Nov. 10, 1953 J. P. GUTTORMSEN 2,658,231

DOOR CHECK

Filed May 18, 1949 2 Sheets-Sheet 1

Fig. 1.

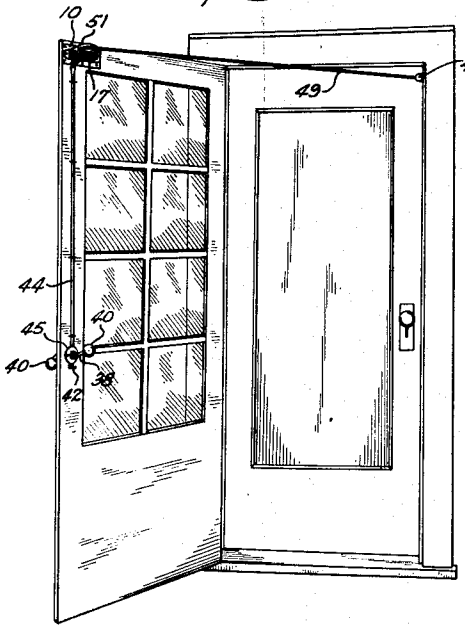
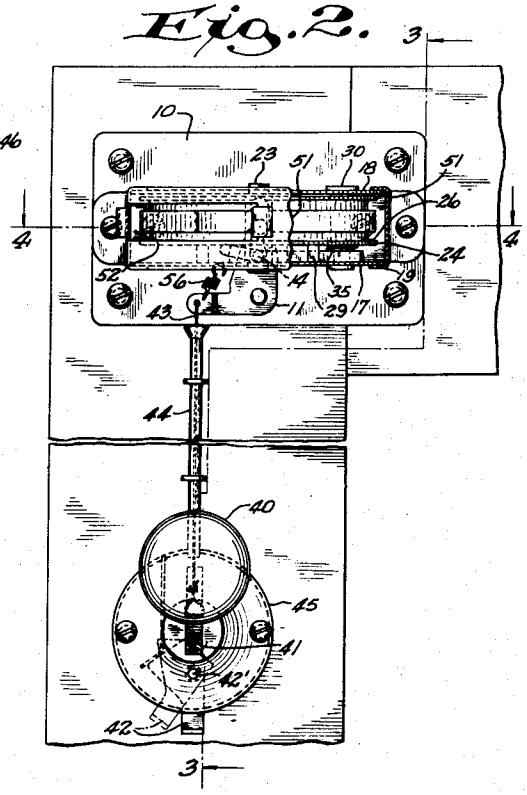


Fig. 2.



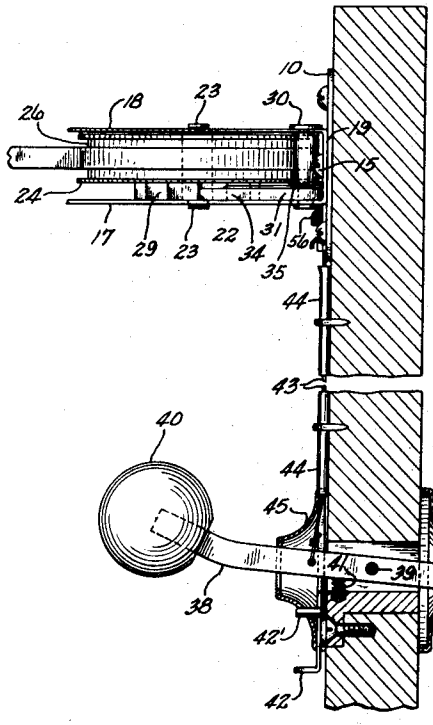


Fig. 3.

