

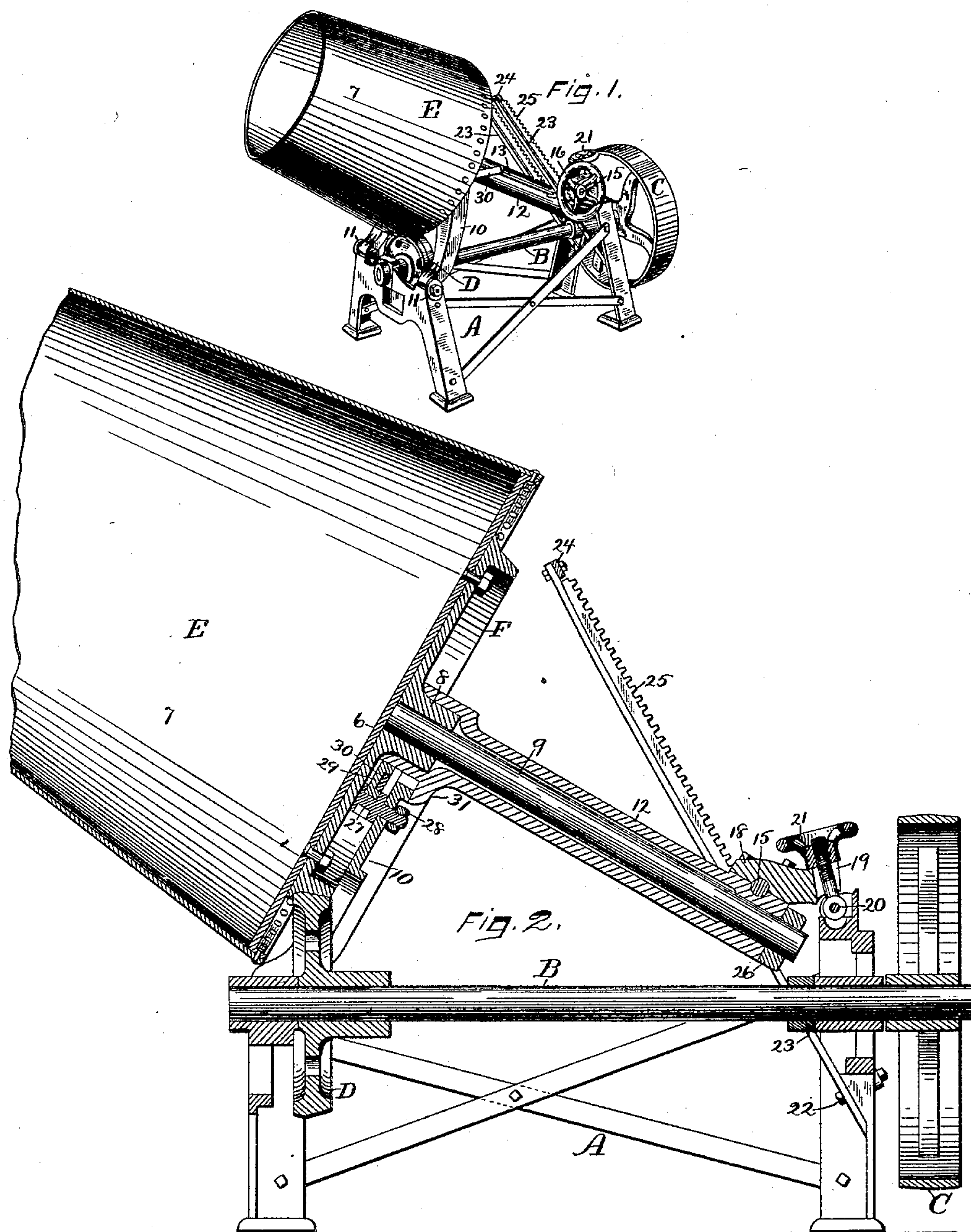
(No Model.)

2 Sheets—Sheet 1.

J. HENDERSON, Jr.  
OBLIQUE TUMBLING BARREL.

No. 462,841.

Patented Nov. 10, 1891.



WITNESSES.  
John Edwards Jr.  
Wilmer Svenson.

INVENTOR,  
John Henderson, Jr  
By James Shepard. Atty.

