

No. 891,794.

PATENTED JUNE 23, 1908.

A. B. CHRISTENSEN.  
GEARING FOR WASHING MACHINES.

APPLICATION FILED DEC. 26, 1907.

2 SHEETS—SHEET 1.

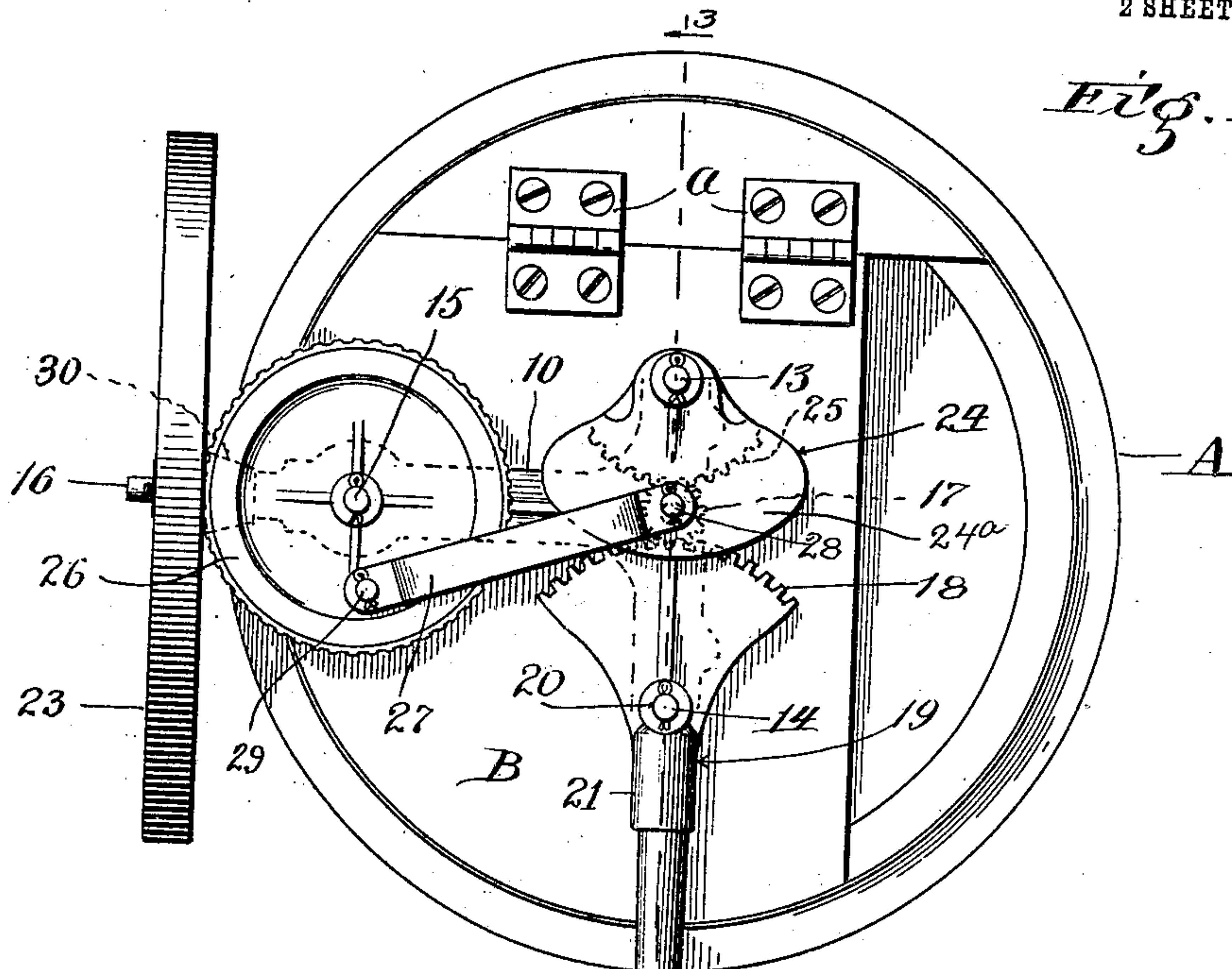


Fig. 1.

