

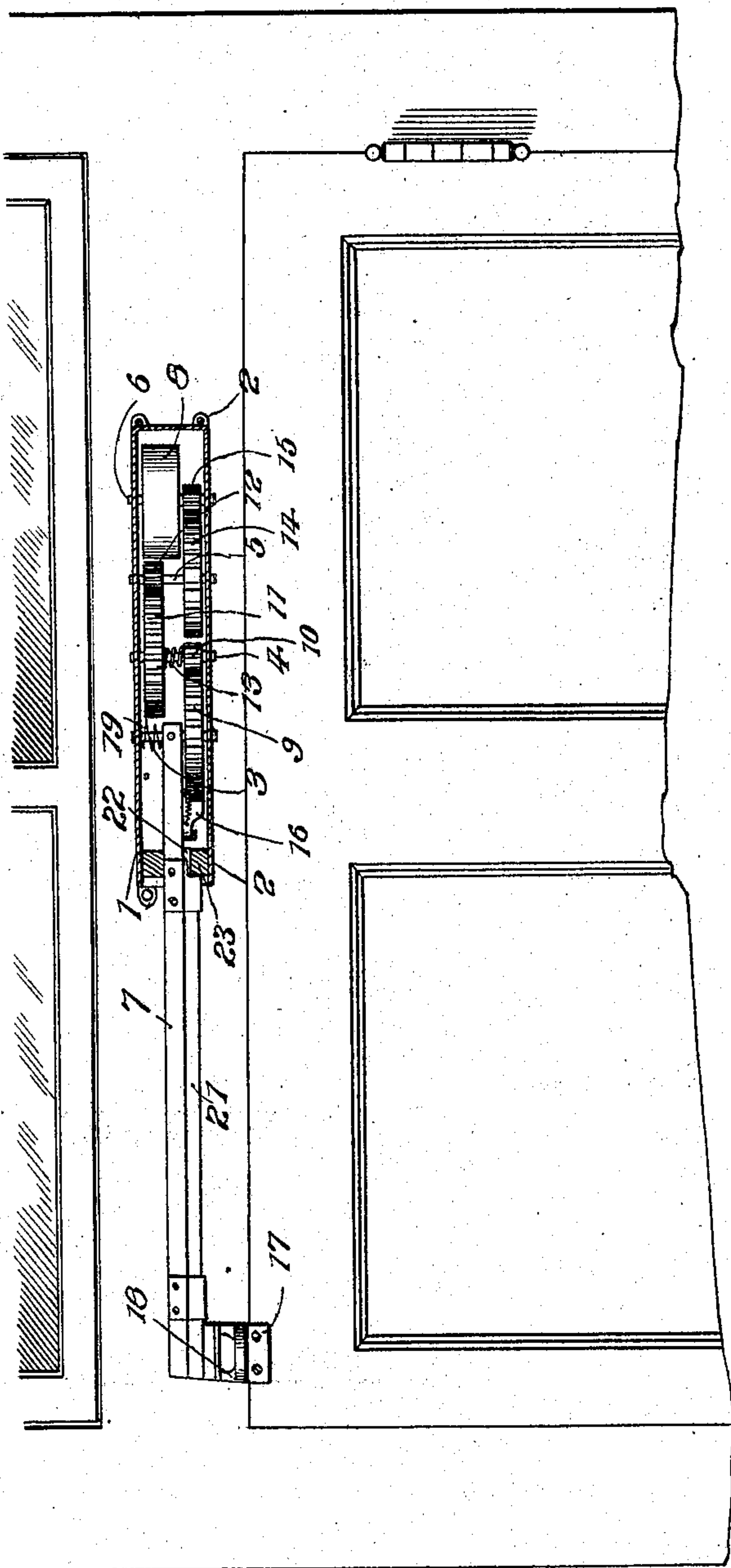
No. 885,023.

PATENTED APR. 21, 1908.