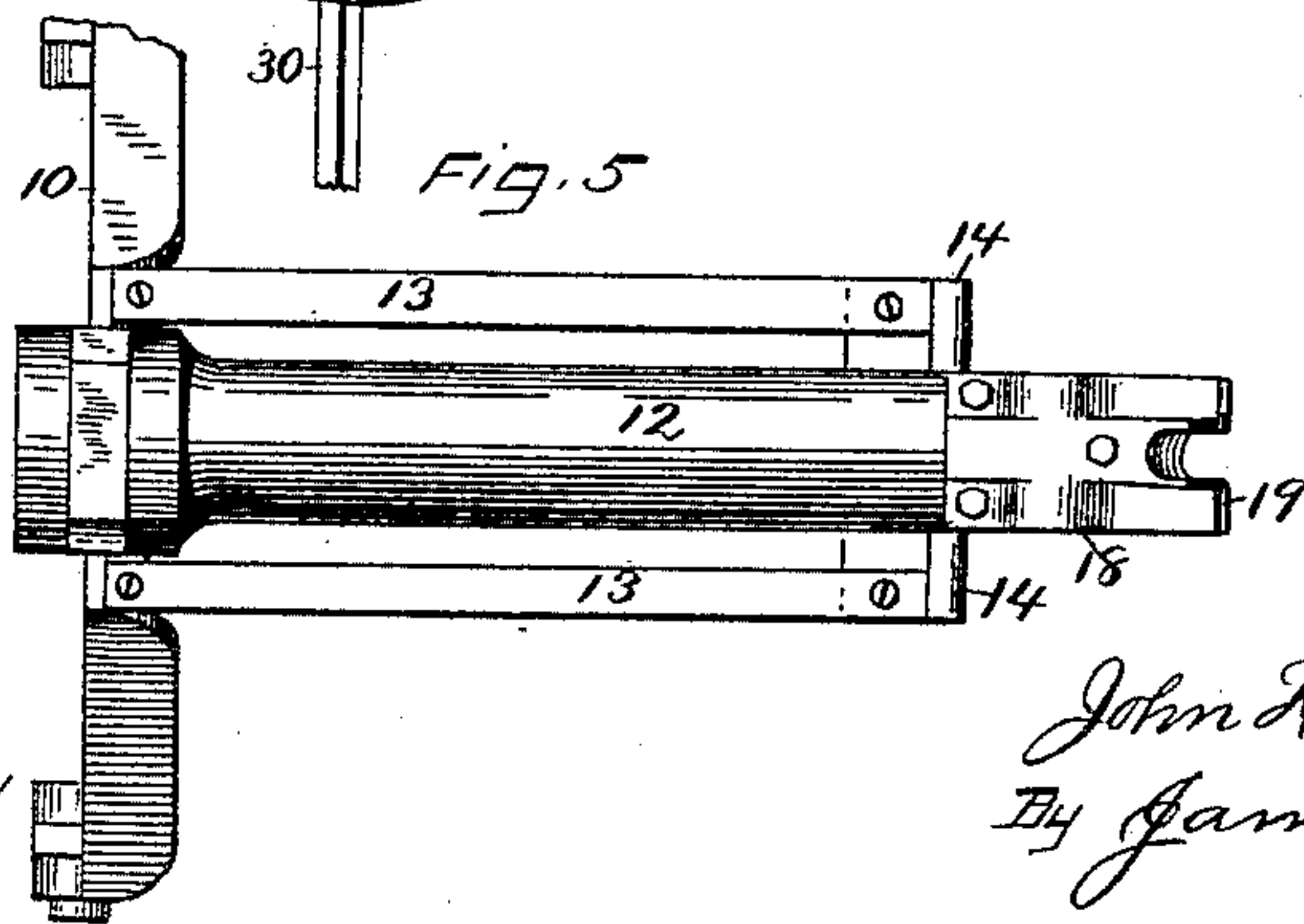
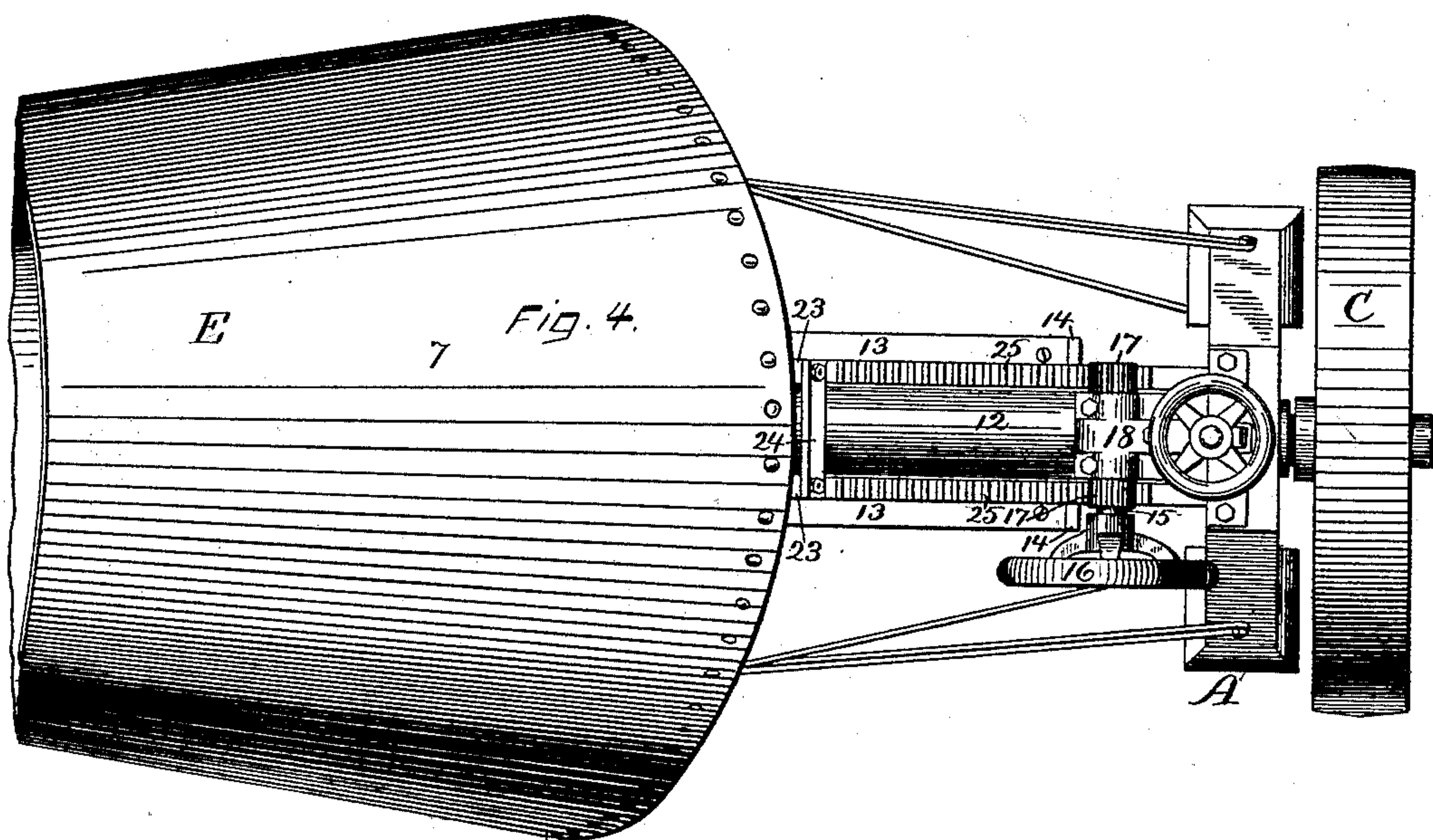
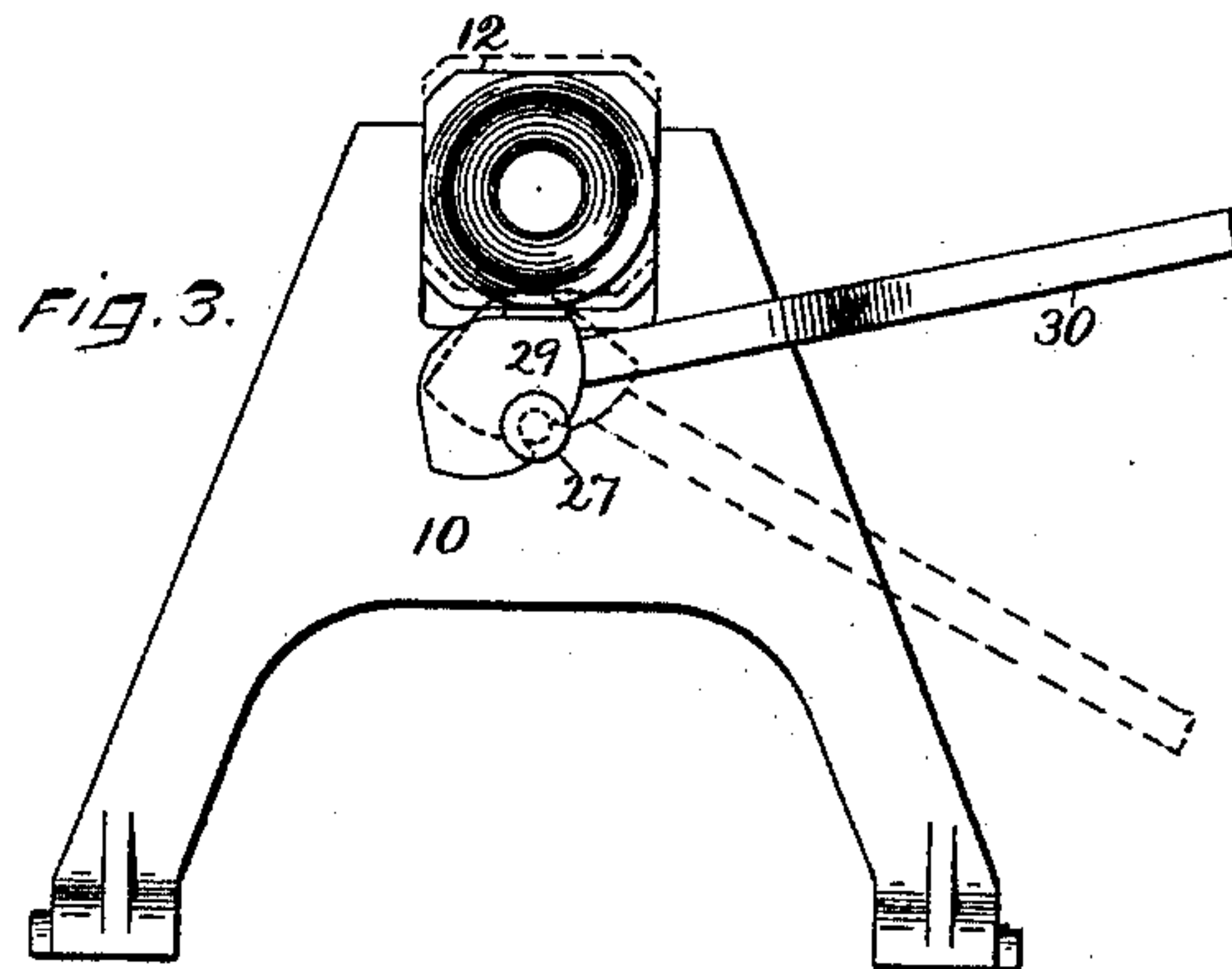
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# UNITED STATES PATENT OFFICE.

