

No. 702,099.

Patented June 10, 1902.

J. D. A. JOHNSON.
MECHANICAL MOVEMENT.

(Application filed Aug. 16, 1901.)

(No Model.)

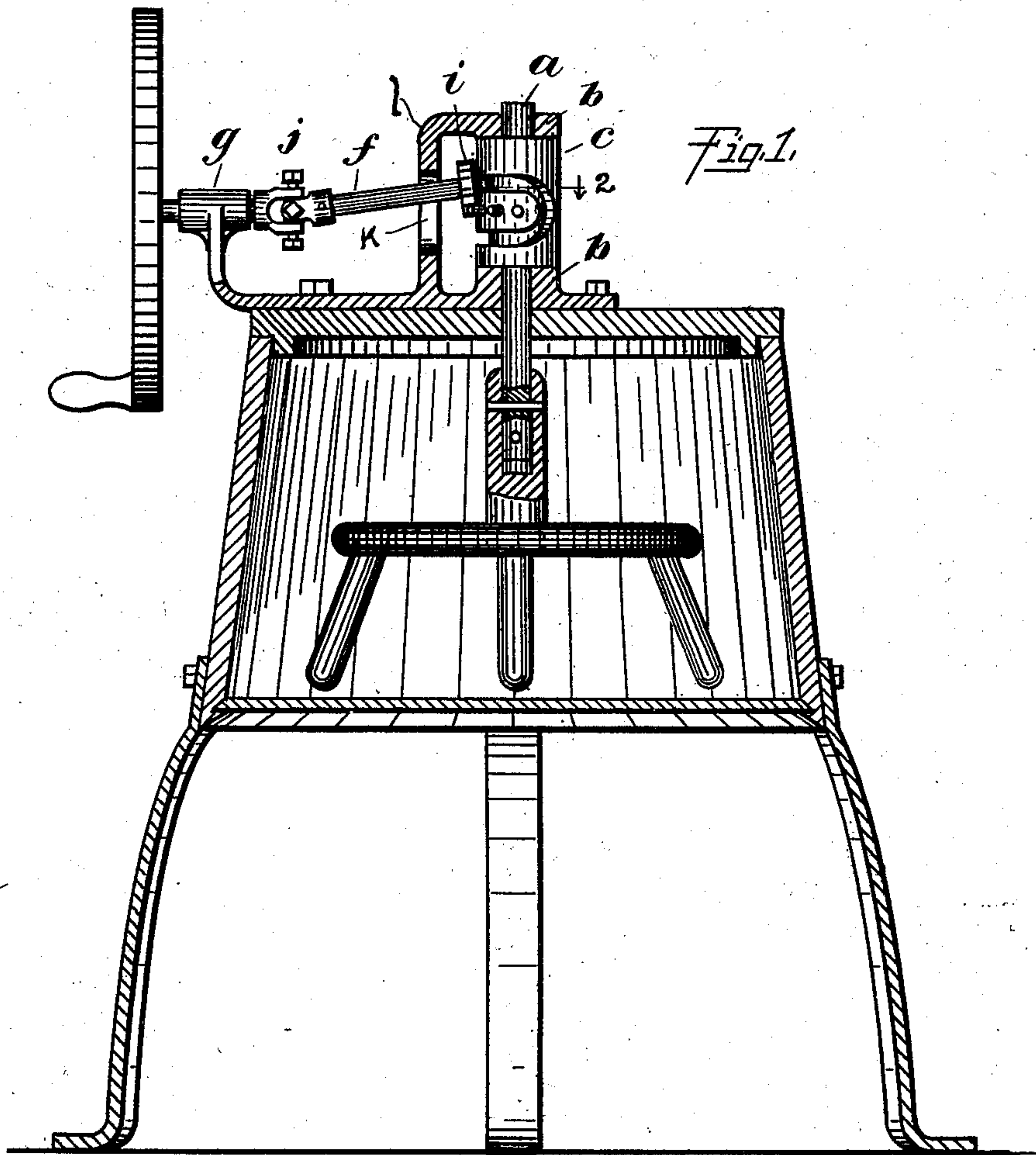


Fig. 2.

