

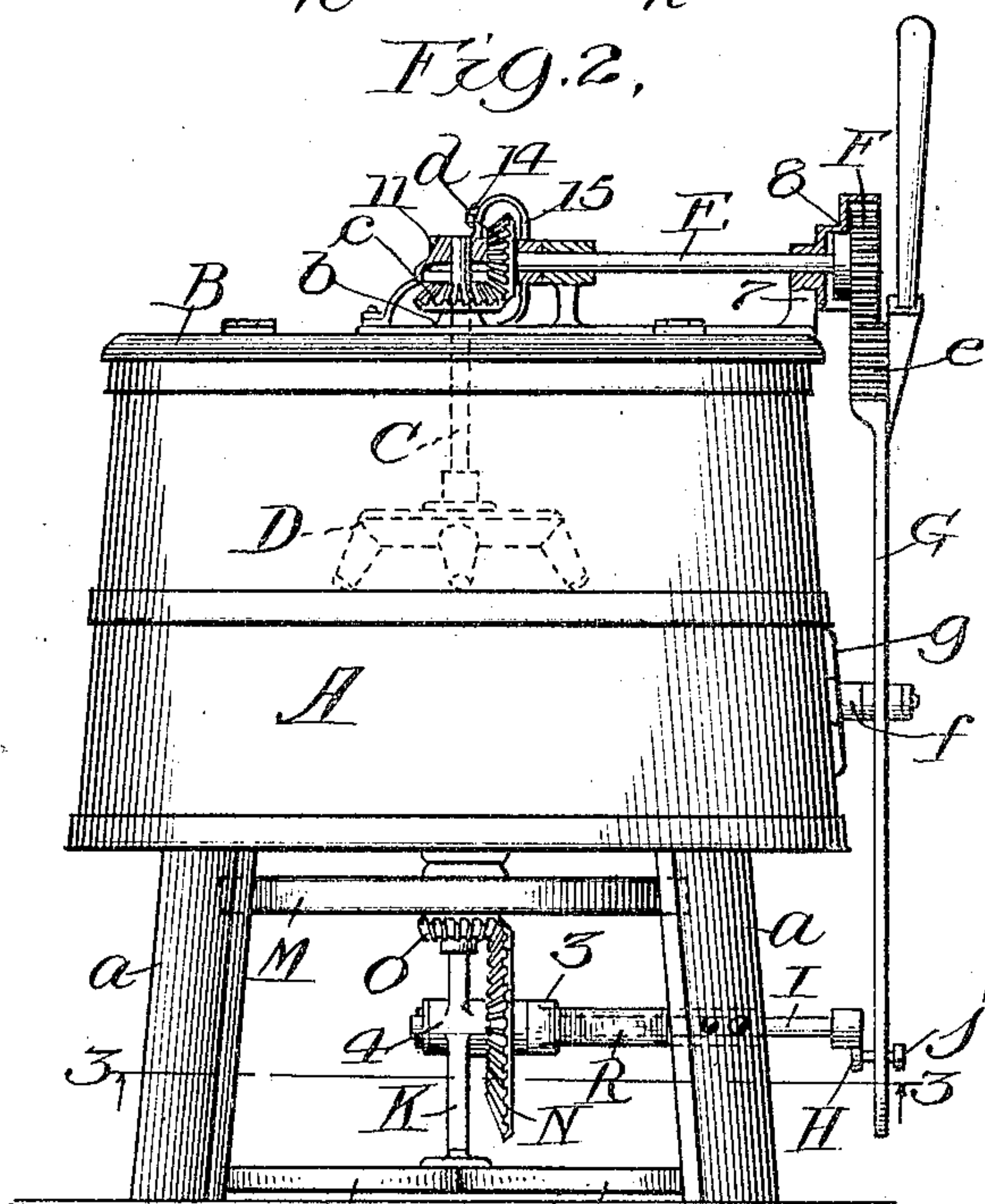
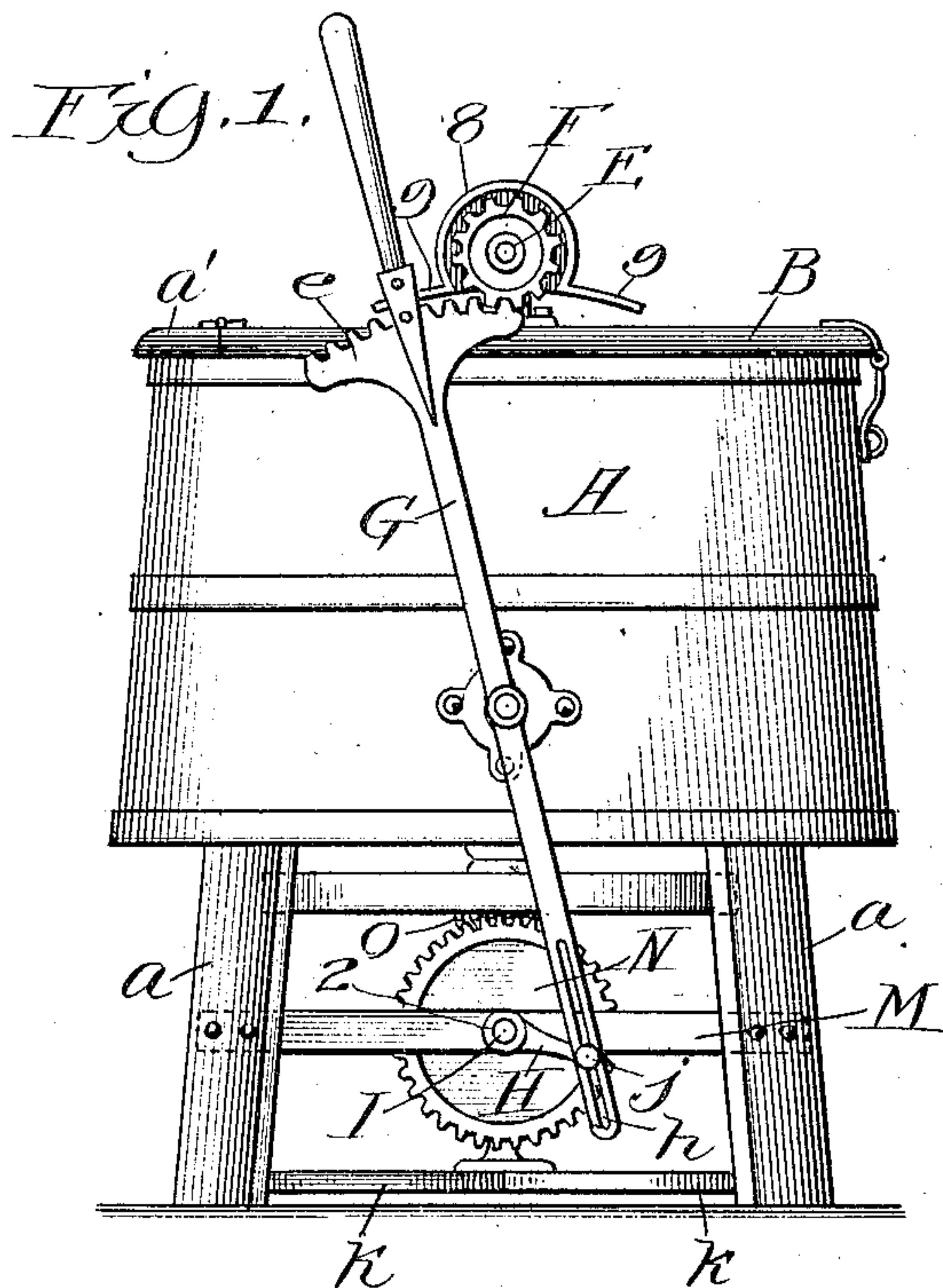
No. 887,022.

