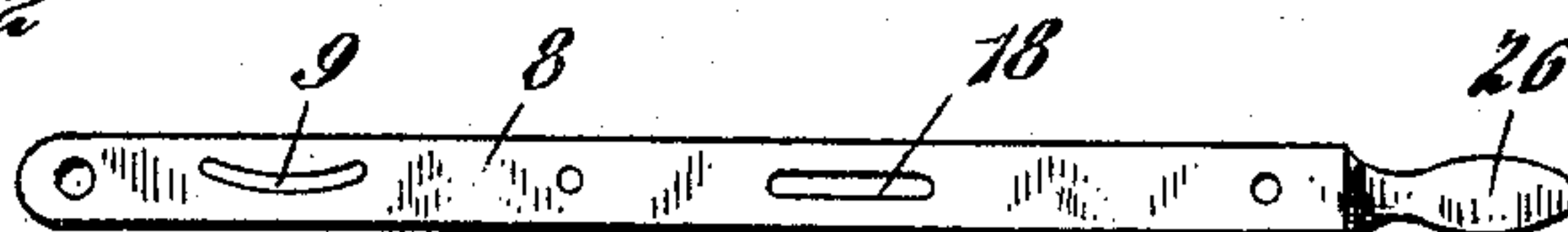
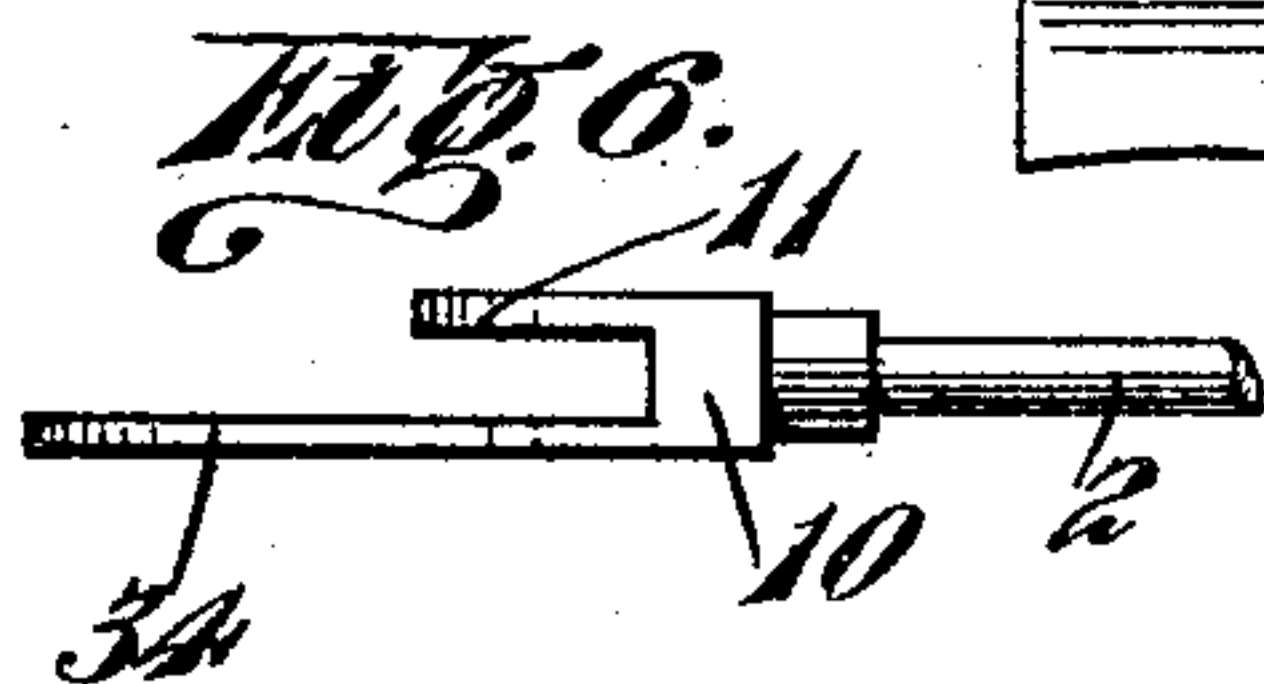
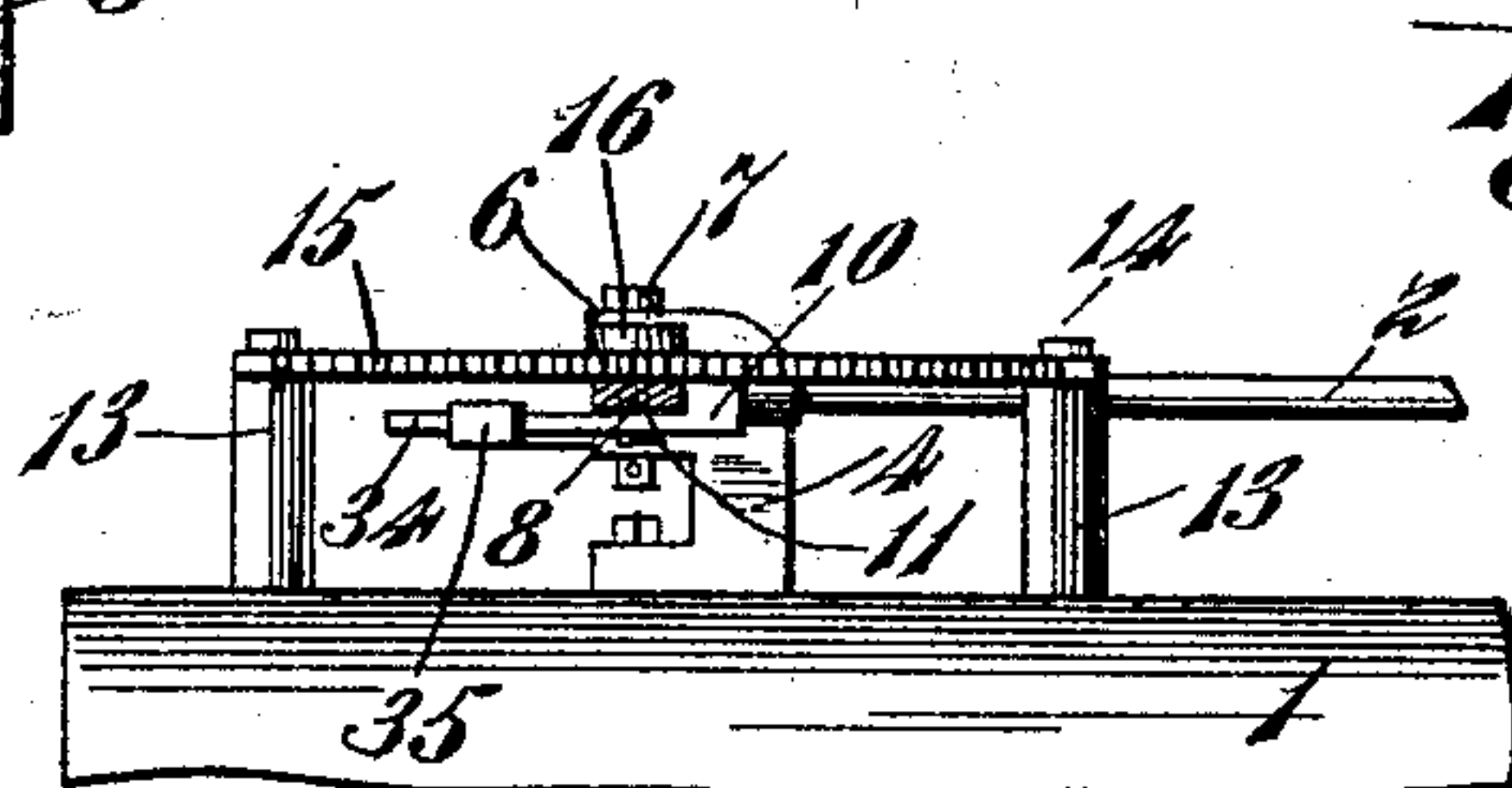
