T. KUSH & A. WEBBER.

DOOR CONTROLLING DEVICE.

APPLICATION FILED OCT. 21, 1908.

916,455. **Patented Mar. 30, 1909.**

Fig. 1.

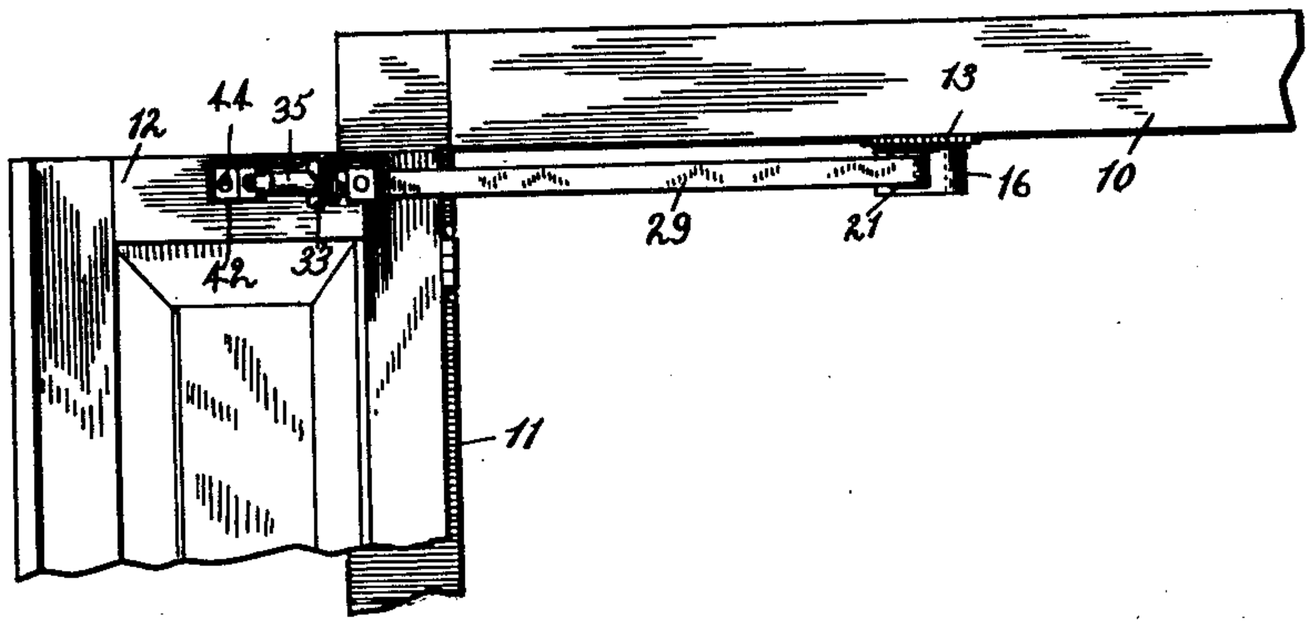


Fig. 2.

