

W. RUTHVEN.  
GEARING FOR WASHING MACHINES.  
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935,551.

Patented Sept. 28, 1909.

Fig. 1

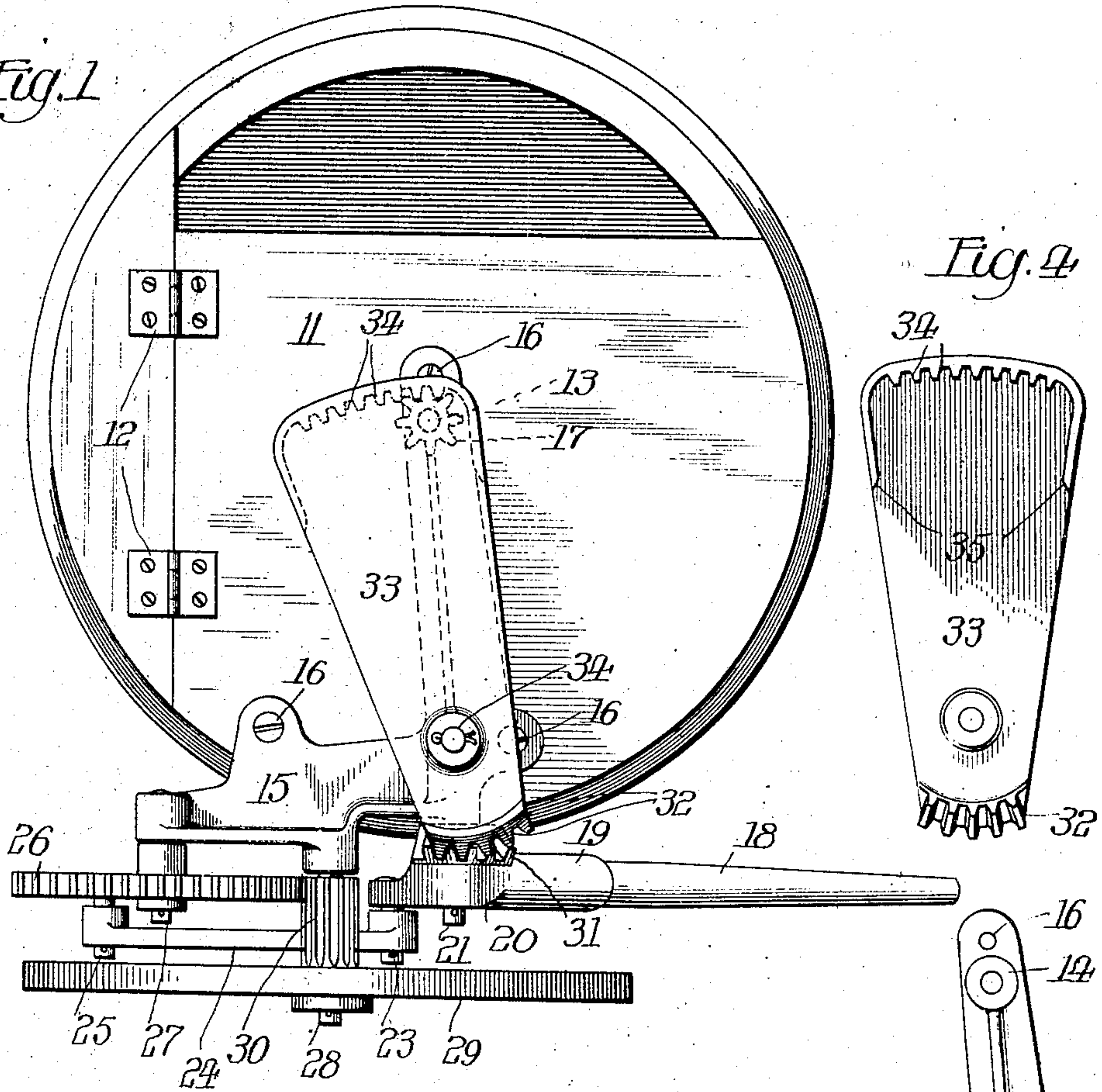


Fig. 4

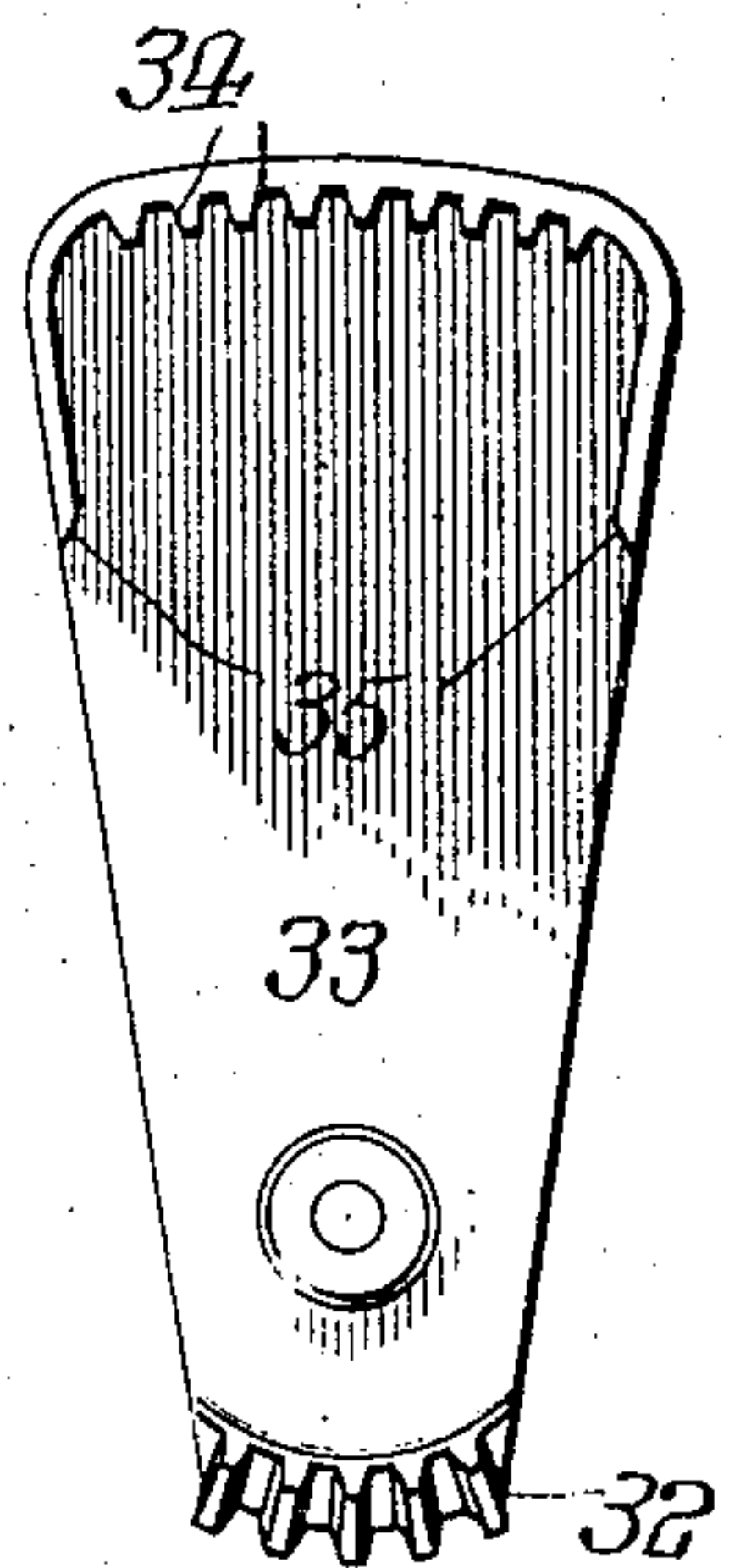


