

No. 778,513.

PATENTED DEC. 27, 1904.

H. TESSEYMAN.
AUTOMATIC LIFTING DEVICE FOR TRAP DOORS.
APPLICATION FILED OCT. 24, 1904.

Fig. 1.

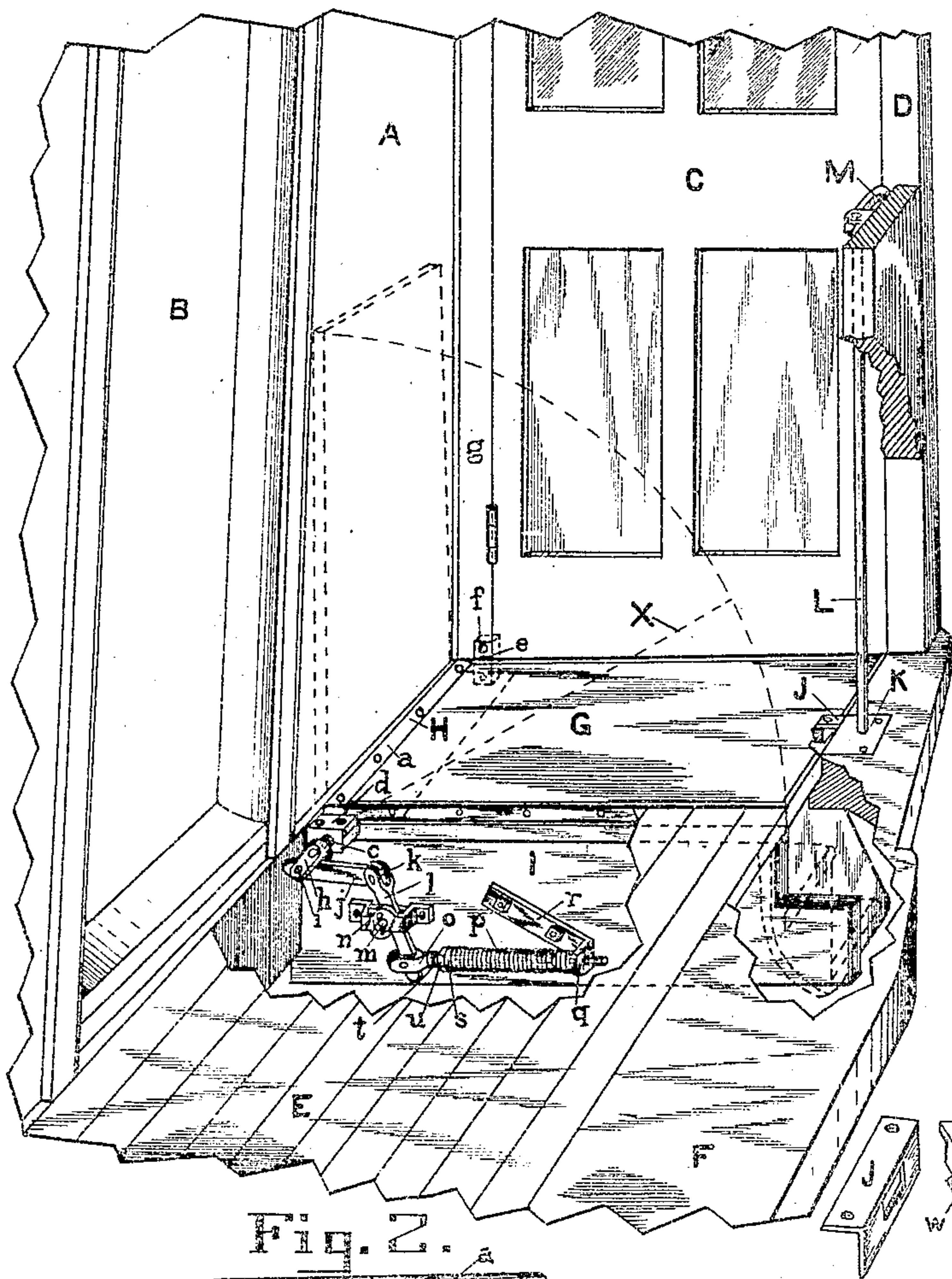


Fig. 4.

