(Model.)

2 Sheets—Sheet 1.

G. W. RANDALL.

DOOR CHECK.

No. 342,224. Patented May 18, 1886.

Fig. 1.

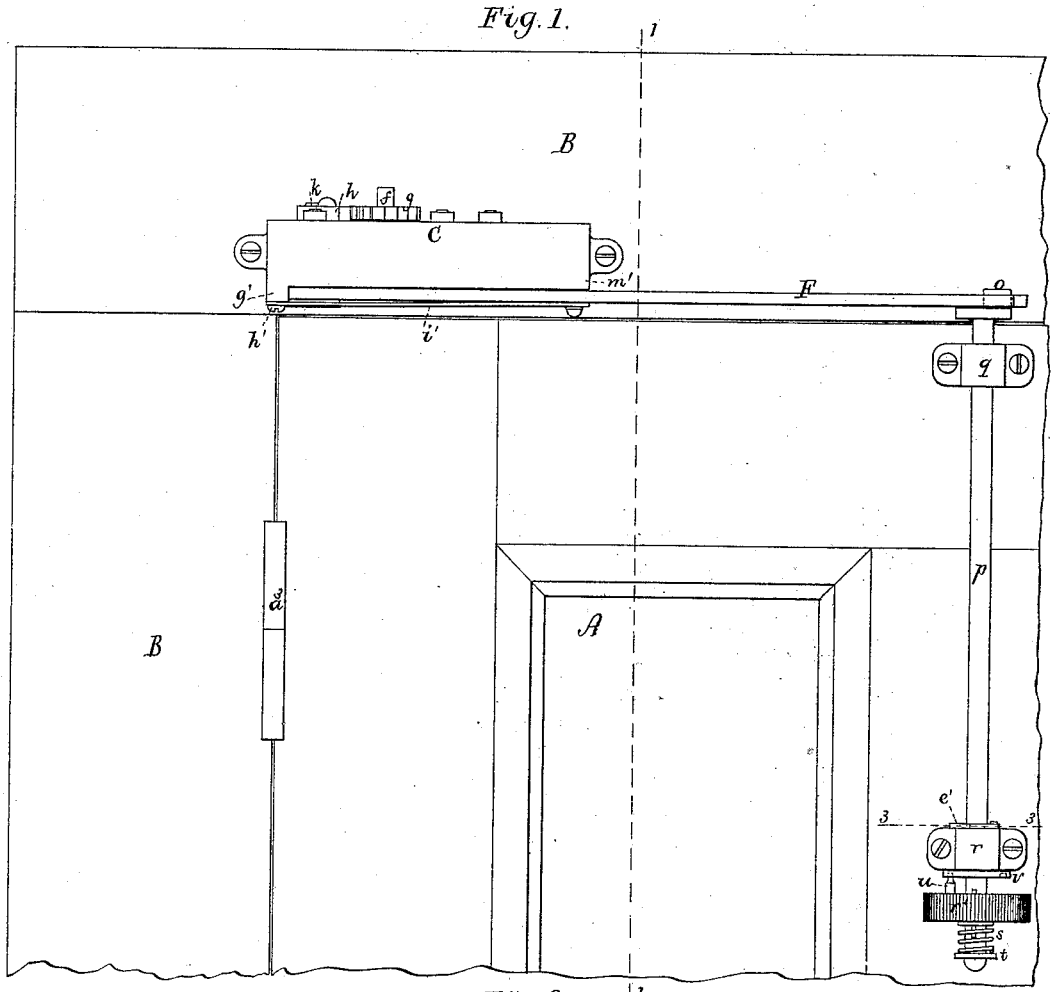


Fig. 2.

