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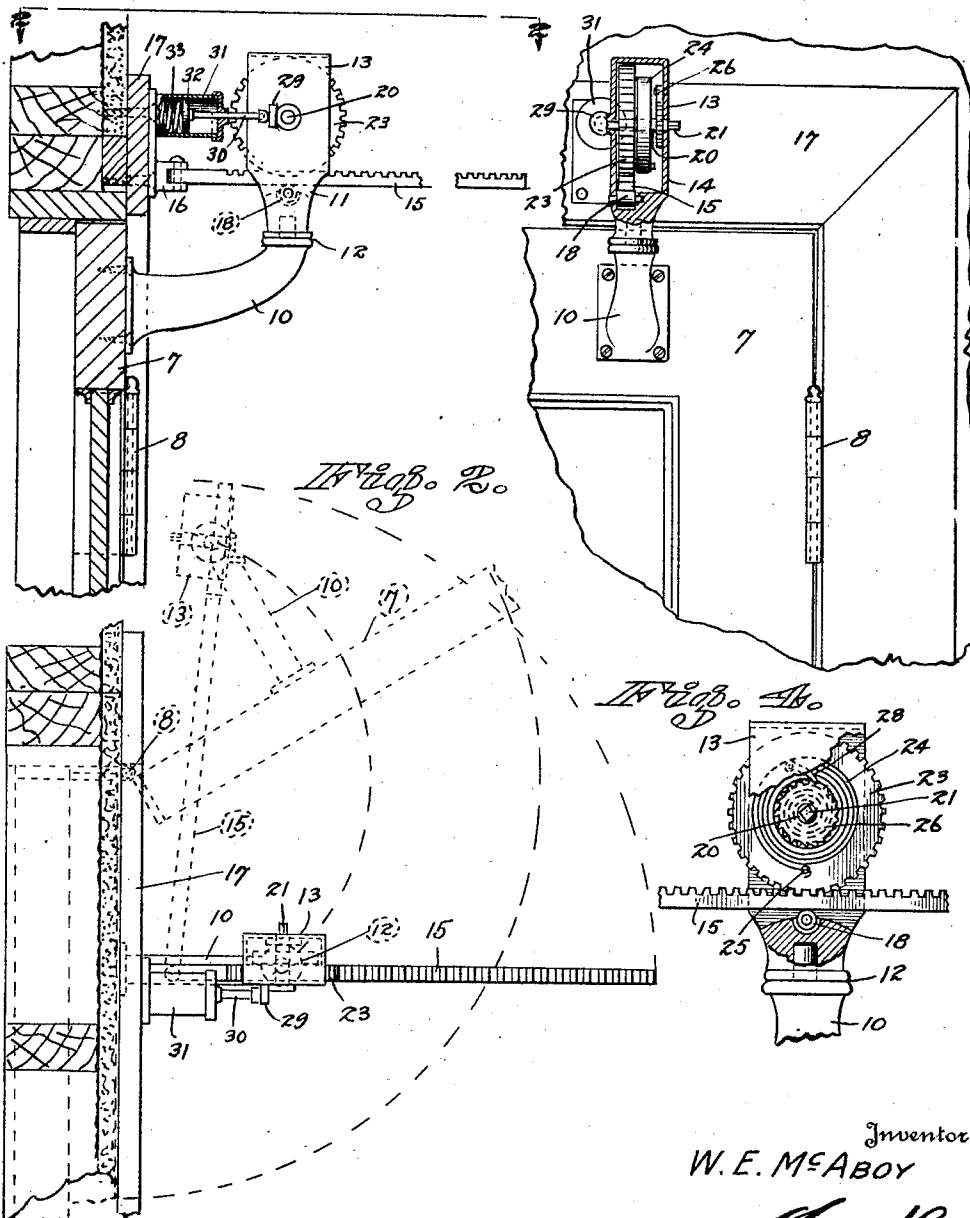
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DOOR CHECK AND CLOSER

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Fig. 1.

Fig. 3.



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334

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DOOR CHECK AND CLOSER.

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This invention relates to door checks and closers, and it has for one of its objects the provision of an efficient, durable and economical door check and closer.

Other objects will be appreciated by those skilled in the art.

In the drawings I have shown one embodiment of my invention. It is to be understood, however, that the device invented by me may assume many forms without departing from the spirit of the invention.