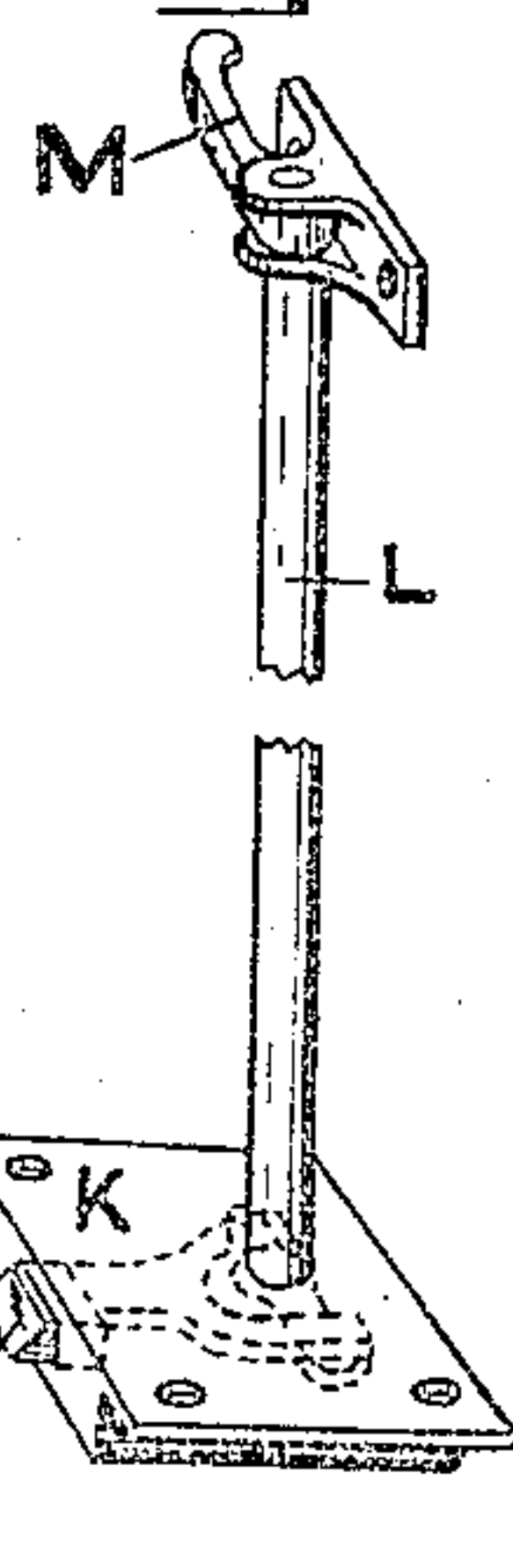


Fig. 2.

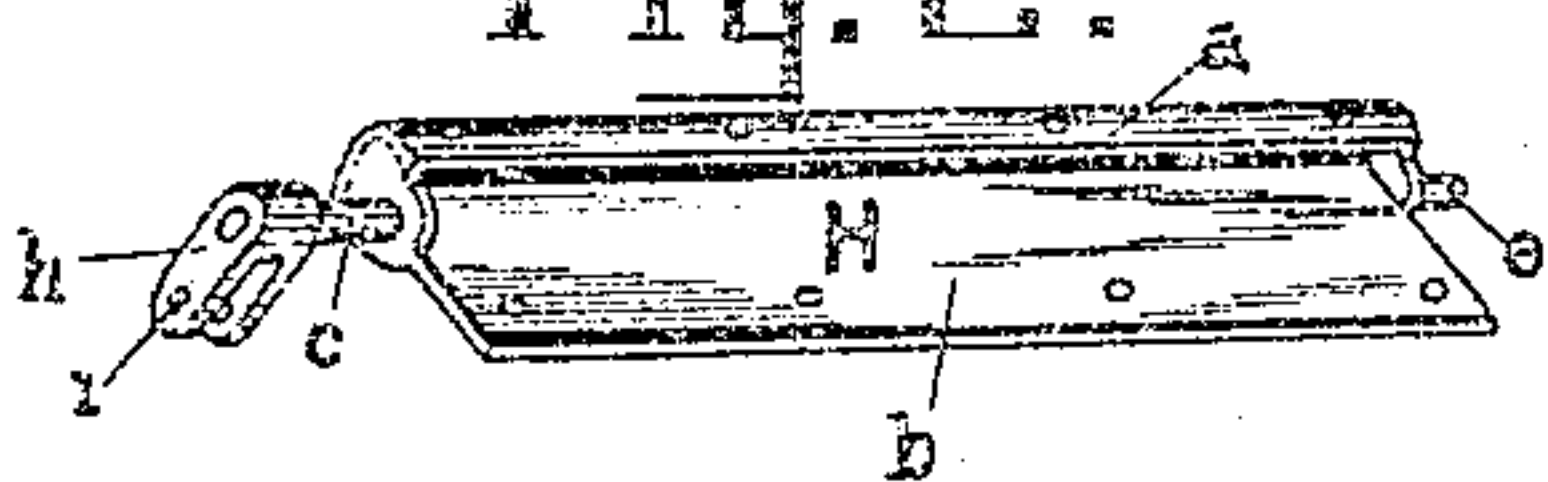
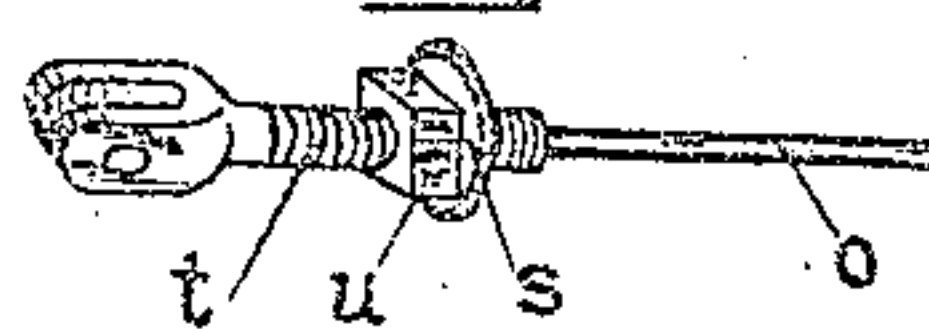