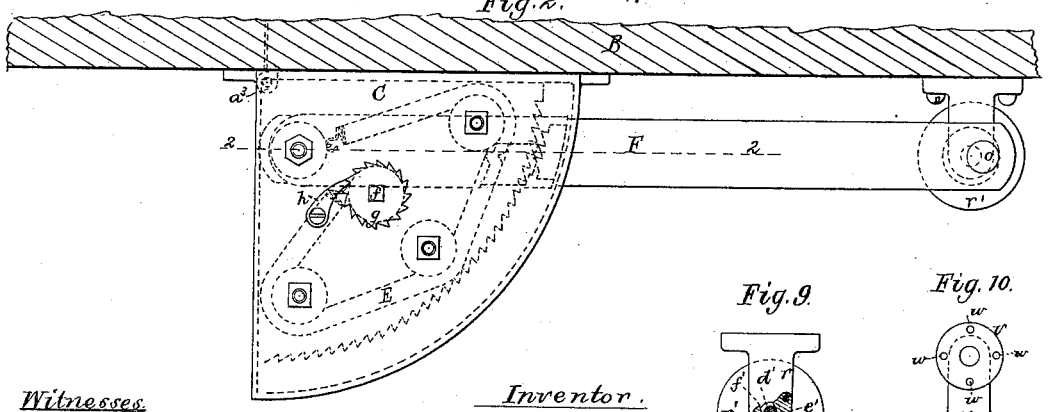


Fig. 9.

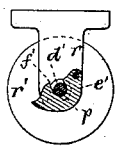
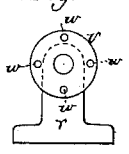


Fig. 10.



Witnesses.
S. N. Piper
R. B. Torrey.

Inventor.
George W. Randall.
by R. K. Eddy atty.

(Model.) 2 Sheets—Sheet 2.

G. W. RANDALL.

DOOR CHECK.

No. 342,224. Patented May 18, 1886.

Fig. 4.

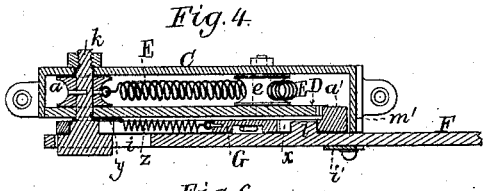


Fig. 6.

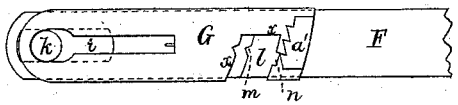


Fig. 5

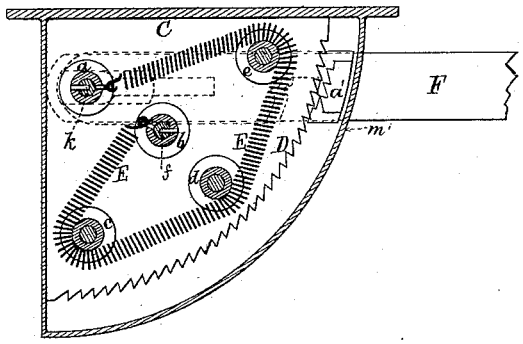


Fig. 3.

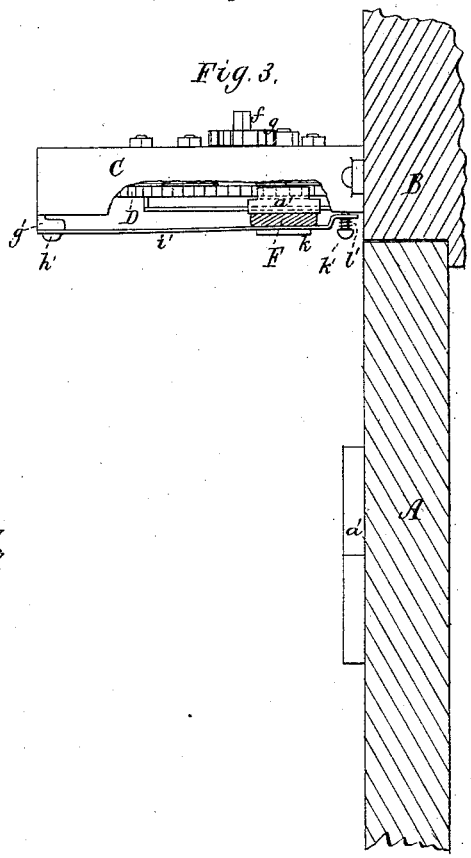


Fig. 8.