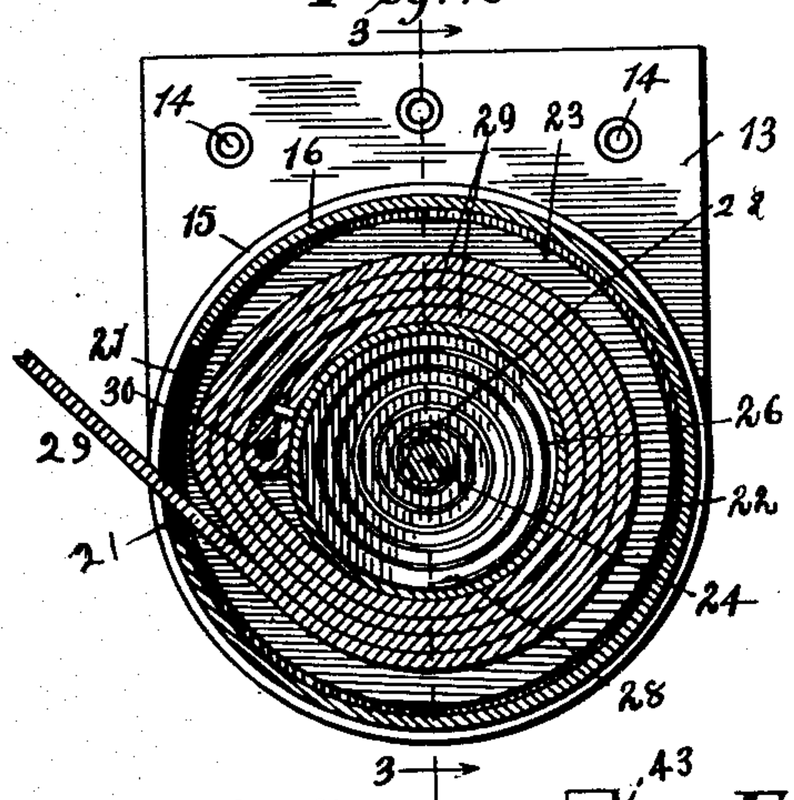


Fig. 3.

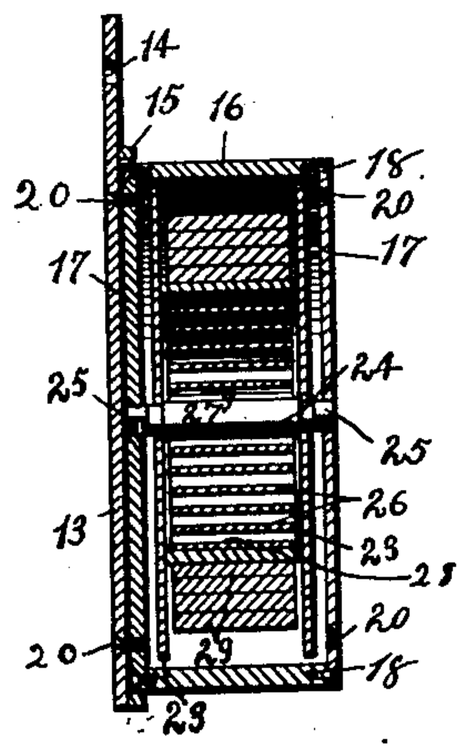


Fig. 4.

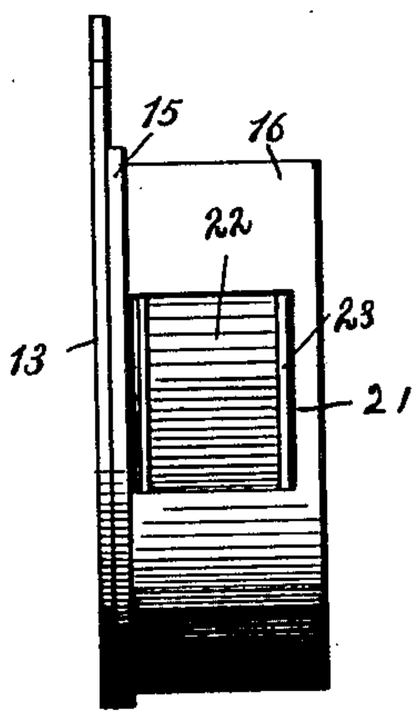


Fig. 5.

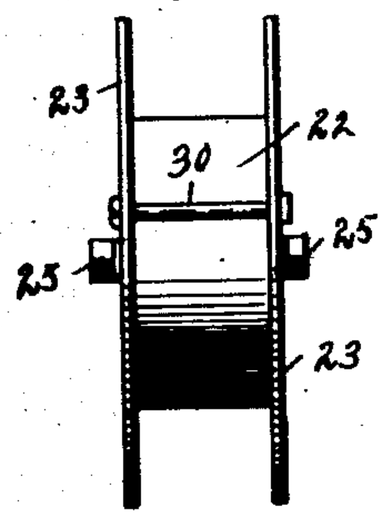


Fig. 6.