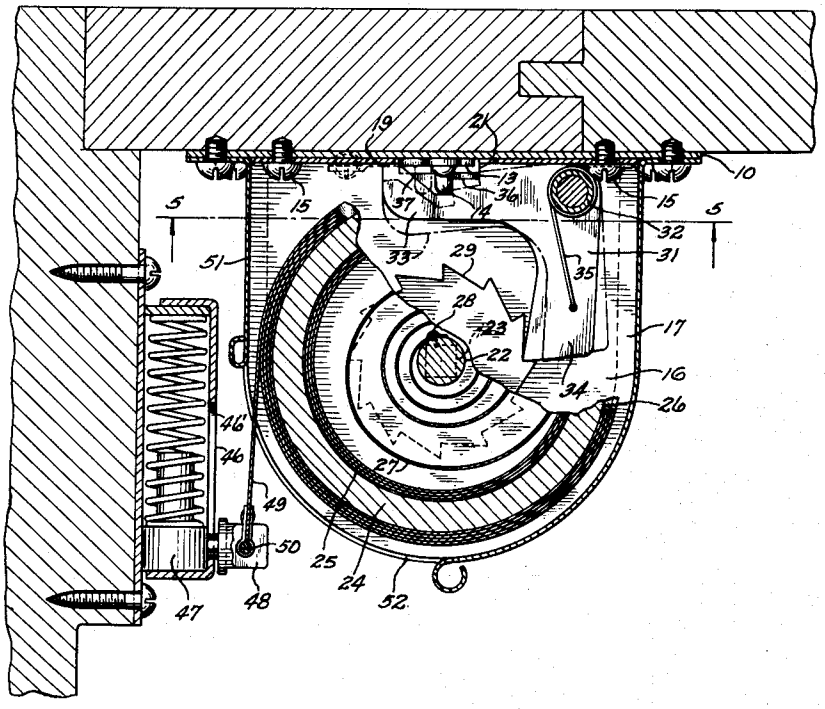
INVENTOR.
Joseph Paul Guttormsen,
BY Morsell & Morsell
ATTORNEYS.

Nov. 10, 1953 J. P. GUTTORMSEN 2,658,231

DOOR CHECK

Filed May 18, 1949 2 Sheets-Sheet 2

Fig. 4.



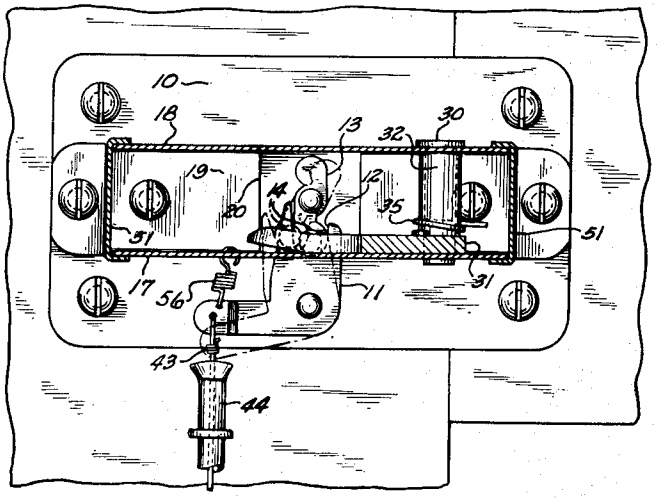


Fig. 5.

INVENTOR.
Joseph Paul Guttormsen,
BY
Morsell & Morsell
ATTORNEYS.

Patented Nov. 10, 1953 2,658,231

UNITED STATES PATENT OFFICE

2,658,231

DOOR CHECK

Joseph Paul Guttormsen, Kenosha, Wis.

Application May 18, 1949, Serial No. 93,921

12 Claims. (Cl. 16—63)

1

This invention relates to improvements in door checks.

Various forms of door checks, door closers and door latches have been developed heretofore, each of which performs a single function which is different from that of the others. It frequently happens that a storm door, for example, provided with a conventional spring door closer is blown open with the result that considerable noise is created and the glass therein may be broken. In addition, conventional spring door closers have no means for preventing a door from being blown out of the control of a person opening said door, with the abovementioned undesirable results.

