No. 706,833. Patented Aug. 12, 1902.

J. G. LAWLER.

TRAP DOOR FOR CAR PLATFORMS.

(Application filed Mar. 31, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. I.

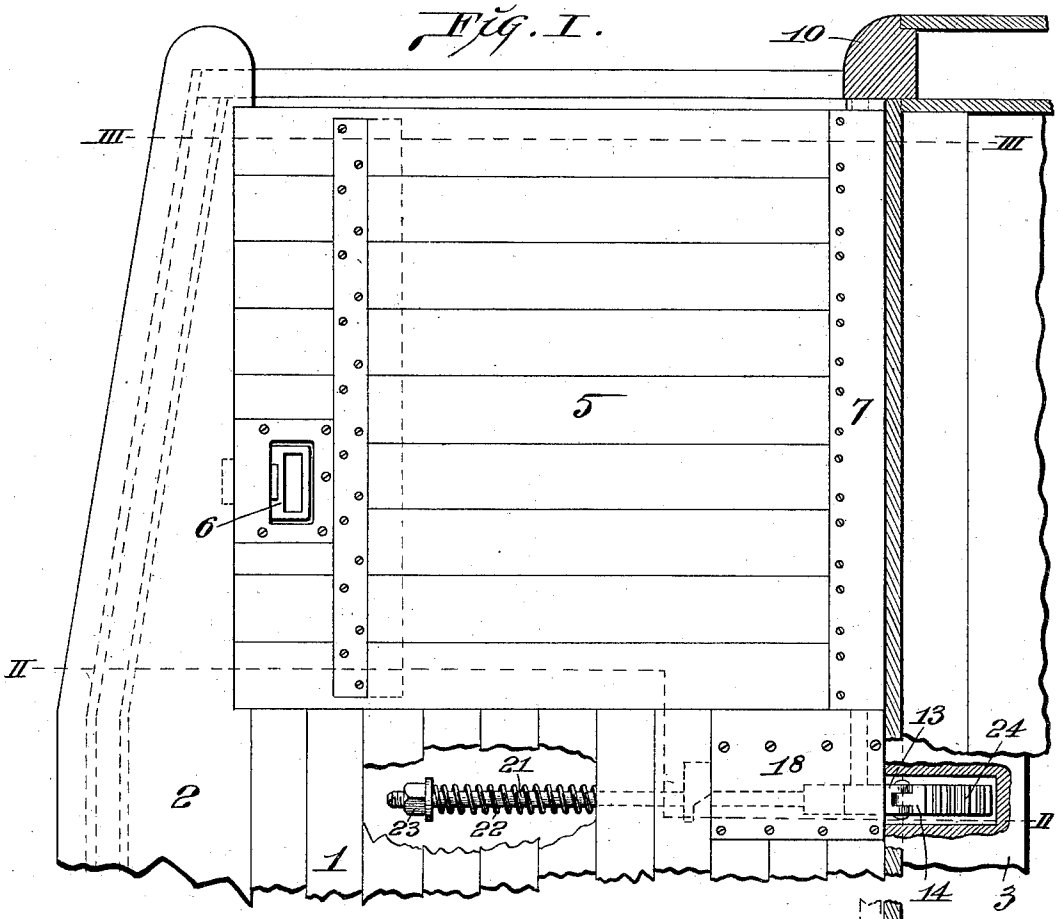


Fig. II.

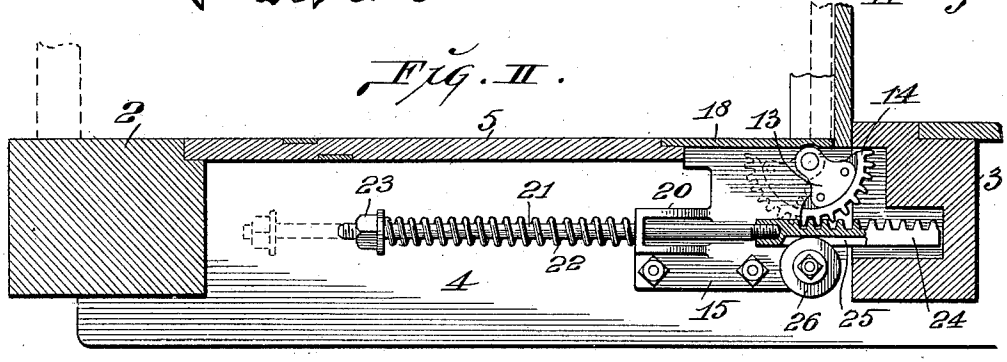
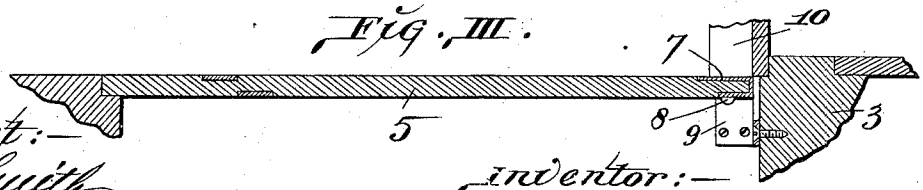


Fig. III.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. IV.