PATENTED MAY 5, 1908.

A. F. VICTOR.  
GEARING FOR WASHING MACHINES.

APPLICATION FILED MAR. 6, 1907.

2 SHEETS—SHEET 1.



Witnesses  
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2 SHEETS—SHEET 2.

Fig. 3.

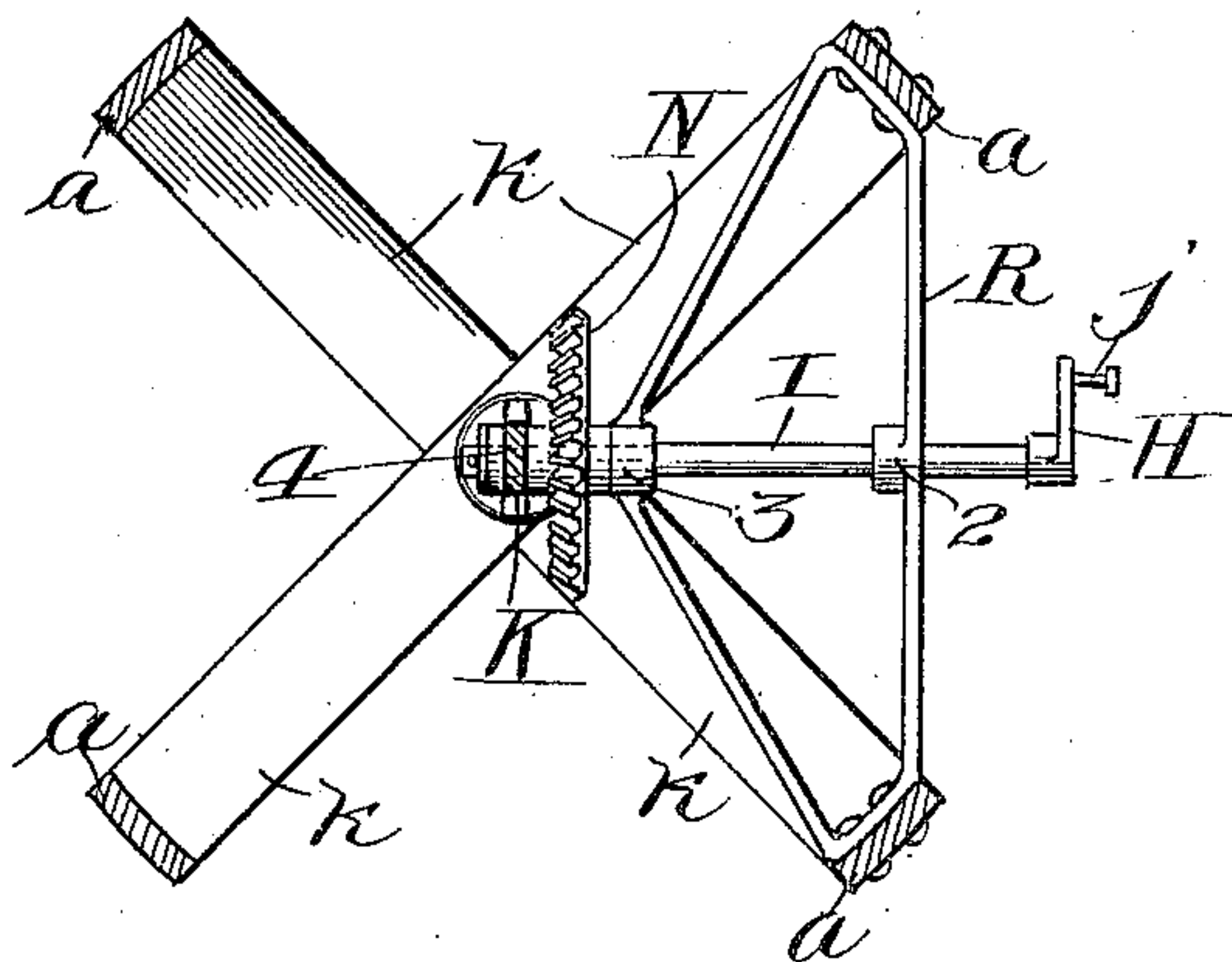


Fig. 4.

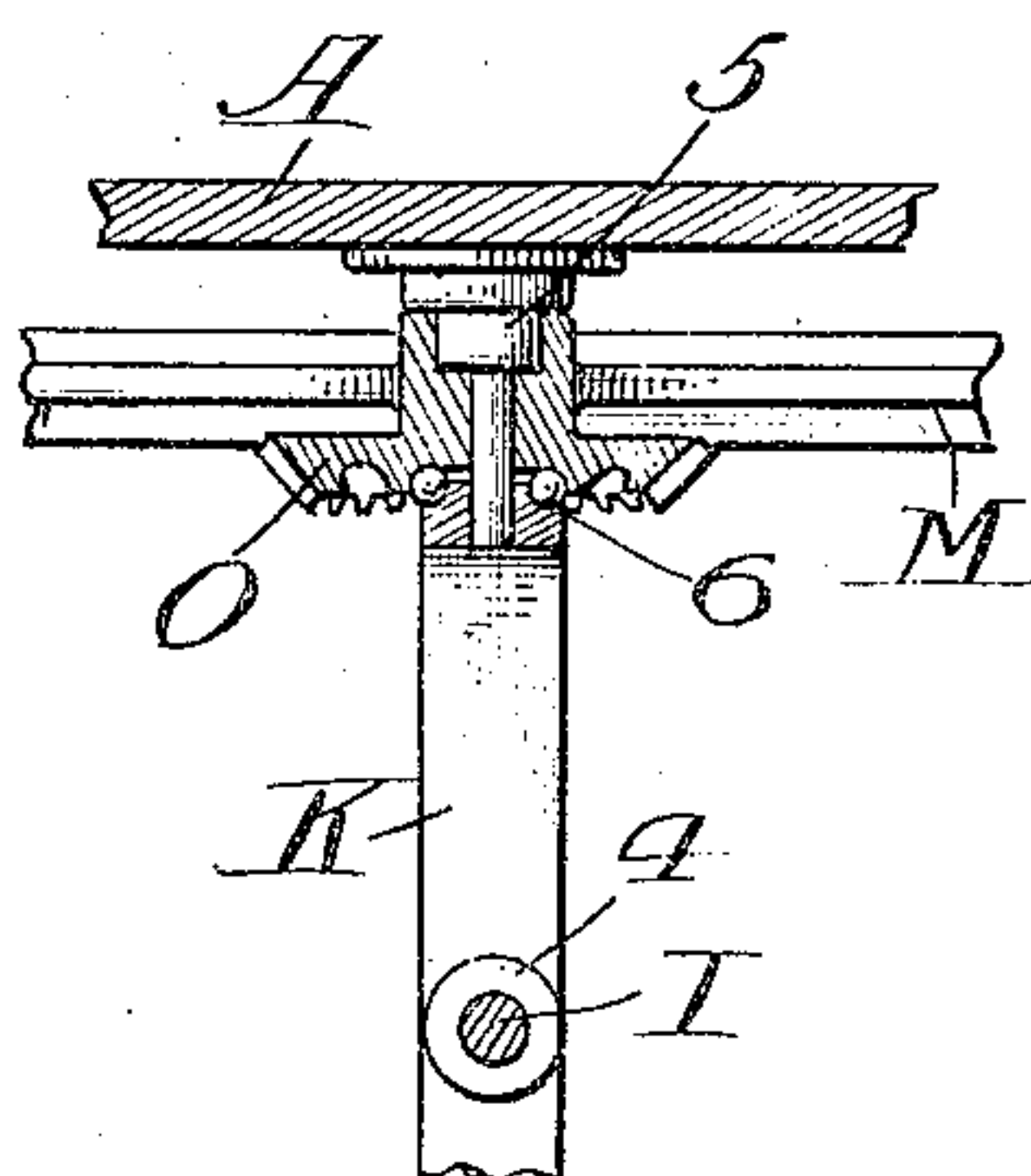


Fig. 5.