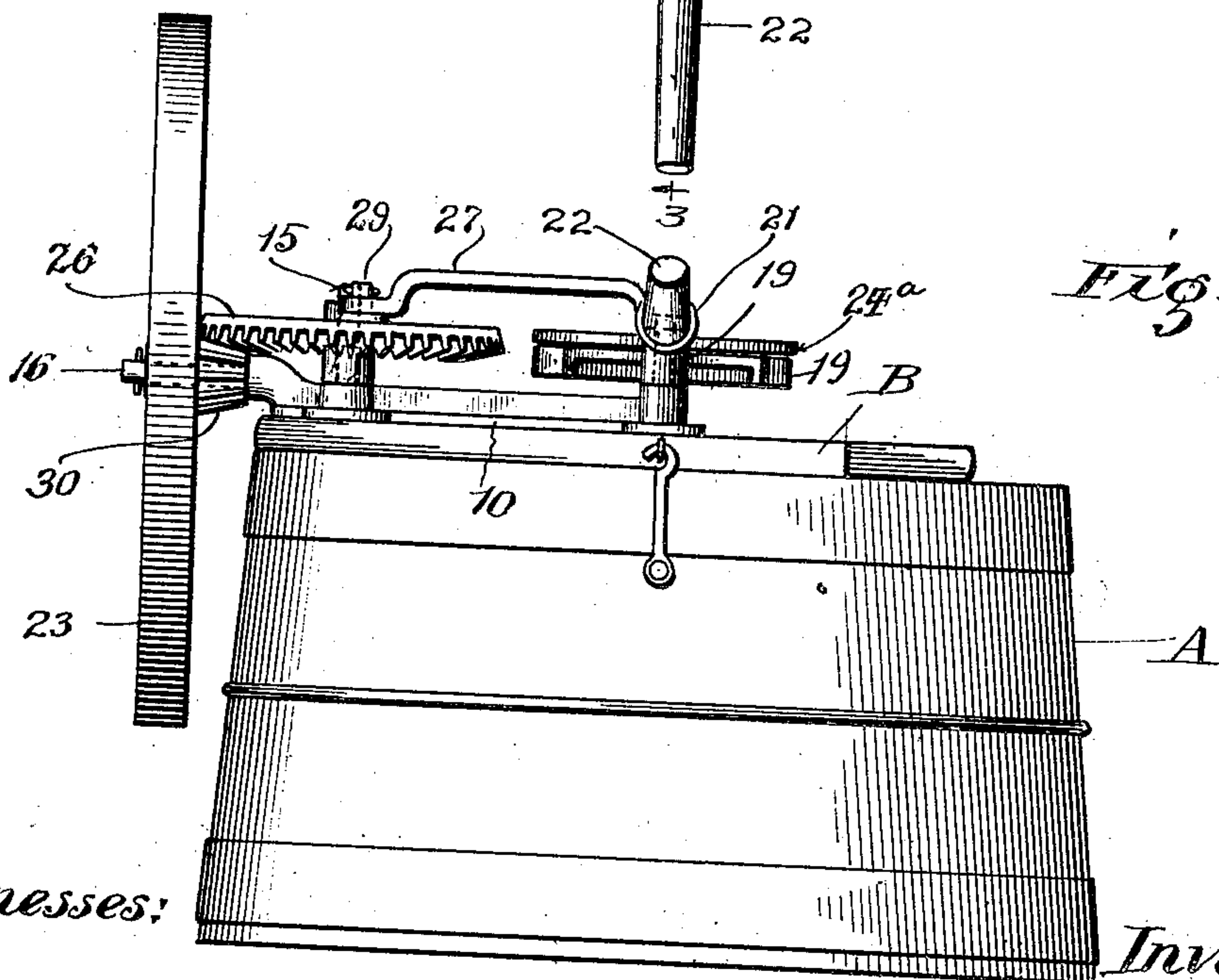


Fig. 2.

Witnesses:

Leone S. Russell,  
Frank Benner.

Inventor:

Andrew B. Christensen,  
by Charles O. Shurway  
his atty.