It is therefore a general object of the invention to provide a door check which prevents movement in a door opening direction except when the door handle is manually actuated.

Another object of the invention is to provide a door check of the class described which has spring means for urging a door in a door closing direction when the door is released.

A further object of the invention is to provide a door check assemblage which incorporates a door lock or latch.

A further object of the invention is to provide a door check of the class described having a control or check tape which may be easily disconnected from the door jamb to render the device temporarily inoperative when it is desired to leave the door open for a period of time.

A further object of the invention is to provide a device of the class described which can be applied to any type of door, which is relatively inexpensive, and which is well adapted for the purposes described.

With the above and other objects in view, the invention consists of the improved door check and all of its parts and combinations, as set forth in the claims, and all equivalents thereof.

In the accompanying drawings, wherein is shown one complete embodiment of the preferred form of the invention, and wherein the same reference characters indicate the same parts in all of the views:

Fig. 1 is a perspective view of a storm door and door frame provided with the improved door check;

Fig. 2 is an enlarged front view of the improved door check mounted on a door, part of the cover strip being broken away;

Fig. 3 is an enlarged vertical sectional view taken approximately along the line 3—3 of Fig. 2, the cover strip being removed;

Fig. 4 is an enlarged horizontal sectional view

2

taken approximately along the line 4—4 of Fig. 2, parts being broken away for clarity; and

Fig. 5 is a vertical sectional view taken approximately along the line 5—5 of Fig. 4.

Referring to the drawings, the numeral 10 indicates a substantially rectangular metal base plate which is screwed to the upper outer corner portion of the inner surface of a door. Pivotally mounted on the plate 10 for movement in a vertical plane is a bell crank lever 11 having an upstanding arm portion formed with a bifurcated upper end 12. Also pivotally mounted on the plate 10 for movement parallel with said plate and with its lower end embraced by the bifurcated upper end 12 of the lever 11, is a lever 13 having its lower end provided with a horizontally projecting pin 14.

Fixed, as by the screws 15, to the outer face of the plate 10 is a U-shaped reel holding member 16 which is formed of sheet metal or other suitable material. The member 16 has a pair of spaced horizontally extending plate members 17 and 18 and has a web portion 19 which is in a plane at right angles to said plate members. The portion 19 is formed with a rectangular aperture 20 into which the lever 13 projects, and the member 17 is formed with a cut-away portion 21 (see Fig. 4) to give the lever 13 sufficient clearance.

A cylindrical shaft 22 is formed with end portions 23 which are square in cross-section. The plate members 17 and 18 are formed with centrally disposed alined square apertures which non-rotatably receive the ends 23 of the shaft 22 to position said shaft vertically and at right angles to said plate members. Rotatably mounted on the intermediate portion of the shaft 22 is a reel 24 having a concentric cylindrical chamber 25 formed therein and having a rectangular peripheral groove 26. A spiral spring 27 is positioned in the chamber 25, having one end fixed to the shaft 22, as at 28, and having the other end fixed to the reel 24 at a point (not shown) on the side wall of the chamber 25. Suitably fixed to the underside of the reel 24 and concentric therewith is a circular ratchet plate 29.

A pin 30 extends vertically between the plates 17 and 18 adjacent the mounting plate 10 near one end thereof. Pivotally mounted on the pin 30 for movement in a horizontal plane is a bell crank lever 31 having fixed thereto a bushing 32. One arm 33 of the lever 31 extends substantially parallel with the plate 10, and the other arm 34 extends at a right angle thereto.

