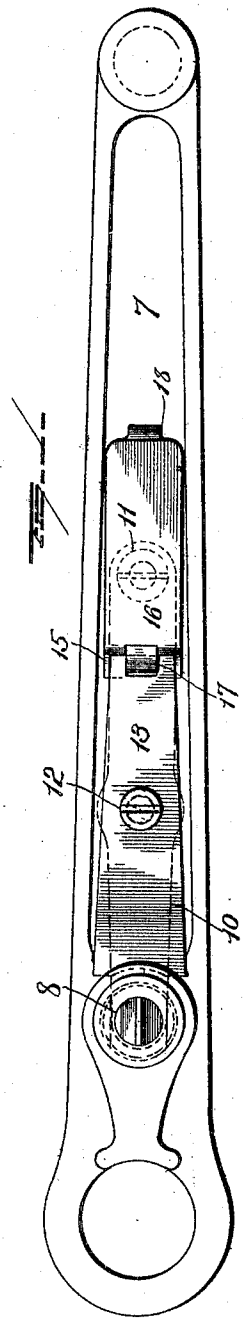
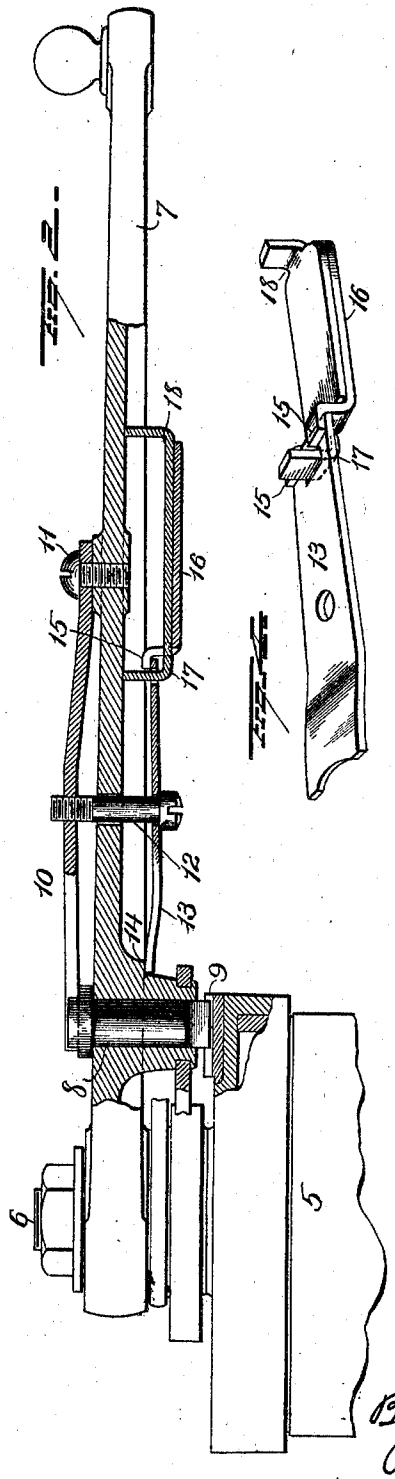
P. MIKKELSEN.

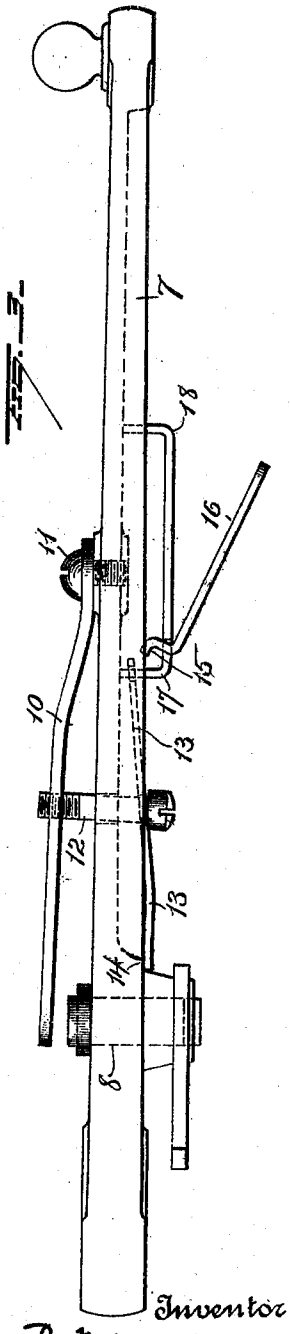
DOOR CLOSER.

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1,315,145. Patented Sept. 2, 1919.







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DOOR-CLOSER.

1,315,145. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed February 3, 1919. Serial No. 274,766.

To all whom it may concern:

Be it known that I, PEDER MIKKELSEN, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Door-Closers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in that type of door closer having means by which the door may be held in open position, the object being to provide means for releasing the door holding means in the event of a fire so that the door will then be automatically closed by the closer, and it consists in the parts, and arrangement of parts as will be hereinafter described and pointed out in the claims.

In the accompanying drawings; Figure 1 is a view in bottom plan of a door closer lever arm having my improvement applied to the same; Fig. 2 is a view in section of the lever arm with my improvement thereon; Fig. 3 is a similar view showing the spring released and Fig. 4 is a perspective view of the bolt retaining member.

This improvement is designed for use with door closers or with combined checks and closers, hence I would have it understood that I do not limit its use to either, and that the term "door closer" used in the specification is intended to include also combined checks and closers.

5 represents the casing of a door closer and 6 the spindle of the same to which the lever arm 7 is secured, the said lever arm being adapted for coöperation with the door closer in the usual and well known manner.

