J. HENDERSON.

TUMBLING BARREL.

APPLICATION FILED APR. 12, 1912.

1,143,268.

Patented June 15, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

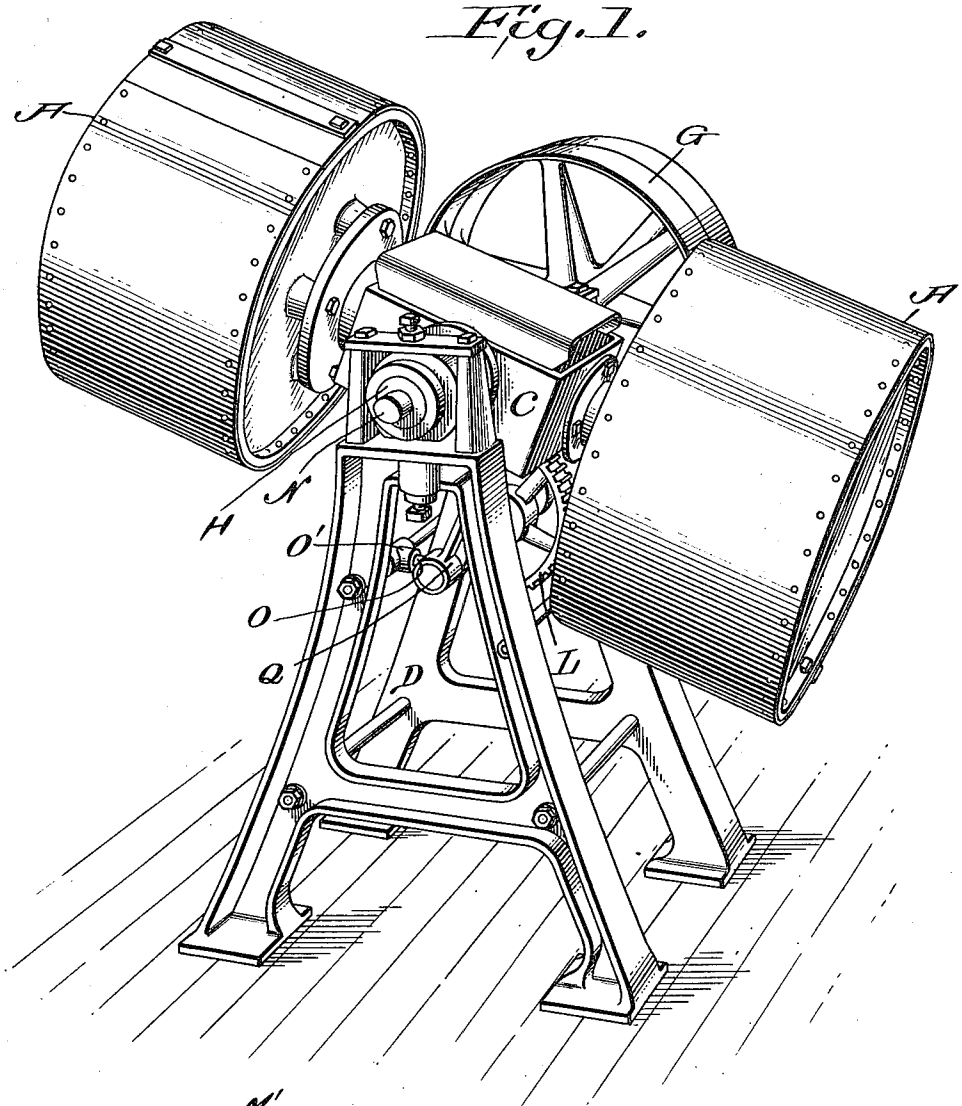


Fig. 4.

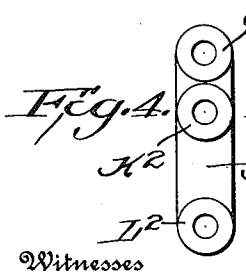


Fig. 5.

