the second arm of the operating lever and the fly wheel for rapidly rotating the latter.

8. In a device of the class described, the combination with a stirrer shaft, of a pivoted member, a jointed transmission lever whose axis is at right angles to that of the pivoted member, connections between the pivoted member and the end of the transmission lever having the compound swinging movement, and connections between the stirrer shaft and the other end having the simple swinging movement, to transform the angular movement of the pivoted member into a greater angular movement of the stirrer shaft, a fly wheel, connections between the pivoted member and the fly wheel for rapidly rotating the latter, and a lever handle for moving said pivoted member and transmission lever.

9. In a device of the class described, the combination with a stirrer shaft and a pin-

ion carried thereby, of a rocking element having two arms, one arm having an aperture therein, a crank pin carried by the other of said arms, a jointed transmission lever having teeth at one end meshing with said pinion and a pin at the other end passing through said aperture, a wheel, a pinion carried by the wheel, a gear wheel having an eccentric pin and meshing with the pinion carried by the wheel, a frame having a bearing aperture therein for the stirrer shaft, a bearing stud carried by the frame for the transmission lever, bearing studs likewise

carried by the frame for the rocking element and the gear wheel and extending at right angles to the first mentioned stud, and a pitman pivoted to the crank pin of the rocking element and to the eccentric pin of the gear wheel. 15

In witness whereof, I have hereunto set my hand and affixed my seal, this 23rd day of September, A. D. 1908. 20

WILLIAM RUTHVEN. [L. s.]

Witnesses:

JOHN HOWARD McELROY,
M. G. FITZSIMMONS.