F. E. RUSSELL.

THROTTLE LEVER MECHANISM.

APPLICATION FILED SEPT. 9, 1915.

1,166,787.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

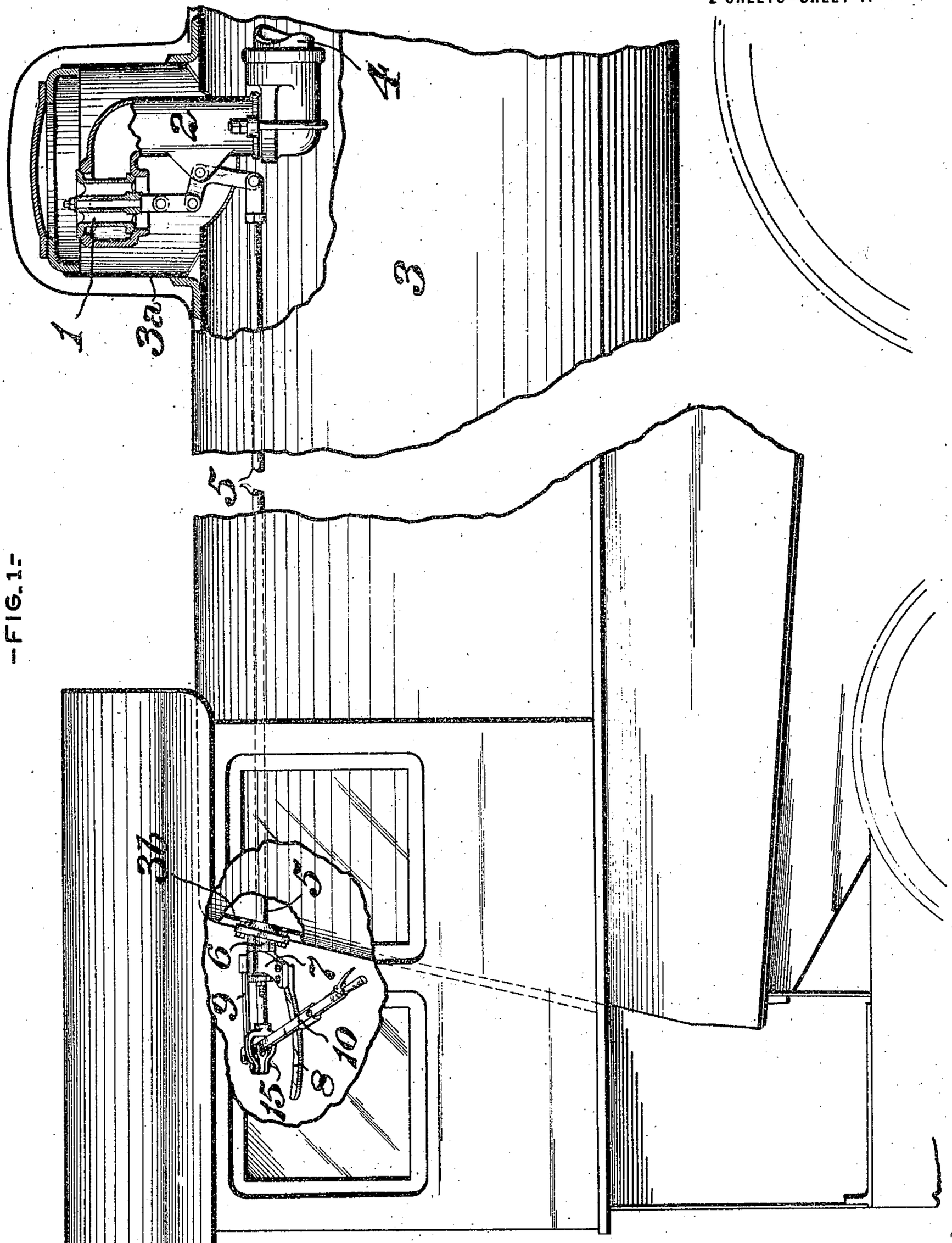

FIG. 1.

WITNESSES

Edward A. Wright

S. R. Bell.

INVENTOR

Frank E. Russell.

by J. Lowndes Bell.

