

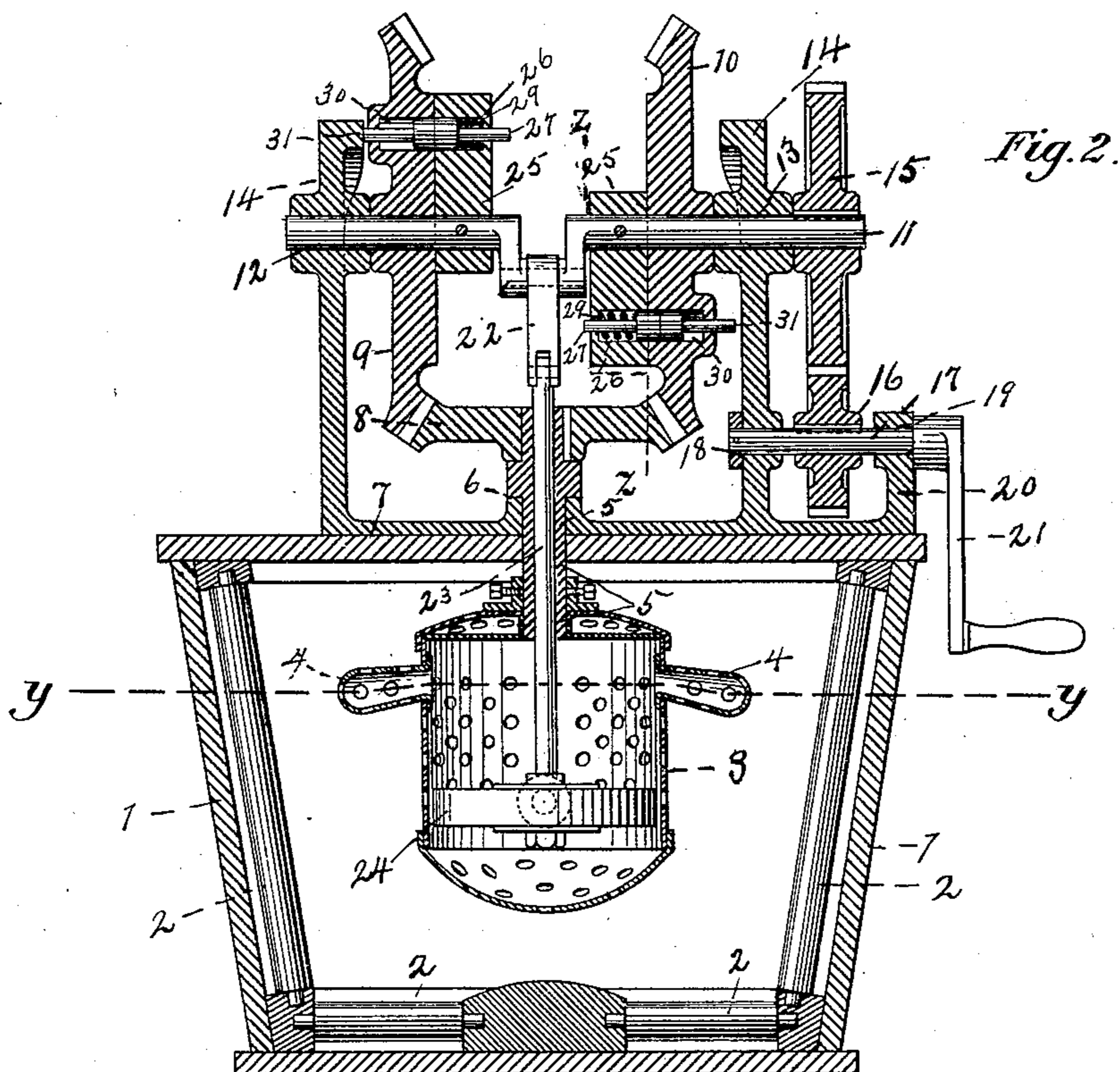
