C. FORTH.

DOOR CLOSING MECHANISM.

APPLICATION FILED AUG. 4, 1916.

1,225,322.

Patented May 8, 1917.

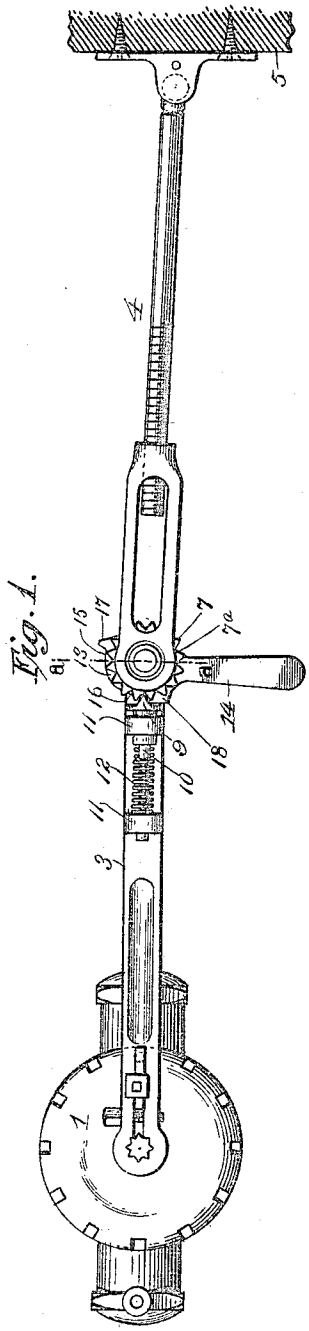


Fig. 1.

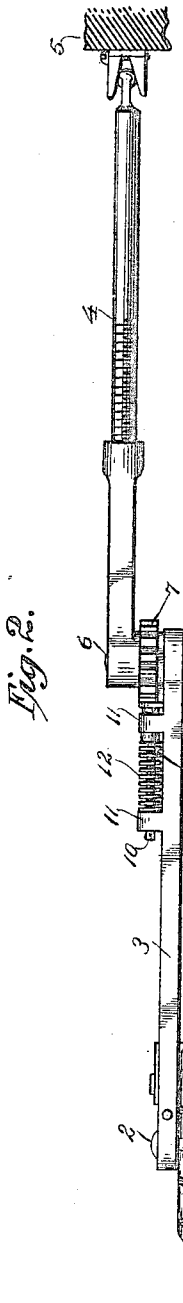


Fig. 2.

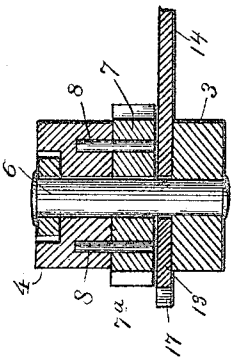


Fig. 4.

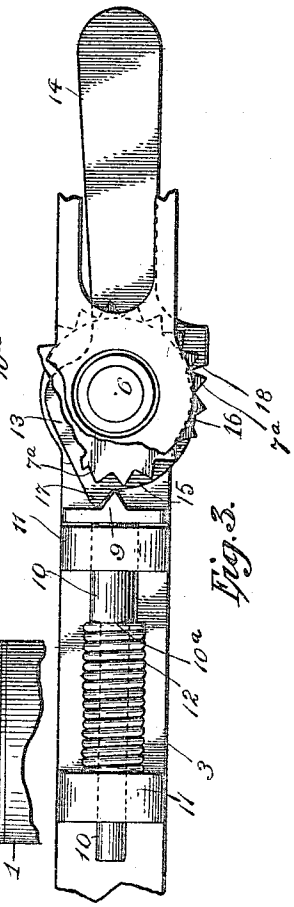


Fig. 3.

Attest:

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UNITED STATES PATENT OFFICE.

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DOOR-CLOSING MECHANISM.

1,225,322. Specification of Letters Patent. Patented May 8, 1917.

Application filed August 4, 1916. Serial No. 113,100.

To all whom it may concern:

Be it known that I, CHARLES FORTH, a citizen of the United States, residing at Ottawa, in the Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Door-Closing Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to door closing mechanism, and has reference more particularly to that type comprising a closing motor or spring, usually attached to the door, an actuating arm operated by the motor, and a link pivoted to the arm and usually connected with the door framing, the object of the invention being to provide for holding the door open in different positions against the closing action of the motor.

With this object in view, my invention consists in combining with the pivotally connected actuating arm and link of a door closing mechanism, a locking device of improved form and construction applied to said parts adjacent the point of pivotal connection and operable to hold the arm and link yieldingly against relative pivotal motion in different open positions of the door, a manually operable releasing device being provided for rendering the locking device inactive in order that the door closing mechanism may operate in its normal manner in effecting the closing action of the door.

In the accompanying drawings:

Figure 1 is a top plan view of a door closing mechanism having my invention embodied therein, the releasable locking device being shown in active position.

Fig. 2 is a side elevation of the same with certain parts broken away.

Fig. 3 is a top plan view on an enlarged scale of the connected ends of the arm and link, showing the locking device out of action.

Fig. 4 is a vertical sectional elevation on an enlarged scale on the line *a*—*a* of Fig. 1.

Referring to the drawings:

1 indicates a barrel or casing adapted to be connected with a door and provided with a motor usually in the form of a closing spring (not shown), which acts to rotate a shaft or stud 2 mounted in the casing and connected at its outer end with one end of an actuating arm 3. 4 indicates a link, the outer end of which is adapted to be jointed to the door framing 5 and the inner end of which is pivotally connected with the free end of the actuating arm, by means of a pivot pin 6 extending through the adjacent ends of the arm and link.

