

F. E. WARNER.
TUMBLING BARREL.
APPLICATION FILED OCT. 26, 1909.

978,524.

Patented Dec. 13, 1910

2 SHEETS-SHEET 1.

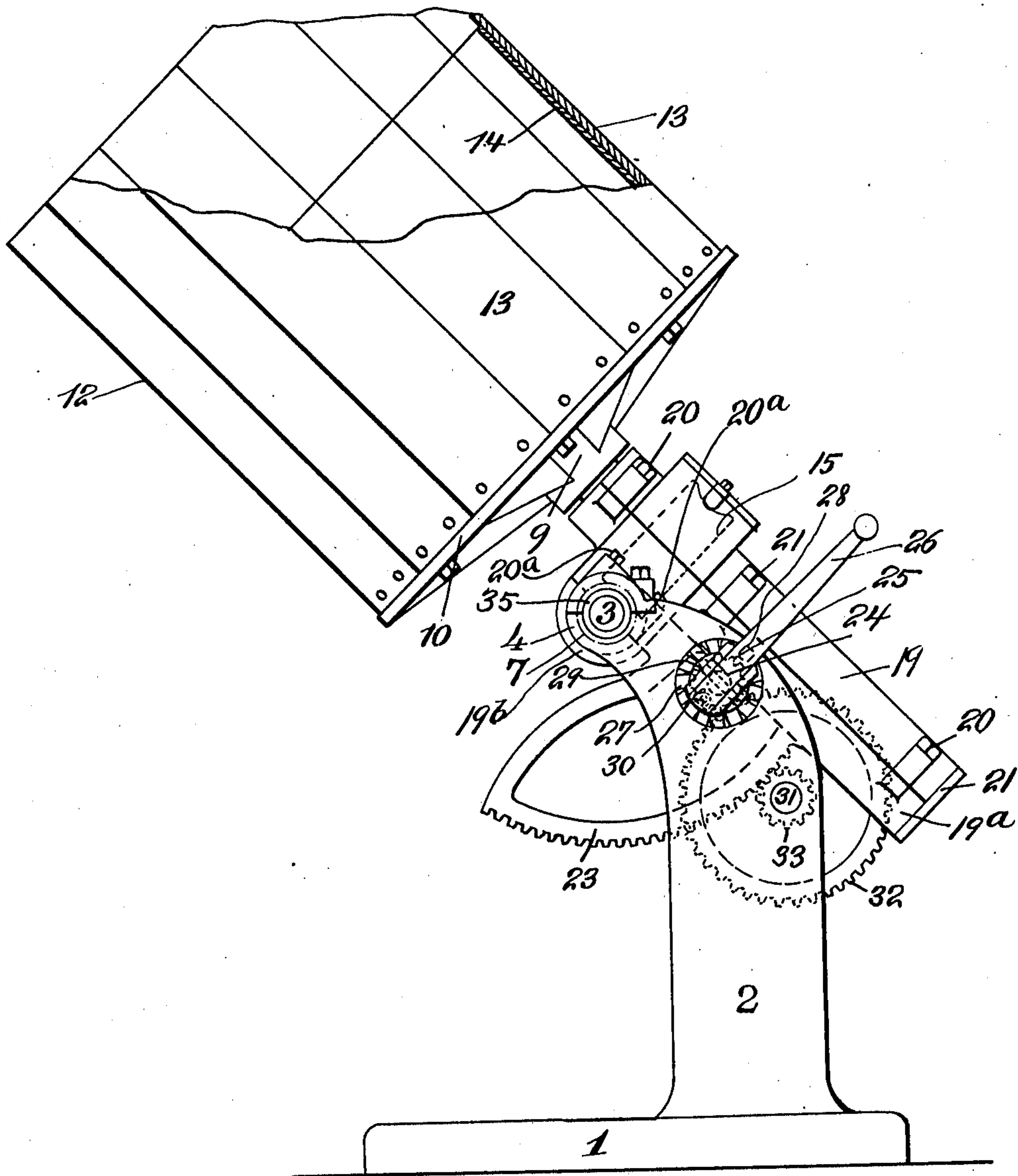


Fig. 1

Witnesses
C. P. La Gay
A. Parker

Frederick E. Warner Inventor
By his Attorneys
Rumney, Mastick & Ogden

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2 SHEETS—SHEET 2.