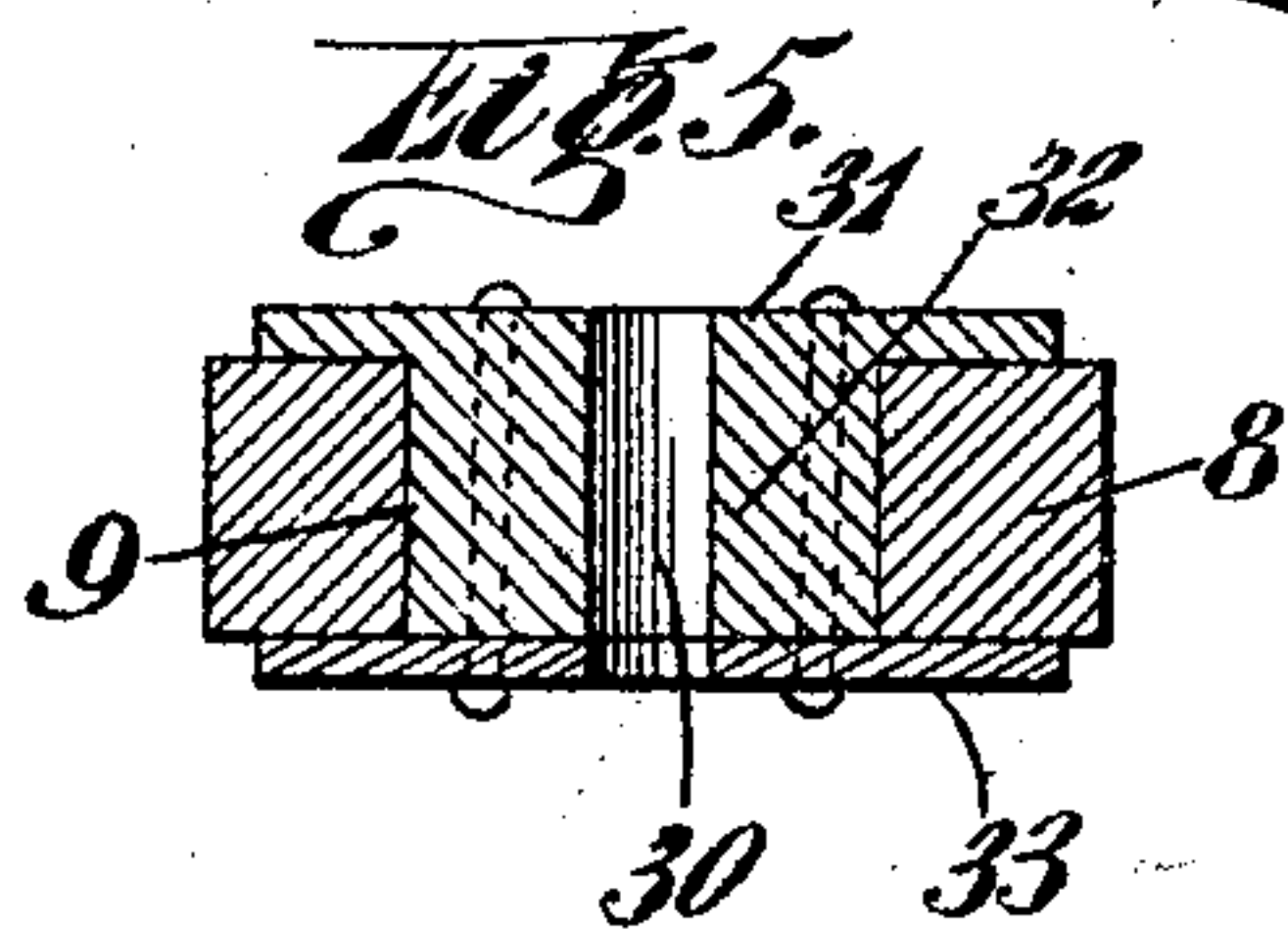