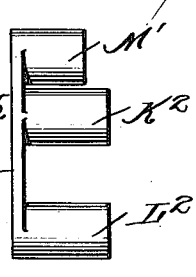
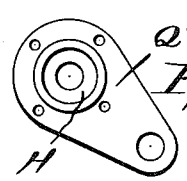


Fig. 6.



Witnesses

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2 SHEETS—SHEET 2.

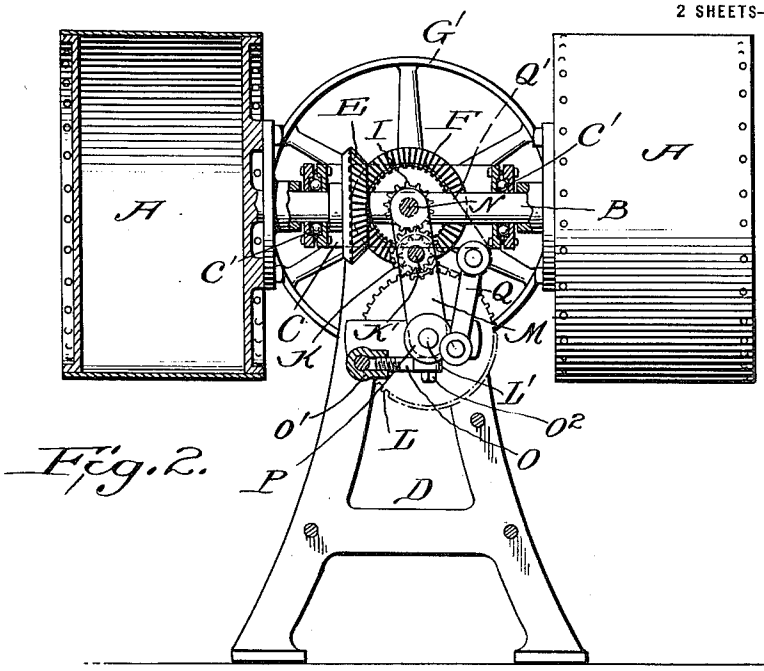

Fig. 2.

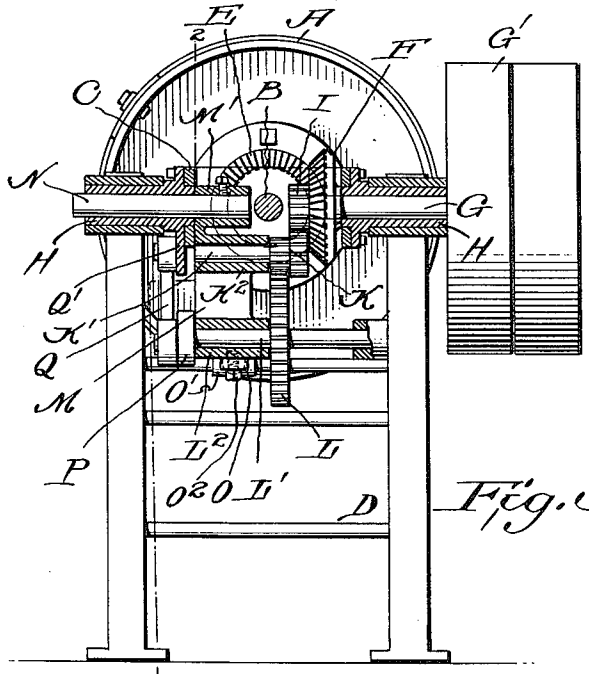

Fig. 3.

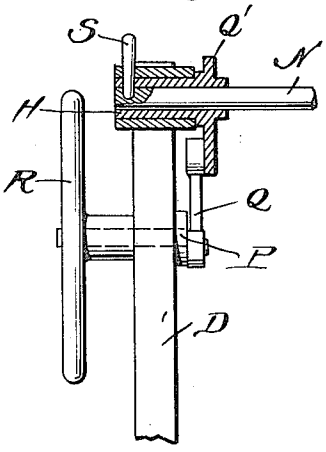

Fig. 7.

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UNITED STATES PATENT OFFICE.