E. G. DELOE.
DOOR CHECK.

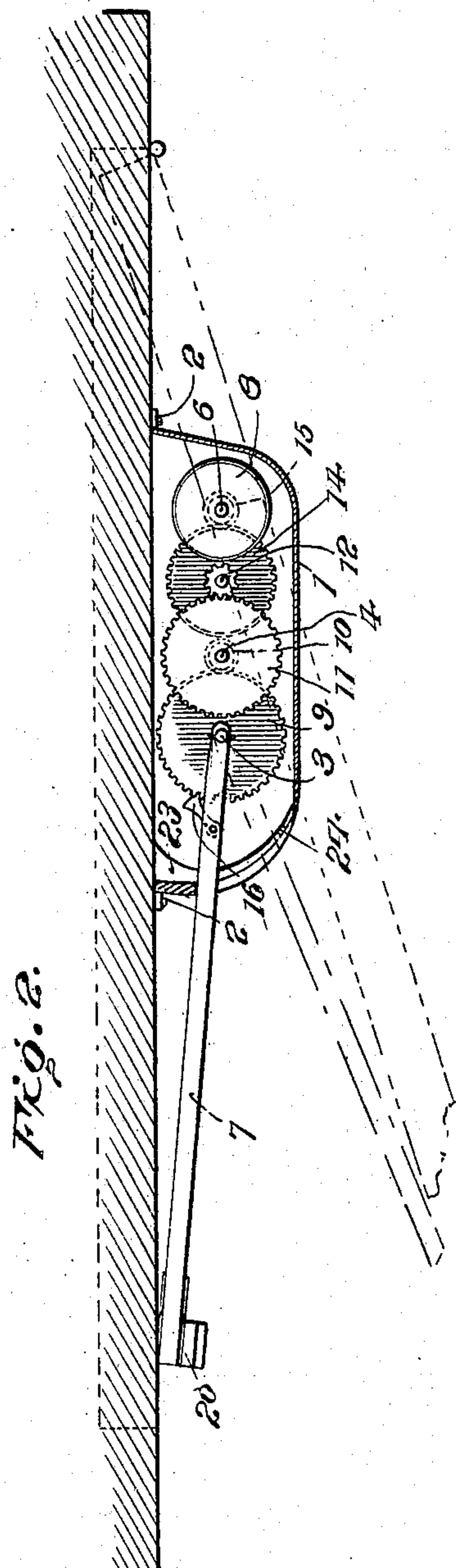
APPLICATION FILED JUNE 17, 1907.

