

No. 711,035.

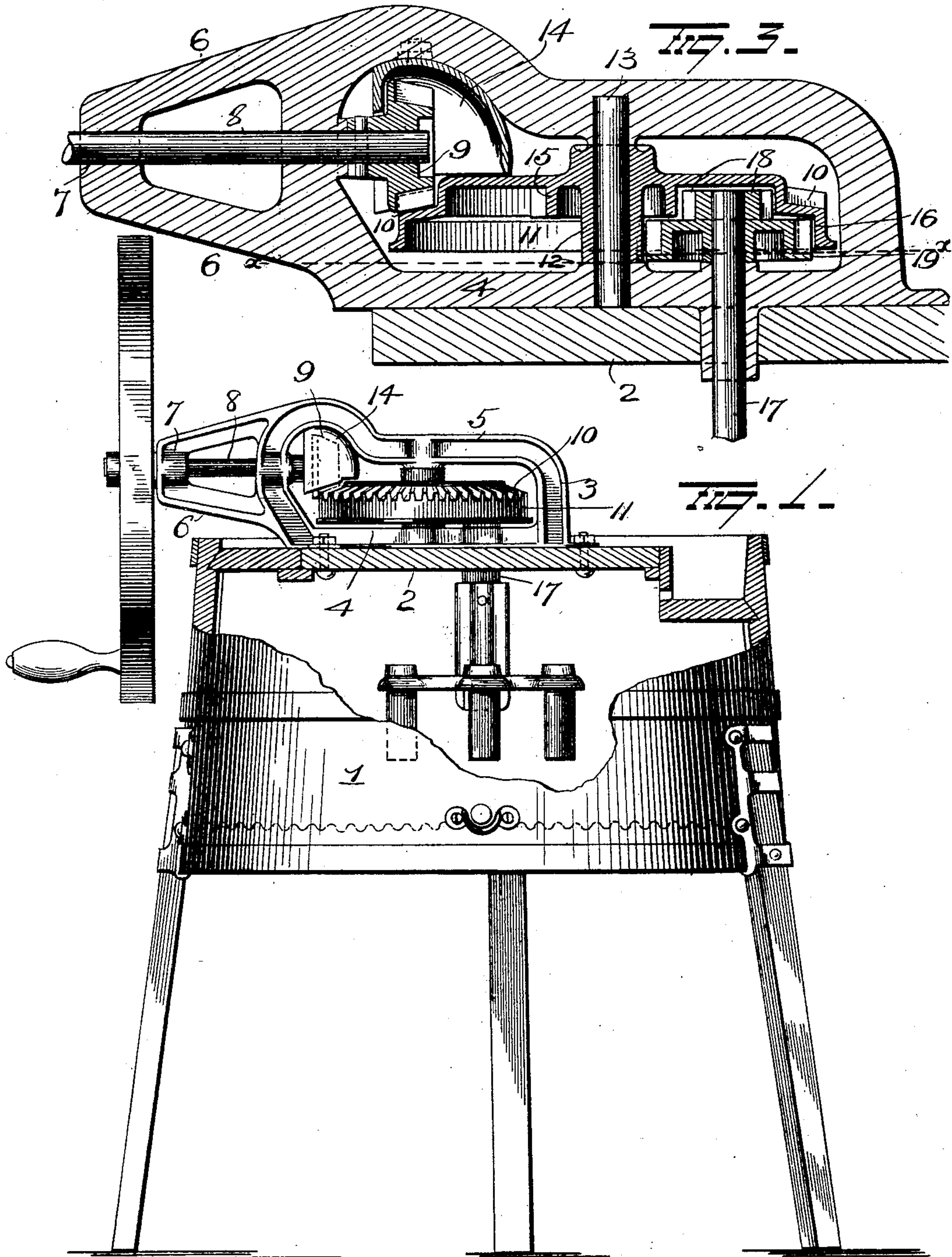
Patented Oct. 14, 1902.

