

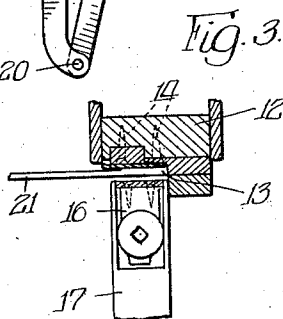
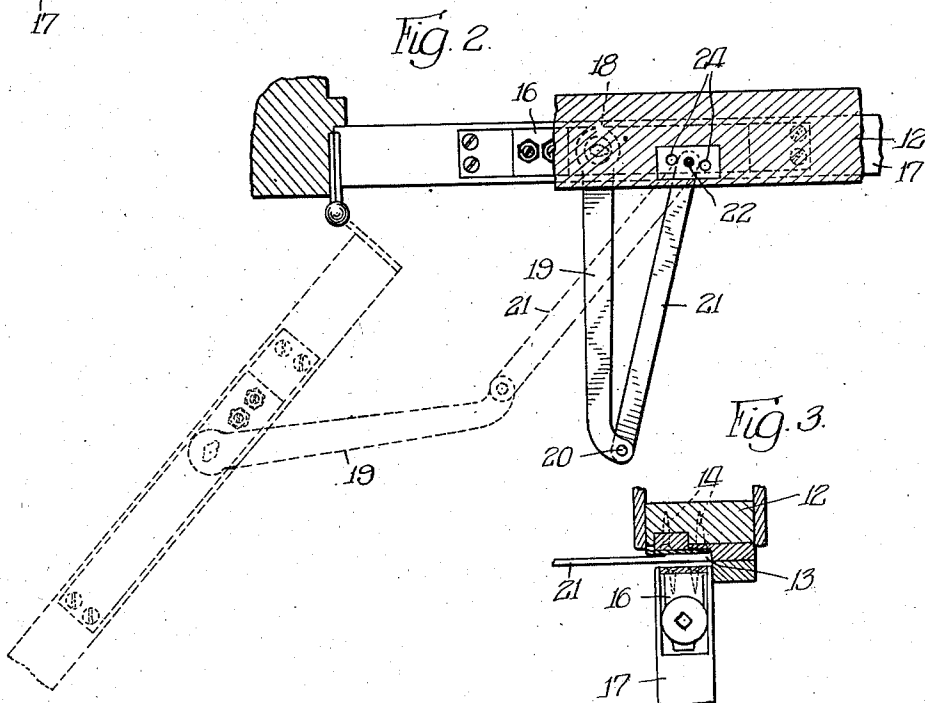
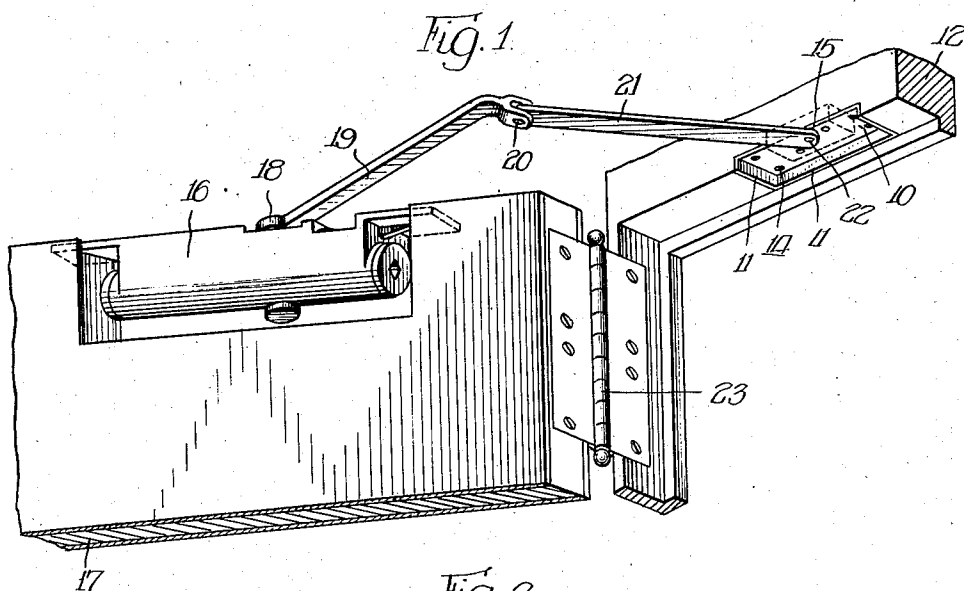
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DOOR CLOSING AND CHECKING DEVICE