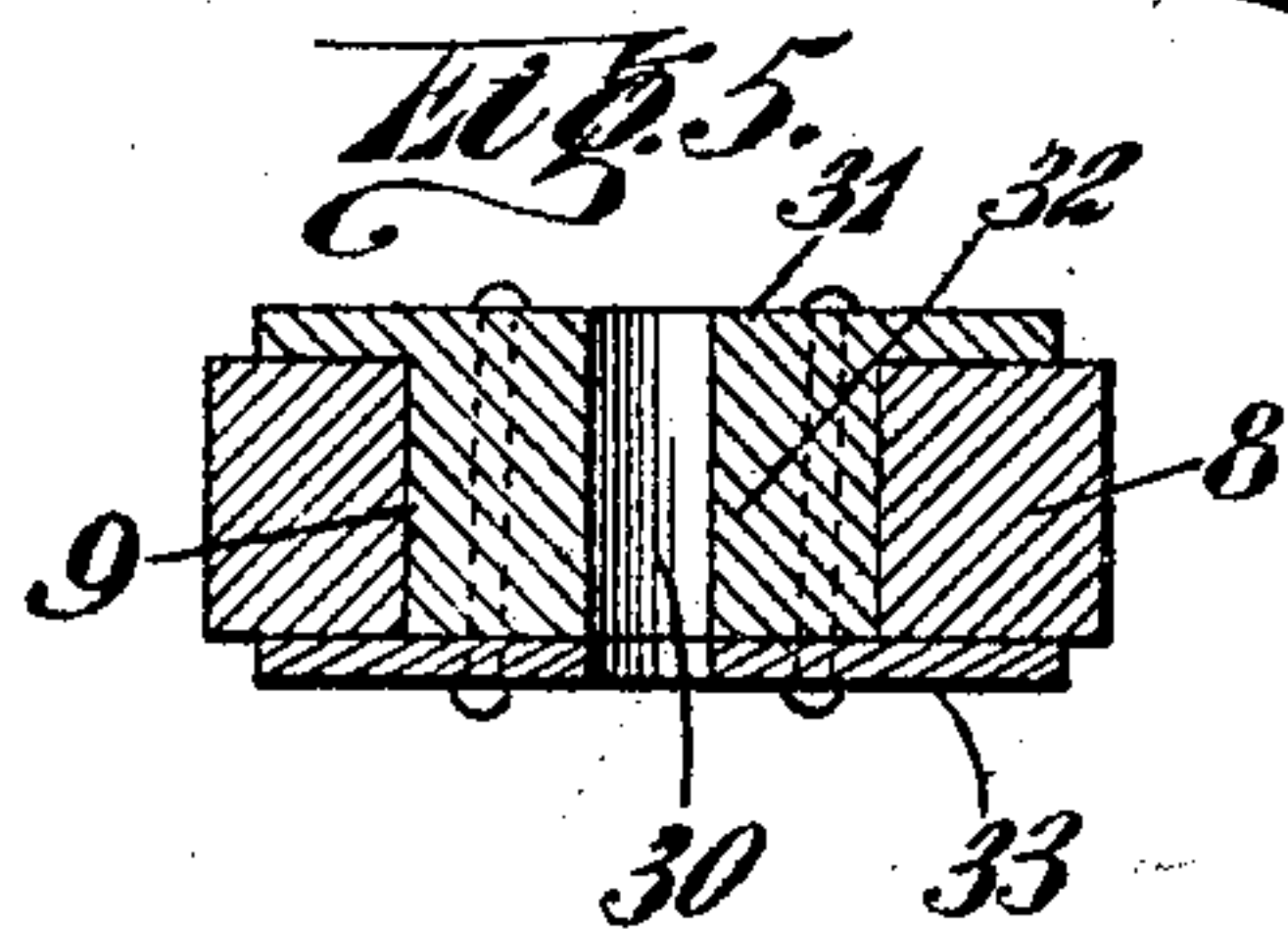
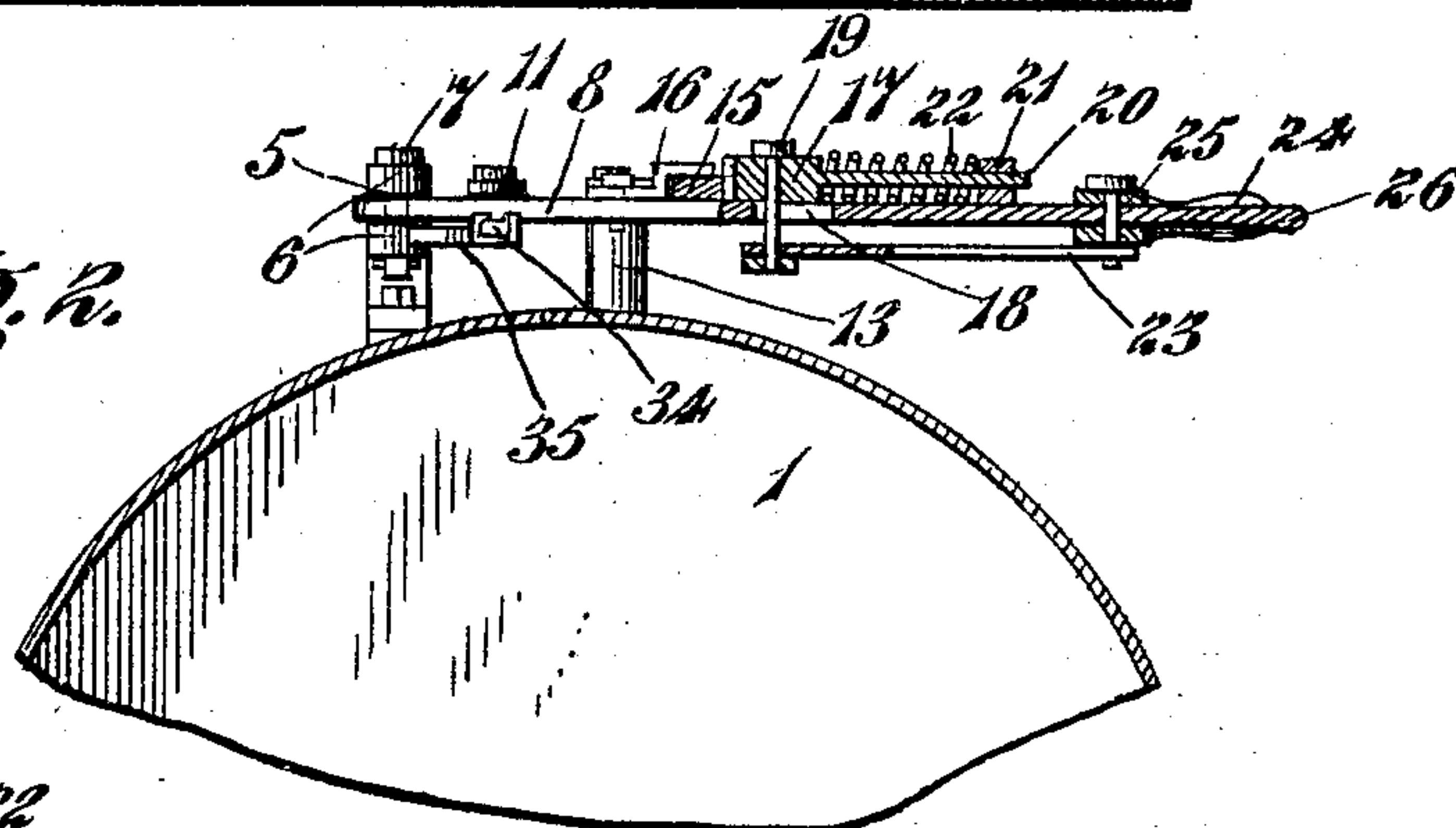