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC LIFTING DEVICE FOR TRAP-DOORS.

SPECIFICATION forming part of Letters Patent No. 778,513, dated December 27, 1904.

Application filed October 24, 1904. Serial No. 229,818.

To all whom it may concern:

Be it known that I, HENRY TESSEYMAN, a citizen of the United States, and a resident of the city of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Automatic Lifting Devices for Trap-Doors; and I do hereby 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, as forming a part of this specification.

My invention relates to trap-doors for vestibule-cars, and more particularly to a device for automatically lifting the same.

In the construction of modern passenger and sleeping cars it is customary to extend the vestibules at the ends thereof to the full width of the car, so as to provide a wider and more commodious vestibule-space when the side doors are closed and which is accomplished in part by means of trap-doors arranged to close down over the steps and form floors for the spaces occupied thereby between the sides of the car and the center platform. It is desirable as a matter of convenience and for the saving of time that the trap-doors be provided with means for automatically raising them from a horizontal to a vertical position when released from their fastenings or to an inclined position, so that they can more readily be thrown back to a vertical position against the end of the car-body; and my invention has for its object to provide a simple, efficient, and inexpensive device for the purpose.

The invention consists in substantially the combinations and arrangement of parts shown in the accompanying drawings and which will be hereinafter fully described and claimed at the end of this specification.

In the said drawings, Figure 1 is a perspective view of a portion of one end of a railway-car equipped with a vestibule and showing my improvement applied thereto. Fig. 2 is a perspective view of the trap-door-hinge casting detached. Fig. 3 is a detached view

of the guide-rod and spring-adjusting nut, and Fig. 4 is a perspective view of the fastening mechanism.

Similar reference-letters indicate corresponding parts in the several figures of the said drawings.

A represents the end of the car-body; B, the end-door opening; C, one of the side or vestibule doors; D, one of the end posts; E, the platform, and F the nose-piece of the platform.

G represents a trap-door filling the space over the steps at one side of the car, thereby forming a floor flush with the platform and which when repeated at the opposite side of the car forms a continuous platform from one of the side or vestibule doors to the other across the end of the car. One end of the trap-door is preferably mounted in a casting H, having over and under lapping portions *a b*, to which the door is secured by screws or bolts, one end of the casting H being provided with a journal *c*, which operates in a bearing *d*, secured to a step-timber I or other suitable support, and the opposite end having a journal *e*, which operates in a bearing *f*, secured, preferably, to the end post *g* of the car-body, and thus the door, through the medium of the journals *c* and *e* and their respective bearings, forms a hinged portion of the platform which is adapted to be swung from the horizontal position shown in solid lines to an upright or vertical position, as shown in dotted lines in Fig. 1, and vice versa.

The free end of the journal *e* is provided with an angle-arm *h*, to which is pivoted at one end of a connecting-link *j*, the opposite end of which is pivotally connected at *k* with one end of a fulcrum-lever *l*, which is in pivotal connection at *m* with a fulcrum-bracket *n*, secured to the step-timber I. To the lower end of the lever-arm *l* there is pivotally connected a guide-rod *o*, surrounded by a coiled spring *p* and operative through an angle portion *q* of a guide-bracket *r*, secured to the step-timber I, one end of the said spring bearing against the angle portion *q* of the guide-bracket *r* and the opposite end bearing against a loose washer *s*, mounted on an enlarged

screw-threaded portion *t* of the said guide-rod and adapted to be set forward or backward on the rod by means of a correspondingly-screw-threaded nut *u* for the purpose of adjusting
5 the tension on the spring.