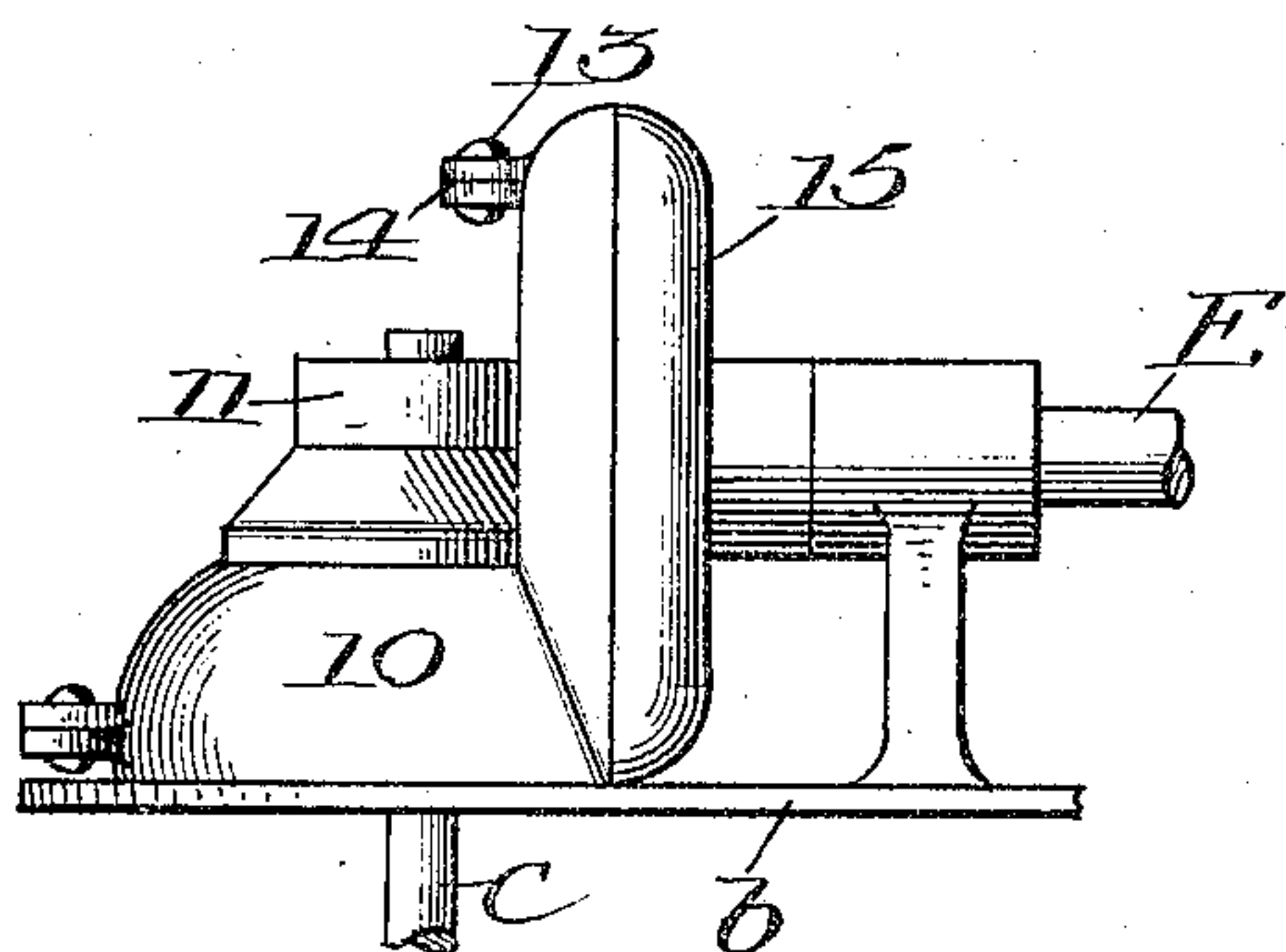


Fig. 6.