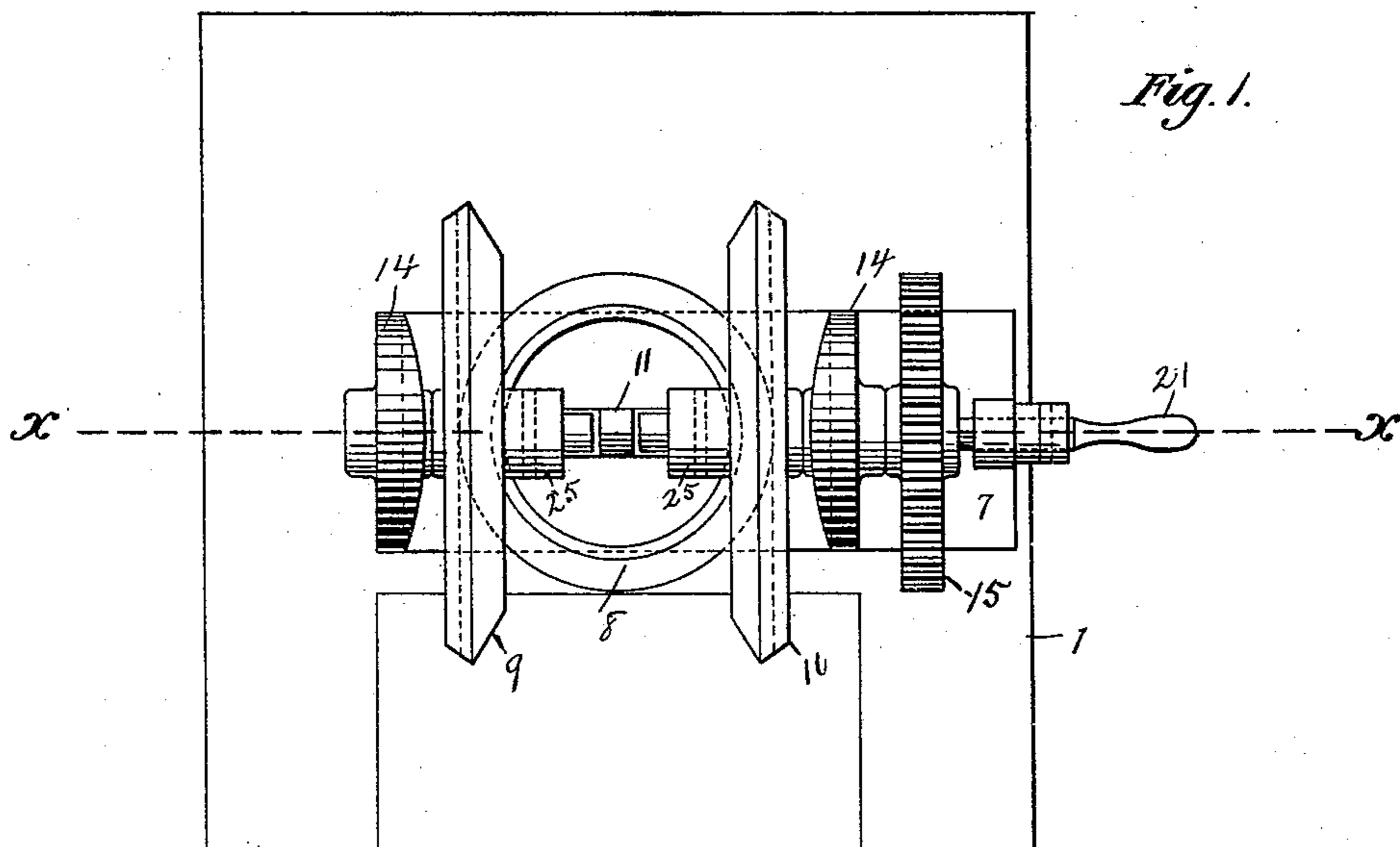
(No Model.)

