No. 832,603. PATENTED OCT. 9, 1906.

J. C. FRITTS.

DOOR HOLDER, CHECK, AND CLOSER.

APPLICATION FILED MAR. 7, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

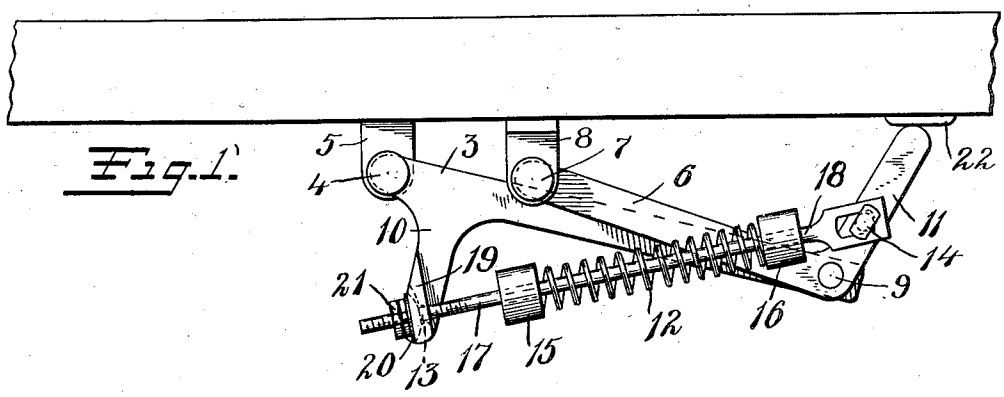
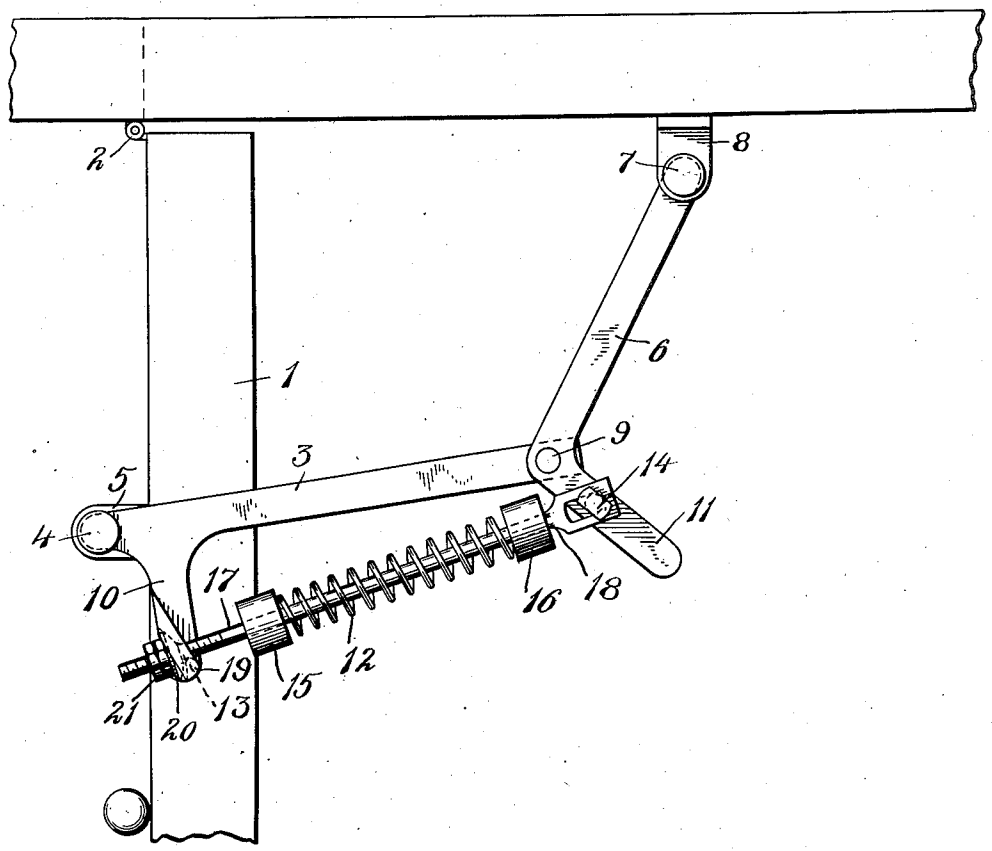


Fig. 2.



Witnesses
Chas. A. Peard
R. B. Stillyn.

Inventor
J. C. FRITTS.
By his Attorneys
Baxter Brownell & Mulchase.

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2 SHEETS—SHEET 2.

Fig. 3.