Atty

F. E. RUSSELL.

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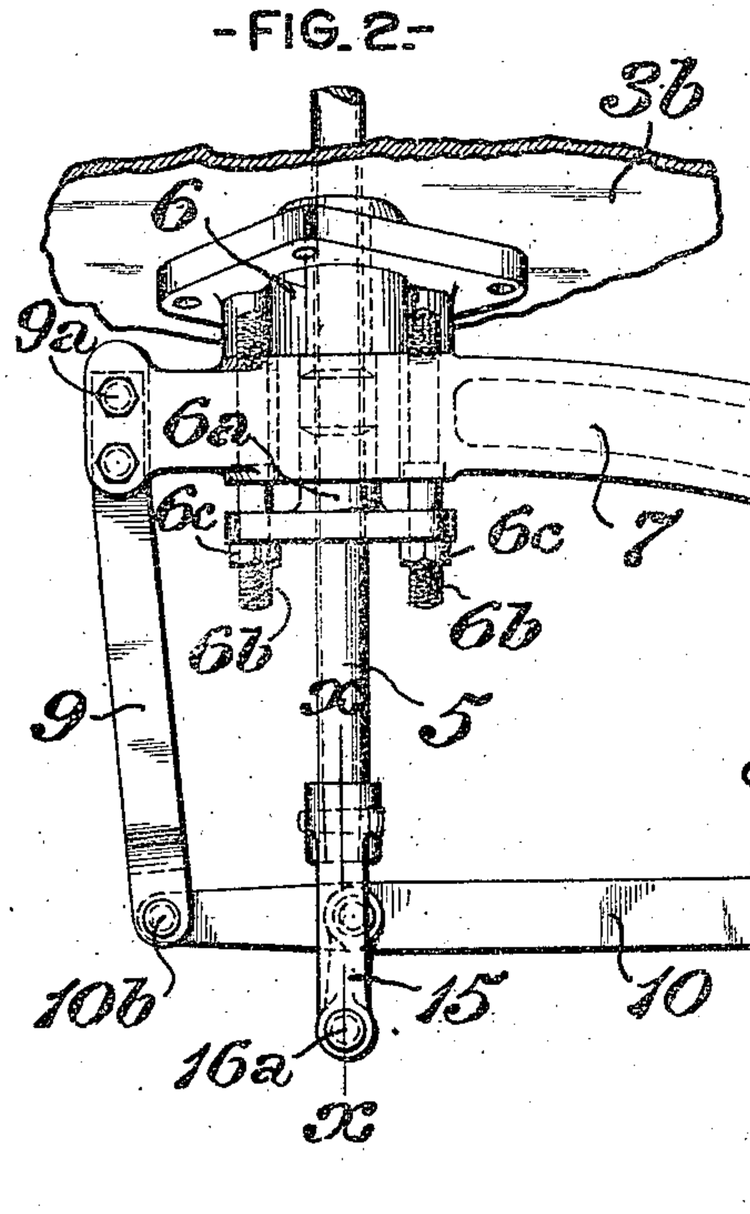
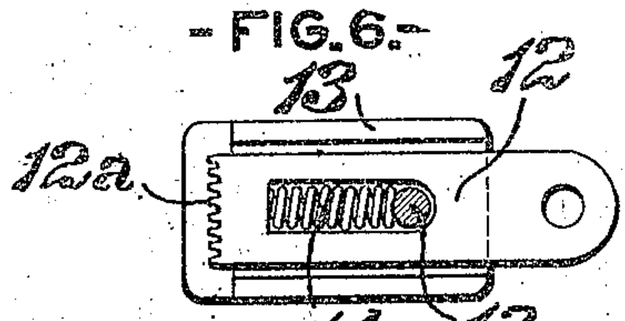
2 SHEETS—SHEET 2.