2 SHEETS—SHEET 1.



Witnesses

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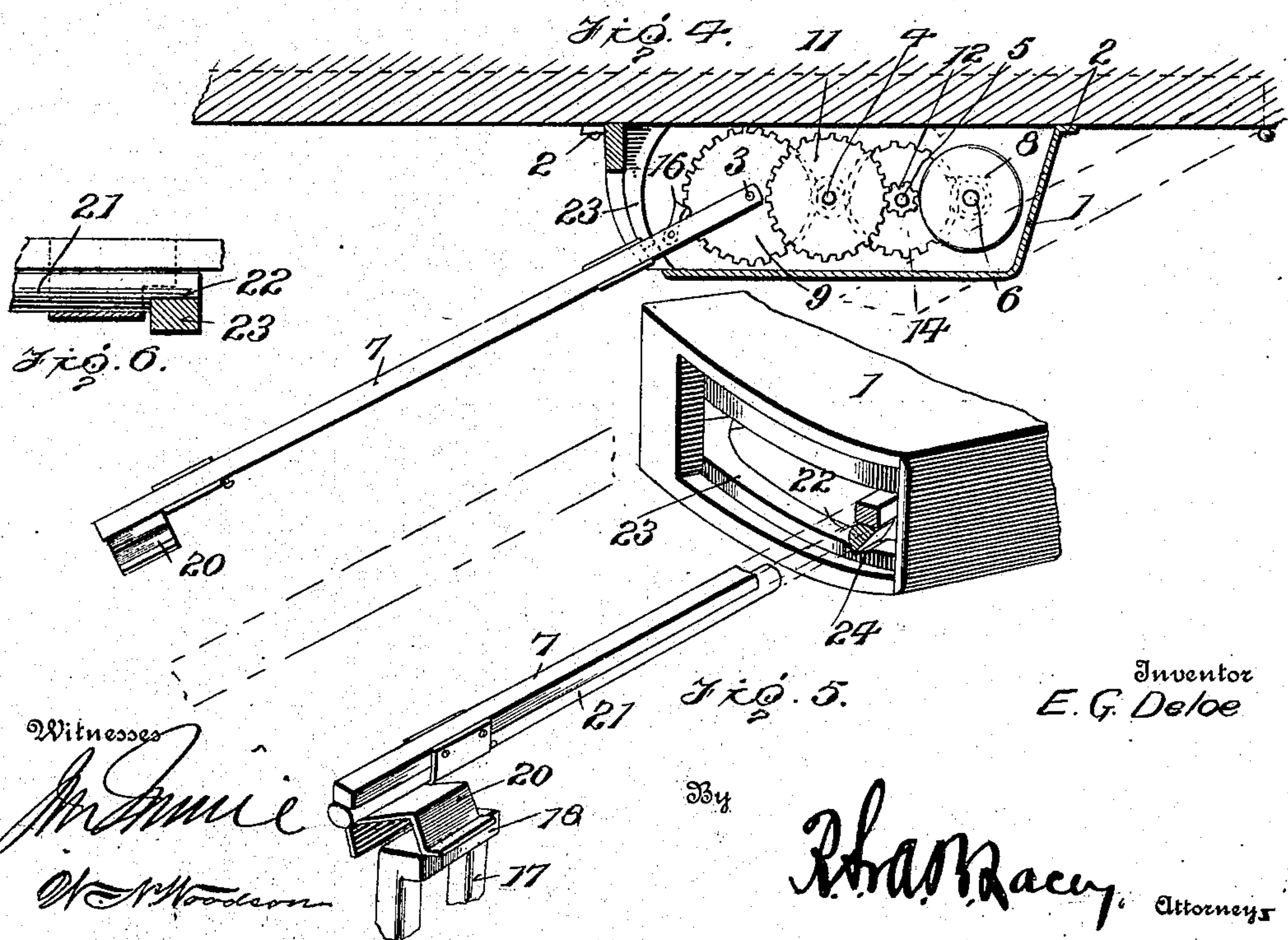
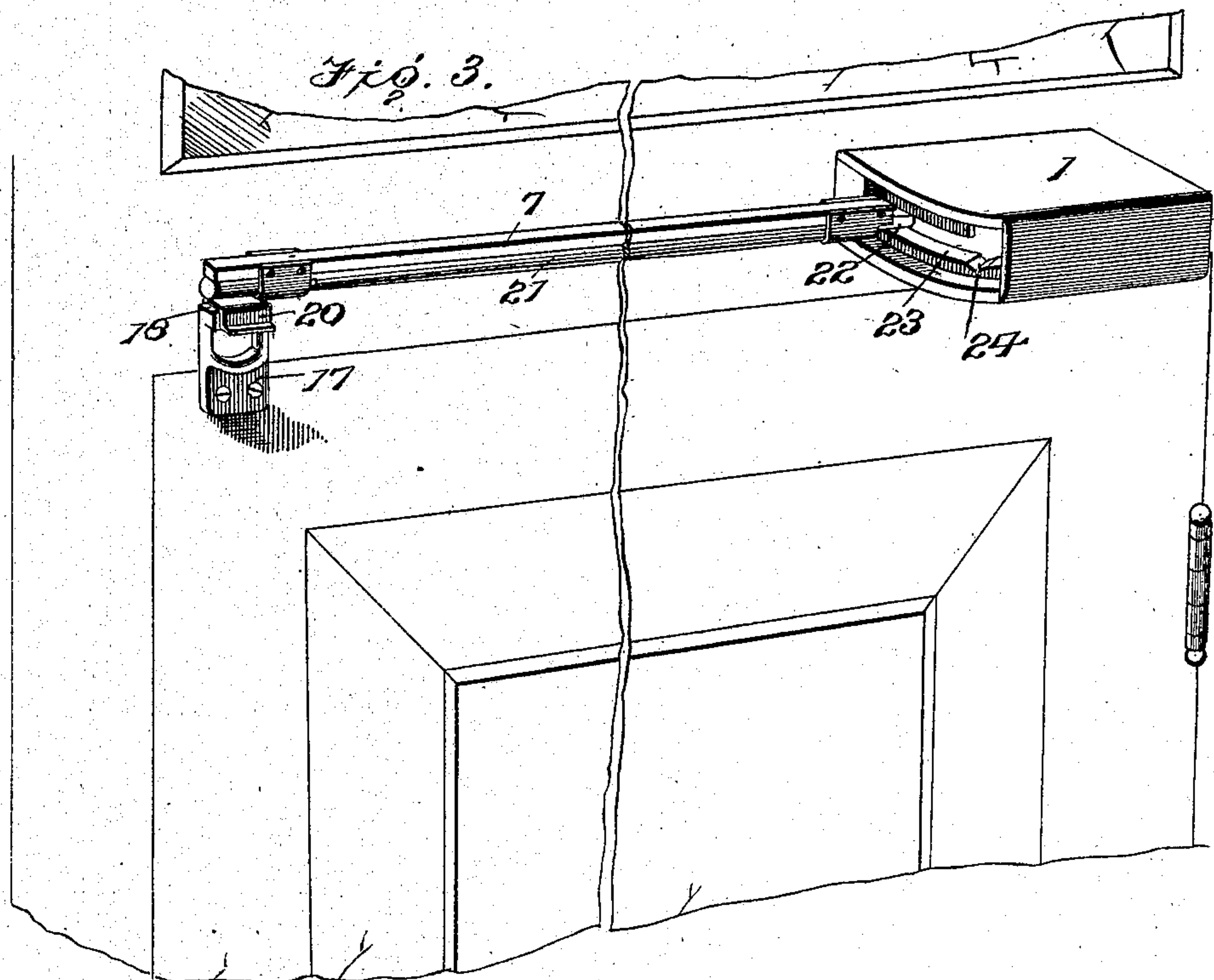
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