JOHN HENDERSON, JR., OF WATERBURY, CONNECTICUT.

## OBLIQUE TUMBLING-BARREL.

SPECIFICATION forming part of Letters Patent No. 462,841, dated November 10, 1891.

Application filed June 11, 1891. Serial No. 395,950. (No model.)

*To all whom it may concern:*

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

My invention relates to improvements in oblique tumbling-barrels; and the chief object of my improvement is to provide a barrel of this class of increased efficiency and convenience, and particularly to provide a barrel that will carry a great weight and may be easily tilted for emptying.

In the accompanying drawings, Figure 1 is a perspective view of my tumbling-barrel. Fig. 2 is a vertical section of the same with some of the central parts in elevation, the same and the following figures being on a larger scale. Fig. 3 is a detached front elevation of the tilting frame for mounting my barrel upon, together with the lever for throwing the barrel out of gear. Fig. 4 is a plan view of my barrel, and Fig. 5 is a detached plan view of the frame shown in Fig. 3.

A designates the principal frame, upon which the main shaft B is mounted in any suitable bearings, said shaft being provided with a driving-pulley C for receiving a driving-belt and a friction cone-pulley D for driving the cone-pulley of the barrel.

E designates the open-ended oblique barrel, which may be of any ordinary construction and form, but which I prefer to make by forming the bottom or head 6 of a cheaper metal, as iron, and the sides 7 of the barrel of a superior metal—as, for instance, brass—riveted to the head or bottom 6, as shown.