2 Sheets—Sheet 1.

**J. J. OTTO.**  
**WASHING MACHINE.**

No. 475,339.

Patented May 24, 1892.



WITNESSES.

W. E. Harrison.  
For A. Wright

INVENTOR

J. H. Roney <sup>per</sup>  
 Atty

(No Model.)

2 Sheets—Sheet 2.

J. J. OTTO.  
WASHING MACHINE.

No. 475,339.

Patented May 24, 1892.

Fig. 3.

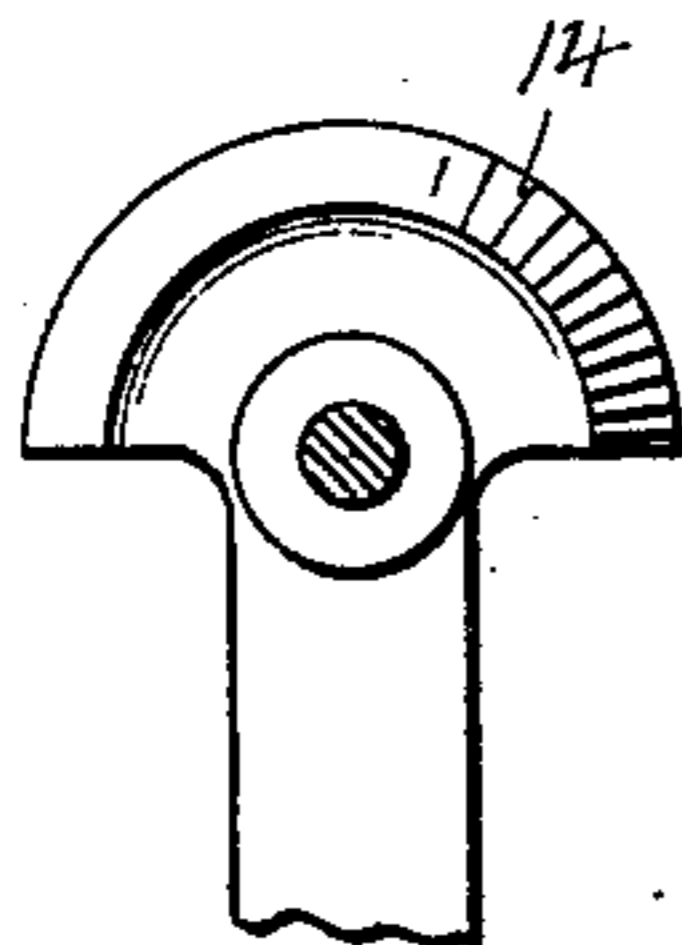


Fig. 4.