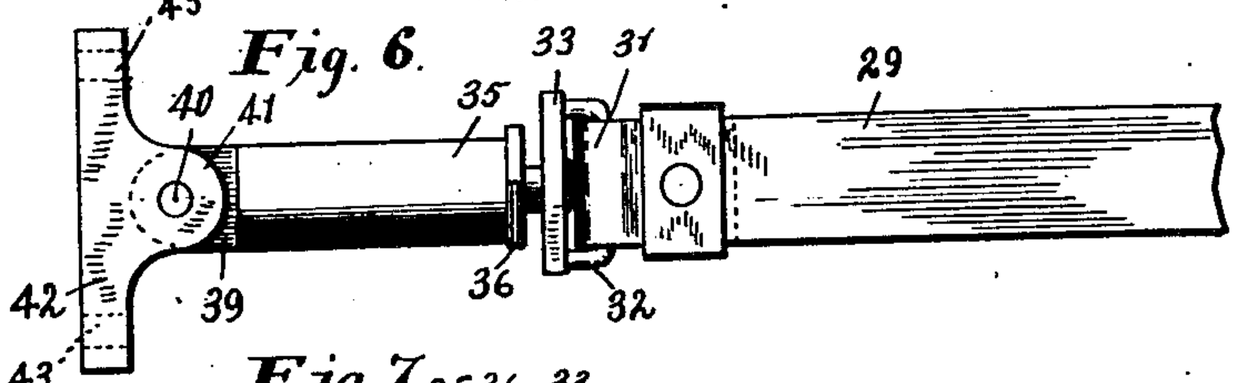
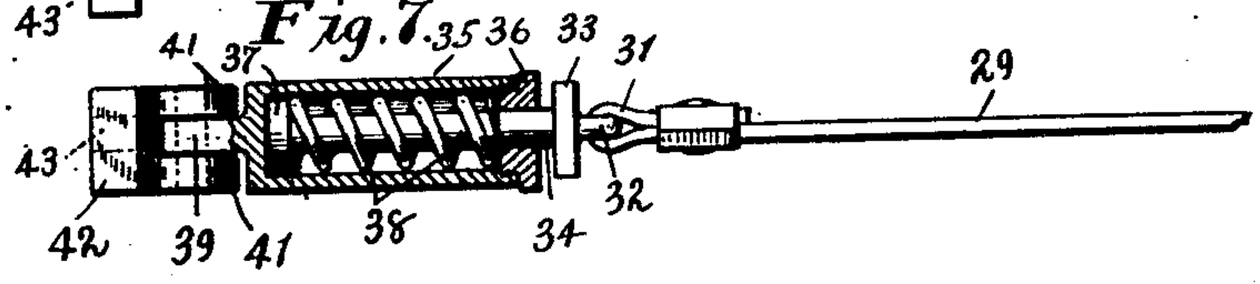


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS KUSH AND ARTHUR WEBBER, OF CHICAGO, ILLINOIS.

DOOR-CONTROLLING DEVICE.

No. 916,455. Specification of Letters Patent. Patented March 30, 1909.

Application filed October 21, 1908. Serial No. 458,902.

To all whom it may concern:

Be it known that we, THOMAS KUSH and ARTHUR WEBBER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Controlling Devices, of which the following is a specification.

Our invention relates to door-checks and the chief objects of the improvements which form the subject matter of this application are:—to provide a simple and efficient device for limiting the movement of a door to its open position and to furnish means for relieving the shock upon the ordinary door check when the door reaches the limit of its movements.