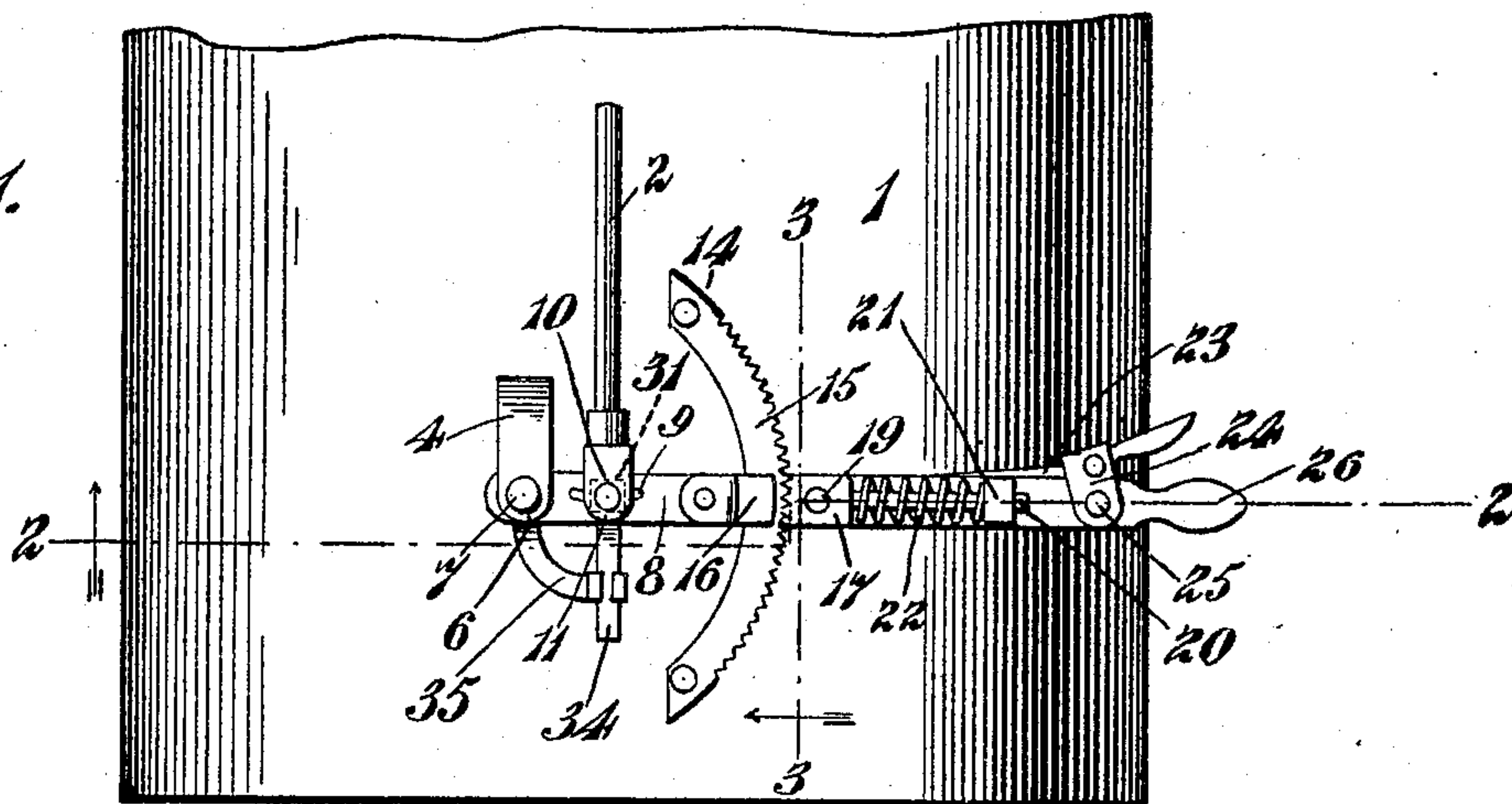