J. R. CARTER.  
GEARING.

(Application filed May 28, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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INVENTOR

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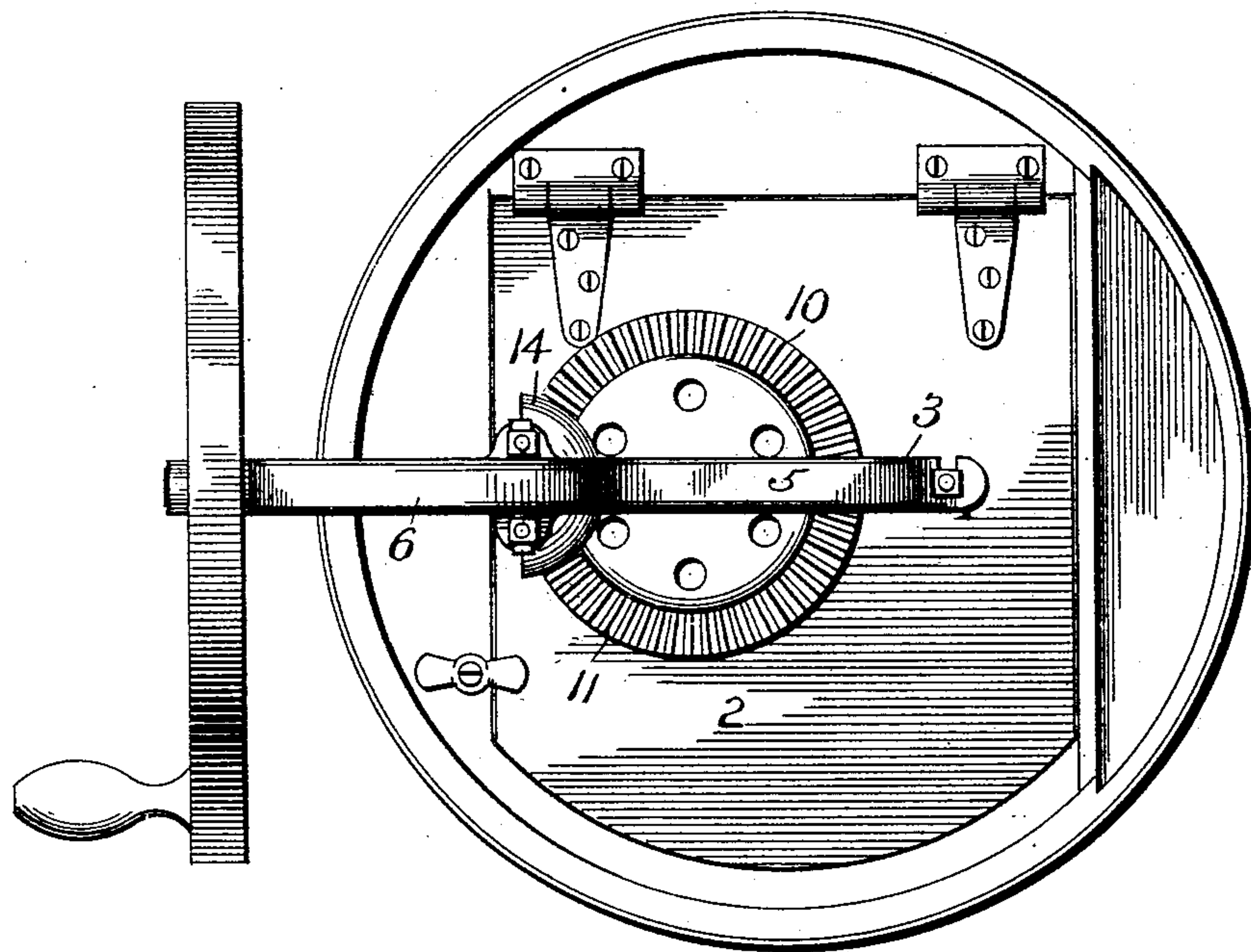


Fig. 2.