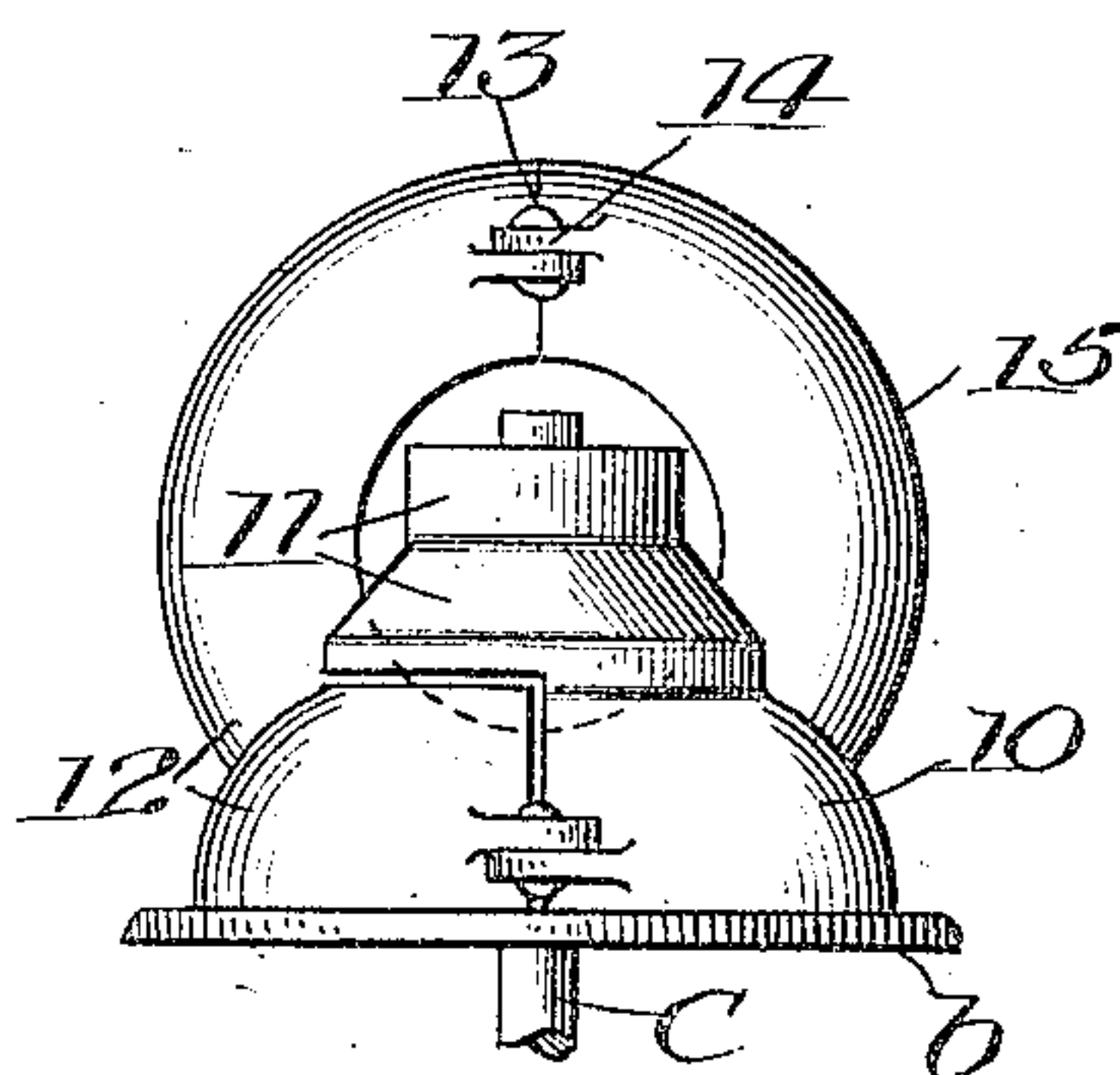
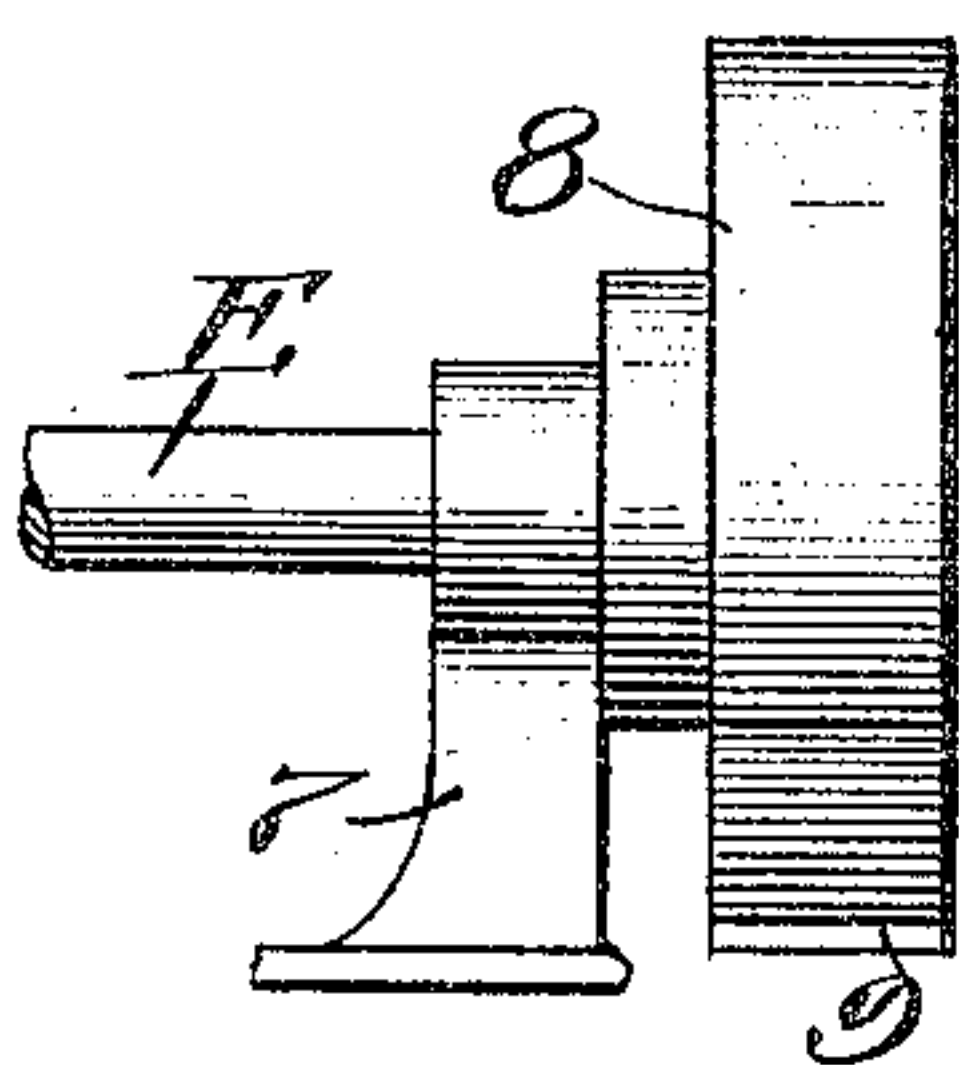