EDWARD G. DELOE, OF ROARING SPRING, PENNSYLVANIA.

DOOR-CHECK.

No. 885,023.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed June 17, 1907. Serial No. 379,469.

To all whom it may concern:

Be it known that I, EDWARD G. DELOE, a citizen of the United States, residing at Roaring Spring, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

The present invention relates to a novel form of door check which operates in an effective manner to stop the door gently and then allow it to entirely close without further resistance.

The object of the invention is to provide a simple and efficient device of this character which is inexpensive in its construction and can be readily applied to the conventional types of doors.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a front elevation of the door check, portions of the casing being removed to more clearly illustrate the invention. Fig. 2 is a top plan view showing the device applied to a door. Fig. 3 is a perspective view of the door check applied. Fig. 4 is a horizontal sectional view showing the operating lever locked in an outwardly swung position. Fig. 5 is a detail perspective view of the operating lever and rock shaft carried thereby. Fig. 6 is a transverse sectional view through the track engaging the cut away end of the rock shaft upon the operating lever.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the door check the numeral 1 designates the casing within which the mechanism is mounted and which is secured to the door frame at a point adjacent the swinging edge of the door by any suitable means such as the screws passing through the laterally projecting ears 2. In the preferred application as shown in Fig. 2 the case is mounted upon the door frame immediately above the top of the door and may be applied to the strip between the door and the transom. A series of vertical shafts 3, 4, 5 and 6 are journaled between the top and bottom of the casing 1 and these

shafts carry a train of gearing designed to receive motion from the operating lever 7 and transmit it to a fly wheel 8. Keyed upon the shaft 3 so as to rotate therewith is a comparatively large gear wheel 9 meshing with a pinion 10 loosely mounted upon the shaft 4.