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DOOR CLOSING AND CHECKING DEVICE

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3 Claims. (Cl. 16—49)

This invention relates to new and improved means for adjusting the effect of the spring power and checking action of a door closing and checking device of the type ordinarily carried by the door and having an operative connection with the door frame.

An object of this invention is to provide novel adjusting means for the closing and checking action of a door closer whereby experimentation is eliminated and a positive adjustment may be quickly made to adapt the closer to varying sizes of doors.

Another object of this invention is to provide adjusting means for the closing and checking action of a door closer whereby the closing and checking means are not adjusted but the action of both may nevertheless be increased or decreased by a single adjustment.

It is a further object of this invention to provide an improved adjustment for door closers of the above described type which is simple in construction, easily installed and quickly adjusted.

Another object of this invention is to provide a novel adjustment for a door closer having an operating spindle and a mechanism connecting it to the door sill whereby the relationship of the rotation of the operating spindle and the angular displacement of the door may be easily varied.

A further object of this invention is to provide a novel adjustment for the action of a door check which will allow the spring power and checking action to be varied without affecting a predetermined relationship of the door hinge, operating spindle and the connection with the door frame.

A further object of this invention is to provide an adjustment having certain new and improved structural characteristics whereby the same door closer may be installed on either a heavy or light door and have substantially the same closing and controlling action on either.

Another object of this invention is to provide a novel type of adjustment for the closing and checking action of a door closer which is so constructed that the possibilities of improperly installing or adjusting the device are practically eliminated.

These and other objects not specifically enumerated are contemplated for this invention, as will readily appear to one skilled in the art as the following description proceeds.

In the accompanying drawing—

Figure 1 is a fragmentary perspective view of a door and door frame, in connection with which

is mounted a door closing and checking device and the adjusting means constructed and installed in accordance with this invention;

Figure 2 is a plan view of the adjustment device of this invention installed in a door frame, and also showing the door and connecting links with the door in closed position; the dotted lines showing the position of the connecting links when the door is opened; and

Figure 3 is a vertical sectional view of the adjustment device of this invention.

By referring to the drawing, it will be noted that the invention here illustrated is embodied in a soffit plate 10 mounted in the door frame 12 and having downwardly extending flanges 11 at both ends and at the rear. This plate is provided with a cut-out portion 13 and is held in place by the screws 14. On its upper surface is mounted a block 15 which may be riveted to the plate or cast or otherwise formed integrally with it. A cut-out portion is provided for this block in the door frame when the device is installed.

The door check 16 of the present embodiment, as shown in Figure 1, is of the concealed type mounted in the door 17, which is independently hung on hinges 23. The operating spindle 18 of the check is preferably positioned substantially on the center line of the thickness of the door. The checking device per se may be of any well known type having a spring and a fluid chamber, and therefore the details of its construction form no part of this invention.

The crank arm 19 is secured at one end to the spindle 18 and has a pivotal connection 20 with the link 21 at the other end. The link 21 is pivotally connected to the soffit plate 10 by means of a bolt, screw or other suitable means 22 at a point underlying the block 15.