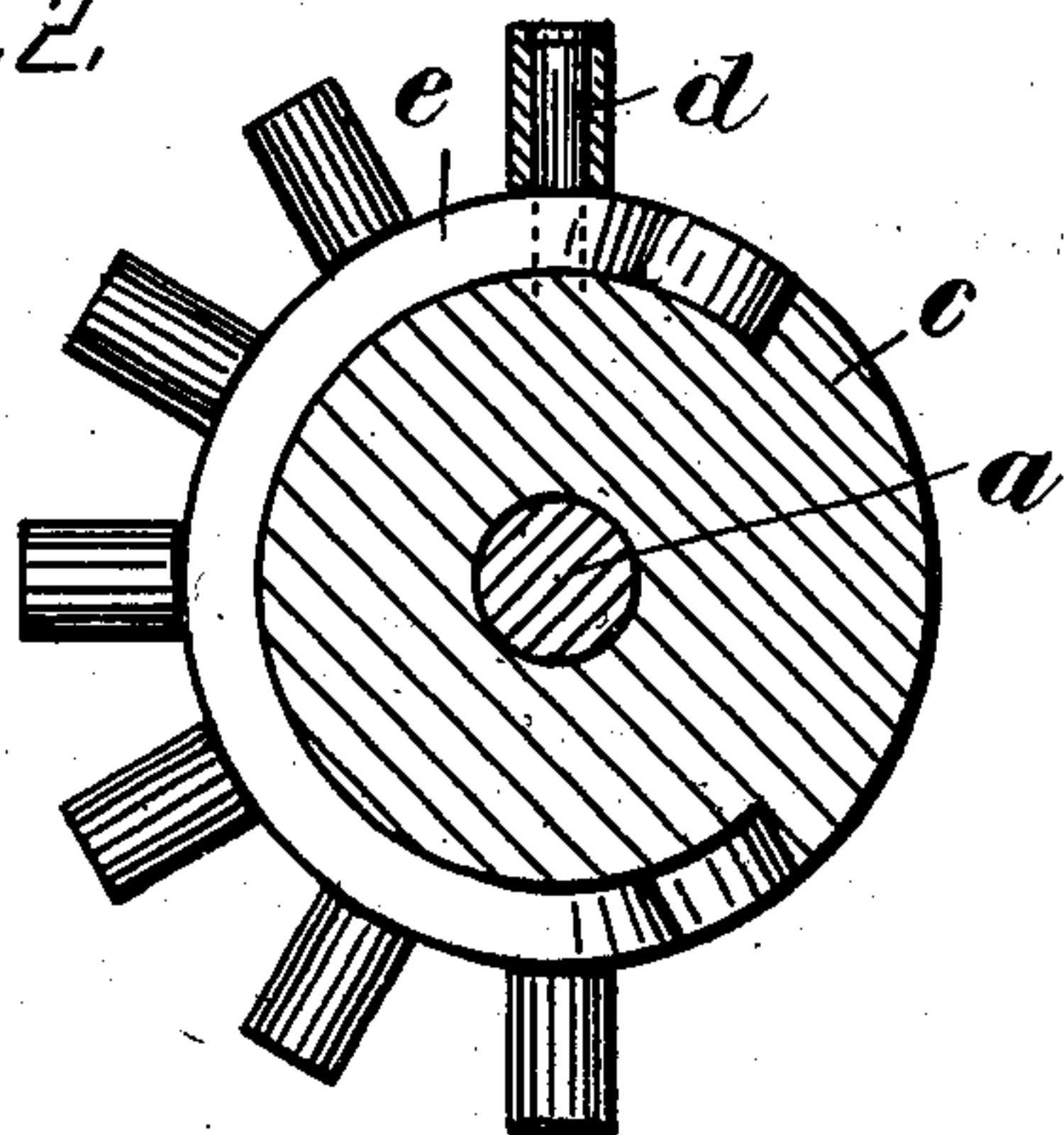