Other important advantages of the cushioning and controlling means herein shown are seen in the tensioning device which prevents any slack in the traction member, exerting a constant tension thereon, and in addition acting as a closure for the door, the latter function adapting the device to be used as an auxiliary to the ordinary pneumatic door-closing check, though it may be employed without any such coöperating device.

Further objects of this invention are to furnish a means for reversing the contrivance to adapt it for use on either right or left-hand doors, and a swivel device permitting variations to be made in the relative positions of the attachments at the opposite ends of the traction member and to prevent the latter from twisting and thus preventing it from entering the casing provided therefor.

We accomplish the desired results by the means illustrated in the accompanying drawing forming a part of this application, the details of construction being disclosed in the following views:—

Figure 1 is a partial view of a door and frame showing our improved door check controller erected in operative relation; Fig. 2 is a bottom plan view of the door-frame attaching plate, the casing and parts arranged therein being partly in section; Fig. 3 is a sectional view on the line 3—3 of Fig. 2; Fig. 4 is a side elevation of the frame plate and casing with the traction member removed; Fig. 5 is a side elevation of the spool or reel; Fig. 6 is a side view of the traction member and its door attachment, and Fig. 7 is an edge view of the parts shown in Fig. 6, the swivel member being in section.

Referring to the details of the drawing the numeral 10 indicates the lintel of a door frame and 11 the upright hinge edge of the door casing, to which the door 12 is hinged, only a portion of the latter being shown. Fastened to the under face of the lintel 10 is a base plate 13, secured by screws which pass through holes 14. One end of this plate is supplied with an annular retaining flange or ring 15, which forms a socket to receive the end of a cylindrical casing or shell 16, having end plates or heads 17, secured thereto by screws 18. This casing or shell is attached by suitable screws 19 which pass through the base plate 10 and engage holes 20 in the casing ends. The peripheral wall of the casing is provided with a rectangular aperture 21 for the passage of the traction member 29 hereinafter described. This arrangement permits the casing to be reversed so that it may be assembled with either end or face against the base plate, and within the retaining flange 15, thus adapting it for use with doors opening in opposite directions. Within the casing and concentric therewith is revolubly mounted a spool or reel 22, having widely extending flanges or end plates 23. The reel is mounted to turn on a central shaft 24, which projects through each plate 23. The ends of the shaft are reduced where they pass through the plates and the extremities are squared as shown at 25, to engage corresponding holes in the casing end plates or heads 17 thus preventing the shaft from turning. Within the cavity of the spool body is arranged a spirally wound ribbon or clock spring 26, having its inner and outer ends fastened to the shaft 24, and the wall of the body, respectively, as shown at 27, and 28. Adapted to be wound upon the said reel or spool 22 is a flat leather or flexible strap 29, having its inner end attached to a bolt 30 supported in the flanges 23, (see Fig. 5). The strap then passes through the aperture 21 in the casing and is formed at its outer end into a loop 31, which engages an eye or staple 32, of a block 33, attached to the end of a bolt 34. Surrounding this bolt is a cylindrical sleeve 35, fitted at one end with a removable threaded plug 36, through which the said bolt 34 projects, and between the head 37 of the bolt and said plug is a coiled compression spring 38. The end of the sleeve opposite the plug is formed with an extension 39 pivoted by a rivet 40 between ears 41, of block 42, the latter having holes 43

for screws 44 by which it is attached to a door. The bolt 34, shell 35 and interposed spring 38 form a yielding and swivel connection between strap and door which permits the attachment of the block 42 to a door in any desired position relative to the other parts and at the same time the spring 38 acts as a buffer to relieve the shock on the spring 26 when the strap is unwound the maximum limit.

The manner of attaching our improved door check controller will be clearly understood by reference to the assembled view, Fig. 1. The base plate with the casing in place is screwed to the under side of the lintel, *i. e.* near the edge opposite to the side upon which the door is hung, and the plate 42 is secured to the door near the upper edge, at a point corresponding with the location of the base plate when the door is closed. Care, of course, must be taken when assembling the reel 22 within the shell 16, so that the spring 26 will be under a sufficient amount of tension when the strap 29 is completely wound upon the reel, to urge the door into its closed position and fully wind up the strap.