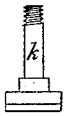


Fig. 7.

Witnesses.
S. N. Pipes
R. B. Torrey

Inventor.
George W. Randall.
by R. H. Eddy atty

UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON RANDALL, OF BOSTON, MASS., ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIMSELF AND MAX BACHERT, OF SAME PLACE.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 342,224, dated May 18, 1886.

Application filed November 13, 1885. Serial No. 182,691. (Model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON RANDALL, of Boston, of the county of Suffolk, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Door-Checks; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, and Fig. 2 a top view, of my door-check applied to a door and its frame. Fig. 3 is a transverse section of the door and check, taken on the line 1 1 of Fig. 1. Fig. 4 is a vertical section of the door-check, taken on the line 2 2 of Fig. 2. Fig. 5 is a horizontal section of the door-check, it being taken through the operative spring thereof, to be hereinafter described. Fig. 6 is a top view of the locking-slide and part of the slotted arm directly underneath it. Fig. 7 is a top view, and Fig. 8 a side elevation, of the pin that goes through the locking-slide and the slotted arm. Fig. 9 is a horizontal section (on line 3 3 of Fig. 1) taken through the latch *e'*, to be described. Fig. 10 is an under side view of the locking-plate of the eccentric for moving the slotted arm.

The nature of my invention is defined in the claims hereinafter presented.

The said door-check is not only to hold a door open to any desirable extent within the limits of its movement on its hinges, but to cause it to close, as circumstances may require.

In such drawings, A denotes the door, and B its frame, to which it is hinged, one of the hinges being shown at *a'*. Fastened to the door-frame, above the door, is a quadrangular frame or case, C, having within it and stationary a curved rack, D, arranged as shown. There is also within the frame or case C a long spiral spring, E, which at its ends is attached to the peripheries of two guide-wheels, *a* and *b*, and goes around three others, *c*, *d*, and *e*, arranged in the case C. On the arbor *f* of the wheel *b* there is fastened a notched wheel, *g*, to engage with a pawl, *h*, pivoted to the top of the case. By applying a key to the arbor *f* and revolving it the spring may be wound more or less on the wheel *b*, in order to increase the tension of such spring as occasion may require. The wheel *a* is supported on a headed pin, *k*, that goes upward through the case C, and is adapted thereto so as to be capable of being turned transversely therein, the wheel *a* being fixed or applied to the pin so as to turn with or be turned by it. To the head of the pin there is applied a slotted arm, F, that has in it a slot, *i*, to receive the head, which head, in the part of it that is in the slot, has a width corresponding to that of the slot, and is rectangular, or thereabout, in order for the arm to be able to slide lengthwise of it a short distance on the pin, but to turn the pin when the arm is turned or swung laterally. Extending up from the arm F is a lug, *l*, having a tooth projecting from each of its two longer opposite edges, as shown at *m* and *n* in Fig. 6. A crank, *o*, fixed on the upper part of a shaft, *p*, journaled in boxes *q r*, fastened to the door, has its wrist extended through the arm F, in which it turns. By revolving the shaft in the boxes the arm F may be moved in a direction lengthwise of it, either forward or backward. There is splined to the shaft a milled circular head, *r'*, adapted to slide on the shaft vertically, and resting on and pressed upward by a spiral spring, *s*, encompassing the shaft and supported on a shoulder, *t*, thereof. A tooth, *u*, projects upward from the milled head, and is adapted to engage with a locking-plate, *v*, fixed to the box *r*, and disposed concentrically with the shaft *p*, and provided with a series of holes, *w*, arranged on it, as shown in Fig. 10. By pressing downward the milled head its tooth will be drawn out of one of the holes *w*, in order that the shaft *p* may be revolved with the milled head. The toothed lug *l* extends upward into a somewhat correspondingly-shaped notch, *x*, made in the locking-slide G. This locking-slide is placed directly over the arm F, is pivoted on the pin *k*, and slotted, so as to be capable of being moved on said pin in a direction lengthwise of it, (the said slide.) Within the slide, and connected to it and a ring, *y*, extending around the pin, is a spiral spring, *z*, for drawing backward the slide, in order to bring into engagement with the curved tooth-rack a