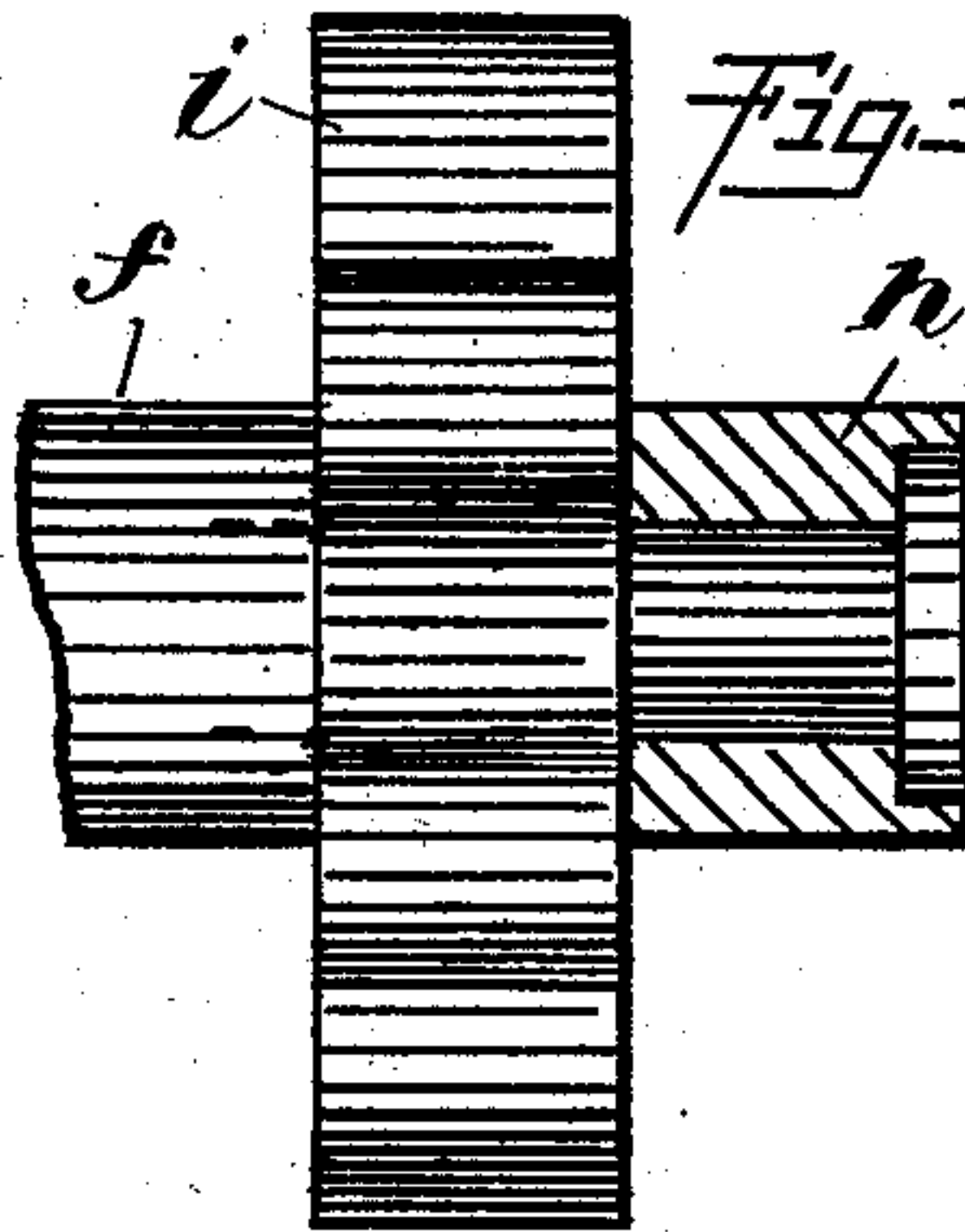