With the parts assembled as illustrated it will be plain that when the door is closed the action of the clock spring 26 which is partially wound up will wind the strap 29 upon the reel, and as the door is opened the traction of the said strap will turn the reel in such a direction as to completely wind up the spring. The length of the strap is so proportioned that when the door is at its maximum open position the said strap will be completely unwound from the reel, and will extend in a straight line between the bolt 34 and the pin 30. Upon the release of the door, the action of the clock spring will cause it to close, and the strap will be wound upon the reel without becoming slack. The device is shown in Fig. 1 attached to door hung left handed. To adapt the appliance to a right-hand door the shell 16 is first removed by loosening the screws 19, and then reversed and secured with the opposite face or head in the socket ring or flange 15, by the same screws, and the plate attached to the lintel in the manner described.

Having thus described our invention, what we claim is—

1. In a door-closing device comprising a supporting member adapted to be secured to the door-frame, and a connecting member adapted to be attached to the door, of a traction member, and spring members connected with said supporting member and door connecting member respectively and with the opposite ends of said traction member, and adapted to exert a yielding tension on said traction member.

2. In a door closer, the combination with a casing, of a reel rotatably mounted in said casing, a spring for rotating the reel in one direction, a flexible traction member attached at one end to the reel, and yielding means for attaching the opposite end of said member to a door.

3. In a door closer, the combination with a casing, of a reel rotatably mounted in said casing, a spring arranged to rotate said reel in one direction, a traction member attached at one end to the reel, and means for attaching the opposite end to a door, said means comprising a swivel and yielding connection adapted to prevent slack of the traction member.

4. In a door closer, the combination with an attaching plate, of a casing removably and reversibly attached to said plate, a reel rotatably mounted in the casing, a spring adapted to rotate said reel in one direction, a traction member attached at one end to the reel, and yielding means for attaching the opposite end of the traction member to a door.

5. In a door controller, the combination with a base plate adapted to be attached to a support, of a reversible casing removably secured to said plate, a reel rotatably mounted in the casing, a spring arranged to actuate said reel in one direction, a traction member attached at one end to the reel and adapted to be wound thereon by the action of said spring, and means for pivotally and yieldingly securing said traction member to a door.

6. In a door controller, the combination of a reversible casing, means for attaching said casing to a support, a flexible traction member projecting from said casing, and adapted to be extended when traction is made thereon, means for automatically retracting said member within the casing when released, and a yielding swivel member attached to the projecting end of said traction member and adapted to be attached to a door.

7. A door controlling device comprising a casing adapted to be secured to the lintel of the door frame, a coiled spring mounted in said casing, a strap connected with one end of said spring, and yielding means connected with the other end of said strap and adapted to be attached to the door.

8. In a device of the character described, a casing, a reel rotatably mounted in said casing, a spring arranged in said reel and adapted to rotate the latter in one direction, a strap connected at one end to said reel, a block adapted to be secured to a swinging closure, a sleeve pivotally connected with said block, a bolt slidably and rotatably arranged in said sleeve, means connecting said bolt with said strap, and means yieldingly holding said bolt in said sleeve.

9. In a device of the character described, a casing, a reel rotatably mounted in said casing, a coiled spring connected with said reel and adapted to rotate the latter in one direc-

tion, a strap having one end connected to said reel, a block adapted to be attached to a swinging closure, a sleeve pivotally connected with said block and having a removable end, a bolt slidably, yieldingly and rotatably arranged in said sleeve, and means connecting said bolt with the other end of said strap.

In testimony whereof we affix our signatures in the presence of two witnesses.

THOMAS KUSH.
ARTHUR WEBBER.

Witnesses:
WM. B. MOORE,
M. A. MILORD.