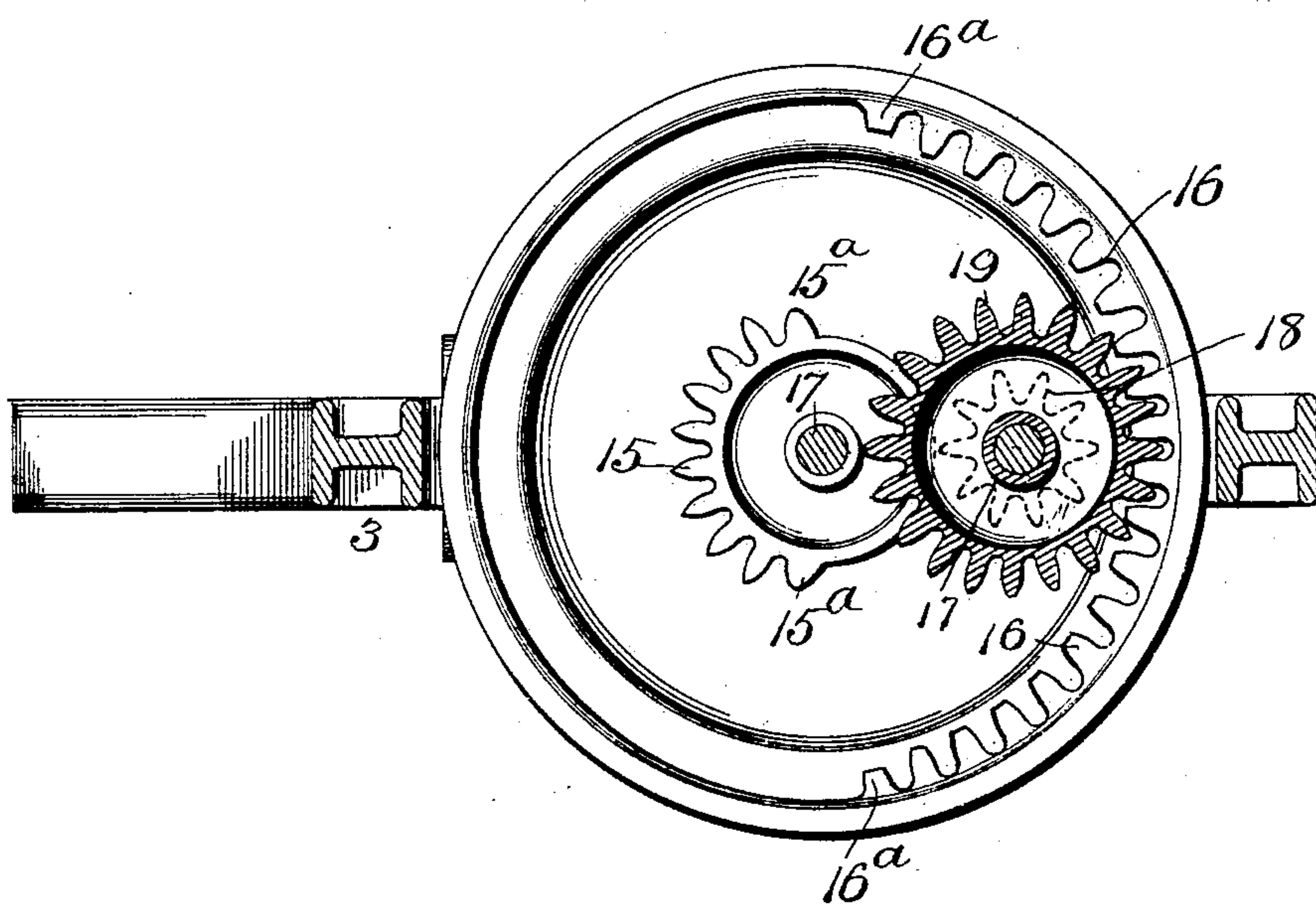


Fig. 4.

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# UNITED STATES PATENT OFFICE.

JOHN R. CARTER, OF AUGUSTA, KENTUCKY, ASSIGNOR TO ERNST H. HUENEFELD, OF CINCINNATI, OHIO.

## GEARING.

SPECIFICATION forming part of Letters Patent No. 711,035, dated October 14, 1902.

Application filed May 28, 1902. Serial No. 109,407. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. CARTER, a resident of Augusta, in the county of Bracken and State of Kentucky, have invented certain new and useful Improvements in Gearing; 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 appertains to make and use the same.

My invention relates to an improvement in gearing, and more particularly to an improved gearing for washing-machines, churns, and the like, the object of the invention being to provide a simple and efficient arrangement of gears to alternately rotate a driven shaft in opposite directions by means of a drive-gear rotated continuously in either direction.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation illustrating my improvements. Fig. 2 is a top plan view. Fig. 3 is a view partly in section, and Fig. 4 is a view in section on the line  $xx$  of Fig. 3.

1 represents the body of a washing-machine or churn, as the case may be, having the lid or cover 2, on which is secured a metal frame 3. The frame 3 comprises a base 4, secured to the lid by bolts and provided with an arched bracket 5, bowed upward at one end, as shown, and one end of this bracket is made with outwardly-projecting converging arms 6, carrying an integral bearing 7, alining with a bearing in bracket 5, to support the drive-shaft 8, turned by a hand-wheel or other suitable mechanism.