To the free end of the trap-door there is applied a keeper *J*, adapted to engage a latch *w*, operative in a casing *K*, secured to the said nose-piece and adapted to be released from
10 engagement with said keeper by means of a vertical rod *L*, operated by a lever *M*. As the fastening mechanism, however, constitutes no part of my invention, it will be unnecessary for me to more fully describe it,
15 particularly so as any suitable device for holding the trap-door down to its place may be employed.

The operation of the device is as follows: When the trap-door is down, the spring *p* is
20 compressed between the angle portion *q* of the guide-bracket and the loose washer *s*, and when released from its fastening the pressure of the spring forces the guide-rod and its connecting mechanism into operation, thus rotating
25 the journals *c* and *e* in their bearings and raising the trap-door, the several movable parts being preferably so proportioned as to require a movement of the guide-rod of from one and one-half to one and three-quarter
30 inches in raising the trap-door from a horizontal to a vertical position. I do not, however, wish to limit my invention to such complete movement, as it is obvious that the device can be arranged to cause but a partial
35 elevation of the trap-door, as exemplified by the dotted line marked *X* in Fig. 1, and the movement thereof completed by other means, and while the device so arranged would not be as efficient and satisfactory as the complete
40 automatic movement which I have described, yet it would contribute materially to convenience in manipulating the trap-doors. It is also obvious that the structural details of the device may be modified in other respects without
45 departing from the spirit of my invention, and I do not, therefore, limit the invention to the exact construction which I have shown and described.

Having thus fully described my invention,
50 I claim—

1. The combination with a railway-car, of a trap-door having journals mounted in suitable bearings, an angle-arm on one of said journals, a fulcrum-bracket secured to a suitable support, a fulcrum-lever mounted in said bracket,
55 a link pivotally connecting one end of said fulcrum-lever with said angle-arm, a spring-retracting guide-rod having one end in pivotal connection with the opposite end of said
60 fulcrum-lever, and a guide for the opposite end of said guide-rod whereby the trap-door will be automatically elevated when released from its fastenings, substantially as set forth.

2. The combination with a railway-car, of a
65 trap-door having journals mounted in suitable

bearings, an angle-arm on one of said journals, a fulcrum-bracket secured to a suitable support, a fulcrum-lever mounted in said bracket, a link pivotally connecting one end of said fulcrum-lever with said angle-arm, a guide, a
70 guide-rod operative in said guide, and a coiled spring surrounding the said guide-rod and adapted to elevate the trap-door when the same is released from its fastenings, substantially as set forth.

3. The combination with the platform of a railway-car, of a hinged door forming a portion thereof, a fulcrum-bracket secured to a suitable support, a fulcrum-lever mounted in said bracket, a spring-retracting guide-rod
80 having one end in pivotal connection with one end of said fulcrum-lever, a guide for the opposite end of said guide-rod, a link one end of which is in pivotal connection with the opposite end of said fulcrum-lever and means for
85 operatively connecting the opposite end of said link with said door, whereby upon releasing the fastening for same the door will be automatically elevated, substantially as set forth.

4. The combination with the platform and step-timber of a railway-car, of a trap-door hinged upon journals mounted in bearings fixed to suitable supports, a fulcrum-bracket and a guide secured to said step-timber, an
90 arm on one of said journals, a link pivotally connecting said arm with one end of said fulcrum-lever, a guide-rod one end of which is in pivotal connection with the opposite end of said fulcrum-lever and the opposite end of
95 which is operative in said guide, and a coiled spring surrounding the guide-rod and adapted to elevate the said trap-door when released from its fastenings, substantially as set forth.

5. The combination with the platform of a railway-car, of a trap-door hinged adjacent thereto and forming a part thereof, an arm in rigid connection with said door, a fulcrum-bracket and a guide secured to a suitable support, a fulcrum-lever mounted in said bracket,
100 a link pivotally connecting one end of said fulcrum-lever with said arm, a guide-rod one end of which is in pivotal connection with the opposite end of said fulcrum-lever and the opposite end of which is mounted in said guide, a
105 coiled spring surrounding said guide-rod, and means for adjusting the tension on said spring, substantially as set forth.

6. In a trap-door automatic lifting device, the combination with the door *G*, of the arm
110 *h*, link *j*, fulcrum-lever *l*, fulcrum-bracket *n*, guide-rod *o*, guide *q*, and spring *p*, all arranged to operate substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two sub-
115 scribing witnesses.

HENRY TESSEYMAN.

Witnesses:

JNO. I. UNDERWOOD,
E. L. SPENCER.