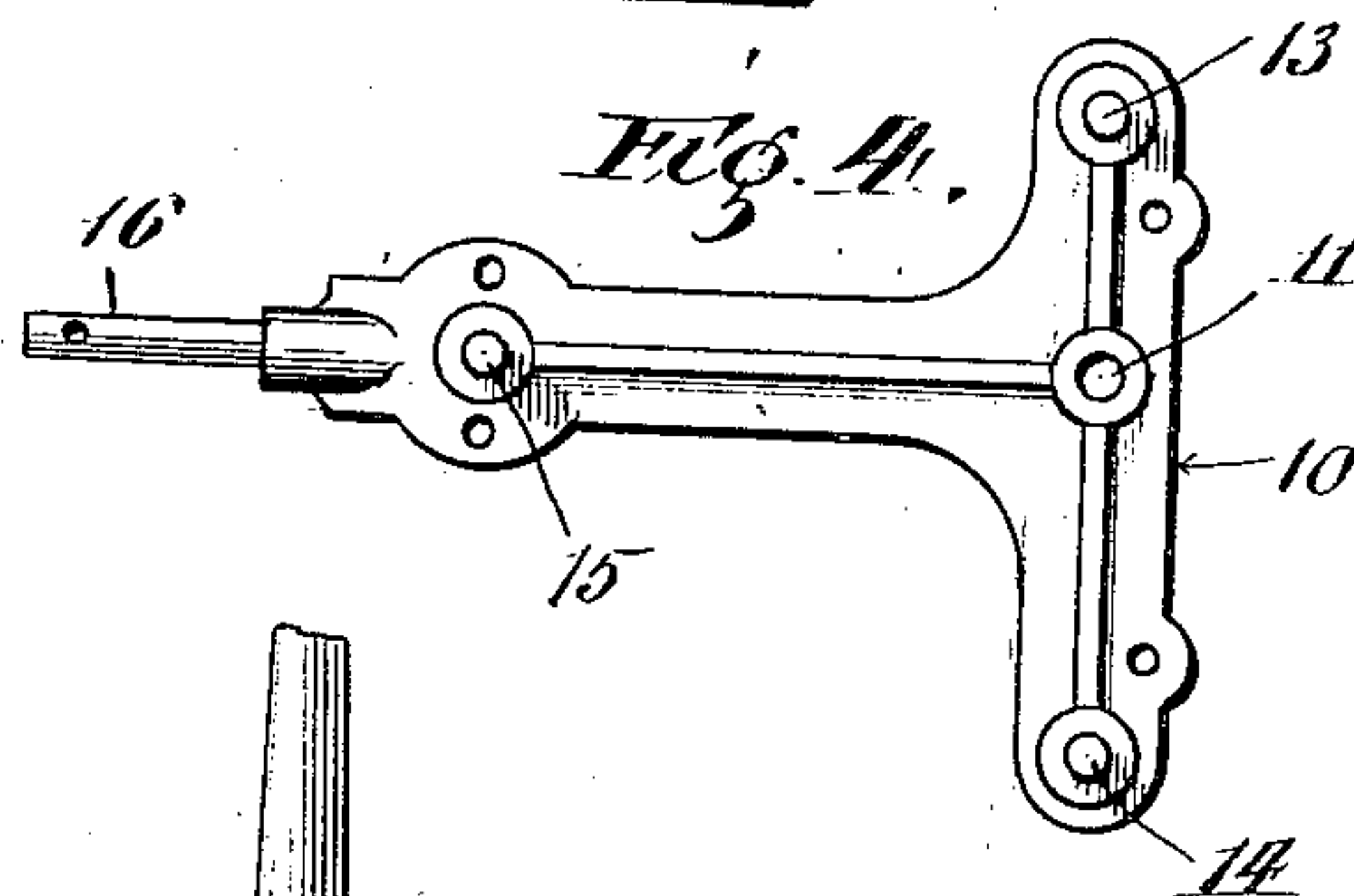