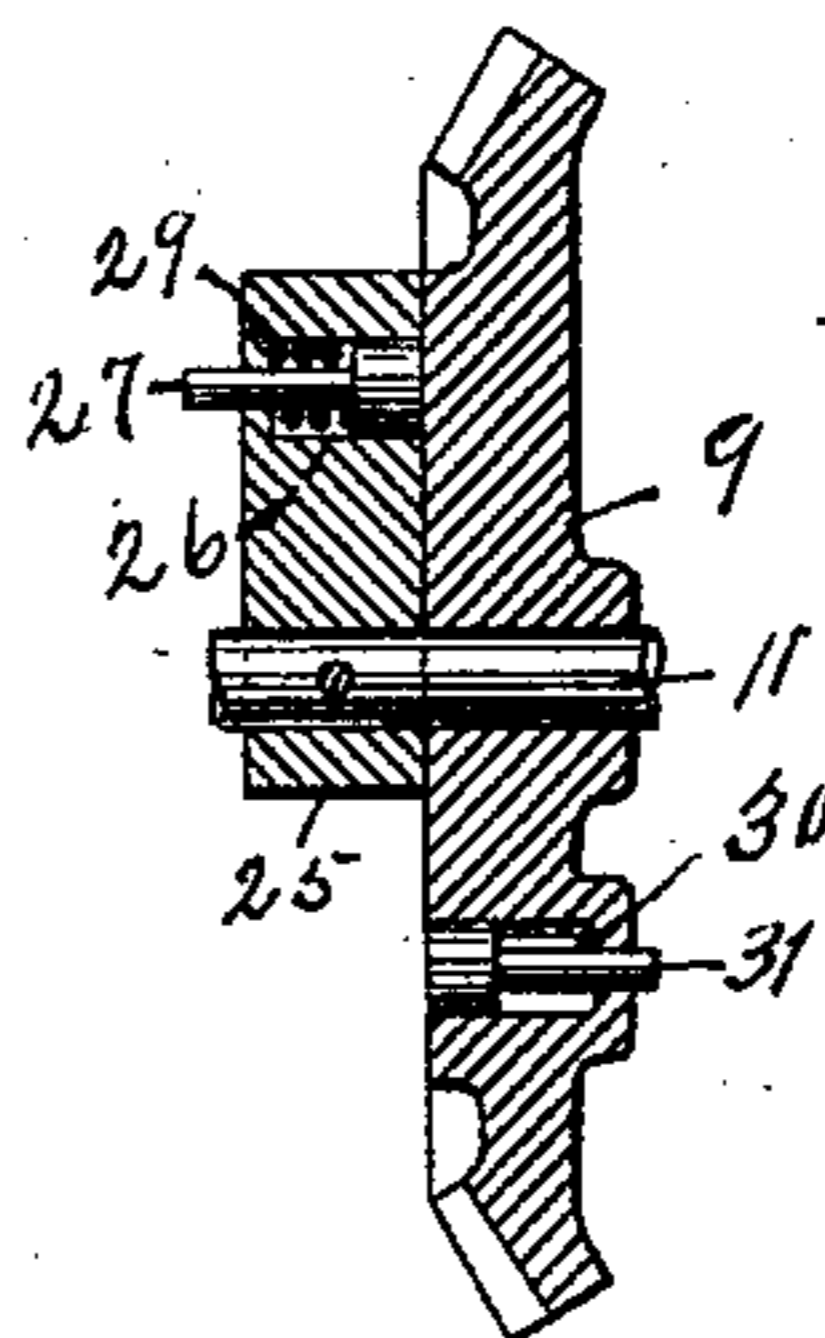


Fig. 5.