In Figs. 2 and 4 the barrel is illustrated as having a portion broken away in order to bring said view inside the marginal lines. So also the upper part of the end portion of the tilting frame is broken off in Fig. 5, in order to economize space. In the central portion of the bottom or head on its outside I secure the friction-pulley F, Fig. 2, said pulley being provided with a central hub 8, to which the shaft 9 is rigidly secured. I mount this barrel, pulley, and shaft upon a tilting frame, detached views of which are

shown in Figs. 3 and 5. This frame is composed of an end portion 10 in the form of a pair of connected legs, the lower ends of which are pivoted or hinged in any proper manner to the upper corners at one end of the main frame, as at 11, Fig. 1, and of a shaft-carrying portion 12, which receives the shaft 9, said shaft having a bearing at the lower end of said portion, as shown in Fig. 2, while the hub 8 of the friction cone-pulley F has its bearing in the upper end of said shaft-carrying portion. The upper part of the end portion 10 has an opening in it to receive the large end of the shaft-carrying portion, as shown most clearly in Fig. 3, the metal by the sides of said opening serving as ways for holding and guiding therein said shaft-carrying portion. The end portion and the shaft-carrying portion of the tilting frame are preferably held together by means of slightly-flexible tie-straps 13, the ends of which straps are secured to the top of the end portion 10 and to laterally-projecting lugs 14 on the shaft-carrying portion 12. These flexible straps firmly secure the end portion and shaft-carrying portion of the tilting frame from moving one upon the other in the direction of the length of said shaft-carrying portion, while at the same time they permit of a slight movement of the upper end of the shaft-carrying portion transversely to its length within said end portion, for a purpose hereinafter described. The large end of the shaft-carrying portion is provided on its under side with a lug 31, against which one side of the end portion 10 of the tilting frame may rest and relieve the tie-straps 13 from taking the weight of the barrel. The shaft-carrying portion 12 has mounted upon it in suitable bearings a shaft 15, carrying a hand-wheel 16 and two pinions 17. The cap 18, that holds the shaft 15 in place, is provided with a rearward extension 19, having a slot in its middle portion, as shown in Figs. 2 and 5. Pivoted to the frame of the machine adjacent to this extension, as at 20, Fig. 2, there is a swinging bolt provided with a hand-nut 21, the body of the bolt being received in the slotted extension, while the lower end of the nut bears upon the upper part thereof to fasten down that end of the tilting frame and



prevent it from being tilted, excepting as the nut may be loosened, so as to swing it back free of the slotted extension.

Bolted to any convenient part of the frame, as at 22, Fig. 2, is a pair of flexible bars 23, that extend obliquely upward underneath the pinions 17, the upper ends of which bars are connected by a cross-bar 24. On the upper surface of these bars 23 I secure the racks 25 for engaging the pinions 17, said racks being of less length than said bars and not extending to their lower ends. The lugs 14 on the tubular portion of the tilting frame, to which the straps 13 are connected, also serve the purpose of lugs for holding the racks into engagement with the pinions. Owing to a change in the relative position of a line passing through the center of the pinion to said lug during the movement of the tilting frame, the combined bars 23 and racks 25 are made slightly thicker in their middle portion than at their ends. This I prefer to accomplish by giving the proper curve for increase in thickness to the backs of said racks, while the flexible bars 23 are sprung sufficiently to conform to the curve on the back of the racks when the two are secured together.

The barrel and its shaft 9 are held within the tilting frame by means of a collar 26 at the lower end of said shaft.

27 designates a shouldered stud secured by a nut 28 to the end portion of the tilting frame, as shown in Figs. 2 and 3.

29 designates a cam having a notch or recess on its lower edge for hooking upon said shouldered stud, said cam being provided with an operating-lever 30, rigidly connected therewith. When the lever 30 is raised to throw the cam 29 in the position best shown in Fig. 3, the friction-pulleys F D are allowed to come in contact with each other and receive the whole weight of the barrel, thus being in a position for driving the barrel. Depressing the operating-lever so as to bring the highest point of the cam under the tubular portion 12 of the tilting frame, the barrel and friction-pulley F are lifted out of gear with the driving-pulley D, so that the barrel is not driven.