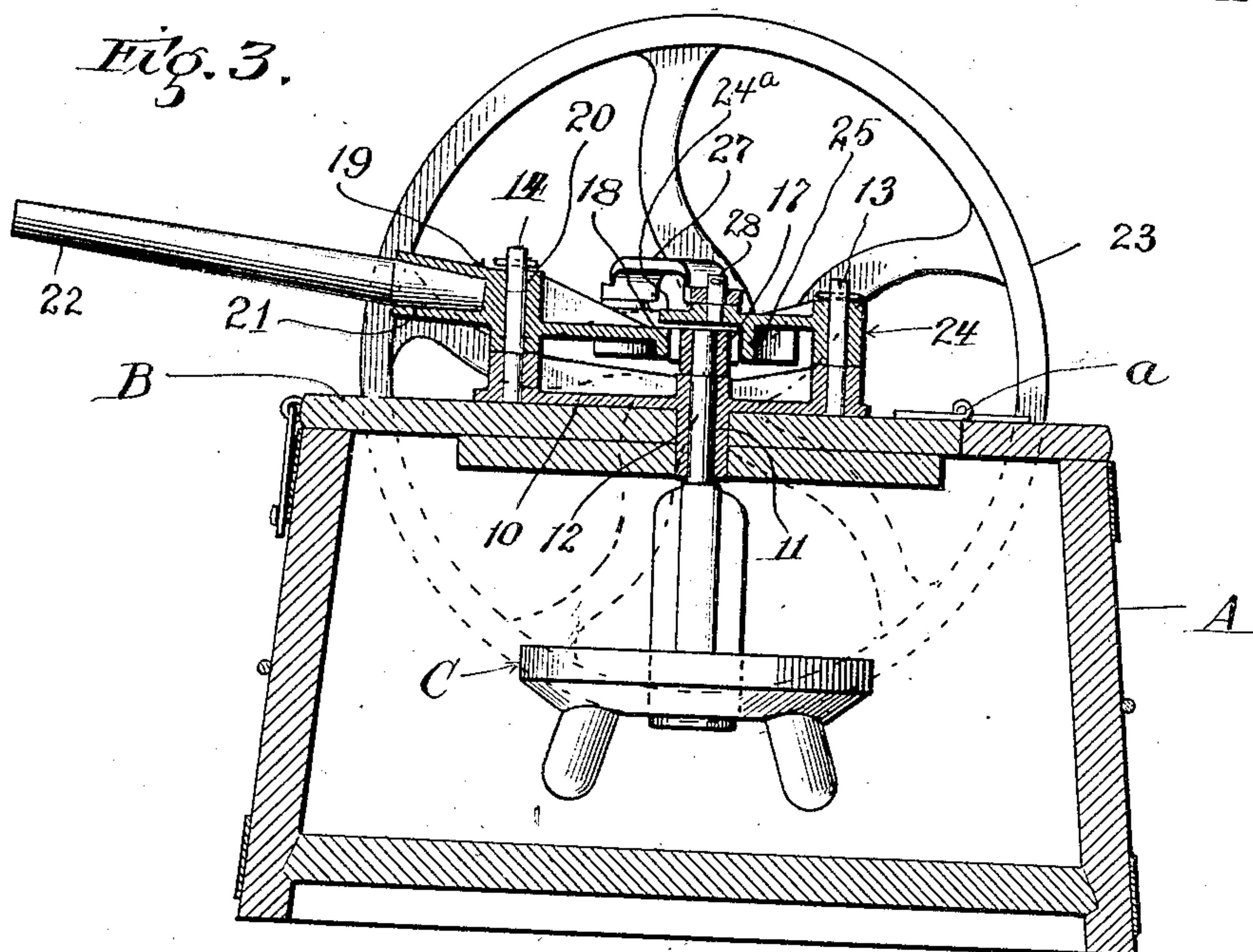
No. 891,794.