A gear wheel 11 meshing with a pinion 12 rigid with the shaft 5 is keyed upon the opposite end of the shaft 4 and the two wheels 10 and 11 are operatively connected by a coil spring 13 surrounding the shaft 4 and also serving as a cushioning means to absorb all sudden shocks and jars and prevent injury of the device due to a sudden application of force thereto the opposite ends of the spring being secured to the said gear wheels. The fly wheel 8 is rigid with the shaft 6 and connects with the pinion 12 through the medium of the gear wheel 14 upon the shaft 5 and a pinion 15 upon the shaft 6. It will thus be apparent that the speed with which the various shafts rotate gradually increases from the shaft 3 to the shaft 6 and that owing to the inertia of the fly wheel 8 the same will be slow either to acquire or part with motion. The operating lever 7 projecting from one end of the casing is loosely mounted upon the shaft 3 and carries a spring actuated pawl 16 engaging the teeth of the gear wheel 9 in such a manner as to permit the lever to swing forwardly without setting the gearing in motion, but locking the lever with the gear wheel 9 upon a rearward movement of the lever such as would be imparted thereto by the closing of the door.

The lever 7 is normally held inwardly against the door casing by means of a spring 19 surrounding the shaft 3 and having one end thereof connected to the top of the casing while the opposite end is connected to the said lever. A plate 17 is applied to the upper portion of the door and projects beyond the top of the same, the projecting portion of the plate being provided with a head 18 designed to engage a clip 20 carried by the operating lever. Extending longitudinally along the operating lever and journaled upon the same is a rock shaft 21 the outer end of which has the before mentioned clip 20 applied thereto while the inner end is flattened as indicated at 22 and coöperates with a track 23 to normally lock the rock shaft 21 against rotary movement. However when the operating lever 7 reaches the limit of its forward swinging movement the flattened

portion 22 of the rock shaft 21 is moved over a notch 24 in the track 23 and the rock shaft 21 is permitted to rotate a sufficient amount to turn the U-shape clip 20 so that it is disengaged from the head 18 of the plate 17 and the door can continue in its outward movement. As soon, either manually or through the action of spring hinges, as the rock shaft 21 is thus turned however the flattened portion 22 thereof is thrown into an interlocking engagement with the notch 24 and the operating lever 7 thereby held in position against the action of the spring 19. When the door is closed the head 18 engages the rear arm of the U-shape clip 19 and thereby causes the rock shaft 21 to revolve until the said head 18 is again received between the two arms of the clip and the flattened portion 22 of the rock shaft is released from engagement with the notch 24. The spring 19 then operates to close the door but owing to the inertia of the fly wheel 8 it will be readily apparent that the door will be effectively checked and closed gently without slamming. In this connection it is to be remembered that the pawl 16 moves freely over the teeth of the gear wheel 9 when the lever 7 is swung outwardly so that no motion is imparted to the gearing while the door is being opened. Attention is again directed to the fact that owing to the action of the spring 13 interposed between the gear wheel 11 and the pinion 10 the shock due to the sudden engagement of the door to the operating lever is completely absorbed and the various parts relieved of the resultant excessive strain.

Having thus described the invention, what is claimed as new is:

1. In a door check, the combination of a casing, a fly wheel mounted in the casing, gearing adapted to impart motion to the fly wheel, a lever controlling the gearing, and a pawl carried by the lever and engaging one of the gear wheels whereby the lever moves freely in one direction but is locked to the gear wheel when moving in the opposite direction.

2. In a door check, the combination of a casing, a fly wheel mounted in the casing, a train of gearing adapted to impart motion to the fly wheel, yielding means operatively connecting a pair of the gear wheels, the said yielding means being of sufficient reactive power to positively move the gear wheels connected by the same, and a lever controlling the train of gearing.