Fig. 7.



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# UNITED STATES PATENT OFFICE.

ALEXANDER FERDINAND VICTOR, OF ELMIRA, NEW YORK, ASSIGNOR TO WHITE LILY WASHER COMPANY, OF DAVENPORT, IOWA, A CORPORATION OF IOWA.

## GEARING FOR WASHING-MACHINES

No. 887,022.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed March 6, 1907. Serial No. 360,897.

*To all whom it may concern:*

Be it known that I, ALEXANDER FERDINAND VICTOR, a subject of the King of Sweden, and a resident of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Gearing for Washing-Machines, of which the following is a clear, full, and exact description.

My invention relates to gearing for that class of washing machines in which the clothes within the tub are stirred back and forth in the water by a rotary reciprocal stirrer-head.

The object of my invention is to operate this rotary reciprocal stirrer-head by a lever, the back and forth movement of which is greatly facilitated and assisted by the momentum of a large horizontally disposed fly-wheel, located under the tub of the machine out of the way, which derives motion from said lever, through the medium of simple and comparatively inexpensive mechanical means. This I accomplish by means herein-after fully described, and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a front elevation of my machine. Fig. 2 is a side elevation thereof. Fig. 3 is a horizontal section taken on dotted lines 3, 3, Fig. 2, looking upwards. Fig. 4 is a central vertical section, drawn to an enlarged scale, of the bearings for the fly-wheel beneath the tub. Figs. 5 and 6 are front and end elevations respectively of the casing for surrounding the gearing on top of the tub. Fig. 7 is a side elevation of the casing for protecting the segmental rack and pinion at the edge of the cover.

In the drawings A represents a tub which is supported a suitable distance above the floor by legs *a, a*, preferably, four in number. The top of this tub is closed by a cover B, that corresponds in dimensions to all but a segment of the circular area inclosed by the upper edge of the tub, and by a segmental strip *a'* of wood or other material, which is permanently secured to the upper edges of the tub and has the cover hinged to the straight edge thereof, substantially as shown in Fig. 1 of the drawings.

Journalled in suitable bearings in the screw-plate of the supporting-frame *b*, is a vertical stirrer-shaft C, the axis of which aligns with the axis of the tub, down into

which it extends a suitable distance, and is provided on its lower end with a stirrer-head D. Immediately above its bearings it is provided with a beveled pinion *c*, which is engaged by a bevel gear *d* on the adjacent end of a drive-shaft E journalled in the standards arising from the screw-plate of the supporting-frame *b*, in a transaxial plane parallel to the hinged edge of the cover.

The end of the shaft E opposite shaft C extends out over the edge of the cover a slight distance and is provided with a spur gear F, the lower segment of which is engaged by a segmental rack *e* that is secured to and made a part of a vertically disposed lever G. The lever G is fulcrumed to a stud *f* projecting laterally from the screw-plate *g* secured to the side of the tub near its lower edge and its lower end extends down below the tub a suitable distance, and is provided with a longitudinally elongated slot *h*, which is engaged by the wrist-pin *j* of a crank H, which latter is secured to the adjacent end of a horizontally disposed shaft I extending under the tub.

Shaft I is journalled in suitable bearings 2 and 3 made, respectively, in the center of length of the outer stretch of a triangular-frame R and in the angle of the other two stretches thereof, and its inner end extends through the last mentioned bearings and has its adjacent extremity journalled in bearings 4 in the king-post K. The lower end of this king-post is provided with basal flanges that are secured to cross-braces *k* at about their intersection, and said post aligns with the axis of the tub. The upper end of said king-post is reduced and made cylindrical, and the upper extremity of this cylindrical portion is seated in a socket made in the boss of a screw-plate secured to the center of the bottom of the tub, as shown. A fly-wheel M is loosely journalled on this upper cylindrical portion of the king-post, and it has, preferably, cast in one piece therewith, a beveled pinion N, which is engaged by a beveled gear O secured on shaft I between bearings 3 of frame R and bearing 5 in the king-post.

