

UNITED STATES PATENT OFFICE.

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DOOR-CHECK.

1,035,298.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM H. ASPEGREN, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Door-Checks, of which the following is a specification.

This invention relates to improvements in door checks and buffers and has for its object to provide a device to check the movements of a door while being opened or closed and to vary the checking power of said checking means.

The object is further to provide a device adapted to prevent the movement of a door relatively to the casing beyond a predetermined point.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings: Figure 1 is a side view, partly in section and part elevation, of a device embodying my invention and shown in connection with a door and door casing. Fig. 2 is a section taken on line 2-2 of Fig. 1 and viewed in the direction of the arrows in said figure. Fig. 3 is a side view of the device illustrated in Fig. 1, shown partly in section and part elevation, with the same connected to a door casing in the manner in which it is used as a door buffer.

Referring to the Figs. 1 and 2 of the drawings, 5 is a casing having a downwardly projecting stem 6 having pivotal engagement with a bracket 7, of any suitable design, adapted to be secured to a door or a door casing, but preferably to a door 8. A screw 9 and washer 10 are provided to retain said stem within said bracket but allowing a free rotary movement of the same therein. The casing 5 is cylindrical in shape and has screw-threaded portions 11 at opposite ends thereof adapted to receive the screw-threaded closures 12 and 12'. A screw 13 having a thread or threads 14 extending thereabout, preferably at an angle of 45° to the median axial line of said screw, has slidable engagement longitudinally of the casing 5 and through the holes 15, 15' formed in the ends of the closures 12 and 12'. A nut 16 having screw-threaded engagement with the screw 13, is located within said casing and adapted to be rotated about said screw by the movement thereof relatively to

the movement of said screw. The nut 16 is also adapted to be moved for a slight distance longitudinally of the casing 5 and is provided at opposite ends thereof with teeth 17, 17' which are adapted to engage teeth 18, 18 upon the rings 19 and 20, disposed at opposite ends respectively of the casing 5 and adapted to be rotated therein against balls 21, 21 interposed between said rings and the ends of the closures 12 and 12', in grooves in said members respectively. The rings 19 and 20 may be yieldingly forced, under more or less pressure, against the balls 21, and toward the ends of the closures 12 and 12' by springs 22, 22 which are adapted to engage at one of their ends the rings 19 and 20 and at the opposite ends thereof the flange 23 formed within the casing 5. The springs 22, 22 in addition to exerting a pressure against said rings in the direction of the ends of said closures, may, if so desired, be arranged to exert a torsional pressure upon said rings when said rings are rotated by the engagement of the teeth 18 thereon with the teeth 17 on the nut 16. The pressure of the springs 22 is varied by the movement of the closures 12 and 12' longitudinally of the casing 5, each of said closures being movable independently of the other and thereby permitting a greater or less pressure on one of said rings than that upon the other of said rings. The screw 13 is provided at one end with a transverse hole 24 which is adapted to receive a stud 25 secured in a bracket 26 and attached to the door or door casing, preferably the door casing 26' as shown, and adapted to prevent a longitudinal or a rotary movement of said screw and constituting a pivot therefor. The relative movement of the casing 5 and screw 13 longitudinally thereof is adapted to be checked by means, preferably consisting of a block 27, slidably mounted in the recessed portion 27' located in the outer or free end of the screw 13. The block 27 is provided with a screw 28 having screw-threaded engagement therewith and communicating with the exterior of said screw 13 through the slot 29, helically disposed between the convolutions of the thread 14, said screw having a head adapted to project beyond the surface of said screw 13 and so placed that it may be adjusted longitudinally of the slot 29 and secured at any predetermined point by screwing the same into said block until the under side of the head 30 engages the outer

surface of the screw 13, adjacent to the edges of said slot, whereby the longitudinal relative movement of the screw 13 and casing 5 may be checked at any predetermined point by the engagement of the head 30 of the screw 28 with the closure 12'.

Referring now to Fig. 3, a modified form of the device, is shown connected to a door casing 31, and acting as a door buffer, the stem 6 being, in this case, connected to a bracket 32 and securely held therein against rotation by the screw and washer 33 and 34 respectively. A screw 35 is adapted to be moved longitudinally through the casing 5 and closures therefor, identical in construction and operation with those shown in Fig. 1, by the closing movement of the door 36 which engages the end 37 provided with a rubber tip 38 and during said longitudinal movement of said screw the same is prevented from rotating by a pin 39 supported in the arm 40 of the bracket 32, said pin projecting through a slot 41 extending longitudinally of said screw for a portion of its length, and into the chamber 42 of said screw. A spiral spring 43 is disposed within the chamber 42 between the end 37 and the head of the pin 39 and upon the opening movement of the door 36, said spring forces said screw 35 in the direction of said opening movement until stopped by a screw 44 contacting with the head of the pin 39, said screw having screw-threaded engagement with a plug 45 secured in the end of the screw 35 by any suitable means, preferably pins 46.