The arm 34 extends outwardly toward the ratchet wheel 29 and is engageable with the

projections thereof. A spring 35 encircles the bushing 32, having one end in engagement with the web 19 and the other end connected to the arm 34 to urge said arm into engagement with the projections of the ratchet wheel 29, as shown in Fig. 4. The arm 33 of the lever 31 is formed with a notch 36 having an angled vertical surface 37 which is engageable by the pin 14. The portion of the arm 33 outwardly of the pin 14 is bent upwardly, as shown in Fig. 5, to insure contact of said arm with said pin during pivotal movement of the lever 13. Extending around the edges of the plate members 17 and 18 is a U-shaped channel member 51 forming a cover strip and formed with a slot 52 adjacent a portion of the periphery of the reel 24.

Mounted in and extending through the door frame, in the position wherein a conventional lock is normally located, is a lever 38 which is mounted for pivotal movement in a vertical plane about a horizontally extending pin 39. The lever 38 has a pair of manually engageable knobs 40 on the outer ends thereof. Positioned within the door frame, and in engagement with the underside of the lever 38 at one side of the pivot pin 39, is a compression spring 41 which urges the inner end of the lever 38 upwardly. Mounted on the inner surface of the door immediately below the lever 38 for pivotal movement parallel with said surface about a horizontal pin 42', is a locking lever 42 which is movable in a clockwise direction from the solid line position shown in Fig. 2 to the dot and dash line position thereof wherein it prevents downward movement of the inner end of the lever 38.

A suitable connecting means, such as an extent of piano wire 43, connects the inner end portion of the lever 38 to the horizontal arm of the lever 11. The wire 43 preferably is housed in a section of tubing 44, and suitable face plates 45 may surround the lever 38 on both faces of the door for ornamental purposes. A coil spring 56 is connected to the horizontal arm of the lever 11 and to the plate 17 and urges the lever 11 in a clockwise direction as viewed in Figs. 2 and 5.

Mounted on the door jamb, in the same horizontal plane with the reel 24, is a cylindrical casing 46 in which is slidably positioned a spring-loaded recoil plunger 47. The plunger 47 has an outwardly projecting arm 48 which extends through a suitable slot 48' in the casing 46. Fixed at one end to the inner surface of the peripheral groove 26 of the reel 24 and having its other end removably pinned as at 50 to the arm 48 of the plunger 47, is a flexible steel tape 49 or other suitable connecting member. The tape 49 is wound around the reel as shown in Fig. 4 when the door is closed, and extends through the slot 52 in the cover strip 51.

In operation, when the lever 38 is pivoted in a counter-clockwise direction (as viewed in Fig. 3) by manual engagement of either of the knobs 40, said lever pulls downwardly on the wire 43 and on the arm of the lever 11 connected therewith. This rotates the lever 11 in a counter-clockwise direction, as viewed in Figs. 2 and 5, to the dot and dash line position of the latter figure. Pivotal movement of the lever 11 in this manner pivots the lever 13 in a clockwise direction, moving the pin 14 to the left (as viewed in Figs. 2, 4 and 5). As the pin 14 so moves, it engages the surface 37 of the notch 36 and forces the arm 33 of the lever 31 away from the web 19, thereby moving the lever 31 in a counter-clockwise direction, as viewed in Fig. 4, to the dot and dash line position shown therein. This movement of the lever 31 causes disengagement of the arm 34 from the ratchet wheel 29, and the reel 24 pays out the tape 49 as the door is pushed open as long as the lever 38 is kept in its counter-clockwise rotated position.

As soon, however, as a knob 40 is manually released, the mechanism will return to the solid line positions of all of the views, due to the action of springs 35, 41 and 56; and the arm 34 will engage the ratchet wheel 29, preventing further paying out of the tape 49. Continued pushing of the door in an opening direction will then cause the plunger 47 to compress its spring, thereby taking up the shock caused by stoppage of the reel 24. The spring 27 within the reel is wound up as the reel 24 pays out tape, and when the door is released, the spring 27 causes the reel 24 to rotate in the opposite direction, thereby reeling in the tape 49 and closing the door.