The soffit plate 10 has a plurality of openings 24 which extend into the block 15 for receiving the pivotal connection 22. The position of these spaced openings are such that they fall in an arc having as its center the pivot 20 when the door is in closed position. It will be noted that the crank 19 in the present embodiment is substantially perpendicular to the face of the door when in this position, and that the depending flanges 11 of the soffit plate 10 form a housing for the spindle 18 when the door is in closed position.

As can readily be seen by moving the pivot point 22 from one of the openings 24 to another, the angle formed by the crank 19 and the link 21 may be either increased or decreased. As the angle is increased, the rotary movement of the spindle for a given angular movement of the

door is decreased, and likewise as the angle formed by the crank and the link is decreased, the rotary movement of the spindle for a given angular movement of the door is increased. If the door, in connection with which this soffit plate is used, is a relatively heavy one for the size of the door check, the above angle will be decreased, whereas, if the door is a light one, the angle will be increased.

This device may be used in connection with a door check which is installed with the crank arm in any position with respect to the face of the door, either perpendicular or otherwise, when in closed position, and when so installed the adjustment of the pivot point 22 in any one of the openings 24 will not affect this position of the crank arm since the openings are disposed in an arc with the pivot 20 as the center thereof.

With the adjustment device of this invention, there is no need for altering the initial compression of the spring to adjust the closing action for various sizes of doors or for drastically altering the fluid checking action. If, for example, the compression of the spring is increased so as to take care of a heavy door, it would only be necessary to adjust the flow of fluid in the fluid chamber to increase the checking action a sufficient amount to accommodate the increased closing action of the spring. Since both the checking and closing actions act directly on the spindle, a regulation of the relative movement of the spindle with respect to the angular displacement of the door will affect equally the checking and closing actions of the door check.

In the present embodiment, with the flanges 11 of the soffit plate 10 forming a housing for the spindle 18 when the door is in closed position, the possibility of improper installation of the plate is lessened since it must be mounted with relation to the check in a manner to provide the necessary clearance for the spindle 18; consequently, the position of the openings 24, with respect to the spindle, are automatically determined in the desired manner. After the plate 10 and the door check 16 have been installed, the proper opening may be selected for the pivot point 22. The pivot point may be easily changed by merely withdrawing the screw or bolt which passes through the end of the link 21, the plate 10 and into the block 15, and securing it in another opening.

It is to be understood that there may be any number of openings 24 positioned as described

above, and that the three in the present embodiment are merely by way of illustration. As a substitute for the openings 24, a slot positioned in accordance with this invention might be used with suitable means for securing the pivot point 22 at various positions along the slot.

The present invention is not to be limited by the disclosure here given as the scope thereof may be determined from the appended claims.

What is claimed is:

1. In combination with a door, a door frame and a door closing and checking device carried by said door and having a pair of operating arms comprising a crank arm and a forearm, said crank arm projecting at a predetermined angle with respect to the face of said door when in closed position, said forearm having a pivotal connection at one end with said crank arm, and adjustable means for pivotally connecting the other end of said forearm to the door frame and for maintaining the angle of said crank arm with respect to the face of said door when in closed position including a bracket mounted in the door frame having a plurality of pivotal points.

2. The combination of a door, a door frame and a door closing and checking device carried by said door and having a spindle, a crank arm fixed to said spindle, said crank arm projecting at a predetermined angle with respect to the face of said door when in closed position and a forearm having a pivotal connection at one end with said crank arm, and means associated with said door frame for housing said spindle when the door is in closed position having a plurality of pivotal points for selectively connecting the other end of said forearm thereto, said pivotal points being so disposed that the connection of the forearm at any one of said pivotal points will not affect the predetermined angle of the crank arm with respect to the face of the door when in closed position.

3. In combination with a door, a door frame and a door closing and checking device carried by said door and having a spindle, means associated with said door frame for housing said spindle when the door is in closed position, a crank connected to said spindle, and a forearm pivotally connected to said crank, said housing means having a plurality of pivotal points for selectively connecting said forearm thereto disposed in an arc having said pivotal connection between the forearm and crank arm as the center thereof when the door is in closed position.

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