

UNITED STATES PATENT OFFICE.

ALBERT J. ROSENTRETER, OF BOONTON, NEW JERSEY.

DOOR CLOSER AND CHECK.

980,342.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed September 8, 1909. Serial No. 516,655.

To all whom it may concern:

Be it known that I, ALBERT J. ROSENTRETER, a citizen of the United States, residing in Boonton, in the county of Morris and State of New Jersey, have invented a certain new and useful Improvement in Door Closers and Checks, of which the following is a specification.

The invention relates to door closers and checks of that class in which the closing movement of the door is produced by a spring and checked by the slow escape of liquid confined in a cylinder behind a piston.

The object of the invention is to provide a simple and efficient device, of few parts easily and economically constructed and assembled, in which the danger of leakage is avoided, and the employment of a long closing spring permitted.

The invention consists in certain novel features and details of construction and arrangement by which the above objects are attained, to be hereinafter described.

The accompanying drawings form a part of this specification and show an approved form of the invention as mounted for service on a left-hand door and its jamb.

Figure 1 is an elevation showing the upper portion of a door and casing, in the closed condition, equipped with the improved closer and check. Fig. 2 is a corresponding horizontal section showing the closer and check in plan view. The dotted lines show the condition when the door is partially opened. Fig. 3 is a front elevation of a portion of the device, partly in vertical section. Fig. 4 is a vertical section taken at a right angle to Fig. 3. Fig. 5 is a horizontal section. Fig. 6 is a view of the under face of the plate to which the working parts are attached. Fig. 7 is a sectional view showing the spring and its carrier.

Similar letters of reference indicate the same parts in all the figures.

A is the upper portion of a door, and B the casing or jamb thereof. The closing and checking mechanism is mounted on a frame or plate C of circular form having an up-turned flange C¹ at the rear by which it is secured to the door by screws C². On the plate C preferably in rear of the center is a hollow boss extending vertically above and below the plate as at C³ C⁴ and serving as a long bearing for a shaft D carrying on its squared upper end the arm D¹ and on its squared lower end the crank D².

At the upper end of the boss C³ is a stuffing-box C⁵ and packing-nut C⁶, and in the midlength is a tubular chamber C⁷ surrounding the shaft and serving with the stuffing-box to prevent the escape of liquid along the shaft.

C⁸ C⁸ are lugs cast on the under face of the plate and drilled and tapped vertically to receive screws E² extending through lateral ears E¹ on the checking cylinder E and securely attaching the latter to the plate. The inner end of the cylinder is open and receives a piston F connected by a pitman F¹ to the crank D² on the shaft.

At the outer end of the arm D¹ is a pin D³ to which is pivoted the outer end of a link or casing-arm G, the inner end of which is pivotally connected to a pin G² in the casing-bracket G¹ attached to the jamb B of the door casing, as shown.

Encircling the boss C³ is a collar or sleeve H having radial teeth H¹ and a lug H². The latter carries a pin H³ to which is attached one end of a chain J³, the other end being secured to, and forming a continuation of, a rod J² having a head or follower J¹ inclosed in a tube J which is pivoted at the outer end on the pin D³ above described. The inner end of the tube is internally flanged as at J⁴ and serves as an abutment for a helical spring J⁵ encircling the rod J² and chain J³ and finding its opposite abutment against the follower J¹. The pin H³ stands close to the boss C³ and the parts are so proportioned and arranged as to cause the chain to follow and lie against the cylindrical face of the boss as the door is opened, shortening the chain and correspondingly compressing the spring during the opening movement of the door. The force of the spring in re-acting serves to close the door when released as will be understood. By turning the collar H on the boss C³ the tension of the spring may be adjusted to suit the conditions, and when thus turned is held by the two-armed pawl H⁴ pivoted on the plate C.

L is a cup, preferably of cylindrical form, closed at the bottom and having an annular bead L¹ matching to a rim or flange C⁹ on the under face of the plate C, and held to the latter by a screw L² extending through the plate into a boss L³ in the bottom of the cup. The cup L serves as a receptacle for checking-liquid and incloses the parts carried on the lower face of the plate C.

The action of the checking cylinder is as

usual; liquid partially filling the cup flows freely into the space behind the piston on the outward stroke of the latter through the passage f controlled by the valve F^2 and is imprisoned by the inward movement of the piston and outward movement of said valve caused by the closing movement of the door and slowly escapes through the contracted passage f^1 in the closed end of the cylinder, thus retarding the closing movement of the door in opposition to the force of the spring J^5 . The escape of liquid is regulated by a screw M extending through a stuffing-box M^1 on the plate C into the passage f^1 .

It will be noted that the working parts are attached to the plate C thus permitting them to be easily and cheaply manufactured independently thereof and assembled with little labor.

By the arrangement shown, space is economically provided for the installation of a long helical spring acting by compression and expansion, an action which experience has demonstrated to be the best for this service. Springs of this type are not expensive and as inclosed in the tube J will continue to perform their functions even in the event of fracture until a new spring may be substituted.