In the drawings Figure 1 is a fragmentary cross-sectional view of a door and adjacent structure in relation to the door check and closer of my invention which is shown in side elevation and which is partly broken away.

Figure 2 is a view taken from the line 2—2 of Figure 1, and shows in dotted lines the door in open position and the door check and closer in the position it assumes when the door is open.

Figure 3 is a front elevation of a door and its associated structure in combination with my door check and closer partly shown in front elevation and partly in section, and

Figure 4 is a fragmentary view of my door check and closer showing the same partly in section and partly broken away.

Referring to the drawings for more detailed description thereof, the numeral 7 indicates a door hinged at 8 and adapted to be swung to a position 9 as indicated in Figure 2. To the top portion of the door 7 is secured a bracket 10 on which rests a frame 11 which is held to the bracket by means of a swivel joint 12. The frame 11 comprises spaced vertical plates 13 and 14 between which passes a rack 15 pivotally secured at its inner end to a bracket 16 which is secured to the head casing 17 of the doorway. The underside of the rack 15 rests on a roller 18 which is journaled in the frame 11. A shaft 20 has its end portions journaled in the vertical plates 13 and 14 of the frame 11, and one of the ends designated 21 extends outside of the vertical plate 14 and this end portion 21 may be made square, for example so that the shaft may be turned by a key placed over the end portion 21. A pinion 23 is loosely mounted on the shaft 20 and this pinion engages the pivoted rack 16. A spirally coiled spring 24 is positioned adjacent the pinion 23 on one side thereof and between the vertical plates 13 and 14 of the frame. The spring 24 encircles the

shaft 20 and has one of its ends secured to the shaft in any suitable manner, and its other end secured to the pinion 23 at a point 25 shown in Figure 4.

A ratchet wheel 26 is fixedly mounted on the shaft 20 so that it may be rotated when the shaft is rotated. A dog 28 pivoted to the inner side of the plate 14 is adapted to engage the teeth of the ratchet wheel. A bumper 29 shown in Figures 1 and 2 is secured to the plate 13 of the frame 11 and is adapted to engage, when the door is nearly closed, the end of a piston rod 30 which extends into a cylinder 31 secured to the head casing 17. The piston rod 30 is secured at its inner end to a piston 32 between which and the head casing 17 is disposed a spring 33.

The operation of my device is as follows:

As the door swings from its closed position, shown in Figure 1, to its open position, indicated by the numeral 9, in Figure 2, the bracket 10 and the frame 11 with the parts carried by the latter travel with the door. The frame 11 between which extends the rack 15 turns the latter horizontally on its pivot. It will be readily appreciated that the movement of the frame 11 with the door and the engagement of the pinion 23 with rack 15 will cause the pinion to travel outwardly on the rack, rotating as it travels. The rotation of the pinion 23 outwardly on the rack will wind up the spiral spring 20 which is attached to one end to the pinion. Thus, as the door opens, backward force exerted by the spring 24 or, in other words, the force tending to keep the door from opening further, increases, and thus a check is placed on the opening of the door. When the force exerted on the door to open it is withdrawn therefrom, the action of the wound-up spring is exerted to close the door. As the door approaches its closed position, the bumper 29 engages the outer end of the piston rod 30 and, due to enclosed air behind the piston in the cylinder, a cushioning effect is provided to prevent the door from slamming. The spring 33 functions to push the piston to its most advanced position when the door is opened. The amount of checking force exerted on the door may be adjusted by placing a key over the end 21 of the shaft 20 and turning the shaft. The turning or rotation of the shaft turns the ratchet wheel 26 which is secured to the shaft. The turning of the ratchet 26 is ef-

fect to wind-up the spring to which it is secured to any desired degree, the dog 28 functioning to maintain the desired degree of winding of the spring at a given position.

5 I claim:

A device of the character described, comprising a bracket to be fixedly secured to a door, a rack to be pivotally mounted beyond said door to swing horizontally, a frame
10 swivelly secured to said bracket, said frame having sides between which said rack passes,

whereby said rack swings with the door, said frame including means for supporting said rack, a shaft mounted in said frame, a pinion mounted loosely on said shaft and adapted to travel on said rack, a flat spiral spring having its ends respectively secured to said shaft and to said pinion, a ratchet wheel fixedly mounted on said shaft and a pawl engaging said ratchet wheel. 15

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