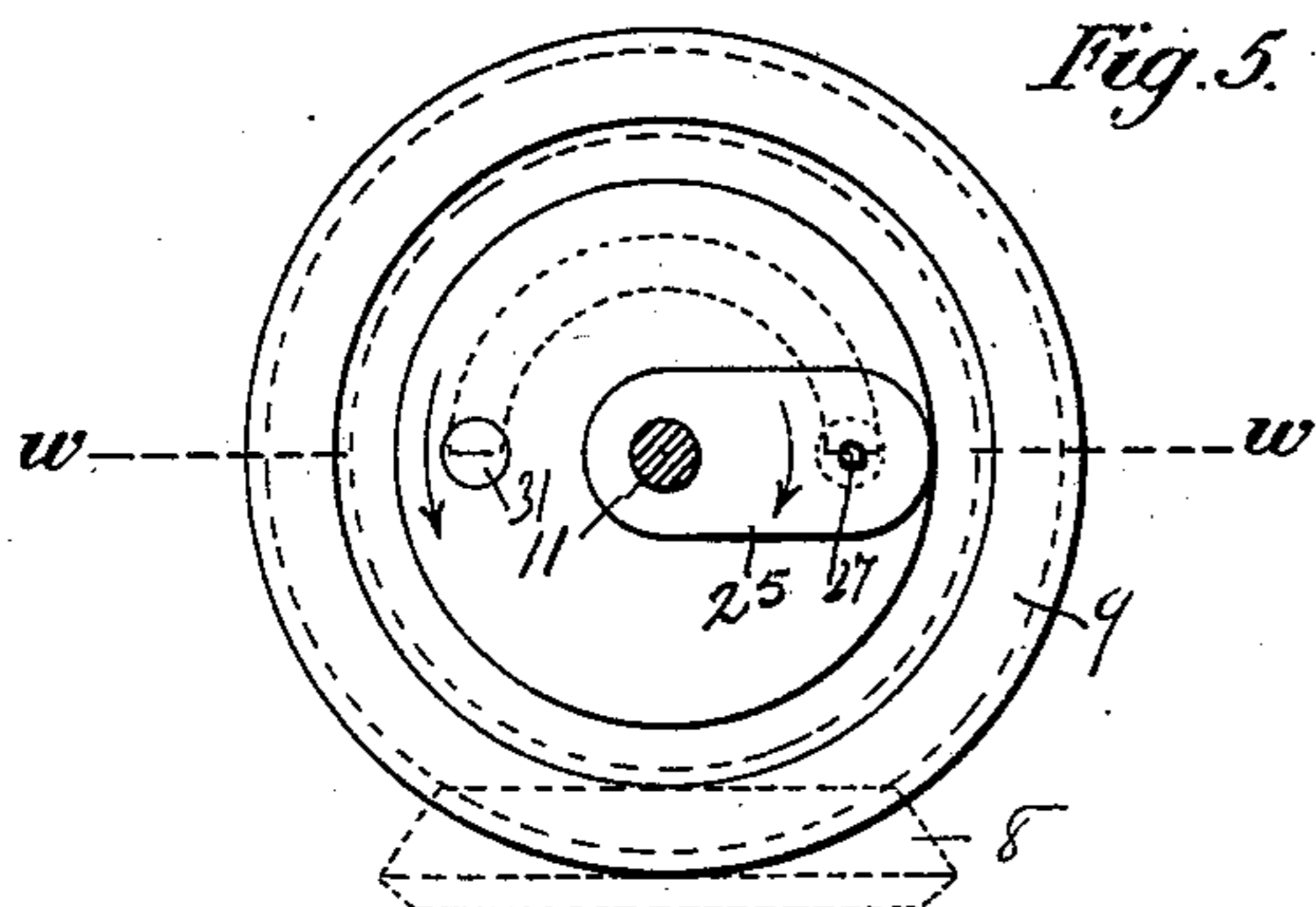


Fig. 6.