Fig. 2

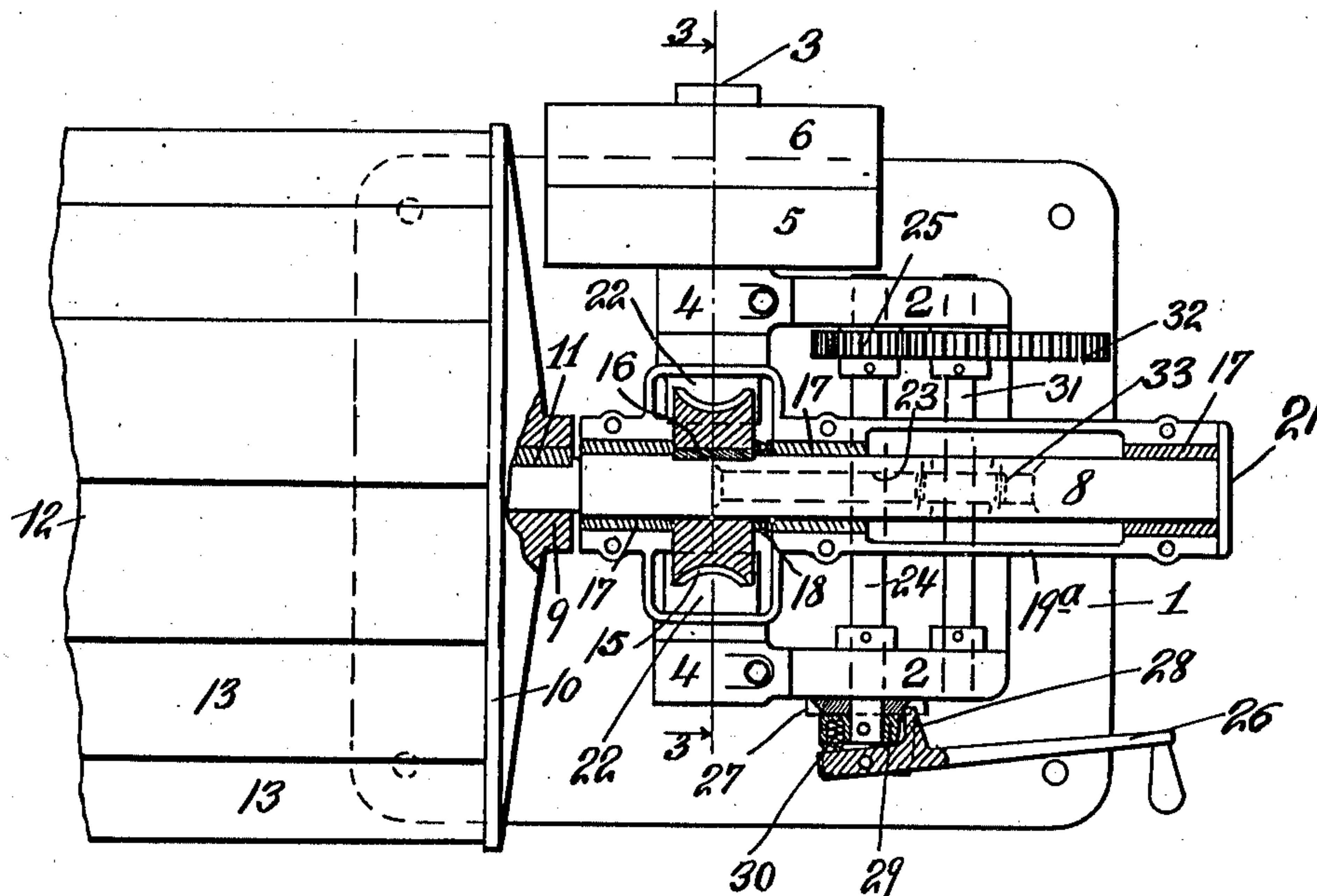
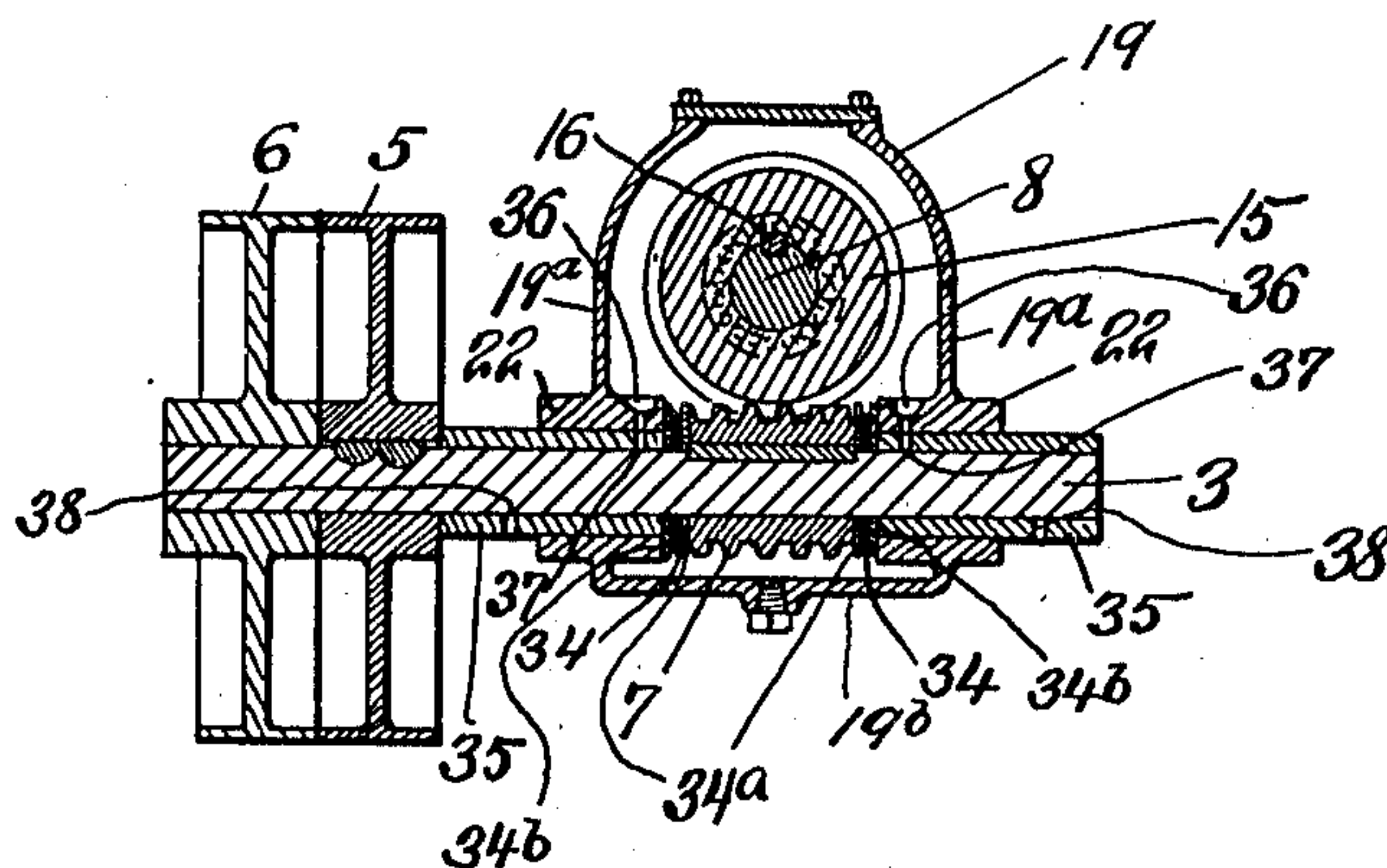


Fig. 3



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UNITED STATES PATENT OFFICE.