3. In a door check, the combination of a casing, a fly wheel mounted upon the casing, a train of gearing adapted to impart motion to the fly wheel, a spiral spring operatively connecting a pair of the gear wheels and serving as a cushioning means, and a lever for controlling the train of gearing.

4. In a door check, the combination of a casing, a fly wheel mounted upon the casing,

a train of gearing adapted to impart motion to the fly wheel, yielding means operatively connecting a pair of gear wheels, the said yielding means being of sufficient reactive power to positively move the gear wheels connected by the same, an operating lever, and a pawl carried by the operating lever and engaging one of the gear wheels whereby the lever moves freely in one direction but is locked to the gear wheel when moving in the opposite direction.

5. In a door check, the combination of an operating lever, a swinging clip mounted upon the lever for engaging the door, and means for holding the clip in engagement with the door until the operating lever is moved into a predetermined position.

6. In a door check, the combination of an operating lever, gearing for retarding the movement of the operating lever in one direction, a spring tending to swing the operating lever in the opposite direction, a swinging clip mounted upon the lever for engagement with the door, and means for holding the clip in engagement with the door until the operating lever is swung to the limit of its outward movement.

7. In a door check, the combination of an operating lever, a swinging clip mounted upon the operating lever for engaging the door, means for holding the clip in engagement with the door until the operating lever has been swung to the limit of its outward movement, and means for locking the operating lever against movement when the clip is turned to release the door.

8. In a door check, the combination of a casing, a swinging lever mounted upon the casing, means for retarding the movement of the lever in one direction, a rock shaft journaled upon the lever, means carried by the rock shaft for engaging the door, and means whereby the rock shaft is locked against motion except at a predetermined position of the lever, the movements of the rock shaft controlling the engagement of the device with the door.

9. In a door check, the combination of a casing, an operating lever mounted upon the casing, means for retarding the movements of the operating lever in one direction, a rock shaft journaled upon the operating lever and provided with means for engaging the door, the disengagement of the door being effected by a rotary movement of the rock shaft, and means whereby the rock shaft is locked against motion except at a predetermined point, the lever being locked in position when the rock shaft is turned.

10. In a door check, the combination of a casing, an operating lever mounted upon the casing, a spring normally holding the operating lever in a predetermined position, a rock shaft journaled upon the operating lever, a clip carried by the rock shaft and designed to

produce engagement with the door, the said door being released from engagement with the clip by a rotary movement of the rock shaft, and means whereby the rock shaft is
5 locked against movement except at a predetermined position of the operating lever, the said operating lever being in turn locked in position when the rock shaft is revolved.

11. In a door check, the combination of a
10 casing, an operating lever mounted upon the casing, a spring normally holding the operating lever in a predetermined position, a rock shaft journaled upon the operating lever,
15 means carried by the rock shaft for engaging the door, the said door engaging means being controlled by the movements of the rock shaft, and means whereby the rock shaft is normally locked against motion except at a
20 predetermined position of the operating lever, the said operating lever being in turn locked against motion when the rock shaft is revolved to release the door.

12. In a door check, the combination of a
25 casing, an operating lever mounted upon the casing, means normally holding the operating lever in a predetermined position, a track

carried by the casing and provided with a notch, a rock shaft journaled upon the operating lever and provided with means for engaging the door, the said door engaging
30 means being controlled by the rock shaft and the said rock shaft being provided with a flattened portion normally engaging the before mentioned track and locking the rock
35 shaft against motion except when the operating lever is turned so that the flattened portion of the rock shaft is over the before mentioned notch in the track.

13. In a door check, the combination of a
40 casing, an operating lever mounted upon the casing, means for actuating the operating lever, a movable clip carried by the operating lever and designed to engage the door, and
45 means whereby the clip is caused to release the door when the operating lever reaches the limit of its outward swing.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD G. DELOE. [L. S.]

Witnesses:

W. M. BARNETT,
H. C. LORENZ.