PATENTED JUNE 23, 1908.

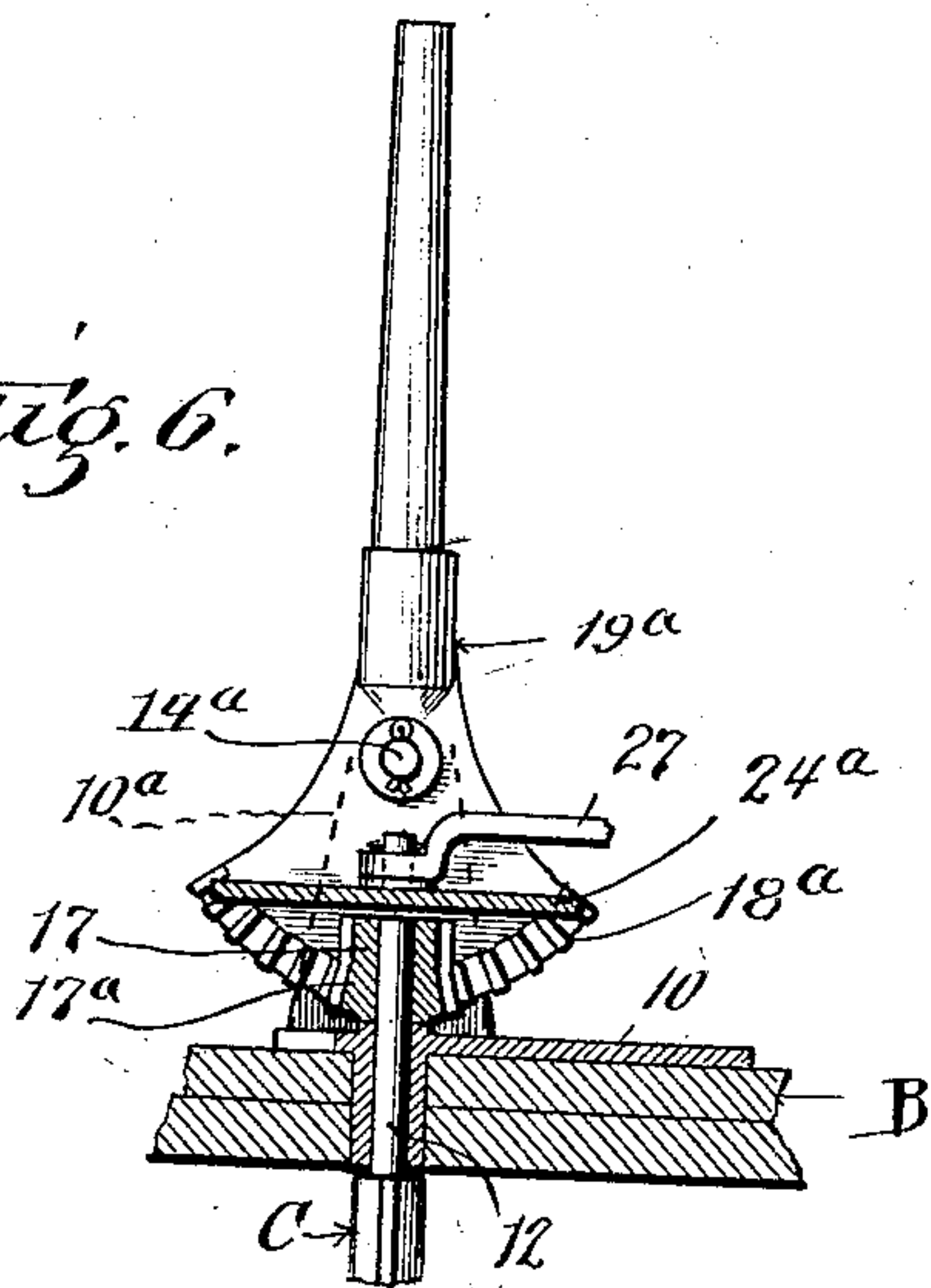
A. B. CHRISTENSEN.  
GEARING FOR WASHING MACHINES.

APPLICATION FILED DEC. 26, 1907.

