

(No Model.)

W. HOUGHTALING.  
STEAM ENGINE INDICATOR.

No. 538,042.

Patented Apr. 23, 1895.

Fig. 4.

Fig. 1

Fig. 3.

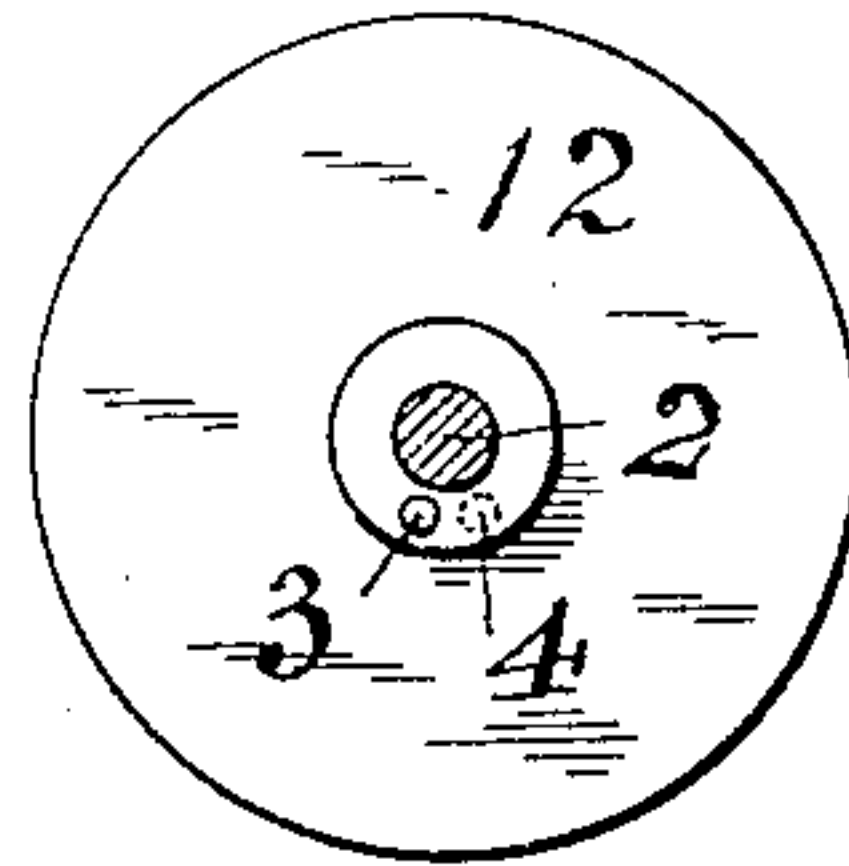
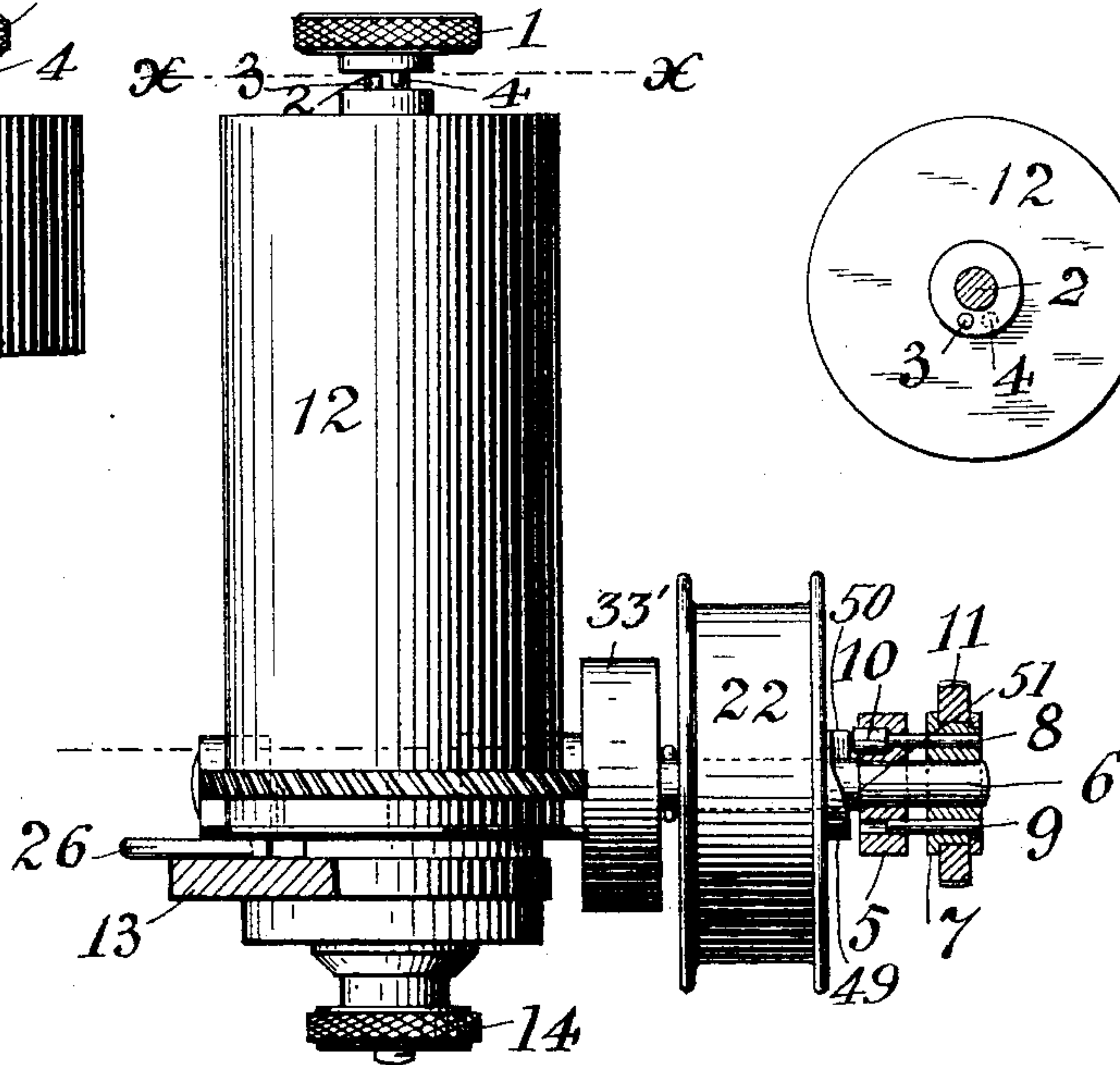