Fig. 2

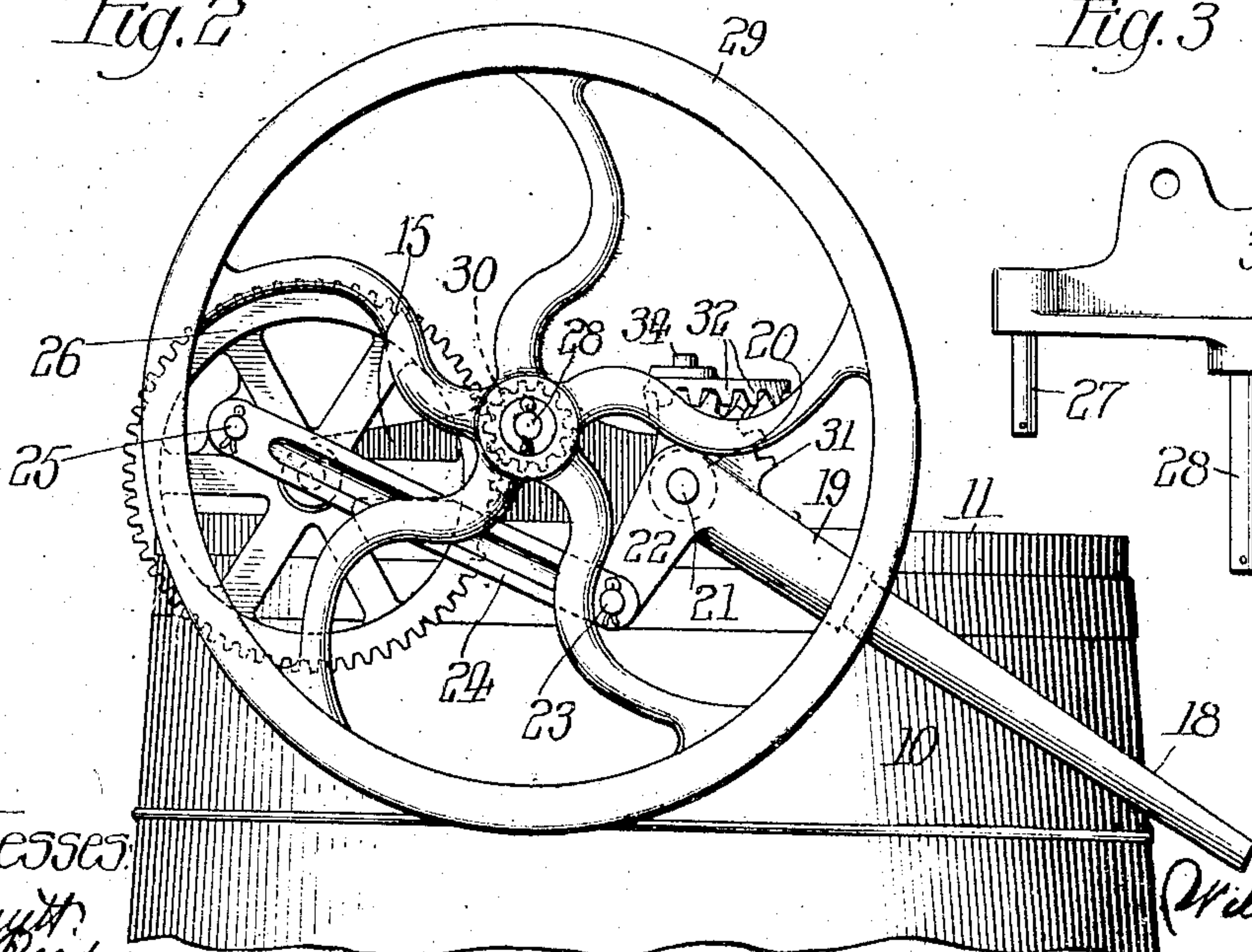
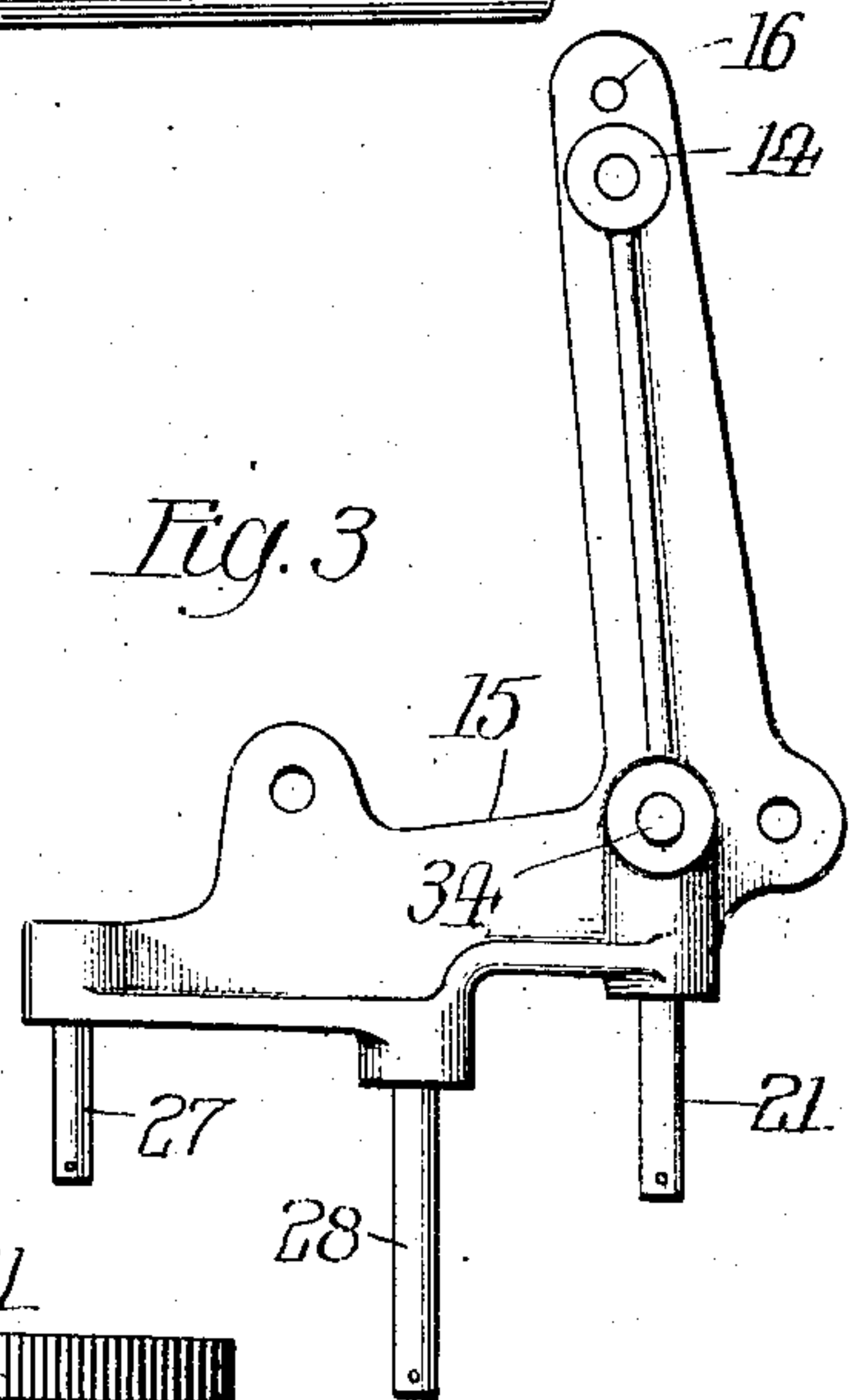