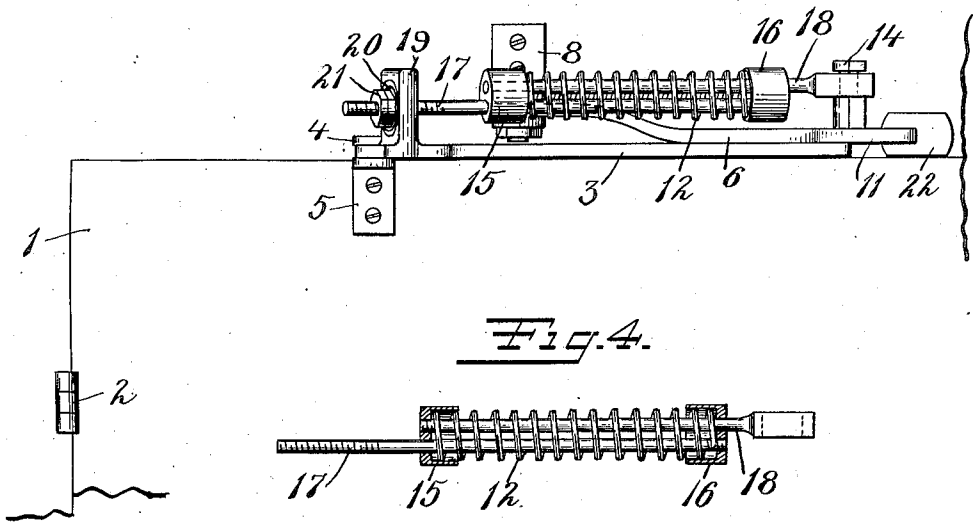
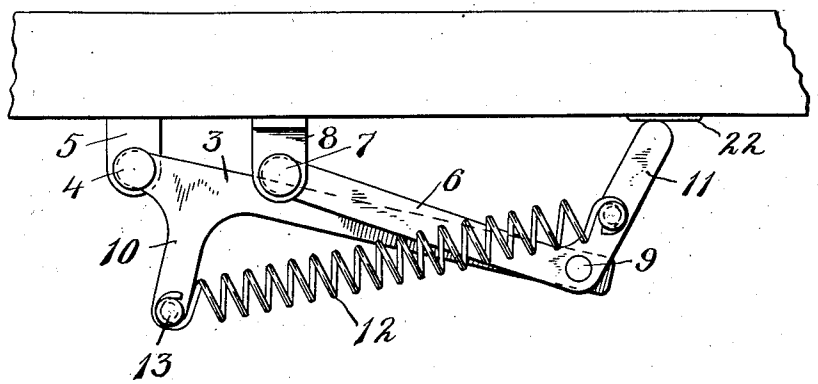


Fig. 4.

Fig. 5.



Witnesses
Chas. A. Peard
R. B. Allyn

Inventor
J. C. Fritts
By his Attorneys
Bartlett Brownell & Mitchell.

UNITED STATES PATENT OFFICE.

JAMES C. FRITTS, OF NEWARK, NEW JERSEY.

DOOR HOLDER, CHECK, AND CLOSER.

No. 832,603. Specification of Letters Patent. Patented Oct. 9, 1906.

Application filed March 7, 1906. Serial No. 304,619.

To all whom it may concern:

Be it known that I, JAMES C. FRITTS, a citizen of the United States, residing at Newark, Essex county, State of New Jersey, have invented certain new and useful Improvements in Door Holders, Checks, and Closers, of which the following is a full, clear, and exact description.

My invention relates to a mechanism adapted to serve the combined purposes of a door holder, check, and closer.

The object of the invention is to provide a simple construction for accomplishing the functions of holding a door closed or open and checking its opening or closing movement. I have endeavored to avoid the use of numerous or complicated parts, so that the construction may be manufactured economically and readily set up or adjusted and which will not be likely to get out of order.

The form illustrated in the accompanying drawings and described in the following specification is particularly adapted to use on doors of railway-cars. It will be obvious, however, that the construction is not limited to such use.

Figure 1 is a plan view of mechanism embodying the improvements of my invention with the door in closed position. Fig. 2 is a like view of the mechanism with the door open. Fig. 3 is a front view of the mechanism with the parts in the closed position. Fig. 4 is a detail view of the spring device. Fig. 5 is a plan view of another construction embodying my invention.

1 indicates the door, which is hinged to the door frame or casing at 2.

3 is one of the levers, pivoted at 4 to the bracket 5, which is attached to the door. 6 is the other lever, which is pivoted at 7 to the bracket 8, which is attached to the door-casing. The two levers 3 and 6 are pivotally connected together at 9. The lever 3 has a projection 10, and the lever 6 has a projection 11, to which the opposite ends of the spring device 12 are attached at points 13 and 14. In the preferred form this spring device is made up of a coiled spring placed under compression between the cap-pieces 15 and 16. The rods 17 and 18 are attached, respectively, to the cap-pieces 16 and 15, and each of said rods passes freely through the respective opposite cap-pieces 15 and 16. The head of the rod 18 is preferably slotted and connected to the T-shaped pivot-post 14. The end of the rod 17 is threaded and passes through the post 19 on the extension 10. The tension of the spring is regulated by means of the adjusting-nut 21 and washer 20 on the projecting screw-threaded end of the rod 17 and bearing against the outer face of the post 19. The rod 18 may be readily connected to the extension 11 by means of a T-and-slot construction.