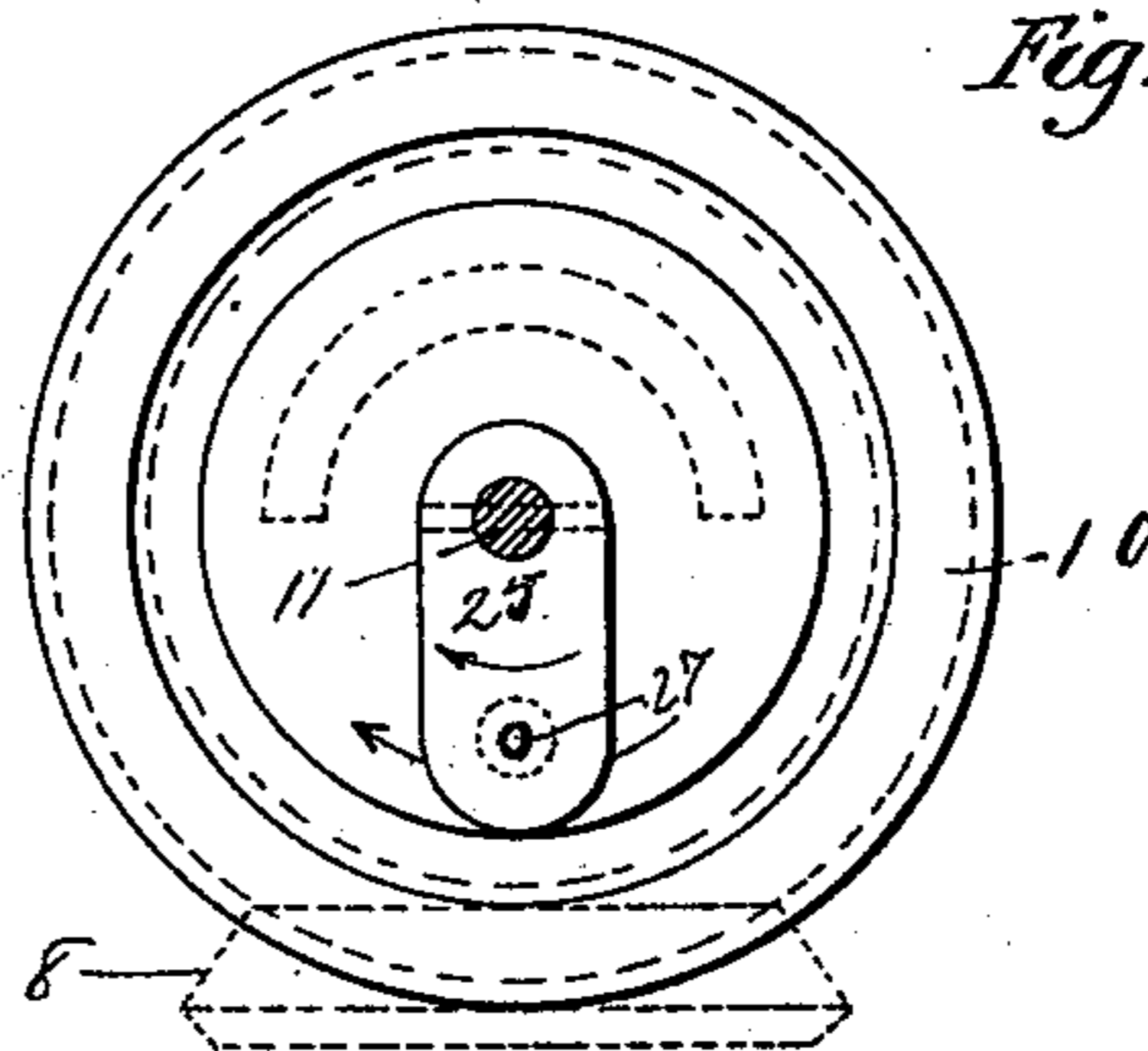
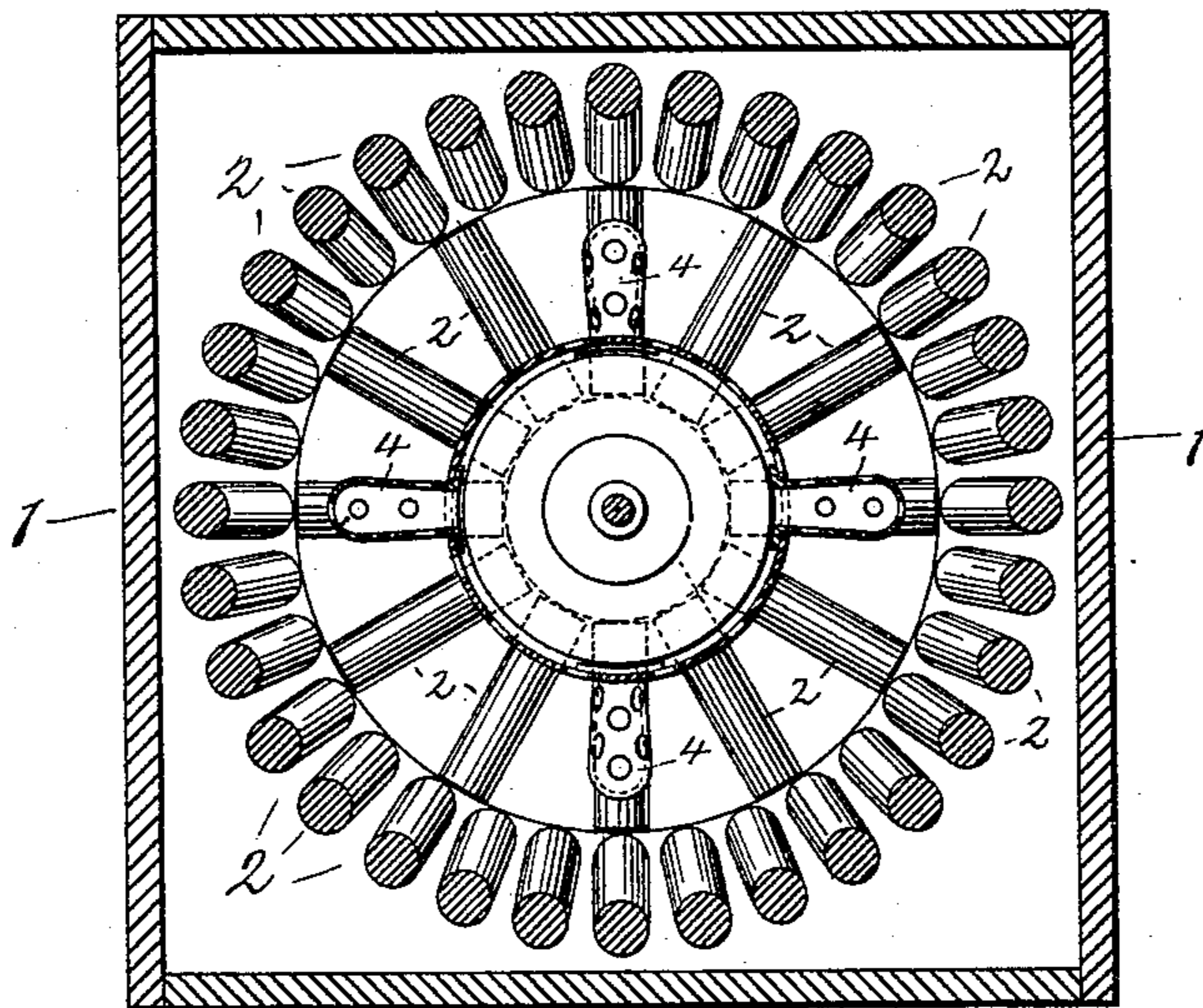