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TUMBLING-BARREL.

1,143,268. Specification of Letters Patent. Patented June 15, 1915.

Application filed April 12, 1912. Serial No. 690,379.

To all whom it may concern:

Be it known that I, JOHN HENDERSON, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Tumbling-Barrels, of which the following is a specification.

This invention relates generally to tumbling barrels and more particularly to a novel construction of double tumbling barrel whereby the capacity is doubled and the effectiveness of the operation of the device materially increased.

Heretofore tumbling barrels have been mounted upon one end of a rotary shaft, which shaft was maintained in a definite position during operation and furthermore was provided with either a counter-balance or a suitable fastening means for maintaining the shaft and barrel in a definite position.

The object of the invention is to do away with the counter balance of the shaft and at the same time materially increase the efficiency of the machine as a whole and this I accomplish by arranging a tumbling barrel upon each end of a shaft which shaft is journaled in a frame, which is suitably mounted and provided with mechanism for not only rotating the shaft but also for oscillating the same during rotation, thereby subjecting the tumbling barrels to not only a rotary motion but also to an oscillating motion, whereby the efficiency of the barrel is materially increased.

The invention consists also in certain novel features of construction, combination and arrangement, all of which will be fully described hereinafter, and pointed out in the claims.

In the drawings forming a part of this specification Figure 1 is a perspective view of my improved construction of tumbling barrel. Fig. 2 is a sectional elevation, on line 2—2 of Fig. 3. Fig. 3 is a sectional view partly in elevation taken upon a plane at right angles to Fig. 2. Fig. 4 is an end view of a radial arm or casting. Fig. 5 is a face view of the same. Fig. 6 is a face view of the connection between the frame and link, and, Fig. 7 is a slightly modified form of mechanism whereby the frame can be oscillated by hand when desired.

In the practical embodiment of my invention, I employ two tumbling barrels A—A, which may be of any desired size, shape or material and opened or closed from either the side or end as preferred. These barrels are rigidly attached to the opposite ends of a shaft B, which is journaled or mounted to rotate in a frame C. Ball bearings C′ being preferably employed in order to reduce friction. This frame C is mounted upon a floor stand D, which may be of any suitable or desired construction. The shaft B has a bevel gear E fixed thereon, which meshes with a bevel gear F mounted upon the inner end of the drive shaft G, which has the drive pulley G′ at its outer end, the drive shaft G passing through the tubular journal H attached to the side of the frame and forming the trunnion upon which the frame rocks, this trunnion being mounted in suitable bearings carried by the floor stand D and it will be understood that a similar tubular bearing or trunnion H is arranged upon the opposite side of the frame and is mounted in suitable bearings. The drive shaft G rotating the bevel gear F transmits rotary motion to the bevel gear E, which in turn rotates the shaft B carrying the tumbling barrels.

Now in order to give the barrels both an oscillating and a rotating movement, I employ a train of gears and transform the rotary motion of the drive shaft into a reciprocating or rocking motion and transmit this transformed motion to the frame so that the barrels and operating mechanism are rocked up and down simultaneously with their rotation and the means for transforming and transmitting these motions are so constructed that each barrel will oscillate once to each six or seven revolutions thereof. These motions I accomplish by arranging a spur gear I upon the end of the drive shaft G, which spur gear meshes with the double spur gear K mounted upon a shaft K′, the smaller portion of said double spur gear K meshing with a gear L mounted upon the end of a shaft L′, said shafts K′ and L′ being mount-

ed in bearings K^2 and L^2, respectively of the radial arm or casting M, the upper portion of said arm having a bearing M', in which fits a short shaft N passing through the trunnion and serving as a support for this radial arm or casting M, the relative position of this radial arm or casting M being regulated by an eye bolt O, the threaded end thereof engaging a coupling O' arranged upon a connecting rod of the floor stand while the eye portion of said bolt is connected to the bottom of the radial arm or casting by means of a lag screw O^2. By removing this lag screw and giving the eye bolt a turn in either direction, and re-connecting the parts, it is obvious that the radial arm or casting M can be maintained in a perpendicular or inclined position as desired and the position of this arm or casting will be determined in a measure by the size and shape of the tumbling barrels.