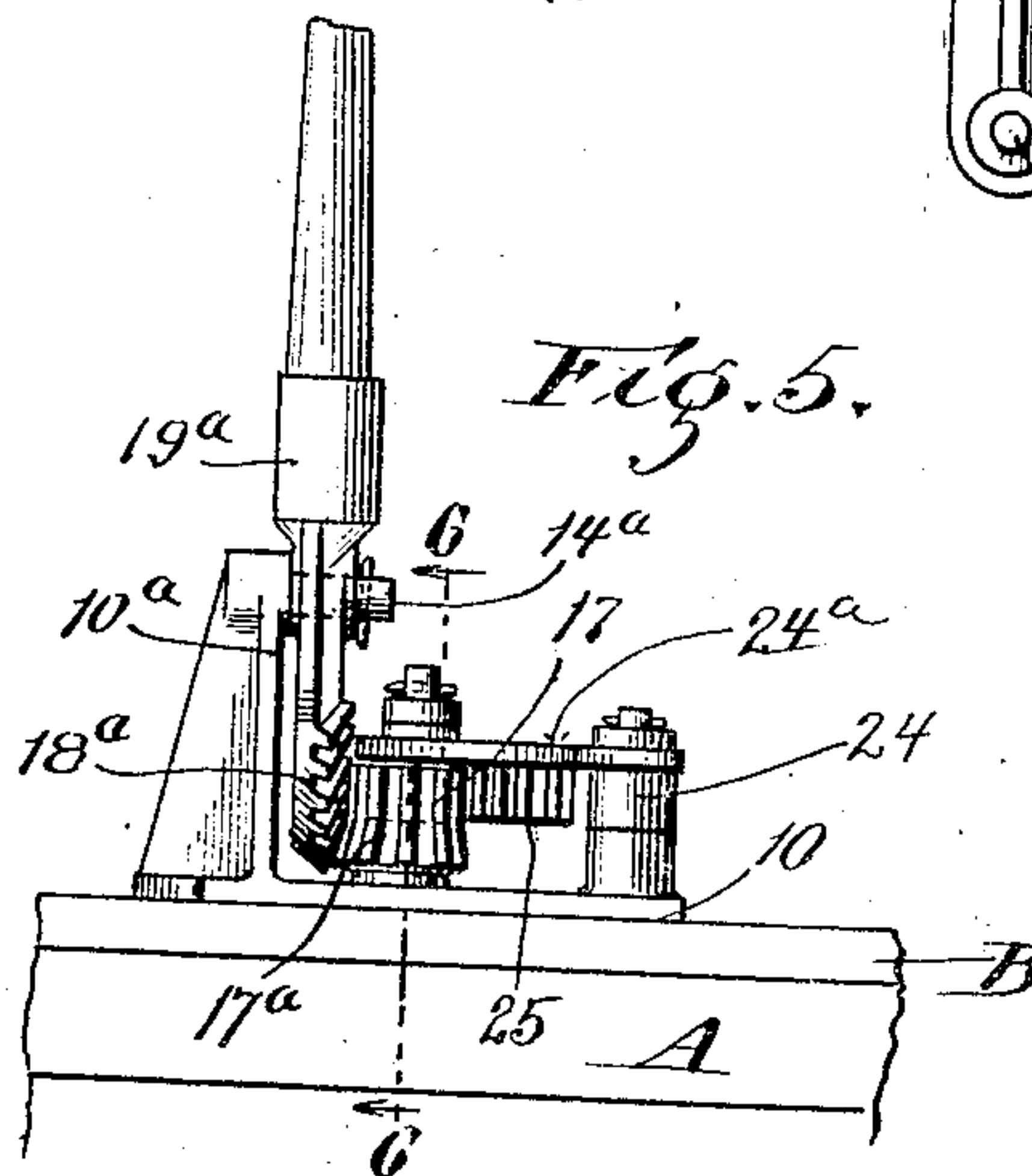
2 SHEETS—SHEET 2.



*Fig. 6.*



*Fig. 5.*



Witnesses:

Leone S. Russell  
Frank Benson

Inventor:

Andrew B. Christensen  
by Charles O. Shewey  
his atty.



# UNITED STATES PATENT OFFICE.

ANDREW B. CHRISTENSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE THISTLE MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## GEARING FOR WASHING-MACHINES.

No. 891,794.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed December 26, 1907. Serial No. 408,174.

*To all whom it may concern:*

Be it known that I, ANDREW B. CHRISTENSEN, a citizen of the United States, 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 description.

My invention relates to certain improvements in gearing for washing machines.