If desired I can provide ball-bearings 6 for the fly-wheel, by securing a suitable cone to the reduced upper portion of the king-post, and inserting a cup in the lower recessed end of the hub of the wheel. This ball bearing feature of the invention may be dispensed with if desired.



In order to protect the gearing connecting the stirrer-shaft C and drive-shaft E, and likewise the spur gear and rack *e* of the lever G, I have so designed the supporting-frame of the machine as to provide gear-casings therefor. To this end the standard 7 of the supporting-frame, is provided with a circular box-shaped case 8 the cylindrical sides of which are concentric with the bearings in said standard, and project sufficiently to inclose the spur gear F, all except the lowest segment of said gear where said cylindrical sides are cut away to permit of the engagement of said gear and rack *e*. The edges of the cut away portion of the cylindrical sides of the case 8 are provided with lateral wings 9, 9, the curvature of which corresponds to the periphery of the segmental rack *e*, which it is constructed to guard.

The beveled pinion *c* is inclosed by a truncated dome-shaped case, which is divided in the longitudinal plane of the drive-shaft into two parts, one, 10, being stationary and made integral or cast in one piece with the screw-plate of the supporting-frame *b* and provided with a suitable bearing-boss 11 for the upper end of the stirrer-shaft. The other part 12 is hinged at the rear to the stationary part, and the edge thereof opposed to the latter is, at the top, recessed to accommodate the bearing-boss 11. The beveled pinion *d* is likewise inclosed by a vertically disposed transverse circular casing, which is likewise divided in the plane of the axis of the drive-shaft into two parts, which are removably fastened together by a bolt and nut 13 engaging the lugs 14 projecting, preferably, from their sides nearest the stirrer-shaft. One of these parts, 15, is made integral with or is cast in one piece with the stationary part 10 of the case for the beveled pinion *c* and with the base-plate of the supporting-frame. The other part is attached to or cast in one piece with the hinged part 12 of the case of pinion *c*, and when bolt and nut 13 are removed it can be swung outwards with part 12 so as to expose the said pinion *c* and gear *d* to view and permit access thereto for repairs or otherwise.

In operation, when the lid of the tub is raised so as to permit the introduction of a sufficient quantity of washing fluid and clothes, the gear F lifts out of engagement with the segmental gear *e* but when the lid is lowered said gear will readily drop into engagement with it again. When closed the lid is fastened by means of a hasp *x* secured to the edge thereof opposite its hinged edge, and by a staple driven into the side of the tub, or is securely held down upon the tub by any other suitable locking device. The handler of the lever is then grasped and the lever worked back and forth to impart a rotary reciprocal motion to the shaft E and through

it a rotary reciprocal motion is imparted to the stirrer-shaft C and stirrer-head secured to the lower end of the latter within the tub. The lower end of lever G, through the medium of crank H, revolves shaft I and shaft I imparts an increased revolution to the fly-wheel M through the medium of the gear O and pinion N. The momentum of the fly-wheel M materially assists in operating the machine, and relieves the operator of the manual effort it would be necessary for him to make in order to reverse the lever J.

What I claim as new is:—

1. In mechanism for driving a washing machine the combination with a vertically disposed rotary reciprocal shaft, a transverse rotary reciprocal shaft operatively connected thereto, and a gear on the outer extended end of said transverse shaft, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

2. In mechanism for driving a washing machine the combination with a vertically disposed rotary reciprocal shaft, a transverse rotary reciprocal shaft operatively connected thereto, and a gear on the outer extended end of said transverse shaft, of an operating lever, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, suitable bearings therefor the axis of which aline with the axis of said vertical shaft, and means operatively connecting said lever and fly-wheel.

3. In mechanism for driving a washing machine, the combination with a vertically disposed rotary reciprocal shaft, a transverse rotary reciprocal shaft operatively connected thereto, and a gear on the outer extended end of said transverse shaft, of an operating lever, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel below said vertical shaft, a horizontal shaft for actuating said fly-wheel, devices operatively connecting said fly-wheel and horizontal shaft, and a crank on the outer end of said last mentioned shaft the wrist-pin of which engages a slot in the lower end of said lever.

4. In mechanism for driving a washing machine, the combination with a vertically disposed rotary reciprocal shaft, a transverse rotary reciprocal shaft, and a gear on the outer extended end of said transverse shaft, of an operating lever, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel below said vertical shaft, a king-bolt in the upper end of



which the spindle of said fly-wheel is journaled, a pinion integral with said fly-wheel, a horizontal shaft one end of which is journaled in said king-post, a gear secured to said horizontal shaft engaging said pinion, and a crank on the outer end of said last mentioned shaft the wrist pin of which engages a slot in the lower end of said lever.