Since the door can never be moved in an opening direction unless the lever 38 is pivoted in a clockwise direction as viewed in Fig. 3 by raising or lowering knob 40 (depending upon which knob is engaged), the improved door check eliminates the need for a separate door lock. The latch 42 serves as a night lock. The door can never blow open when the improved check is used, and should the wind catch it just as it is being opened, the wind cannot open the door beyond the point at which a knob 40 is released. The improved catch serves as a door closer as well as a door check, and by removal of the pin 50, the tape 49 can be readily disconnected from the plunger arm 48 to permit the door to be left open for a period of time when desired.

The improved door check is fool proof in operation and is inexpensive to manufacture. By performing the triple function of a door check, door closer, and door lock, the improved device considerably reduces the cost of hardware required for a door, while at the same time providing a definite advance in the art.

Various changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated, as may come within the scope of the claims.

What I claim is:

1. In a door check, a reel adapted to be rotatably mounted on a door; an elongated flexible member connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; means including a ratchet wheel fixed to the reel and a pivotally mounted pawl movable into and out of engagement with said ratchet wheel for normally preventing rotation of said reel in a direction to pay out said flexible member; and a connection between said control member and said pawl, whereby operation of said control member causes movement of said pawl out of engagement with said ratchet wheel to permit said flexible member to be unreeled during a door opening operation.

2. In a door check, a reel adapted to be rotatably mounted on a door; an elongated flexible member connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel fixed to said reel and having external teeth; a pawl pivotally mounted adjacent said ratchet wheel and cooperable therewith to normally pre-

vent rotation of said reel in a direction to pay out said flexible member; and a connection between said control member and said pawl, whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said flexible member to be unreeled during a door opening operation.

3. In a door check, a reel adapted to be rotatably mounted on a door; a flexible tape connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel fixed to said reel and having external teeth; a pawl pivotally mounted adjacent said ratchet wheel and cooperable therewith to normally prevent rotation of said reel in a direction to pay out said tape; a connection between said control member and said pawl whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said tape to be unreeled during a door opening operation; and means for causing rotation of the reel in the opposite direction during a door closing operation.

4. In a door check, a reel adapted to be rotatably mounted on a door; a flexible tape connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel fixed to said reel and having external teeth; a pawl pivotally mounted externally of said ratchet wheel and movable into and out of engagement with the teeth thereof to normally prevent rotation of said reel in a direction to pay out said tape; a connection between said control member and said pawl whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said tape to be unreeled during a door opening operation; and a spring normally urging said reel in the opposite direction to cause reeling in of said tape during a door closing operation.

5. In a door check, a reel adapted to be rotatably mounted on a door; a flexible tape connected at one end to said reel; yielding means for removably connecting the opposite end of said tape to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel fixed to said reel; a pawl pivotally mounted adjacent said ratchet wheel and cooperable therewith to normally prevent rotation of said reel in a direction to pay out said tape; and a connection between said control member and said pawl whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said tape to be unreeled during a door opening operation.

6. In a door check, a reel adapted to be rotatably mounted on a door; a flexible tape connected at one end to said reel; yielding means for removably connecting the opposite end of said tape to a door frame; a control member adapted to be operatively mounted in a door; a latch for selectively rendering said control member inoperative; a ratchet wheel fixed to said reel; a pawl pivotally mounted adjacent said ratchet wheel and cooperable therewith to normally prevent rotation of said reel in a direction to pay out said tape; and a connection between said control member and said pawl whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said tape to be unreeled during a door opening operation.

7. In a door check, a reel adapted to be rotatably mounted on a door; a flexible tape connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a latch for selectively rendering said control member inoperative; a ratchet wheel fixed to said reel; a pawl pivotally mounted adjacent said ratchet wheel and cooperable therewith to normally prevent rotation of said reel in a direction to pay out said tape; a connection between said control member and said pawl whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said tape to be unreeled during a door opening operation; and a spring normally urging said reel in the opposite direction to cause reeling in of said tape during a door closing operation.