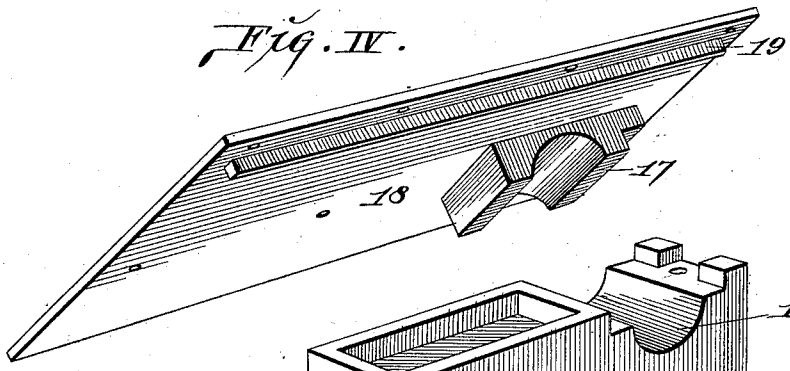


Fig. V.

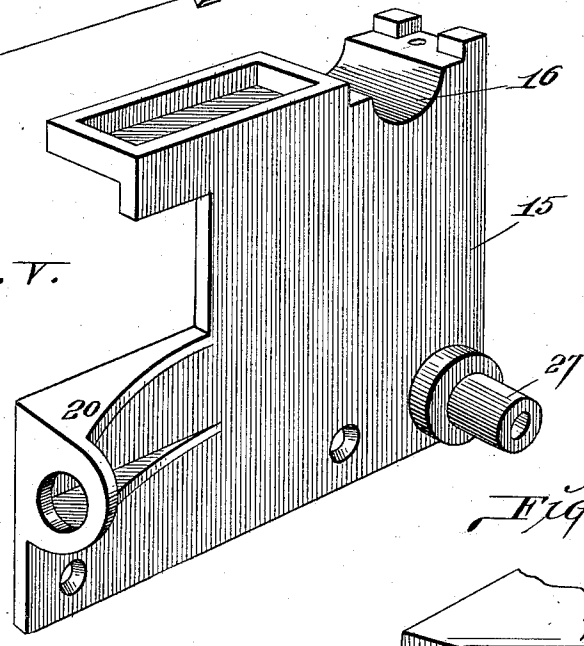


Fig. VII.

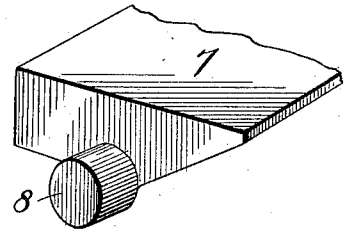


Fig. VI.

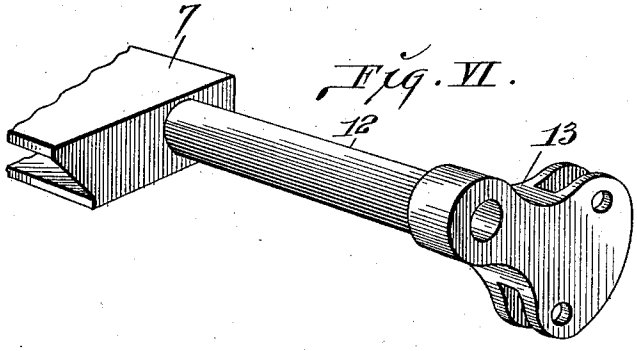
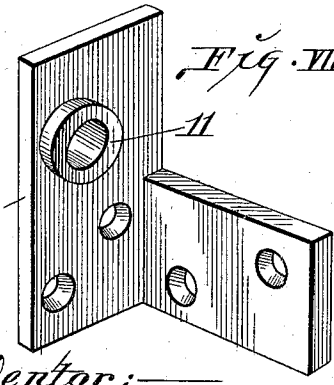


Fig. VIII.



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UNITED STATES PATENT OFFICE.

JAMES G. LAWLER, OF ST. CHARLES, MISSOURI.

TRAP-DOOR FOR CAR-PLATFORMS.

SPECIFICATION forming part of Letters Patent No. 706,833, dated August 12, 1902.