Fig. 7.



WITNESSES.

*W. C. Harrison.*  
*For. A. Wright*

INVENTOR.

*Josiah J. Otto*  
*John H. Roney*  
*Atty*

# UNITED STATES PATENT OFFICE.

JOSIAH J. OTTO, OF ALTOONA, PENNSYLVANIA.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 475,339, dated May 24, 1892.

Application filed November 28, 1891. Serial No. 413,446. (No model.)

*To all whom it may concern:*

Be it known that I, JOSIAH J. OTTO, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a plan view of my improved washing-machine. Fig. 2 is a vertical section through line *xx* of Fig. 1. Fig. 3 is an enlarged detail of the upper inner end of the inclined standards. Fig. 4 is a sectional view through line *ww* of Fig. 5. Fig. 5 is an elevation of the inner face of beveled wheel out of engagement with crank-shaft. Fig. 6 is same of opposite wheel through line *zz* of Fig. 2, showing same in engagement with shaft. Fig. 7 is a horizontal section on line *yy* of Fig. 2.

My invention relates to washing-machines; and my object is to produce a machine adapted to impart a constant rubbing motion to the clothes, applied in opposite directions alternately, and at the same time to discharge numerous jets of water against said clothes with considerable force; and to this end I employ the device hereinafter more specifically described, and which consists of a suitable vessel preferably wider at the top than at the bottom and provided with series of rollers journaled in the sides and bottom thereof, a perforated cylinder suspended in said vessel from a hollow shaft and adapted to be rotated in opposite directions alternately by said shaft, and a piston having a plunger adapted to be operated vertically in said cylinder, whereby the water contained therein is impelled through said perforations against the clothes contained in said vessel with considerable force.

I will now describe my invention, reference being had to the accompanying drawings, forming part hereof, in which like figures indicate like parts wherever they occur.

Referring to said drawings, 1 is a vessel preferably of greater width at the top than

at the bottom and provided with series of rollers 2 2 2 2, &c., formed of any suitable material and journaled in the sides and bottom thereof, as shown in Figs. 2 and 7.

3 is a cylinder, convex or bulging at the bottom and having numerous perforations therein and in its sides and provided with nozzle-like extensions 4 4 4 4, projecting from the sides thereof near the upper end of the same. Said cylinder is bolted or otherwise suitably secured to the lower end of the hollow vertical shaft 5, which projects into said vessel and is supported in the bearing 6 in the frame 7, secured upon the top of said vessel, as shown in Fig. 2.