8. In a door check, a reel adapted to be rotatably mounted on a door; a flexible tape connected at one end to said reel; a spring loaded recoil plunger adapted to be mounted on a door frame and to which the other end of the tape is removably connected; a control member adapted to be operatively mounted in a door; a latch movably mounted adjacent said control member to selectively render said member inoperative; a ratchet wheel fixed coaxially to said reel; a pawl pivotally mounted adjacent said ratchet wheel and cooperable therewith to normally prevent rotation of said reel in a direction to pay out said tape; a connection between said control member and said pawl whereby operation of said control member causes disengagement of said pawl from said ratchet wheel to permit said tape to be unreeled during a door opening operation; and a spring within said reel normally urging said reel in the opposite direction to cause reeling in of said tape during a door closing operation.

9. In a door check: a reel adapted to be rotatably mounted on a door; an elongated flexible member connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel fixed to said reel and having external teeth; a pawl movably mounted adjacent said ratchet wheel, a spring engaging said pawl, said pawl being movable into and out of engagement with said ratchet wheel and normally held by said spring in engagement with said ratchet wheel to prevent rotation of said reel in a direction to pay out said flexible member; and a connection between said control member and said pawl, whereby operation of said control member causes movement of said pawl out of engagement with said ratchet wheel against the action of said pawl spring to permit said flexible member to be unreeled during a door opening operation.

10. In a door check: a reel adapted to be rotatably mounted on a door; an elongated flexible member connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; means including a ratchet wheel fixed to said reel and also including a pivotally mounted pawl and a spring engaging said pawl, said pawl being movable into and out of engagement with said ratchet wheel and normally held by said spring in engagement with said ratchet wheel to prevent rotation of said reel in a direction to pay out said tape; and a connection between said control member and said pawl, whereby operation of said control

member causes pivotal movement of said pawl out of engagement with said ratchet wheel against the action of said pawl spring to permit said elongated member to be unreeled during a door opening operation.

11. In a door check: a reel adapted to be rotatably mounted on a door; an elongated flexible member connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel fixed to said reel; a pawl movably mounted adjacent said ratchet wheel, said pawl being movable into and out of engagement with said ratchet wheel and normally preventing rotation of said reel in a direction to pay out said flexible member; a connection between said control member and said pawl, whereby actuation of said control member causes movement of said pawl out of engagement with said ratchet wheel to permit said flexible member to be unreeled during a door opening operation; and a latch movably mounted adjacent said control member and selectively movable toward and away from a locked position in engagement with said control member, said latch, when in locked position, preventing actuation of said control member.

12. In a door check: a reel adapted to be rotatably mounted on a door; an elongated flexible member connected at one end to said reel and adapted to be connected at its other end to a door frame; a control member adapted to be operatively mounted in a door; a ratchet wheel

fixed to said reel; a movably mounted pawl adjacent said ratchet wheel; a spring engaging said pawl, the pawl being movable into and out of engagement with the ratchet wheel and the spring normally holding said pawl in engagement with said ratchet wheel to prevent rotation of said reel in a direction to pay out said flexible member; a connection between said control member and said pawl whereby actuation of said control member causes movement of said pawl against the action of said pawl spring out of engagement with said ratchet wheel to permit said flexible member to be unreeled during a door opening operation; and a latch movably mounted adjacent said control member and selectively movable toward and away from a locked position in engagement with said control member, said latch, when in locked position preventing actuation of said control member.

JOSEPH PAUL GUTTORMSEN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,014,266	Stutler	Jan. 9, 1912
1,049,096	Hurley	Dec. 31, 1912
1,987,913	Schulz	Jan. 15, 1935
2,217,079	Ronning	Oct. 8, 1940

FOREIGN PATENTS

Number	Country	Date
339,535	Italy	Apr. 23, 1936