FREDERICK E. WARNER, OF BRIDGEPORT, CONNECTICUT.

TUMBLING-BARREL.

978,524.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed October 26, 1909. Serial No. 524,715.

To all whom it may concern:

Be it known that I, FREDERICK E. WARNER, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Tumbling-Barrels, of which the following is a specification.

My invention relates to an improvement in tumbling barrels of that class known as tilting tumbling barrels and the object of my improvement is to provide a device which will be easier to operate than heretofore, more effective and of greater durability. I obtain these objects by the means illustrated in the accompanying drawings which show one way of carrying out my invention, the features thereof being more particularly pointed out hereinafter in the claims.

In the drawings, Figure 1 is a side elevation of a device illustrating my invention, parts being broken away and parts being shown in section. Fig. 2 is a plan view of the same with the upper half of the housing removed, parts being broken away and parts being shown in section, and Fig. 3 is a sectional view along the line 3, 3 Fig. 2, with the upper half of the housing attached.

Similar numerals of reference indicate similar parts throughout the several views.

1 indicates the bed plate supporting standards 2, 2.

3 is the driving shaft mounted in bearings 4, 4 on standards 2, 2, said shaft being driven by any suitable means, such as fast and loose pulleys 5 and 6 respectively.

7 is a worm shown here as keyed to shaft 3.

8 is the driven shaft on the end of which is secured the hub 9 of plate or support 10.

11 is a key locking hub 9 to shaft 8. Plate 10 carries barrel 12 which is preferably formed of wooden strips or staves 13 secured together in any desired manner. Barrel 12 may be provided with a brass lining 14 extending from the bottom of the barrel upward to any desired distance, as shown in Fig. 1. Shaft 8 carries a worm wheel 15 secured thereto by key 16, said worm wheel 15 being adapted to mesh with and be driven by worm 7 on shaft 3.

17, 17, 17, are suitable bearings for shaft 8, preferably of soft metal such as die cast Babbitt bearings, and consequently interchangeable, and 18 is a ball-bearing adapted to act as a thrust-bearing for shaft 8 and its

load. Said bearings 17 and 18 are in turn supported in a housing, here shown as in three parts 19, 19^a, 19^b, the bearings being held in position in the housing by suitable lugs (not shown). The upper part 19 of the housing is removably secured to the intermediate part 19^a by screws 20 and the lower part 19^b of the housing is removably secured to the intermediate part 19^a by screws 20^a.

21 is a cap closing the end of the housing. The housing with cap 21 is adapted to completely inclose shaft 8, worm 7, worm wheel 15 and bearings 17 and 18. Hubs 22 are formed in parts 19^a and 19^b of the housing, as shown in Fig. 3.

23 is a toothed segment mounted on and preferably cast with the intermediate portion 19^a of the housing.

24 is a crank shaft mounted in standards 2, 2, carrying at one end a pinion 25 and at the other end a crank handle 26.

27 is a ratchet fast on standard 2. Crank handle 26 is pivotally mounted on the end of shaft 24 and carries a tooth or pawl 28 adapted to take into the teeth of ratchet 27.

29 is a collar fast on the end of shaft 24 and forming a seat for spring 30 adapted to bear against the end of crank arm 26 to normally throw pawl 28 into engagement with ratchet 27.

31 is a cross shaft carrying gear wheel 32 adapted to mesh with and be driven by pinion 25. Cross shaft 31 also carries a pinion 33 adapted to mesh with the teeth of segment 23.

34, 34 are suitable washers, preferably of wood fiber, loosely mounted on shaft 3 between steel washers 34^a and 34^b, washers 34^a being fast to worm 7 and washers 34^b being fast to hub 22.

35, 35 are sleeves on shaft 3 extending through bearings 4, 4 and forming a bushing for shaft 3, hubs 22 of the housing being fast to sleeves 35 and said sleeves serving as trunnions for the housing. Barrel 12 and shaft 8 with its housing are substantially counterbalanced against each other around shaft 3 so that the application of comparatively little force to crank handle 26, will turn the barrel and its shaft about shaft 3 as a center.