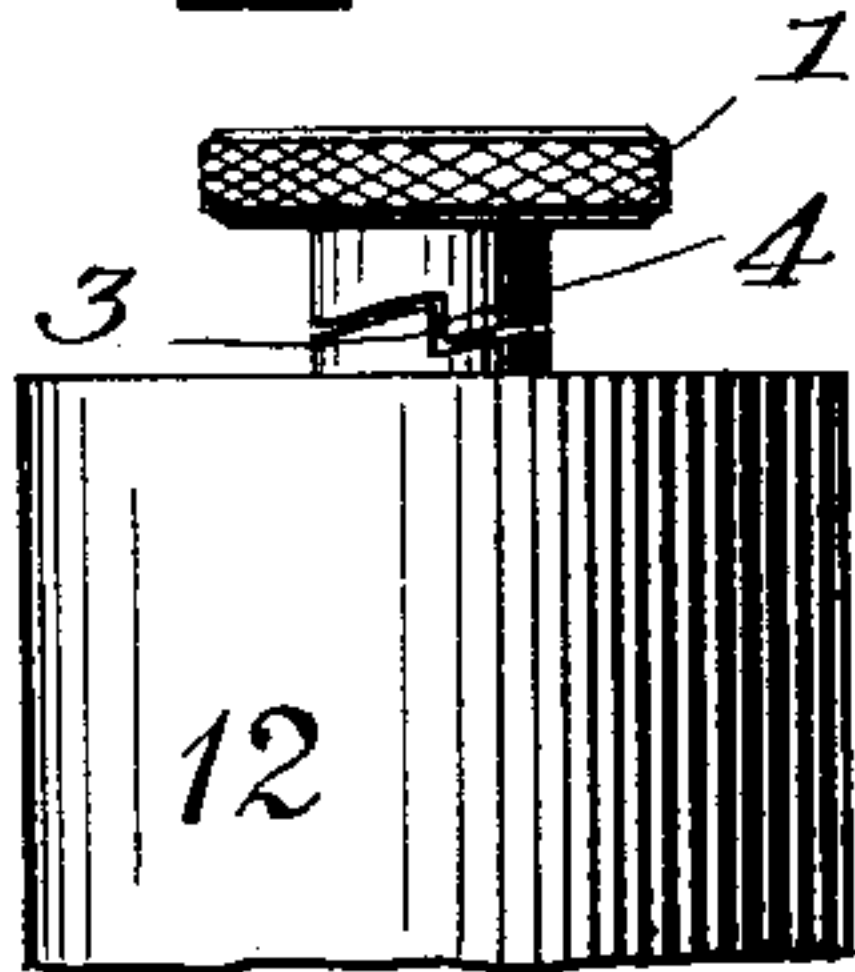
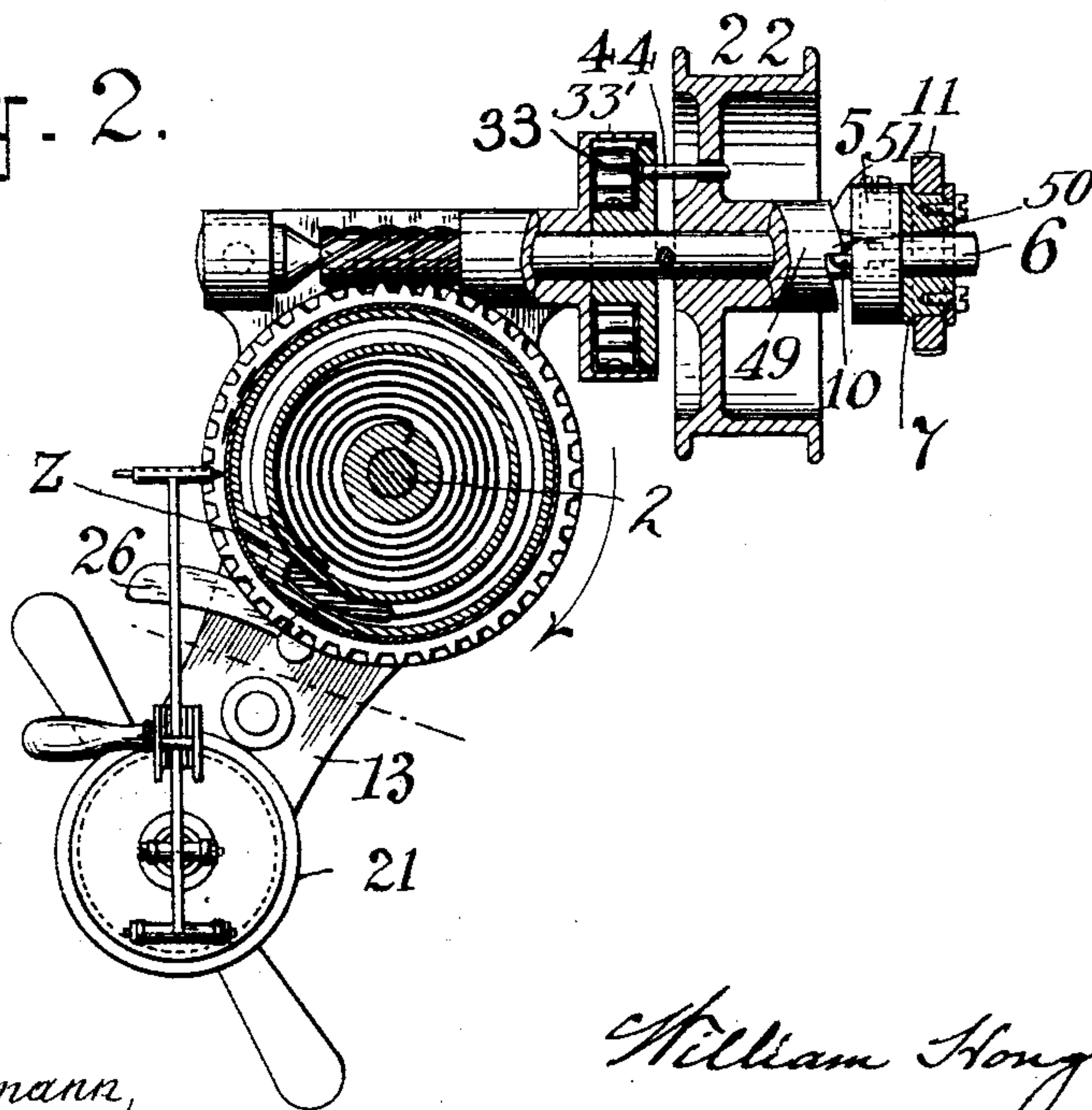