Fig. 3



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# UNITED STATES PATENT OFFICE.

WILLIAM RUTHVEN, OF CHICAGO, ILLINOIS.

GEARING FOR WASHING-MACHINES.

935,551.

Specification of Letters Patent.

Patented Sept. 28, 1909.

Application filed March 14, 1907, Serial No. 362,400. Renewed May 13, 1909. Serial No. 495,834.

*To all whom it may concern:*

Be it known that I, WILLIAM RUTHVEN, a citizen of the United States, and 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 in its preferred form; Fig. 2 is a side elevation of the same; Fig. 3 is a top plan view of the casting forming the bearing for the various elements of the mechanism; and Fig. 4 is an inverted plan view of the transmission lever.

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 14 formed on the end of the bearing casting 15, shown detached in Fig. 3, 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 upon the bearing pin 21 projecting horizontally from the angle 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 upon 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 wheels 20, 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, the segmental bevel gear teeth 31, which mesh with a corresponding set of bevel gear teeth 32, which, in my preferred form, are carried by the adjacent end of the transmission lever 33, which is pivoted intermediate its ends upon the bearing pin 34 projecting vertically from the casting 15. The lever 33 has projecting downwardly from its other end the segmental gear teeth 34, which are preferably of the internal type, so as to cover the pinion 17 and prevent the possibility of anything being caught therein; and to further secure this end, I preferably extend along the sides of the lever the downwardly projecting flanges 35, so that the pinion 17 is practically entirely inclosed. It will be readily apparent that when the lever or handle 18 is rocked through the angle of movement permitted by its connection, it will serve to give a reciprocating rotary motion to the beater shaft 13 through a considerably greater angle, as is desirable in this class of machines.