The invention is designed to overcome certain objectionable features common in washing machines and to otherwise improve the same.

To such end this invention consists in certain novel features of construction and arrangement, a description of which will be found in the following specification and the essential features of which will be more definitely pointed out in the claims.

The invention is clearly illustrated in the drawings furnished herewith in which

Figure 1 is a plan view of a washing machine illustrating the preferred form of my invention. Fig. 2 is a front view thereof. Fig. 3 is a vertical section taken on line 3—3—Fig. 1. Fig. 4 is a plan view of a bearing plate. Fig. 5 is a side view of a modified form of the invention and Fig. 6 is a vertical section taken on line 6—6—Fig. 5.

Referring first to Figs. 1 to 4 inclusive, A, represents a tub of ordinary form which is provided with a lid or cover B hinged to the tub by hinges *a*. Within the tub is a dasher C, which is supported in the lid B, and arranged to be given a rotary reciprocatory motion by the gearing, which forms the subject matter of the present invention.

A bearing plate or bracket 10, is bolted or otherwise secured to the lid B and is formed with an elongated vertical bearing aperture 11, in which is journaled the dasher shaft 12, of the dasher C. Said bearing plate 10 has three vertically extending studs 13, 14, 15 and a horizontally extending stud 16, each of which is adapted to receive one of the operating parts of the gearing.

The dasher shaft 12, bears upon its upper end a pinion 17, which meshes with a segmental rack 18, formed upon an operating lever 19, which lever is provided with a bearing aperture 20 and a handle socket 21. The

lever 19, is journaled to oscillate upon the stud 14, and is provided with a handle 22, fitted to the handle socket 21. Oscillation of the operating lever 19, will obviously impart to the dasher shaft a rotary reciprocatory movement through the action of the segmental gear or rack 18 and pinion 17.

In order that the machine may have an even and easy operation I have provided a fly wheel or balance wheel 23, which is geared to the dasher shaft by mechanism entirely independent of the operating lever 19, this gearing being so proportioned and arranged, that while the operating lever has a comparatively slow movement, the fly wheel will run at high speed.

A transmitting member 24, is journaled upon the stud 13, and has a flange 24<sup>a</sup> which overhangs the pinion 17, so as to protect the user from injury from the pinion 17 and rack 18. Upon the underside of the transmitting member 24, is a segmental rack 25, which meshes with the pinion 17. It should be noticed that the operating lever and transmission member 24 lie diametrically opposite each other on either side of the pinion 17, and that the gear teeth of the racks 18 and 25 oppose each other with the pinion in between them.

The oscillatory reciprocatory motion of the dasher shaft is transferred to the transmission member giving it an oscillatory movement of some extent and this movement is transmitted to a gear wheel 26 by a pitman 27 which connects the transmission member and gear wheel. Wrist-pins 28, 29 are provided upon the transmission member and gear wheel respectively for engagement with the pitman. The gear wheel 26 is journaled upon the stud 15 of the frame 10, and meshes with a pinion 30, which is formed upon the fly-wheel 23. The fly-wheel is journaled upon the stud 16, which extends out from the frame 10 in a horizontal direction so that the fly-wheel may rotate in a vertical plane. The gearing between the pinion 17 and the fly-wheel is such that one forward and backward movement of the transmission member will cause a number of revolutions of the fly-wheel, at high speed.

The operation of the device is as follows: Oscillation of the operating lever will impart



a rotary reciprocatory movement to the dasher shaft. This movement of the dasher shaft is transmitted to the transmission member in the form of an oscillatory movement, which movement is transformed into a continuous rotary movement of the fly wheel through the agency of the pitman, gear wheel and pinion.