In order to empty the barrel, the hand-nut 21 is partly unscrewed and said nut and its bolt swung backwardly to disengage the slotted extension 19 of the tilting frame. The hand-wheel 16 is then revolved to turn the pinions, thereby carrying that end of the frame upwardly on the racks 25 to move the shaft 9 up to or a little beyond a horizontal position for emptying the barrel. When the barrel is emptied, turning the hand-wheel in the opposite direction will bring the barrel into the position shown. The tilting frame is pivoted to the main frame at such a point as to be practically the center of gravity of the loaded barrel, thus enabling it to be tilted with ease. The axis of the tilting frame is also wholly below the barrel, so that the barrel when being tilted or emptied will not col-

lide with any part of the frame. Upon the return of the barrel to its normal position, as shown, the hand-nut may be again brought into position for securing the barrel against being accidentally tilted. This fastening mechanism is not an absolute necessity, but it is believed to be useful as a matter of precaution and certainty. Although the racks 25 are straight upon their toothed surface and the pinion-shaft 15 moves on the arc of a circle, they are permitted to operate by being mounted upon flexible bars.

Having shown and described an oblique barrel mounted upon a tilting frame whose axis is below the barrel and practically in the center of gravity and provided with rack and pinion for operating the same, it will of course be evident to any mechanic that these leading features may be embodied in barrels which differ from that herein shown and described in many of its other parts and minor details of said parts, and therefore such changes as may be brought about by the expected skill of mechanics and still retain the generic features of my machine I consider within my invention.

The friction-gearing herein illustrated is made under my patent, No. 412,386, dated October 8, 1889, and while I prefer this gearing it is evident my invention would not be avoided by substituting any known gearing therefor.

I claim as my invention—

1. In an oblique tumbling-barrel, the combination of the main frame, a tilting frame upon which the barrel is mounted, said frame being composed of a shaft-carrying portion and a frame-like end portion pivoted to the main frame by its lower end, while the shaft-carrying portion is in a higher plane than the pivotal connection of said end portion with said main frame, and mechanism for operating said tilting frame, substantially as described, and for the purpose specified.

2. The combination of the main frame, the tilting frame composed of pivoted end portion and shaft-carrying portion, said shaft-carrying portion being located at the upper part of said end portion, while its pivotal connection with the main frame is located at the lower part thereof, the barrel mounted in said tilting frame, and rack and pinion for operating said tilting frame, substantially as described, and for the purpose specified.

3. The combination of the main frame, the tilting frame composed of pivoted end portion and shaft-carrying portion, the pivotal connection thereof with the main frame being in a lower plane than said shaft-bearing portion, the barrel mounted in said tilting frame, rack and pinion for operating said tilting frame, and fastening mechanism for securing the barrel in its oblique position, substantially as described, and for the purpose specified.

4. The combination of the main frame, the driving-shaft and driving-gear, the tilting frame composed of an end portion and a shaft-



carrying portion, the barrel and driven pulley mounted on said tilting frame, and the cam and its operating-lever for moving the upper end of the shaft-carrying portion within the end portion of said tilting frame, substantially as described, and for the purpose specified.

5 5. The combination of the main frame, the tilting frame composed of an end portion and a shaft-carrying portion, the barrel and shaft mounted therein, the pinion-shaft and pinions mounted on said shaft-carrying portion, the flexible bars 23, secured to the main frame, and the racks 25, secured to said flexible bars, 15 said shaft-carrying portion having lugs 14 for holding said racks in engagement with said pinions, substantially as described, and for the purpose specified.

20 6. The combination of a main frame, the tilting frame pivotally connected thereto and provided with the slotted extension 19, the barrel mounted upon said tilting frame, mechanism for operating said tilting frame, and the locking-bolt and nut 21, pivoted to the

main frame for engaging said slotted extension, substantially as described, and for the purpose specified. 25

7. In an oblique tumbling-barrel, a tilting frame composed of an end portion 10, a shaft-carrying portion 12, and the flexible tie-straps 30 13 to permit of a movement of the shaft-carrying portion transversely to its axis within said end portion, substantially as described, and for the purpose specified.

8. In a tumbling-barrel, the tilting-frame 35 consisting of an end portion, a shaft-carrying portion with one end fitted to move transversely to its axis within said end portion, and devices for securing said end portion and shaft-carrying portion against moving one 40 upon the other in the direction of the length of said shaft-carrying portion, substantially as described, and for the purpose specified.

JOHN HENDERSON, JR.

Witnesses:

GORDON B. LAWRENCE,  
FREDERICK W. CHESSON.