In applying my invention to a door closing mechanism of this type, there is arranged between the ends of the arm and link a toothed member in the form of a disk 7 containing a central opening through which the pivot pin passes and firmly fixed to the link, in the present instance by means of fastening pins 8 extending through the disk and into the link so that the disk will be moved with the link. The disk is provided on its edge with pointed teeth 7^a between which is adapted to engage a locking tooth 9 on the end of a locking bolt 10 carried by the actuating arm 3 and constituting a locking device. This bolt extends longitudinally of the arm and is mounted to slide endwise in guiding openings in lugs 11 extending upwardly from the arm, a compression spring 12 encircling the bolt and bearing at one end against a shoulder 10^a thereon and at its opposite end against the end guiding lug 11, the tendency of the spring being to urge the locking bolt toward the toothed member and hold the locking tooth yieldingly between adjacent teeth on the toothed member, as shown in Fig. 1. With the parts in this position, the locking bolt will act to hold the arm and link yieldingly against pivotal relative movement so that the door may be held in different open positions against the closing action of the motor. Due to the fact that the locking bolt is yieldingly held in engagement with the toothed disk, if the door when held open is forcibly pushed in either direction, the locking bolt will yield and the arm and link will be permitted to pivot on each other without injury to the parts. As a result of this action, the door may be moved in either direction and held as desired.

Means are provided for rendering the locking device inactive when it is desired that the closing motor will act normally in closing the door from an open position, which means in the present instance consists of a releasing device in the form of a manually operable cam 13 which is mounted between the toothed disk and actuating arm and is provided with an opening through which the pivot pin 6 extends, the cam being thus rotatable about the axis of the pin and being provided with a handle 14 for

operating it. The active edge of the cam is in position to engage the end of the locking tooth 9 on the locking bolt, and is curved eccentrically with respect to the axis of rotation, thereby forming a high portion 15 and a low portion 16, a stop lug 17 being provided at the end of the high portion, and a stop lug 18 being provided at the end of the low portion. When the cam is in the position shown in Fig. 1, the low portion thereof will be in line with the locking tooth and the latter will be held by the spring 12 between adjacent teeth on the toothed disk, thereby rendering the locking device active to hold the door in open position. When, however, the cam is rotated to the position shown in Fig. 3 the high portion of the cam will be engaged with the locking tooth and the locking bolt will be forced endwise against the action of the spring, which will disengage the locking tooth from the toothed disk and the locking device will be held inactive, so that the closing mechanism will be permitted to act in its normal manner in closing the door.

The construction described is of extreme simplicity, effective in operation, and the releasing device is in position to be conveniently operated either to render the locking device active or inactive at will, it being but necessary when the door is to be held open in a given position to reach up and turn the handle 14 from the position shown in Fig. 3 to the position shown in Fig. 1, and when the locking device is to be rendered inactive, to permit the door closing mechanism to operate normally, to turn the handle in the reverse direction to its former position indicated in Fig. 3.

In the foregoing description and accompanying drawings, I have shown my invention in the particular detailed form and arrangement of the parts which I prefer to adopt and which I have found in practice to answer to a satisfactory degree the ends to be attained. It will be manifest, however, that these details may be variously changed and modified within the limits of my invention provided the operation will be substantially as described; and it will be understood that the invention is not limited to any particular form or construction of the parts except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim is:

1. In a door closing mechanism, the combination of a closing motor, an arm actuated thereby, a link pivoted to the arm, a toothed member carried by one of said parts adjacent the pivot, a yielding locking member carried by and movable relatively to the other part and adapted to engage the toothed member and hold the link and arm yieldingly against relative pivotal movement, and a manually operable releasing device sustained in position to act on the locking member, said releasing device being operable at will to disengage the locking member from the toothed member and hold the same disengaged.

2. In a door closing mechanism, the combination of a closing motor, an arm actuated thereby, a link pivoted to the arm, a toothed member carried by the link adjacent the pivot, a yielding locking member mounted on the arm and adapted to engage the toothed member and hold the parts yieldingly against relative movement, and a manually operable releasing device sustained in position to act on the locking member, said releasing device being operable at will to disengage the locking member from the toothed member and hold the same disengaged.

3. In a door closing mechanism, the combination of a closing motor, an arm actuated thereby, a link, a pivot pin connecting the arm and link pivotally together, a toothed member surrounding the pin between the arm and link and movable with the link, a spring-pressed locking bolt mounted on the arm in position to engage the toothed member and hold the arm and link yieldingly against relative pivotal movement, and a manually operable releasing cam sustained in position to act on the locking bolt and disengage it from the toothed member.

4. In a door closing mechanism, the combination of a closing motor, an arm actuated thereby, a link, a pivot pin connecting the arm and link pivotally together, a toothed disk surrounding the pin between the arm and link and connected with the link, a spring-pressed locking bolt mounted on the arm and provided on its end with a locking tooth in position to engage between the teeth on the disk, and acting when so engaged to hold the arm and link yieldingly against relative pivotal movement, and a manually operable releasing cam rotatable on the pivot pin between the toothed disk and arm in position to act on the locking tooth and disengage the same from the toothed disk.

In testimony whereof, I have affixed my signature in presence of two witnesses.

CHARLES FORTH.

Witnesses:
O. GAYLORD MARSH,
W. W. SCOTT, Jr.

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