The operation of the door check as illustrated in Figs. 1 and 2 is as follows: Upon the opening of the door 8 the casing 5 is moved longitudinally of the screw 13 and by said movement the teeth 18, carried by the ring 20, are brought into engagement with the teeth 17 on the end of the nut 16 adjacent to said ring and, if so desired, the rotary movement of said nut 16 may be checked by applying pressure through the spring 22 against said ring, and causing friction between the closure 12 and said ring 20 through the balls 21 intermediate thereof, which continues until the closure 12, at the opposite end of said casing, engages the head 30 of the screw 28 or until the door has been opened the desired amount. Upon the closing of the door, which may be by means of a spring, by sudden drafts or may be manually operated, the casing 5 is drawn in the opposite direction causing the teeth 18 upon the ring 19 to engage the teeth 17' upon the nut 16, thereby rotating said nut in the opposite direction from that in which it was rotated by the opening of said door and allowing the door to be closed slowly and preventing slamming thereof.

In the device embodied in Fig. 3, it will be seen that the screw 35 is not connected

with the door and therefore this device may be placed anywhere upon the casing where it may be engaged by the closing of said door, but where said screw 35 will be permitted to move a slight distance longitudinally through the casing 5. In this device as the door is opened the spring 43 forces the screw 35 through the casing 5 until the screw 44 engages the pin 39 at which point said screw will remain until the door is again brought in contact therewith, which will preferably be at the end of its closing movement, just prior to the latching of said door and is adapted to prevent the slamming of said door, the operation of the nut and the rings in said casing being identical with those illustrated in Fig. 1.

It must be evident that the device embodying my invention may be applicable to devices other than doors or door casings and that the specific construction of the device would not necessarily have to be carried out as herein shown and described, as many variations and changes might be made without departing from the spirit of the invention or sacrificing the advantages obtained thereby.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. A door check having, in combination, a casing, checking means disposed at opposite ends thereof, a screw mounted in said casing, a nut having screw-threaded engagement with said screw, means adapted to impart relative movements to said screw and nut in opposite directions and means adapted to connect said screw and nut with said checking means at opposite ends of said casing alternately whereby said relative movements in opposite directions may be alternately checked.

2. A door check having, in combination, a pivotal casing, a screw slidably arranged in said casing, a nut rotatably mounted in said casing upon said screw and having screw-threaded engagement therewith, means adapted to impart a longitudinal relative movement to said screw and nut in opposite directions alternately whereby said nut is rotated in opposite directions and means adapted to alternately check the relative movements of said screw and nut in opposite directions.

3. A door check having, in combination, a casing adapted to be pivotally mounted upon a support, a screw adapted to be pivoted to another support and having slidable engagement with said casing, a nut rotatably mounted on said screw and having screw-threaded engagement therewith, means adapted to impart a longitudinal relative movement to said screw and nut in opposite directions alternately whereby said nut is rotated in opposite directions and means

adapted to alternately check the relative movements of said screw and nut in opposite directions.

4. A door check having, in combination, a casing, a closure having adjustable engagement with said casing, checking means disposed adjacent to said closure, the checking power thereof adapted to be varied by the movement of said closure relatively to said casing, a screw having slidable engagement with said casing, a nut having screw-threaded engagement with said screw, means adapted to impart a longitudinal movement to said nut relatively to said screw whereby said nut is rotated and means carried by said nut adapted to engage said checking means to check the relative movements of said screw and nut.

5. A door check having, in combination, a casing, a screw slidable longitudinally of said casing, a nut having screw-threaded engagement with said screw, a ring disposed at each end of said casing respectively, balls disposed intermediate said rings and said casing, means adapted to vary the pressure of said rings against said balls, means adapted to impart a longitudinal relative movement to said screw and nut in opposite directions alternately whereby said nut is rotated in opposite directions, and means at one end of said nut adapted to engage one of said rings when said nut is rotated in one direction and means at the opposite end of said nut adapted to engage the other of said rings when said nut is rotated in the opposite direction.

6. A door check having, in combination, a casing, a closure at each end thereof respectively having adjustable engagement therewith, a screw slidable on said closures longitudinally of said casing, a nut having screw-threaded engagement with said screw, a ring disposed adjacent to each of said closures respectively, balls disposed intermediate said rings and said closures, springs disposed between said rings and said casing and adapted to force said rings toward said closures, the pressure thereof adapted to be

varied by movement of said closures relatively to said casing, means adapted to impart a longitudinal relative movement to said screw and nut in opposite directions, and means at one end of said nut adapted to engage one of said rings when said nut is rotated in one direction and means at the opposite end of said nut adapted to engage the other of said rings when said nut is rotated in the opposite direction.

7. In combination, a door and door casing, a pivotal casing mounted upon one of said elements, a screw having slidable engagement with said pivotal casing, longitudinally thereof and pivotally connected at one end with the other of said elements, a nut having screw-threaded engagement with said screw and adapted to be rotated by the longitudinal relative movement of said screw and casing, and variable checking means located at opposite ends of said casing adapted to engage opposite ends of said nut when said nut is rotated by the relative movement of said door and door casing.

8. In combination, a door and door casing, a pivotal casing mounted upon one of said elements, a screw having slidable engagement with said pivotal casing longitudinally thereof and pivotally connected at one end with the other of said elements, means adapted to check the longitudinal relative movement of said screw and casing at a predetermined point, a nut having screw-threaded engagement with said screw and adapted to be rotated by the longitudinal movement of said screw, and variable checking means located at opposite ends of said casing adapted to engage opposite ends of said nut when said nut is rotated by the relative movement of said door and door casing.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM H. ASPEGREN.

Witnesses:

CHARLES S. GOODING,
SYDNEY E. TAFT.