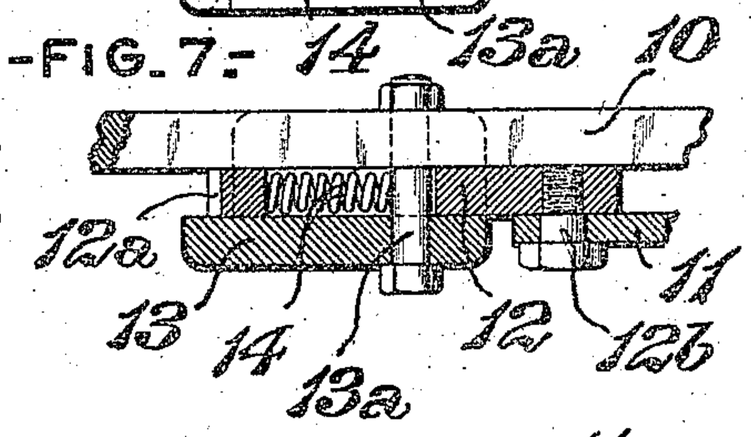
-FIG. 2.-



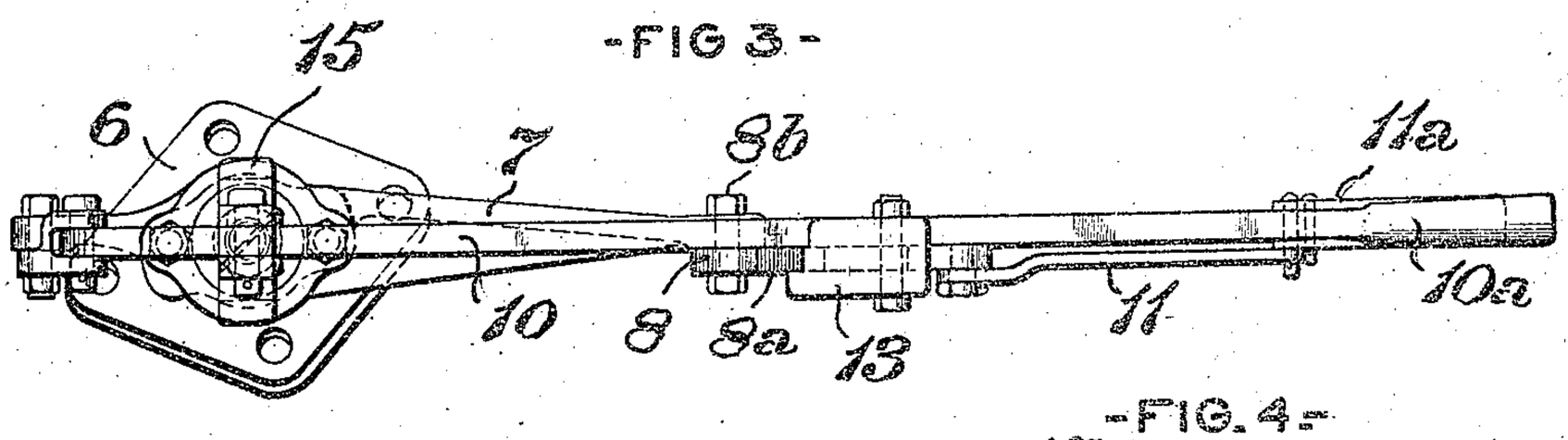
-FIG. 6.-



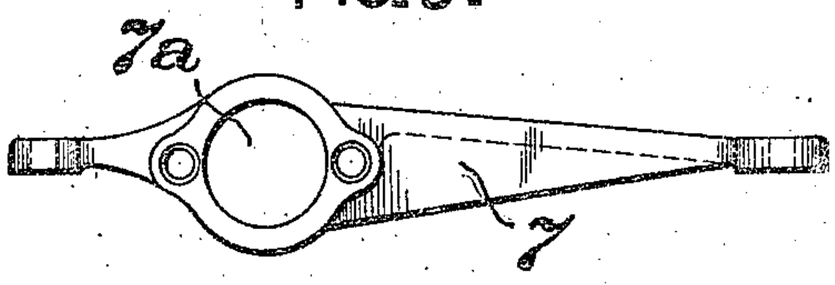
-FIG. 7.-



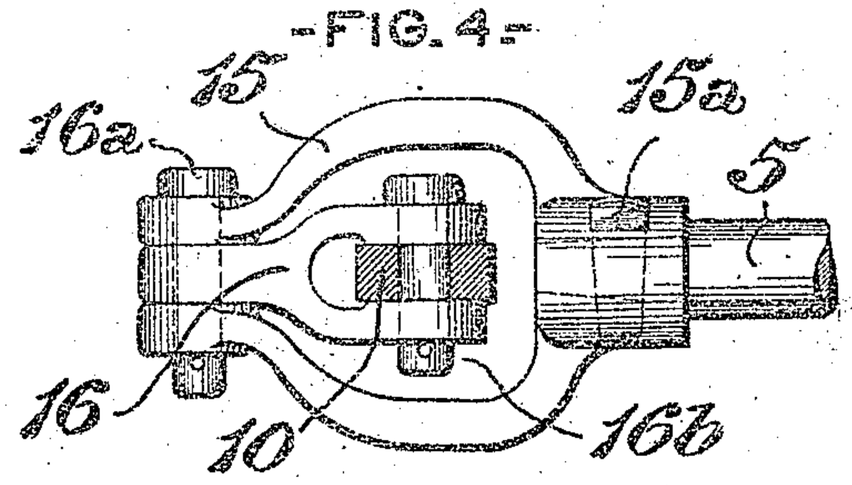
-FIG 3.-



-FIG. 5.-



-FIG. 4.-



WITNESSES

Edward A. Wright.