5. In mechanism for driving a washing machine the combination with a vertically disposed rotary reciprocal shaft, a pinion on said vertical shaft above its bearings, a drive-shaft, a gear thereon engaging said pinion, a casing for said gear and pinion, and a gear on the end of said drive-shaft opposite said vertical shaft, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

6. In mechanism for driving a washing machine the combination with a suitable supporting-frame, a vertically disposed rotary reciprocal shaft journaled in bearings therein, a pinion on said vertical shaft above its bearings, a drive-shaft, a gear engaging said pinion, a casing for said gear and pinion consisting of a stationary part made integral with said supporting-frame and a part hinged thereto, and a gear on the end of said drive-shaft opposite said vertical shaft, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

7. In mechanism for driving a washing machine the combination with a suitable supporting frame, a vertically disposed rotary reciprocal shaft journaled in bearings in said frame, a drive-shaft for actuating the said vertical shaft and journaled in said supporting-frame, a gear on the end thereof opposite said vertical shaft and a partially circular case for said gear made integral with the adjacent bearing of the drive-shaft, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

8. In mechanism for driving a washing machine the combination with a suitable supporting-frame, a vertically disposed rotary reciprocal shaft journaled in bearings in said frame, a drive-shaft for actuating the said vertical shaft and journaled in said supporting-frame, a gear on the end thereof opposite said vertical shaft, and a partially cir-

cular case for said gear made integral with the adjacent bearing of the drive-shaft and having oppositely projecting wings, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

9. In mechanism for driving a washing machine the combination with a suitable supporting-frame, a vertically disposed rotary reciprocal shaft journaled in bearings in said supporting-frame, a pinion on said vertical shaft above its bearings, a drive-shaft journaled in said supporting-frame, a gear engaging said pinion, a casing for said gear and pinion, a gear on the end of said drive-shaft opposite said vertical shaft, and a partially circular case for the gear on the outer end of the drive-shaft which is made integral with the adjacent bearing, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

10. In mechanism for driving a washing machine the combination with a suitable supporting-frame, a vertically-disposed rotary reciprocal shaft journaled in bearings in said supporting-frame, a pinion on said vertical shaft above its bearings, a drive-shaft journaled in said supporting-frame, a gear engaging said pinion, a casing for said gear and pinion, a gear on the end of said drive-shaft opposite said vertical shaft, and a partially circular case for the gear on the outer end of the drive-shaft which has oppositely projecting wings, and is made integral with the adjacent bearing, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

11. In mechanism for operating a washing machine the combination with a suitable supporting-frame, a vertically disposed rotary reciprocal shaft journaled in bearings in said supporting-frame, a pinion on said vertical shaft above its bearings, a drive shaft journaled in said supporting-frame, a gear engaging said pinion, a casing for said gear and pinion consisting of a stationary part made integral with said supporting-frame and a part hinged thereto, a gear on the end of said drive-shaft opposite said vertical shaft and a partially circular case for the gear on the outer end of the drive-shaft



which is made integral with the adjacent bearing, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

12. In mechanism for driving a washing machine the combination with a suitable supporting-frame, a vertically disposed rotary reciprocal shaft journaled in bearings in said supporting-frame, a pinion on said vertical shaft above its bearings, a drive-shaft journaled in said supporting-frame, a gear engaging said pinion, a casing for said gear and pinion consisting of a stationary part made integral with said supporting-frame and a part hinged thereto, a gear on the end of said drive-shaft opposite said vertical shaft and a partially circular case for the gear on the outer end of the drive-shaft which has oppositely projecting wings and is made integral with the adjacent bearing, of an operating lever having its pivoted end extended beyond its bearings, a horizontally disposed segmental rack carried thereby and adapted to engage the under segment of said gear, a horizontally disposed fly-wheel, and means operatively connecting the extended end of said lever and fly-wheel.

13. In mechanism for driving a washing machine, a suitable supporting medium, legs supporting the same, a horizontal shaft one end of which is journaled centrally under said supporting medium, a triangular frame two of whose angles are secured to said legs and which between said last mentioned angles and at its remaining angle is provided with bearings for said shaft, and a fly-wheel, devices actuated by said shaft for operating

said fly-wheel, in combination with means for actuating said shaft.

14. In mechanism for driving a washing machine a suitable supporting medium, legs supporting the same, a horizontal shaft one end of which is journaled centrally under said supporting medium, a triangular frame two of whose angles are secured to said legs and which between said last mentioned angles, and at its remaining angle is provided with bearings for said shaft, and a horizontally disposed fly-wheel below said supporting medium, and devices actuated by said shaft for operating said fly-wheel, in combination with means for actuating said shaft.

15. In mechanism for driving a washing machine, a suitable supporting medium, legs supporting the same, cross-braces connecting said legs, a horizontal shaft, a king-post supported by said cross-braces, and having its upper end connected to the bottom of said supporting medium, a horizontal shaft one end of which is journaled in suitable bearings in said king-post, a triangular frame two of whose angles are secured to said legs, and which between said last mentioned angles and its third angle is provided with bearings for said shaft, and a horizontally disposed fly-wheel journaled on the upper end of said king-post, and devices actuated by said shaft for operating said fly-wheel, in combination with means for actuating said shaft.

In testimony whereof I have hereunto set my hand and seal this 16th day of February, A. D., 1907.

ALEXANDER FERDINAND VICTOR. [L. s.]

Witnesses:

FRANK D. THOMASON,  
E. K. LUNDY.