For the purpose of holding the door open, the lever arm 7 is provided with a spring pressed dog 8, and the cap of the closer casing with an upwardly projecting rib or stop 9 which is engaged by the lower beveled end of the dog when the door is in its open position, the dog riding over the rib 9 during the opening movement of the door and dropping behind the rib when the door is fully open, the pressure of the spring against the dog 8 being sufficient under all normal conditions to prevent the dog from riding over the rib and thus permitting the closer to close the door.

The dog is mounted for free vertical movement in an opening through the lever arm 7, and is provided with a chisel or beveled lower end to engage the rib or stop 9 and with a head which limits its downward movement, and against which the free end of the long flat spring 10 bears, the head of the dog being preferably grooved to receive the end of the spring 10 whereby the dog will be prevented from turning in its bearing.

The spring 10 is secured at its other end, by a rivet or screw 11 to the lever arm 7, with its free end in position over the dog as previously explained. Passing upwardly from the underside of arm 7, and through the latter and also through the spring 10 is the tension bolt 12. This bolt 12 has free movement in the lever arm 7, and while it may be provided at its threaded end with a nut to bear on the spring 10, I prefer to thread the bolt opening in the spring 10 so that the bolt will directly engage the spring as shown in Figs. 2 and 3 of the drawing.

13 is a retaining plate one end of which rests against the depending shoulder 14 on the arm 7, while its outer end is slotted to embrace the adjacent end member or leg of the yoke 18, which latter is permanently secured to the underside of the arm 7. This retaining plate 13 is provided with an opening for the screw bolt 12, and when the latter is in place, and the parts in normal position, the head of the bolt bears against the underside of the said plate 13 and is held in place by the latter, so that when the spring 10 is put under tension by screwing up on the bolt, the screw will be supported and held in place by the plate 13. The end of retaining plate 13 carried by the yoke 18 is held down in its normal position by the bent end 15 of the lock plate 16. The bent end of lock plate 16 is bifurcated to receive the narrowed end 17 of the yoke 18 and also the leg or end member of the yoke at said narrowed end, and the lip 15 of the lock plate is adapted to take over the adjacent end of the retaining plate 13 as shown in Fig. 2, and positively lock the engaged end of the retaining plate against any movement. Lock plate 16 is comparatively long and light in weight, as is also the horizontal member of the yoke 18, so that the said parts will be quickly heated when exposed to high temperature, and lock plate 16 is secured

against the under face of the yoke 18 by a fusible alloy or solder that will melt at a comparatively low temperature.

When the parts are assembled as shown in Figs. 1 and 2, the spring 10 is under tension and is yieldingly holding the dog 8 in its position to engage the stop 9, the screw being supported wholly by the retaining plate 13. In the event of a fire, the heat melts the solder which holds the lock plate in position against the yoke, then freeing the lock plate and permitting the spring 10 the tension of which is borne by the retaining plate 13, to pull the retaining plate toward the lever arm 7, the screw bolt 12, moving of course with the spring. When the retaining plate 13 is released, as above described, the tension of the spring is also released and the free end of the latter rises above the dog thus leaving the latter free to rise and ride over the stop 9 without any opposition, or with such slight opposition that may be readily overcome by the door closer spring.

In assembling or reassembling the parts, the retaining plate 13 mounted on the screw bolt 12, should be secured with its ends abutting respectively against the shoulder 14 on the lever arm 7, and the lip 15 of the lock plate 16, the latter being soldered to the yoke. The spring is then brought down into contact with the head of the dog, and the proper tension applied thereto by turning the screw bolt.

With this improvement the fusible members or rather the metal parts held together by the fusible solder or alloy are comparatively thin and light and are separated from the heavier lever arm so that they will be instantly affected by any material rise in temperature which if it be above normal will melt the solder and thus release the spring as previously explained.

In the ordinary use of the door, power sufficient can be applied to the latter to cause the dog to ride over the stop both in closing and opening. If however the door is to be left open the dog will engage the stop 9 and be held down by the spring 10, against the closing tendency of the spring in the closer.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described but,

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. The combination of a door closer having a stop, a lever arm carrying a dog, a spring for yieldingly holding the dog against the stop, a bolt retaining means carried by the lever arm and secured in fixed position to the latter by fusible solder, and a tension bolt passing through the said retaining means and the spring and connected with the latter, whereby the said bolt and spring will be released when the retaining means is released by the melting of the solder.

2. The combination of a door closer having a stop, a lever arm carrying a dog, a spring fixed at one end and bearing against the dog at its other end for yieldingly holding the dog against the stop, a bolt retaining member secured to the lever arm in fixed relation thereto by fusible solder, and a tension bolt passing through the retaining member, lever arm and spring and connected with the latter for normally holding the spring under tension.

3. The combination of a door closer having a stop, a lever arm carrying a dog, a spring for yieldingly holding the dog against the stop, a tension adjusting bolt for the spring, the said bolt passing loosely through the lever arm, and a retaining plate forming a support for the tension adjusting bolt, the said plate having a fixed support at one end and a movable support at the other end, the said movable support being secured in place by fusible material.

4. The combination of a door closer having a stop, a lever arm carrying a dog, a spring for yieldingly holding the dog against the stop, a tension adjusting bolt for the spring, the said bolt passing loosely through the lever arm, a yoke secured to the lever arm, a retaining plate forming the support for the bolt, the said retaining plate bearing at one end against a shoulder on the lever arm and a lock plate secured by fusible alloy to the yoke and provided with a lip forming a support for the other end of the bolt retaining plate.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PEDER MIKKELSEN.

Witnesses:
P. C. RICHTER,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."