When the door is closed, the end of the extension 11 preferably rests against the yielding stop 22. A stop 23 may be provided for the door in its opened position. The spring device holds the door in either position by reason of the relative position and proportions of the parts. In the modification shown in Fig. 5 it is obvious that the spring device might consist simply of a coiled spring having its opposite ends attached at the points 13 and 14 and placed under tension instead of compression, as in the other form of device shown. The compression form is preferred, however, as it is more durable.

In all positions of the door and mechanism the distances between the points 2 and 4, 2 and 7, 4 and 9, and 7 and 9 are fixed. The lines connecting the points 2, 4, 9, 7, and 2 present a quadrilateral when the door is opened to stand, for instance, at a right angle to the lintel of the door and lie in nearly a straight line when the door is closed, the point 4, however, having passed inside of the line connecting the points 2 and 9. When the door is opened, the action of the spring device is to draw the point 14 toward the point 13. The result is a pressure which holds the door against the stop 23. As the door is closed a dead-point is reached when the points 13, 9, and 14 are in alinement. At this point there is no effective pressure of the spring, so that the door is checked in its movement toward the closing position. As the door passes by this checking position into the closed position the point 14 passes inside the line connecting the points 13 and 9, so that the action of the spring is to draw the point 14 toward the door-casing. The effective pressure of the spring for this closing action, however, decreases as the door reaches its closed position, since the points 13 and 4 again approach each other, but on the inside of the center line. This has a tendency to draw the point 4 inside the line of points 2 and 7 and closes the door. When the door is closed, the spring is expanded and under a minimum pressure offers but little

resistance to the opening of the door. When the door is open, the spring is also expanded and under little pressure, but exerts its pressure at the most effective angle, so that the door is held securely against the stop 23.

What I claim is—

1. A combined door holder, check and closer comprising two levers adapted to be respectively connected to a door and to the casing, a common pivotal connection for said levers, an extension from each lever beyond the line connecting its two pivot ends and a spring device connecting said extensions.

2. In a combined door holder, check and closer, two levers of unequal length pivotally connected together and adapted respectively to be pivotally connected to a door and door-casing and a spring device connected to each of said levers at points on opposite sides of said levers when the parts are in the closed position.

3. In a device of the character described, two brackets adapted to be respectively attached to a door and door-casing, a lever pivoted to each of said brackets, a common pivotal connection for said levers, and a spring device connected with said door-lever at one side of the line joining its pivoted ends, and connected with the casing-lever, at one side of the extension of the line joining its pivoted centers.

4. In a device of the character described, two brackets adapted to be respectively attached to a door and door-casing, a lever pivoted to each of said brackets, a common pivotal connection for said levers, and a compression-spring device connected with said door-lever at one side of the line joining its pivoted ends, and connected with the casing-lever, at one side of the extension of the line joining its pivoted centers.

5. In a device of the character described, brackets adapted to be respectively attached to a door and door-casing, levers pivoted to said brackets and pivoted to each other, and a compression-spring device connecting said levers comprising a pair of caps, a coiled spring, the ends of said spring abutting against said caps, and a pair of rods, each of said rods passing through one cap and being secured to the opposite cap.

6. In a device of the character described, brackets adapted to be secured to a door and door-casing respectively, levers pivoted thereto and to each other and having angularly-disposed extensions provided with vertically-disposed posts, a spring device connecting said posts and a spring adjusting member comprising an arm projecting through one of said posts and an adjusting-nut for said arm.

7. In a construction of the character described, a door-casing, a hinged door, a lever pivoted to said casing, a longer lever pivoted to said door between the point of support of said first lever and the axis of the door when the parts are in the closed position, said levers being pivoted together and a spring device connecting said levers.

8. In a construction of the character described, a door-casing, a hinged door, a lever pivoted to said casing, a longer lever pivoted to said door between the point of support of said first lever and the axis of the door when the parts are in the closed position, said levers being pivoted together and a spring device connecting said levers, one of said levers having an extension and a stop adapted to be engaged by said extension before the door is entirely closed.

9. In a door-closer, two levers adapted to be pivotally connected respectively to a door and door-casing, said levers being pivoted together and each having a vertical post disposed eccentrically of the common pivot and a coiled spring having its opposite ends connected to said posts.

10. In a construction of the character described, the combination of a door-casing, a hinged door, two levers of unequal length pivotally connected together, the shorter lever being connected to the door-casing, the other lever being connected to the door between the door-casing connection and the door-hinge, an extension carried by one of said levers, and a spring normally holding said levers with said extension in engagement with the door-casing.

11. In a door-closer, a pair of levers pivotally connected together and pivotally connected to a door and door-casing respectively, and a horizontally-disposed compression-spring device connecting said levers.

12. In a door-closer, a pair of levers pivotally connected together and pivotally connected to a door and door-casing respectively, a horizontally-disposed compression-spring device connecting said levers, and means for adjusting the compression of said spring device.

JAMES C. FRITTS.

Witnesses:
L. VREELAND,
ROBT. S. ALLYN.