The shaft L' which carries the gear L at its inner end is provided with a crank disk P at its outer end and a link Q connects this crank disk with the frame so that as the crank disk revolves the frame will be caused to rock or moved up or down thereby oscillating the rotating tumbling barrels. The link Q is preferably connected to the frame C by means of a casting Q', which is integral with trunnion H, and is bolted to the side of the frame. This casting is shown in detail in Fig. 6.

In Fig. 7, I have shown a very slight modification in which a hand wheel R is employed to transmit motion to the link Q for the purpose of rocking the frame, this construction being employed when it is desired to simply rotate the barrels and not oscillate them and a key S is employed to hold the frame stationary and for the purpose of filling or emptying the barrels the frame is tilted by the hand wheel R so as to bring the barrel into proper position for either filling or emptying.

It will thus be seen that I provide two tumbling barrels which could balance each other and that in addition to rotating these barrels I also utilize a portion of the force and transform the rotary into a reciprocating motion for the purpose of oscillating the tumbling barrels simultaneously with their rotation, thereby materially increasing both the capacity and the efficiency of the machine as a whole.

What I claim is:—

1. In a machine of the kind described a support, a frame pivotally mounted thereon, a shaft passing through said frame, a tumbling barrel mounted upon each end of the shaft projecting beyond the frame, gearing arranged within said frame for rotating said shaft, together with means connecting said frame and gearing, whereby said frame is oscillated simultaneously with the rotation of the shaft; the barrels at the ends of shaft counter-balancing each other.

2. In a machine of the kind described, a support, a frame pivotally mounted therein, a rotatable shaft passing through said frame, a tumbling barrel mounted upon each projecting end of said shaft, gearing arranged within said frame for rotating said shaft, together with means connecting said frame and gearing whereby said frame is oscillated, and means for adjusting said connection between the frame and gearing whereby the amplitude of oscillation of frame can be regulated.

3. In a device of the kind described, a shaft, a tumbling barrel mounted upon each end of said shaft, a pivotally supported frame arranged between said barrels and through which the shaft passes, and means connected with said frame for rotating said shaft and rocking said frame.

4. In a device of the kind described a shaft, a tumbling barrel arranged at each end of said shaft, a pivotally supported frame arranged between said barrels and through which said shaft passes, gears arranged within the frame for rotating said shaft and means operated from said gears for rocking said frame; the tumbling barrels counter-balancing each other.

5. In a device of the kind described, a shaft, a tumbling barrel mounted upon each end of said shaft, a pivotally supported frame in which the shaft is journaled, said frame being located between the barrels, gears arranged within the frame for rotating said shaft, a link for rocking said frame, and operative means connecting said link and gears.

6. In a device of the kind described, a shaft, a tumbling barrel arranged upon each end of said shaft, a pivotally supported frame intermediate the barrels and in which the shaft is journaled, gears for rotating said shaft, a link for rocking said frame, a train of gears for operating said link, and an adjustable arm for carrying said train of gears, as set forth.

7. A device of the kind described comprising two tumbling barrels arranged at opposite ends of a shaft, and means arranged upon said shaft intermediate the barrels for simultaneously imparting rotary and oscillatory movements to said barrels, said barrels counter-balancing each other, as set forth.

8. A device of the kind described, the combination with a suitable support, of a rotary shaft mounted therein, a second shaft at right angles to the first shaft and having a tumbling barrel at each end thereof, said tumbling barrels counter-balancing each other, a frame pivotally mounted upon the

support, intermediate the barrels, and through which the tumbling barrel shaft passes, gearing contained within said frame whereby the rotation of the first named shaft imparts rotation to the tumbling barrel shaft, together with means connected to said gearing, frame, and support, whereby the frame is oscillated simultaneously with the rotation of the tumbling barrel shaft.

JOHN HENDERSON.

Witnesses:
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CHARLES E. HART, Jr.