Application filed March 31, 1902. Serial No. 100,659. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. LAWLER, a citizen of the United States, residing in St. Charles, in the county of St. Charles and State of Missouri, have invented certain new and useful Improvements in Trap-Doors for Car-Platforms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of trap-doors used upon the platforms of vestibule railway-cars to cover the steps leading from the platform during the period that the platforms are inclosed to complete the vestibule.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of a car-platform equipped with one of my doors and partially broken out to afford a view of the door-operating mechanism beneath the platform. Fig. II is a vertical longitudinal sectional view taken on line II II, Fig. I. Fig. III is a vertical longitudinal sectional view taken on line III III, Fig. I. Fig. IV is a detail perspective view of the cover-plate which surmounts the bearing-plate that carries the actuating parts of the door. Fig. V is a detail perspective view of the bearing-plate that carries the actuating parts of the door. Fig. VI is a detail perspective view of the segment-carrying shaft of the actuating mechanism. Fig. VII is a detail perspective view of the outer end of the hinge member applied to the door and a trunnion thereon. Fig. VIII is a detail perspective view of the bearing-bracket that receives the hinge-member trunnion shown in Fig. VII.

1 designates the floor of the car-platform; 2, the bumper-beam; 3, the end sill, and 4 one of the platform-timbers of the car.

5 designates a trap-door mounted over the car-steps leading from the floor 1 and adapted to be raised and lowered to uncover or cover said steps. The door is equipped with a latch 6, adapted to engage a keeper secured to the bumper-beam, as seen in Figs. I and III. This hinge member is provided at its outer end with a trunnion 8, that is journaled in a bearing-bracket 9, secured to the corner-post 10 of the car and provided with the aperture 11, that receives said trunnion.

12 is a rock-shaft carried by the hinge member 7 at its inner end. 13 is a forked arm rigidly fitted to said rock-shaft. Mounted in the fork of the arm 13 is a toothed segment 14.

15 designates a bearing-plate mounted upon one side of the platform 4, as seen in Fig. II, the plate being provided with a bearing-socket 16, that receives a mating bearing-socket 17, forming a part of a cover-plate 18, mounted on said bearing-plate and secured to the floor 1. The cover-plate 18 is provided with a rib 19, that is adapted to rest against one side of the bearing-plate 15 to prevent shifting of said cover-plate.

20 is an apertured lug extending from the face of the bearing-plate 15.

21 designates a pull-rod mounted in the apertured lug 20 and surrounded by an expansion-spring 22, positioned between said lug, and a nut and washer 23 at the forward end of said pull-rod. Fixed to the rear end of the pull-rod 21 is a rack 24, the teeth of which receive the mesh of the teeth of the segment 14, that is carried by the rock-shaft 12. In the lower side of the rack 24 is a longitudinal groove 25.

26 is a roller journaled on a stem 27 (see Fig. V) beneath the rack 24 and arranged to fit in the groove 25 in said rack, so that the rack may ride upon said roller and also be limited in its movement thereby in order that the rack may be maintained in gear with the segment 14.

In the practical operation of the trap-door herein described the door when closed is held by the latch 6, so as to cover the steps leading from the platform-floor 1. When the latch is released, the expansion-spring 22 on the pull-rod 21 exerts power upon said pull-rod to lift the door by actuating the parts in the following manner: As the spring 22, previously contracted on the closing of the door, expands upon the freeing of the door the pull-rod is carried forwardly by said spring, and the rack 24 is moved in a corresponding direction. As the rack travels forwardly it rockingly actuates the toothed segment 14, in mesh therewith, with the result that the rock-shaft 12 is rotated in its bearing and the

hinge member 7 is moved with said rock-shaft to occasion the lifting of the trap-door into an upright position, where it is held by the power of the expansion-spring 22 until again lowered into horizontal position and secured by the latch 6.

I claim as my invention—

1. The combination with a trap-door for car-platforms, of a hinge member, a rock-shaft carried by said hinge member, a toothed segment carried by said rock-shaft, a pull-rod, a spring surrounding said pull-rod, and a rack carried by said pull-rod and having engagement with said segment, substantially as described.

2. The combination in a trap-door for car-platforms, of a hinge member, a rock-shaft carried by said hinge member, a toothed segment carried by said rock-shaft, a pull-rod, a spring mounted on said pull-rod, a grooved rack carried by said pull-rod, and adapted for engagement with said segment, and a roller mounted beneath said rack adapted to enter the groove in said rack, substantially as and for the purpose set forth.

3. The combination with a trap-door for car-platforms, of a hinge member, a rock-shaft carried by said hinge member, a segment carried by said rock-shaft, a bearing-plate in which said rock-shaft is mounted, a pull-rod mounted in said bearing-plate, a longitudinally-grooved rack carried by said pull-rod and arranged to engage said segment, and a roller mounted upon said bearing-plate beneath said rack and adapted to rotate in the groove in said rack, substantially as and for the purpose set forth.

JAMES G. LAWLER.

In presence of—
E. S. KNIGHT,
M. P. SMITH.