In the form shown in Figs. 5 and 6, the pinion 17 is extended to form a bevel pinion, 17<sup>a</sup>, and the operating lever 19<sup>a</sup> contains a bevel segmental gear 18<sup>a</sup> which meshes with the bevel pinion 17<sup>a</sup>. By this arrangement I am enabled to pivot the lever 19<sup>a</sup> upon a horizontal stud 14<sup>a</sup>, so that the operating lever may be oscillated through a vertical plane. The stud 14<sup>a</sup> projects from a bracket 10<sup>a</sup> which extends up from the frame 10. There are a number of advantages present in this structure. Firstly, the power is transferred directly to the dasher pinion from the operating lever thereby doing away with considerable unnecessary friction usually attendant in machines of this class; secondly, the power derived from the fly wheel is imparted to the dasher pinion independently of the operating lever, and upon the side of the pinion opposite to the operating lever. The pinion is therefore turned back and forth between the two racks 18—25, and a steady and even movement is imparted to the dasher which is one of the results which it is desired to obtain in machines of this class.

I am well aware that various alterations and modifications of this device are possible without departing from the spirit of my invention and I do not therefore desire to limit myself to the exact forms shown and described.

I claim as new and desire to secure by Letters Patent:—

1. In a gearing for washing machines, the combination with a dasher shaft, of an operating lever arranged to impart to said shaft a rotary reciprocatory movement, a fly wheel and connections between the fly wheel and dasher shaft, independent of the operating lever for transforming the rotary reciprocatory movement of the dasher shaft into a continuous rotary movement of the fly wheel.

2. In a gearing for washing machines, the combination with a dasher shaft and pinion, of an operating lever having a rack thereon meshing with said pinion, a fly wheel, and connections between the fly wheel and pinion for transforming the rotary reciprocatory movement of the pinion into a continuous rotary movement of the fly wheel.

3. In a gearing for washing machines, the combination with a dasher shaft and pinion, of an operating lever having a rack thereon meshing with said pinion, a fly wheel, and connections between the fly wheel and pinion

for transforming the rotary reciprocatory movement of the pinion into a continuous rotary movement of the fly wheel, incorporating a transmission member having a rack meshing with said pinion.

4. In a gearing for washing machines, the combination with a dasher shaft, and pinion, of two segmental racks lying on opposite sides of said pinion and meshing therewith, one of said racks having a handle socket thereon, and a wrist pin for a pitman on the other.

5. In a gearing for washing machines, the combination with a beater shaft and pinion, of two segmental racks lying on opposite sides of said pinion and meshing therewith, a handle on one of said racks, a pitman connected to the other of said racks, a fly wheel and connections between the fly wheel and pitman for transforming the reciprocatory movement of the pitman into a continuous rotary movement of the fly wheel.

6. In a gearing for washing machines, the combination with a dasher shaft and pinion, of an operating lever having a rack meshing with said pinion, a transmission member having a rack, also meshing with said pinion, a wrist pin on said transmission member, a fly wheel, a pinion thereon, a gear wheel meshing with said pinion, a wrist pin on said gear wheel and a pitman connecting said wrist pins.

7. In a gearing for washing machines, the combination with a dasher shaft, and pinion, of two segmental racks lying in the plane of the pinion and meshing therewith, a handle on one of said racks, a wrist pin on the other, a gear wheel lying in the plane of the rack, a wrist pin on said gear wheel, a pitman connecting said wrist pins and a fly wheel having a pinion meshing with said gear wheel.

8. In a gearing for washing machines, the combination with a dasher shaft and pinion, of an operating lever and a transmission member fulcrumed on opposite sides of said pinion, each of which has a segmental rack meshing with the pinion, said operating lever having a handle socket thereon and said transmission member having a wrist pin for a pitman.

9. In a gearing for washing machines, the combination with a dasher shaft pinion, of an operating lever having a segmental rack meshing with said pinion, and a transmission member having a segmental rack meshing with said pinion, a flange which overhangs said pinion and those teeth of the segmental rack of the operating lever which are in mesh with the teeth of the pinion at any given time, and a wrist pin for a pitman.

10. In a gearing for washing machines, the combination with a dasher shaft and pinion, of an operating lever having a segmental

rack meshing with said pinion, a transmission member having a segmental rack meshing with said pinion, a flange overhanging said pinion to cover the same, and a wrist pin  
5 on said flange for a pitman.

In witness whereof I have executed the above application this 20th day of December,

1907, at Chicago, county of Cook, and State of Illinois.

ANDREW B. CHRISTENSEN.

Witnesses:

CHARLES O. SHERVEY,  
LEONE S. RUSSELL.