While I have shown the two sets of segmental gear teeth 32 and 34 as carried upon the end of the single transmission lever 33 as a preferred construction, it will be understood that my invention is somewhat broader than this specific form, as each set of said teeth might be carried upon a separate segment suitably pivoted to the casting 15, and the two segments be connected by a link.

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 the stirrer shaft and a pinion carried thereby, of the operating lever, a gear segment carried thereby, the transmission lever having the gear teeth at its ends meshing with said pinion and segment, the fly wheel, and connections between the operating lever and the fly wheel for rapidly rotating the latter.
2. In a device of the class described, the combination with the stirrer shaft and a pinion carried thereby, of the operating lever, a gear segment carried thereby, the transmission lever having the gear teeth at its ends meshing with said pinion and segment, the fly wheel, and connections between the operating lever and the wheel for rapidly rotating the latter, said connections consisting of the arm on the lever, the gear wheel having an eccentric pin, the link pivoted to said arm and to the pin, and a pinion carried by the fly wheel meshing with the gear wheel.
3. In a device of the class described, the combination with the stirrer shaft, of the operating lever, the transmission lever, gearing connecting the transmission lever with the operating lever and the stirrer shaft to transform the angular movement of the operating lever into a greater angular movement of the stirrer shaft, the fly wheel, and connections between the operating lever and the fly wheel for rapidly rotating the latter.
4. In a device of the class described, the combination with the stirrer shaft, of the operating lever, the transmission lever, gearing connecting the transmission lever with the operating lever and the stirrer shaft to transform the angular movement of the operating lever into a greater angular movement of the stirrer shaft, the fly wheel, and connections between the operating lever and the fly wheel for rapidly rotating the latter, said connections consisting of the arm on the lever, the gear wheel having an eccentric pin, the link pivoted to said arm and to the pin, and a pinion carried by the fly wheel meshing with the gear wheel.
5. In a device of the class described, the combination with the casting 15 having the bearing pins 27, 28, 21 and 34, and the bearing 14, of the stirrer shaft journaled in the bearing 14 having the pinion 17 on its upper end, the lever pivoted on the pin 21 and having the gear segment, and the arm carrying the pin 23 thereon, the transmission lever pivoted on the pin 34 and having the gear teeth at its ends meshing with said pinion and segment, the gear wheel pivoted on the pin 27 and having the eccentric pin 25, the link connecting the pins 23 and 25, and the fly wheel having the 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.
6. In a device of the class described, the combination with the stirrer shaft and a pinion carried thereby, of the operating lever, a gear segment carried thereby, the transmission lever having the internally toothed segmental end covering and engaging the pinion, and the segmental teeth at the other end meshing with the gear segment on the operating lever, the fly wheel, and connections between the operating lever and the wheel for rapidly rotating the latter.
7. In a device of the class described, the combination with the stirrer shaft and a pinion carried thereby, of the operating lever, a gear segment carried thereby, the transmission lever having the internally toothed segmental end covering and engaging the pinion, and provided with the downwardly-extending flanges 35 for the purpose described, and the segmental teeth at the other end meshing with the gear segment on the operating lever, the fly wheel, and connections between the operating lever and the wheel for rapidly rotating the latter.
8. In a device of the class described, the combination with the stirrer shaft and a plain pinion carried thereby, of the operating lever mounted on a horizontal pivot and having the vertical bevel gear segment carried thereby, a horizontal segmental gear meshing with the segment on the operating lever, mechanism for supporting and connecting said horizontal bevel gear segment and said horizontal segmental gear so that they will reciprocate in unison, the fly wheel, and connections between the operating lever and the wheel for rapidly rotating the latter.
9. In a device of the class described, the combination with the stirrer shaft and a plain pinion carried thereby, of the operating lever mounted on a horizontal pivot and having the vertical bevel gear segment carried thereby, a horizontal segmental gear meshing with the pinion, a horizontal bevel gear segment meshing with the segment on the operating lever, mechanism for supporting and connecting said horizontal bevel gear segment and said horizontal segmental gear so that they will reciprocate in unison, the fly wheel, and connections between the operating lever and the wheel for rapidly rotating the latter, said connections consisting of the arm on the lever, the gear wheel having an eccentric pin, the link pivoted to said arm and to the pin, and a pinion carried by the fly wheel meshing with the gear wheel.
10. In a device of the class described, the casting 20 having the bearing aperture, the handle socket, the link arm, and the gear segment, substantially as described.
11. In a device of the class described, the rocking element having the bearing aperture, the handle socket, the eccentric bearing pin for the link, and the gear segment, substantially as described.