On the inner end of drive-shaft 8, which projects into frame 3, a gear-wheel 9 is secured and meshes with a circular rack 10 at the outer upper edge of a peripherally-flanged or inverted-cup-shaped wheel 11, having a central hub or bearing 12, mounted on a vertical shaft 13, secured centrally in frame 3. A semibell-shaped cup or shield 14 is secured in the bowed portion of bracket 5 and incloses gear 9 and a portion of wheel 11 at the engagement of gear 9 and rack 10 to prevent anything being caught in this intermeshing

engagement. On this hub 12 in the wheel 11 an integral segmental gear 15 is provided, the teeth of said segment extending about half-way around the gear, and the teeth at each end of the segment are made shorter than the others, as shown at 15<sup>a</sup>, for a purpose which will hereinafter appear. The depending flange on wheel 11 is also provided internally with a gear-segment 16, located in a position opposite to segment 15, and the end teeth of the segment 16 being made shorter than the others, as shown at 16<sup>a</sup>.

The dasher rod or shaft 17, on which is secured in body 1 a dasher of any desired construction, projects up through cover 2 and base 4 and has secured thereon double integral gears 18 and 19, the former or upper gear being of appreciably smaller diameter than lower gear 19 and adapted to mesh with the segmental gear 15 and be driven thereby in one direction, and the other or lower gear 19 meshes intermittently with the segmental gear 16 on wheel 11 to drive the shaft 17 in the opposite direction.

The operation of my improvements is as follows: The drive-shaft 8 is turned in either direction, thus turning gear 9 and transmitting motion to wheel 11 by means of rack 10 to rotate the wheel and the integral gear-segment 15 continuously in either direction. The teeth of the segmental gears 15 and 16 are disposed directly opposite to each other, so that when the segmental gear 15 engages gear 18 to revolve dasher-rod 17 in one direction, the segmental gear 16, being out of engagement with gear 19, and as soon as the segmental gear 15 turns far enough to free itself from gear 18, the segmental gear 16 will engage the gear 19 and drive the dasher-rod in the reverse direction. Thus the segmental gears 15 and 16 will alternately engage the integral or double gears 18 19 to drive the dasher-rod in reverse directions.

While I have described the gears 18 and 19 as integral, it is to be understood that they may be separate gears secured to the dasher-rod, and that by making gear 18 the same relative size to gear 15 that gear 19 is to gear 16 the speed and distance of rotation of the dasher-rod can be made approximately the same in both directions.



In this form of device it is necessary that at all times the gears 18 and 19 should be held to prevent any independent turning thereof, so as to insure their correct position to receive the first tooth of the segments 15 and 16, and at the same time the segments 15 and 16 should never be engaged at the same time. To insure the accomplishment of this, I have made the last tooth at each end of segments 15 and 16 slightly shorter than the others, as shown at 15<sup>a</sup> and 16<sup>a</sup>, so as to insure one of the shorter teeth 15<sup>a</sup> or 16<sup>a</sup> holding the gears 18 19 long enough to permit the short tooth of the other segment to engage the gear just as the other segment is leaving the gear. This short tooth is advisable by reason of the different circles through which the gears and segments move, and they provide sufficient clearance to permit the short teeth to engage the side of the gear-teeth, whereas a long segmental tooth might engage the end of a gear-tooth and lock the gears against movement.

Various slight changes might be made in the general form and arrangement of parts described without departing from the spirit and scope of my invention, and hence I do not limit myself to the precise construction set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what

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

1. The combination of a driven shaft, gear-wheels thereon, external and internal segmental gears adapted to intermittently engage said first-mentioned gears, the end teeth of said segmental gears being shorter than the other teeth of said segments.

2. The combination with a driven shaft and gearing fixed thereto, of a wheel having a continuous annular engaging face, and provided with two concentric segments spaced apart, said segments disposed to successively engage the gearing on the driven shaft, the end teeth of both segments being made shorter than the other teeth of said segments.

3. The combination with a frame having a bowed upper member, a horizontal drive-shaft supported in said frame, a horizontal wheel supported in the frame and having a rack around its upper edge, and a driven shaft operated by said wheel, of a gear in the drive-shaft engaging the rack on the wheel, and a shield inclosing said gear-wheel and secured to the frame at its bowed upper portion.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN R. CARTER.

Witnesses:

S. W. FOSTER,  
A. W. BRIGHT.