No. 795,685.

PATENTED JULY 25, 1905.

E. S. BURTLESS.  
LOCOMOTIVE THROTTLE VALVE.  
APPLICATION FILED DEC. 22, 1904.



## Witnesses

Eugene W. Pliny.  
C. H. Griesbauer.

*Fig. 4.*

Inventor

Edward S. Burtless.

by

A. Brilsson  
Attorney



# UNITED STATES PATENT OFFICE.

EDWARD S. BURTLESS, OF ROANOKE, VIRGINIA.

## LOCOMOTIVE THROTTLE-VALVE.

No. 795,685.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed December 22, 1904. Serial No. 237,997.

*To all whom it may concern:*

Be it known that I, EDWARD S. BURTLESS, a citizen of the United States, residing at Roanoke, in the county of Roanoke and State of Virginia, have invented certain new and useful Improvements in Locomotive Throttle-Valves; and I do 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 improvements in devices for operating the throttle-valves of locomotives; and it consists of certain novel features of construction, combination, and arrangement of parts hereinafter fully described and claimed.

The object of my invention is to effect improvements in the mounting and connection of the operating-lever of the throttle-valve, whereby the valve may be quickly and accurately adjusted and secured or locked in such adjusted position.

In the accompanying drawings, Figure 1 is a plan view of a throttle-valve-operating mechanism constructed and mounted in accordance with my invention. Fig. 2 is a longitudinal sectional view taken on the line 2 2 in Fig. 1. Fig. 3 is a transverse sectional view taken on the line 3 3 in Fig. 1. Fig. 4 is a detail view of the operating-lever. Fig. 5 is a detail sectional view through the operating-lever, showing the sliding block mounted therein; and Fig. 6 is a detail view of the connection upon the outer end of the throttle-valve stem.