12. In a device of the class described, the combination with a fly wheel and a pinion secured thereto; of a driving gear wheel meshing with the pinion and carrying an eccentric bearing pin; a rocking element having a bearing recess, a handle socket, an eccentric bearing pin, and segmental teeth thereon; a link connecting said bearing pins; a stirring shaft; connections between said shaft and rocking element cooperating with the teeth on the latter, for causing the rocking of the element to rock the shaft; and a handle in said socket.

13. In a device of the class described, the combination with a fly wheel and a pinion secured thereto; of a driving gear wheel meshing with the pinion and carrying an eccentric bearing pin; a rocking element having a bearing recess, a handle socket, an eccentric bearing pin, and another engaging element; a link connecting said bearing pins; a stirring shaft; and connections between said shaft and rocking element cooperating with said engaging element, for causing the rocking of the element to rock the shaft; and a handle in said socket.

14. In a device of the class described, the combination with a fly wheel and a pinion secured thereto; of a driving gear wheel meshing with the pinion and carrying an eccentric bearing pin, a rocking element having a bearing recess, a handle socket, an eccentric bearing pin, and another engaging element; a link connecting said bearing pins, a stirring shaft; a pinion on said shaft; connections between said shaft and rocking element cooperating with the gear pinion on the stirring shaft and with said engaging element, for causing the rocking of the element to rock the shaft; and a handle in said socket.

15. In a device of the class described, the combination with a stirrer shaft, of a pivoted member, a transmission lever whose axis is at right angles to that of the pivoted member, gearing connecting the transmission lever with the pivoted member at one end and with the stirrer shaft at the other end 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.

16. In a device of the class described, the combination with a fly wheel and a pinion secured thereto; of a driving gear wheel meshing with the pinion and carrying an eccentric bearing-pin; a rocking element having a bearing recess, a handle socket, and segmental teeth thereon; connections between said rocking element and eccentric bearing-pin to transform the rocking movement of the former into the continuous ro-

tary movement of the driving gear wheel; a steering shaft; connections between said shaft and rocking element cooperating with the teeth on the latter for causing the rocking of the element to rock the shaft; and a handle in said socket.

17. In a device of the class described, the combination with a fly wheel and a pinion secured thereto; of a driving gear wheel meshing with the pinion and carrying an eccentric bearing-pin; a rocking element having a bearing recess, a handle socket, and another engaging element; connections between said rocking element and eccentric bearing-pin to transform the rocking movement of the former into the continuous rotary movement of the driving gear-wheel; a stirring shaft; and connections between said shaft and rocking element cooperating with said engaging element for causing the rocking of the element to rock the shaft; and a handle in said socket.

18. In a device of the class described, the combination with a fly wheel and a pinion secured thereto; of a driving gear-wheel meshing with the pinion and carrying an eccentric bearing-pin; a rocking element having a bearing recess, a handle socket, and another engaging element; connections between said rocking element and eccentric bearing-pin to transform the rocking movement of the former into the continuous rotary movement of the driving gear-wheel; a stirring shaft; a pinion on said shaft; connections between said shaft and rocking element cooperating with the gear pinion upon the stirring shaft and with said engaging element for causing the rocking of the rocking element to rock the shaft; and a handle in said socket.

19. In a device of the class described, the combination with a stirrer shaft and a pinion carried thereby, of a rocking element having a bevel gear segment and an arm, a transmission lever having gear teeth at its ends meshing with said pinion and the bevel-gear segment, 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 arm of the rocking element and to the eccentric pin.

In witness whereof, I have hereunto set my hand and affixed my seal, this 11th day of March, A. D. 1907.

WILLIAM RUTHVEN. [L. S.]

Witnesses:

JOHN H. McELROY,  
M. S. REEDER.