Fig. 3.



WITNESSES:
J. B. Glorius
G. Seavey

INVENTOR
John D. A. Johnson
David Davis
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN D. A. JOHNSON, OF OMAHA, NEBRASKA, ASSIGNOR TO RICHMOND CEDAR WORKS, OF HENRICO COUNTY, VIRGINIA, A CORPORATION OF VIRGINIA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 702,099, dated June 10, 1902.

Application filed August 16, 1901. Serial No. 72,307. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. A. JOHNSON, a citizen of the United States of America, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a vertical sectional view showing my invention applied to a washing-machine; Fig. 2, a horizontal section taken on the line 2 of Fig. 1, one of the antifriction-rollers on the pin-teeth being shown in section; and Fig. 3, partly a side and partly a sectional elevation of the pinion and its shaft.

15 The object of this invention is to provide a simple and economical device for rotating a shaft, preferably an agitator-shaft of a washing-machine, alternately in opposite directions by a continuous rotary movement of a drive-shaft; and it consists of certain novel features of construction hereinafter described, and particularly pointed out in the 25 claims.

The letter *a* designates the shaft to be driven, it being in the present instance the vertical agitator-shaft of a washing-machine and being journaled in arms *b b* of a bracket 30 attached to the washing-machine cover. This shaft *a* is supported in its bearings by means of a cylindrical enlargement or sleeve *c*, which nicely fits between the arms *b b*. Extending about half-way around this cylindrical portion, about midway the ends of the enlargement, is a row of radial pins *d*, each of which 35 is provided with an antifriction sleeve or roller, and entirely surrounding the row of pins is a continuous groove *e*, whose upper and lower parts are substantially parallel 40 with each other and with the row of pins and whose ends are semicircular in shape where they pass around the respective ends of the row of pins or teeth.

45 The drive-shaft *f* is journaled in a suitable bearing *g* and has one end entering the continuous groove *e*, this end being provided with an antifriction-roller *h*. Near the roller *h* on shaft *f* is secured a pinion *i*, which is 50 held constantly in engagement with pins *b*. The drive-shaft *f* is provided with a suitable

universal joint *j* at a suitable point between the shaft-bearing and the pinion *i*. It will be observed that when shaft *f* is rotated continuously in one direction the pinion will engage the pins *d* and cause the shaft *a* to be 55 rotated, and by reason of the cam-groove *e* the pinion will be caused to pass around the end pins and engage the pins on the opposite side, so that the driven shaft *a* will be rotated about seven-eighths of a turn in one 60 direction and then be reversed and rotated about seven-eighths of a turn in the other direction, and so on as long as the drive-shaft is rotated. It will be observed that this arrangement avoids the employment of a reciprocating sleeve on the agitator-shaft and other 65 more or less complicated connections.

The letter *l* designates a standard connecting the upper and lower bearings *b*, which is 70 slotted vertically at *k* for the passage of the drive-shaft *f*. This slotted standard, besides supporting the upper bearing *b*, affords means to prevent the drive-shaft shifting laterally far enough to leave the pins or teeth. It will 75 also be observed that the end of the shaft carrying roller *h* will rest upon the bottom of the groove while the pinion is engaging the upper sides of the teeth, whereby the drive-shaft will be supported at both its ends, which 80 will prevent the weight of the inner part of the shaft and the pinion being carried on the pins or teeth, and thereby increasing friction and wear. While the pinion is working under the pins the roller *h* will rest upon the 85 bottom of the lower side of the groove, and thereby maintain the proper mesh with the pins. In this manner the standard *l* need only be used as a vertical guide and not as a support or bearing for the drive-shaft. 90

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

1. In combination, a support, a driven shaft provided with a cylindrical portion having a 95 row of pins or teeth radially arranged and extending part way around said cylindrical part, said cylindrical part being also provided in its periphery with an external groove extending around said row of pins, a drive-shaft 100 and a stationary bearing therefor, said shaft being provided with a pinion in constant

mesh with the aforesaid row of pins and with a universal joint between its bearing and the pinion and having its inner end extending beyond said pinion and working in said groove, 5 the bottom of the upper part of the groove serving as a bearing or rest to support the inner end of the shaft while the pinion is in engagement with the upper sides of the pins or teeth, and an upright guide for the drive- 10 shaft located between the pinion and the joint in the shaft as and for the purpose set forth.

2. In combination, a support, a driven shaft provided with a cylindrical enlargement having a row of pins or teeth radially arranged 15 thereon and extending part way around said cylindrical portion, bearings *b b* engaging the ends of said cylindrical enlargement and holding the driven shaft against endwise movement, a driving-shaft and a stationary bearing 20 therefor, a pinion carried by said shaft and meshing with said pins or teeth, said shaft being jointed at a point between said

pinion and said bearing and having its end projecting beyond the pinion, a slotted standard connecting the bearings *b b* through which 25 said drive-shaft works, said standard being located between the pinion and the joint in the shaft, and guiding means whereby when said drive-shaft is rotated continuously in one direction said pinion will be caused to 30 first engage the upper side of said row of pins or teeth and then the lower side thereof and so on alternately, said guiding means consisting of a groove in the cylindrical enlargement in which the projecting end of the shaft 35 works and is supported.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 12th day of August, 1901.

JOHN D. A. JOHNSON.

Witnesses:

EDWARD W. HUNLAN,
PAUL L. MARTIN.