S. R. Bell.

INVENTOR

Frank E. Russell.

by Lawrence Bell, atty.

UNITED STATES PATENT OFFICE.

FRANK E. RUSSELL, OF ALAMEDA, CALIFORNIA.

THROTTLE-LEVER MECHANISM.

1,166,787 Specification of Letters Patent. **Patented Jan. 4, 1916.**

Application filed September 9, 1915. Serial No. 49,793.

To all whom it may concern:

Be it known that I, FRANK E. RUSSELL, of Alameda, in the county of Alameda and State of California, have invented a certain new and useful Improvement in Throttle-Lever Mechanism, of which improvement the following is a specification.

The object of my invention is to provide means whereby the accurate and positive graduation of a throttle valve may be effected; the objectionable results of imperfective latching of the throttle lever be prevented; and proper alinement of the working parts of the valve operating mechanism, with elimination of unnecessary friction, be insured.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a side view, partly in section, of the rear portion of a locomotive engine, illustrating an application of my invention; Fig. 2, a plan or top view of the throttle lever and its connections; Fig. 3, a rear view of the same; Fig. 4, a view, partly in elevation, and partly in section, on the line $x\ x$ of Fig. 2, and on an enlarged scale, showing the details of the connection between the throttle lever and the throttle stem; Fig. 5, a rear view of the stuffing box yoke; Fig. 6, a plan view, on an enlarged scale, of the latch and guide; and, Fig. 7, a horizontal section through the same.

Referring to the drawings, my invention is herein exemplified as applied for the operation of a balanced puppet throttle valve, 1, which is seated, in the ordinary manner, at the top of a vertical throttle pipe, 2, which is supported in the dome, 3^a, of a locomotive boiler, and communicates, at its bottom, with the dry pipe or main supply pipe, 4, the throttle valve controlling, as usual, communication between the steam space within the boiler and dome and the interior of the throttle pipe and dry pipe. The throttle valve is coupled to a throttle stem, 5, which extends rearwardly and outwardly through a stuffing box, 6, secured to the rear head, 3^b, of the boiler.

In the practice of my invention, I provide a stuffing box yoke, 7, having a transverse opening, 7^a, which fits around the outer portion of the stuffing box, the yoke abutting against the inner portion thereof and being secured thereto, transversely to the throttle stem, 5, by the bolts, 6^b, and nuts, 6^c, which compress the gland 6^a, on the packing. A segment, 8, on the outer side of which there is formed a plurality of teeth, 8^a, is secured, by bolts, 8^b, to one end of the yoke, 7, and a fulcrum bar, 9, is secured, by bolts, 9^a, to the opposite end of the yoke. A throttle lever, 10, having a handle, 10^a, on its outer or free end, is pivoted, at its opposite end, to the fulcrum bar, by a pin, 10^b. A latch lever, 11, having a handle, 11^a, is coupled to the throttle lever by a link, 11^b, the connection of the two levers being made so that their handles adjoin each other and can be coincidently grasped by the engineman. A latch, 12, having a plurality of teeth, 12^a, on one of its ends, adapted to engage the teeth of the segment, 8, is connected, by a pin, 12^b, to the inner end of the latch lever, 11, and is fitted to slide between the throttle lever, 10, and a latch guide, 13, secured to the throttle lever by a bolt, 13^a. The latch is normally, or except when released by movement of the latch lever, held in engagement with the segment, by a spring, 14, fitted in a longitudinal slot in the latch, and abutting against the bolt, 13^a. The latch guide serves also as a guide or keeper for the throttle lever and prevents it from being thrown or lifted out of position.