8 is a horizontal beveled wheel suitably secured upon the upper end of said shaft and adapted to receive motion from the beveled wheels 9 and 10, which are loosely secured upon the crank-shaft 11, meshing with said horizontal wheel at opposite sides of the same. Said crank-shaft is suitably journaled in bearings 12 and 13, respectively, in the uprights or standards 14, which are secured upon said frame at either end thereof, the upper inner faces of said standards being provided with inwardly-projecting inclined and curved flanges for the purpose herein-after specified.

15 is a large spur-wheel suitably secured upon one end of said crank-shaft and adapted to mesh with and receive motion from the small spur-wheel 16, secured upon the short horizontal shaft 17, which is journaled in bearings 18 and 19 in the lower end of one of said standards 14 and the upper end of the standard 20, respectively, the outer end of said short shaft being provided with the hand-crank 21.

22 is a connecting-rod secured to the crank upon the shaft 11, the lower end thereof being pivotally attached to a piston-rod 23, projecting through an orifice in the center of said horizontal beveled wheel, through said hollow shaft 5, and into said cylinder, the lower end thereof having secured thereto the head or plunger 24 and adapted to vertically reciprocate the same in said cylinder, whereby the water therein may be discharged through the perforations in the bottom and sides of said cylinder with great force against clothes contained in said vessel. Rigidly se-

cured to said horizontal shaft at either side of the crank thereon and projecting vertically in opposite directions therefrom are arms 25 25, having formed therein near their outer ends recesses 26 26 for the reception of pins 27 27, freely movable therein, the heads of said pins being of greater cross-section than the shanks thereof, upon which are mounted the spiral springs 29 29, which when compressed, as hereinafter specified, permit the shanks of said pins to project through and operate freely in orifices in the inner face of said arms opening from said recesses. The beveled wheels 9 and 10 are provided with corresponding recesses 30 30 for the reception of pins 31 31, similar to those recessed in said arms 25, the shanks thereof, however, being reversed and projecting in orifices in the outer face of said wheels. It is obvious that the rotation of said wheels 9 10 brings the pins 31 31, recessed therein, respectively, in contact alternately with the inclined and curved inner faces of the standards 14 14, thereby forcing the pins 27 27, recessed in the arms, alternately out of the recesses in said wheels and releasing said wheels alternately from engagement with said arms, the recoil of the springs mounted upon the inner ends of the pins 27 27 forcing the same into the recesses of the wheels when opposite said recesses, thereby rotating the shaft and perforated cylinder attached thereto one-half revolution alternately in opposite directions.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a washing-machine, substantially as

described, the combination of a vessel, a perforated cylinder suspended therein upon a hollow vertical shaft, means to rotate said shaft alternately to the right and left, and a piston having a plunger secured to the lower end thereof adapted to be vertically reciprocated in said cylinder simultaneously said cylinder is rotated, substantially as and for the purpose herein set forth.

2. In a washing-machine, substantially as described, the combination of a vessel, a perforated cylinder, a hollow vertical shaft carrying a beveled wheel provided with an orifice through the center of the same, a crank-shaft suitably secured in bearings, a vertical piston-rod suitably secured thereto and adapted to be vertically reciprocated in said hollow shaft and said cylinder, arms rigidly secured on said crank-shaft at either side of said crank and projecting in opposite directions therefrom and provided with recessed pins carrying spiral springs mounted thereon, and a pair of beveled gear-wheels secured upon said shaft in close juxtaposition with said arms and having similar recessed pins with said arms and adapted to be thrown into clutch with said arms alternately, substantially as and for the purpose herein set forth.

In testimony that I claim the foregoing I hereunto affix my signature this 24th day of November, A. D. 1891.

JOSIAH J. <sup>his</sup> × OTTO. [L. S.]  
mark

In presence of—  
WM. L. MONRO,  
A. PATTERSON.