The checking liquid in the cup is not subjected to pressure and danger of leakage is thus avoided. The cup is securely and snugly held in place by the single screw L^2 and may be easily removed to permit access to the checking mechanism.

By mounting the cup eccentrically to the shaft sufficient space is afforded for the cylinder, piston, and other parts within a cup of relatively small diameter.

Although the invention is shown and described as applied to a left-hand door it will be understood that by a simple reversal of the arm and link it will be conditioned for service with a right-hand door, the double-pawl H^4 being correspondingly reversed, and although the link or casing-arm is shown as attached to the door jamb, the device may be easily arranged for link attachment to the lintel. Other modifications may be made in the forms and proportions without departing from the invention, and parts may be used without the whole.

I claim:—

1. In a door-closer, a plate adapted to be secured to a door, a shaft mounted thereon, an arm on said shaft, a tube independent of, pivotally connected to and carried by said arm, a follower in said tube, a spring in said tube arranged to be compressed by said follower, a pin on said plate, a flexible connection from said follower to said pin, and a link pivotally connected to said arm and adapted to be secured to a door-casing, all arranged to serve substantially as herein specified.

2. In a door closer, a plate adapted to be secured to a door, a cup supported by said plate, a shaft mounted on said plate eccentrically to the cup, an arm on said shaft, a link pivotally connected with the arm and adapted to be secured to a door casing, a tube independent of, pivotally connected to and carried by said arm, a follower in said tube, a spring in the tube arranged to be compressed by the follower, a pin on said plate, a flexible connection between the pin and follower, means for moving the latter to vary the tension of the spring, a cylinder within the cup, a piston in the cylinder, and a crank connection between said piston and shaft.

3. In a door-closer, a plate adapted to be secured to a door, said plate having a boss, a shaft mounted in said plate and extending through said boss, an arm on said shaft, a link pivotally connected to said arm and to the casing, a tube carried by said arm, a follower in said tube, a spring in said tube arranged to be compressed by said follower, a collar rotatable on said boss, a pin on said collar, means for holding said collar against rotation, and a flexible connection from said follower to said pin, all arranged to serve substantially as herein specified.

4. In a door-closer, a plate adapted to be secured to a door having a boss, a shaft mounted in said plate and extending through said boss, an arm on said shaft, a link pivotally connected to said arm and to the casing, a tube carried by said arm, a follower in said tube, a spring in said tube arranged to be compressed by said follower, a collar rotatably mounted on said boss having laterally projecting teeth, a pawl having oppositely extending arms arranged to engage said teeth, a pin on said collar, a flexible connection from said follower to said pin, and a cup on said plate in which said shaft is eccentrically mounted, said cup inclosing the inner end of the shaft and a checking device within said cup.

5. In a door check, a plate adapted to be attached to a door, a shaft mounted directly in said plate, a checking cylinder mounted directly upon said plate, a checking piston in said cylinder, a crank on said shaft, a pitman extending from said crank to said piston, a cup separably attached to said plate and inclosing said cylinder and piston, said shaft being mounted eccentrically with relation to said cup and extending in the same general direction.

6. In a door check, a plate adapted to be attached to a door, a shaft mounted in said plate and constructed and arranged to be actuated by movements of the door, checking means mounted on the under face of said plate and actuated by said shaft, and a cylindrical cup inclosing said checking means and detachably secured to said plate eccentrically.

trically to said shaft and extending in the direction of the length thereof, said plate being formed with integral bearing lugs wherein the shaft of the checking means is directly mounted.

7. In a door-closer and check, a plate adapted to be attached to a door and having a boss extending vertically upward and downward therefrom, a shaft mounted directly in said boss, an arm on said shaft at the upper end thereof, a link pivotally connected to said arm and adapted to be attached to the door-casing, a tube carried by said arm, a follower, a spring in said tube arranged to be compressed by said follower, a collar rotatable on said boss, a pin on said collar, means for holding said collar against rotation, a flexible connection between said follower and pin, checking means mounted on the under face of said plate and actuated by said shaft, and a cup inclosing said checking means and secured to said plate.

8. In a door-check, a plate adapted to be secured to a door having lugs on its under face, a checking-cylinder secured to said lugs, a shaft mounted directly in said plate, a crank on said shaft, a checking-piston in

said cylinder, means for permitting the restricted flow of the liquid in front of the piston and a pitman connecting said crank and piston, and a detachable cup inclosing said cylinder and crank and secured to said plate and extended in the direction of the length of the shaft of the checking means.

9. In a door-check, a plate adapted to be secured to a door, a checking-cylinder attached to the under face of said plate and having an escape passage, a shaft mounted directly in said plate, a crank on said shaft, a checking-piston in said cylinder, a pitman connecting said crank and piston, a regulating screw extending through said plate into said escape passage, and a cup inclosing said cylinder and crank and detachably secured to said plate and extended in the direction of the length of the shaft of the checking means.

In testimony that I claim the invention above set forth I affix my signature, in presence of two witnesses.

ALBERT J. ROSENTER.

Witnesses:

CHARLES R. SEARLE,
C. L. MEYERS.