A substantially U-shaped throttle lever yoke, 15, is secured to the outer end of the throttle stem, 5, by a key, 15^a, and the throttle lever, 10, is coupled to the opposite end of the yoke through the intermediation of a link, 16, one end of which is pivoted to the yoke, by a pin, 16^a, and the other to the throttle lever, by a pin, 16^b. This construction converts the curved movement of the throttle lever into rectilineal movement of the throttle stem, eliminating unnecessary movement of the latter, and relieving strain upon the packing of the stuffing box, which needs to be only sufficiently tight to maintain a steam tight joint around the stem.

The throttle lever may be adjusted to any desired height or angle, by changing the location of the stuffing box bolts, and in the event of repairs being required, it is only necessary to remove said bolts and the key by which the throttle lever yoke is secured to the throttle stem, upon which the entire throttle lever mechanism may be detached. If it is required to continue the locomotive in service while repairs to the throttle lever

mechanism are being made, a spare mechanism may be substituted and delay correspondingly avoided.

Among the advantages which have been developed in practical service by my invention, there may be noted the capacity of accurate and positive graduation of the throttle valve to within one tenth of valve lift, and the elimination of the floating action of the throttle lever which has been experienced with prior constructions, rendering it unnecessary for the engineman to use a stick, wrench, or other device for holding the throttle valve in any desired position. Further, cramping action of the throttle stem in the stuffing box is eliminated, by which the life of the packing is increased, and the throttle valve is rendered more easily operable. The connection of the throttle lever segment and its fulcrum by the stuffing box yoke insures proper alinement of the working parts and eliminates unnecessary friction, and enables all parts to be assembled in the machine shop, reducing to the minimum the work in the erecting shop or round house. Adjustment of the throttle lever to desired height is permitted without involving change of detail parts.

I claim as my invention and desire to secure by Letters Patent:

1. In a throttle lever mechanism, the combination of a longitudinally movable throttle stem, a fixed yoke extending transversely thereto, a fulcrum bar secured to one end of said yoke, a segment secured to the opposite end of said yoke, and a throttle lever pivoted to the fulcrum bar and working over the segment.

2. In a throttle lever mechanism, the combination of a longitudinally movable throttle stem, a stuffing box surrounding said stem, a yoke detachably secured to said stuffing box and extending transversely to said stem, a fulcrum bar secured to one end of said yoke, a segment secured to the opposite end of said yoke, and a throttle lever pivoted to the fulcrum bar and working over the segment.

3. In a throttle lever mechanism, the combination of a longitudinally movable throttle stem, a stuffing box surrounding said stem, a gland fitting in the stuffing box, bolts connecting said gland to the stuffing box, a yoke detachably connected to said bolts and extending transversely to the throttle stem, a fulcrum bar secured to one end of said yoke, a segment secured to the opposite end of said yoke, and a throttle lever pivoted to the fulcrum bar and working over the segment.

4. In a throttle lever mechanism, the combination of a longitudinally movable throttle stem, a stuffing box surrounding said stem, a yoke fitting around the stuffing box and extending transversely to the stem, a segment fixed to one end of the yoke, and a throttle lever coupled to the opposite end of the yoke and to the throttle stem.

5. In a throttle lever mechanism, the combination of a longitudinally movable throttle stem, a fixed yoke extending transversely thereto, a fulcrum bar secured to one end of said yoke, a segment secured to the opposite end of said yoke, a throttle lever pivoted to the fulcrum bar and working over the segment, a yoke fixed to the throttle stem, and a link coupled to said yoke and to the throttle stem.

6. In a throttle lever mechanism, the combination of a longitudinally movable throttle stem, a fixed yoke extending transversely thereto, a fulcrum-bar secured to one end of said yoke, a segment secured to the opposite end of said yoke, a throttle lever pivoted to the fulcrum bar and working over the segment, a latch guide secured to the throttle lever and fitting on the side of the segment opposite the throttle lever, a spring latch adapted to traverse between the throttle lever and guide, and a latch lever coupled to said latch and to the throttle lever.

FRANK E. RUSSELL.

Witnesses:
WINFIELD PROCTOR SMITH,
M. E. CRAMER.

Disclaimer in Letters Patent No. 1,166,787

DISCLAIMER.

1,166,787.—*Frank E. Russell,* Alameda, Cal. THROTTLE-LEVER MECHANISM. Patent dated January 4, 1916. Disclaimer filed July 6, 1916, by the patentee.

Enters this disclaimer to, and disclaims, the entire subject-matter claimed in said Letters Patent.

[*Official Gazette, July 11, 1916.*]