In the operation of the device, barrel 12 having been filled with the articles to be tumbled, the power is turned on driving shaft 3, which through worm 7 and worm

wheel 15 causes the barrel to rotate at any desired speed. When it is desired to tilt the barrel, crank arm 26 is moved away from the standard so as to release pawl 28 from ratchet 27 and shaft 24 is rotated by means of crank arm 26; the rotation of the shaft through pinion 25, gear wheel 32 and pinion 33 on cross shaft 31, causing segment 23 to be raised or lowered, carrying with it the barrel and its connecting parts, the housing being tilted with the shaft 8 by having its trunnions movable about the driving shaft 3.

The housing may be packed with a suitable lubricating material, preferably a non-fluid oil, in which the shaft 8, worm 7 and worm wheel 15 turn, thus protecting them from wear and dust while permitting them to work smoothly and easily and with less vibration than heretofore. The ball-bearings 18 and washers 34 assist in ease of operation and lessen wear.

36, 36 are oil cups in the top of hubs 22 within the housing having oil holes 37 extending through sleeves 35 to shaft 3, the shaft being provided with suitable oil channels (not shown) whereby the shaft and its bearings may be lubricated. Oil holes 38 on the under side of sleeves 35 permit the oil to reach bearings 4, thus lubricating them.

It is obvious that the details of arrangement and construction may be varied without departing from the spirit of my invention. It is further obvious that the brass lining 14 may be cast in one piece and may be made removable, the barrel being, in such case, made of the same diameter throughout, as shown in the drawings, to provide for the easy slipping in and removing of the lining. Such lining not only protects and preserves the wooden portion of the barrel but makes the work of polishing much quicker as it gives a contact of brass on brass, where brass objects are those being tumbled.

What I claim and desire to secure by Letters Patent is:

1. In a tumbling barrel, a barrel rotating mechanism, comprising a driving shaft, a gear thereon, a driven shaft on which the barrel is mounted, and a gear wheel on said driven shaft operably connected with the gear on the driving shaft, combined with means for tilting the barrel and its supporting and operating shaft and its attached gear wheel, and a housing completely in-

closing said barrel rotating mechanism and movable therewith in the tilting movements of the barrel.

2. In a tumbling barrel, a barrel rotating mechanism, comprising a driving shaft, a worm thereon, a driven shaft on which the barrel is mounted, and a worm wheel on said driven shaft in mesh with the worm on the driving shaft, combined with means for tilting the barrel and its supporting and operating shaft and its attached worm wheel, and a housing completely inclosing said barrel rotating mechanism and movable therewith in the tilting movements of the barrel.

3. In a tumbling barrel, a barrel rotating mechanism, comprising a driving shaft, a worm thereon, a driven shaft on which the barrel is axially supported, a worm wheel on said driven shaft in mesh with the worm on the driving shaft, combined with means for tilting the barrel and its attached driven shaft and worm wheel, a housing completely inclosing said barrel rotating mechanism and movable therewith in the tilting movements of the barrel, and a ball bearing thrust bearing for said driven shaft mounted in and protected by said housing.

4. In a tumbling barrel, a barrel rotating mechanism, comprising a driving shaft, a driven shaft on which the barrel is axially mounted, and gearing connecting said shafts, combined with a housing completely inclosing said barrel rotating mechanism, and means for tilting the barrel and its attached driven shaft and said housing, comprising a segment mounted on and carried by said housing, a crank shaft, a pinion on said crank shaft, a cross shaft, a gear on said cross shaft meshing with said pinion, a pinion on said cross shaft meshing with said segment, and means for locking said crank shaft to hold the barrel in its tilted positions.

5. In a tumbling barrel, the combination with a barrel of the same diameter throughout, of a removable one piece brass lining.

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

FREDERICK E. WARNER.

Witnesses:

LUCIEN T. WARNER,
D. O. N. WARNER.