toothed or serrated lug, a', extending upward from the slide and arranged as represented. In case it may be desirable to open the door and allow it afterward to entirely close, the shaft p is to be turned so as to move the arm F, so as to move the lug l out of engagement with the slide G. On opening the door the arm F will move with it and turn or revolve the pin k and carry the lug l out of the notch x. By turning the said pin the wheel a will be revolved therewith, and the spring E will be strained or wound on such wheel. The contractile force generated in the said spring while the door is being opened will suffice to subsequently close the door. Should it be desirable to hold the door in any position within the range of its outward movement, the shaft p should first be turned, so as to move the arm F in a manner to cause it to draw the lug l against the toothed lug a', and move the slide G, so as to pull the said lug a' out of engagement with the rack D. On next opening the door to the desirable angle or extent, the lug l being in engagement with the locking-slide, the latter will be turned outwardly with the arm F, and will at the time carry the toothed lug a' outwardly. Next the shaft p is to be turned so as to allow the spring z to retract the locking-slide to carry its toothed lug a' into engagement with the rack. This having been done, the door will be locked in its position. On the door being closed, and the stud a' being in engagement with the curved rack, and the stud l being in engagement with the locking-slide—that is, when either tooth of the said stud l is in engagement with the said slide—the door will be confined in its closed position.

For the purpose of disconnecting the crank o from the arm F, when it may be desirable or necessary, I pivot to the box r a latch, e', provided with a curved notch, f', such latch being to operate with an annular groove, d', in the shaft p, in order to hold the said arm and crank in connection. (See Figs. 1 and 9.) By turning the said latch e' outwardly, so as to withdraw it from the annular groove d', the shaft p can be depressed sufficiently to disconnect the said crank and arm.

In order to prevent the door from "slamming," I fix by a screw, h', to a lug or ear, g', projecting down from the bottom of the case C, a curved friction-plate, i', which passes underneath the arm F, such plate at its inner end resting on a spring, l', supported on and by a screw, k'. (See Fig. 3.) By means of the screw k' the space between the portion or flange m' of the case C and the plate i' can be so reduced that when the door in closing shall have nearly reached the extent of its movement the arm F will be borne against the part m' by the plate i' with sufficient force to cause the door to bring up against its casing with little, if any, noise.

I claim—

1. The combination of the case fixed to the door-frame, and provided with a spring and curved rack, with the arm having the toothed lug, and with the locking-slide provided with the open notch, toothed lug, and retracting-spring, all being arranged and applied, and the said arm having mechanism, as represented, for moving it lengthwise, fastened to the door, all being substantially and to operate as set forth.

2. In a door-check, the combination or mechanism for actuating and locking the arm F, consisting of the revoluble shaft p, with its crank o, the stationary locking-plate v, and the wheel r', splined to the shaft and provided with the tooth u, and the elevating-spring s, all being substantially as described, and the shaft being supported in boxes fixed to the door, and arranged as represented.

3. In a door-check, the combination of the spiral spring E, within the case C, with the series of supporting-wheels b c d e, and the winding barrel or wheel a in such case, such spring extending about such wheels, as represented.

4. In a door-check, the combination of the recessed latch e', pivoted to the box r, with the cranked shaft p, provided with the annular groove d', to receive such latch, all being substantially as and for the purpose set forth.

5. In a door-check, the combination of the friction-plate i', its spring l', and supporting-screw k' with the box C and the arm F, applied to such box and the door, as represented.

GEORGE WASHINGTON RANDALL.

Witnesses:
R. H. EDDY,
S. N. PIPER.