Fig. 2.



WITNESSES:

Chas. Hanemann,  
H. Graham.

INVENTOR

William Houghtaling

BY

Chas H. Forbes  
ATTORNEY



# UNITED STATES PATENT OFFICE.

WILLIAM HOUGHTALING, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO  
THE ASHCROFT MANUFACTURING COMPANY, OF SAME PLACE.

## STEAM-ENGINE INDICATOR.

SPECIFICATION forming part of Letters Patent No. 538,042, dated April 23, 1895.

Application filed March 31, 1894. Serial No. 505,885. (No model.) Patented in England February 20, 1894, No. 3,627.

*To all whom it may concern:*

Be it known that I, WILLIAM HOUGHTALING, 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 Steam-Engine Indicators, of which the following is a specification.

The invention forms a part of that described in British patent granted to me, dated February 20, 1894, and numbered 3,627; and it relates to a means for facilitating the operation of making the clutch engagement referred to in Letters Patent of the United States, No. 494,482, granted March 28th, 1893. As described in said patent the first part of the operation of taking a diagram previous to making the clutch engagement, consists in turning the diagram barrel slightly forward, and clear of its recoil stop, which gives a slight extra tension to the cord, so that when the engagement is effected the barrel is prevented from slamming against its stop in its recoil movement.

It is found in practice that in applying the hand directly to the diagram barrel for the purpose stated, the diagram sheet is often moved or disarranged. To avoid this and at the same time to conveniently turn the barrel in the manner described is the purpose of my present invention, which I will first proceed to describe and subsequently point out in the claims its novel features.

Referring to the accompanying drawings forming a part of this specification, Figure 1 represents a side elevation of the diagram barrel showing the present invention and also the clutch mechanism section; Fig. 2, a horizontal section of the diagram barrel, and its clutch mechanism, showing the recoil stop and the clutch engaged. Fig. 3 is a horizontal view through the line  $x-x$  Fig. 1; and Fig. 4 a modification of the means for engaging the thumb-piece with the diagram barrel.

The parts composing the diagram barrel 12 and cord pulley 22 with the geared connection and also the connected clutch mechanism supported by the arm 13 consisting of a fixed collar 5 secured to the shaft 6, the sliding collar 7 with the parallel pins 8, 9, clutch bolt extension 10 on, or integral with the pin, 8, loose ring 11, cord pulley 22, recoil spring 33 in spring-barrel 33', and connecting pin 44, the

diameter of the cord pulley 22 selected for use in taking a definite diagram being the proper one for the length of stroke of the engine piston, are substantially the same as in the United States patent referred to.

The present invention consists in the thumb-piece 1 connected to the projecting end of the spindle 2 of the diagram barrel 12 and like the barrel, rotating freely on said spindle a space being left as shown to accommodate the projecting pins or studs 4 and 3 fixed respectively to the thumb-piece 1 and diagram barrel. The pins 3 and 4 are made long enough to engage each other laterally when the thumb-piece is turned.

When it is desired to make the clutch engagement between the pulley 22 and the shaft 6, the thumb-piece 1 is first turned before such engagement is effected to bring the projecting pins 3 and 4 in contact and by a slight farther turn the barrel is advanced clear of its recoil stop  $z$  and held in such position until the clutch engagement is made, which latter is effected by moving, with the other hand, the sliding collar 7, toward the pulley 22, so as to bring the clutch-bolt extension 10, on the pin 8, into engagement with one of the shoulders 50, on the hub 49, of said pulley. The instant the clutch engagement is made, the pin 3 on the diagram barrel at once moves away from the pin 4 on the thumb piece, thus leaving the latter free while the barrel oscillates in its operation. The thumb piece 1 is also of use in arresting the oscillations of the barrel, after a diagram has been taken. This is effected by rotating the thumb piece sufficiently to bring the pins 3 and 4 in contact and then firmly holding the thumb-piece, which will stop the recoil oscillation of the barrel and cause the clutch mechanism to be automatically disengaged as the inclined face, 51, on the hub of the pulley, 22, will then force the collar, 7, outward.

As shown in Fig. 4 the bottom of the hub of the thumb piece 1 may be constructed with a circumferential cam surface and shoulder 4 and the projecting shoulder 3 of the diagram barrel correspondingly made which will effect the same purpose as the pins 3 and 4.

I do not wish to confine myself to the specific devices heretofore described, as I have claimed broadly any hand device which is

connected immediately with the diagram barrel for the purpose set forth. For example, a hand lever, as shown at 26, may be rigidly connected to and project from the base of the barrel without departing from the spirit of my invention.

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

10 1. In a steam-engine indicator, the combination with the diagram-barrel, of an independent hand-device in immediate communication therewith, for rotating or arresting the rotation of the same, substantially as set  
15 forth.

2. In a steam-engine indicator, the combination with the diagram-barrel of a hand-device in immediate communication therewith, for rotating said barrel, and a clutch-mechanism adapted for automatic disengagement, substantially as set forth. 20

3. In a steam engine indicator, the combination with the diagram barrel provided with the pin 3 and the thumb piece 1, provided with the pin 4, substantially as and for the purpose specified. 25

WILLIAM HOUGHTALING.

Witnesses:

MARTIN LUSCOMB,  
N. P. FLYNN.