In the present embodiment of my invention, which is shown applied to a locomotive of the wagon-top boiler type, the numeral 1 denotes a portion of the top of the boiler, and 2 the throttle-valve stem, which extends into the cab over the top of the boiler. Secured upon the boiler 1 by screws or bolts is a stationary bracket 4, which is provided with a recessed portion 5, forming arms 6. Between said arms upon a pivot-bolt 7 is mounted an operating-lever 8. This pivot-bolt 7 passes through aligned openings in the arms 6 and in the inner end of the lever 8, so that the latter is pivotally mounted upon a stationary support. Formed in said lever 8 adjacent to its pivoted end is a longitudinally-disposed curved slot or opening 9, in which is loosely pivoted the outer end of the throttle-valve stem 2. This mounting is preferably effected by providing upon said end of the valve-stem a con-

nection 10, which has a bifurcated outer end 11, adapted to engage said lever, and by passing the pivot bolt or screw through said end 11 and an opening 30, formed in a block 31, which is slidably mounted in said slot 9. As seen in Fig. 5, said block 31 comprises a flanged body portion 32 and plate 33, which are riveted or otherwise secured together. By mounting the lever in this manner it will be seen that when the same is operated the valve-stem 2 will be permitted to move into and out of the casing in a direct line with its axis. In order to further guide the stem 2, its connection 10 is formed with an extended portion or arm 34, which slides in a guide 35, formed or secured upon the bracket 4, as shown.

In order to lock the lever at any desired point, and thus hold the valve in any adjusted position, I provide upon the boiler 1 two supports or brackets 13, upon which is removably secured, as shown at 14, a quadrant or segmental rack-bar 15, the arc or curvature of which is concentric with the pivot of the operating-lever 8. The latter extends beneath this rack-bar and is supported from the same by an angular guide-arm or bracket 16, which is secured upon said lever and engages the inner edge of said rack-bar, as shown. Upon the outer free portion of the lever 8 and coacting with the rack-teeth of the bar 15 is a pawl 17. This pawl is slidably mounted upon the lever by passing through it and through a longitudinally-disposed slot 18, formed in said lever, a guide-bolt 19 and by passing the reduced outer end 20 of said pawl through an opening formed in a guide-block 21, which is secured upon said lever. The pawl is held normally in engagement with the rack in order to lock the lever thereto by means of a coil-spring 22, which surrounds said reduced portion 20 of the pawl between its lower end and the guide-block 21. The pawl may be disengaged from the rack-bar when it is desired to operate the lever by pivotally connecting a link 23 to one end of the bolt 19 and to a handpiece 24, which is in the form of a bell-crank pivotally mounted, as at 25, upon the lever 8 adjacent to its extreme outer end or handle 26. It will be seen that when the handpiece 24 is forced inwardly toward the handle 26 the pawl 17 will be disengaged from the rack-teeth of the bar 15, so that the lever 8 may be readily operated, and when said handpiece is released the coil-spring 22 will force the pawl into engagement with



the rack-bar to lock the lever 8, and hence the valve-stem 2, against movement.

In devices of this class now in general use the operating-lever is loosely pivoted—that is, pivoted by means of a link—so that even after the pawl is engaged with the segmental rack for the purpose of locking the lever and valve there is a slight movement of the lever, and hence of the valve-stem, because of the loose pivotal connection of the lever. This is objectionable in that it is difficult to adjust the valve accurately, so that the desired amount of steam is permitted to pass therethrough, the shifting of the valve after the locking of the lever causing the uncertainty of the adjustment. My invention overcomes this objection. When the lever 8 is once locked, it will be impossible for the parts to shift and vary the opening or closing of the throttle-valve.

While I have shown my invention as applied to a locomotive of the wagon-top boiler type, it will be understood that the same may be applied to locomotives of any other form.

Various changes in the form, proportion, and the minor details of construction may be

resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

The combination with a longitudinally-movable valve-stem, of a connection attached thereto and bifurcated to form a pair of spaced arms, a guide element engaged by one of said arms, a pivoted lever having a fixed pivot, extending between the said arms, and having a slot between said arms, a pivot connecting said arms and working in said slots, a segment-rack, and a spring-pressed detent carried by said lever to engage said segment-rack to lock the lever and the valve-stem in adjustable position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD S. BURTLESS.

Witnesses:

JOHN G. CHALLICE,  
LAWRENCE S. DAVIS.