

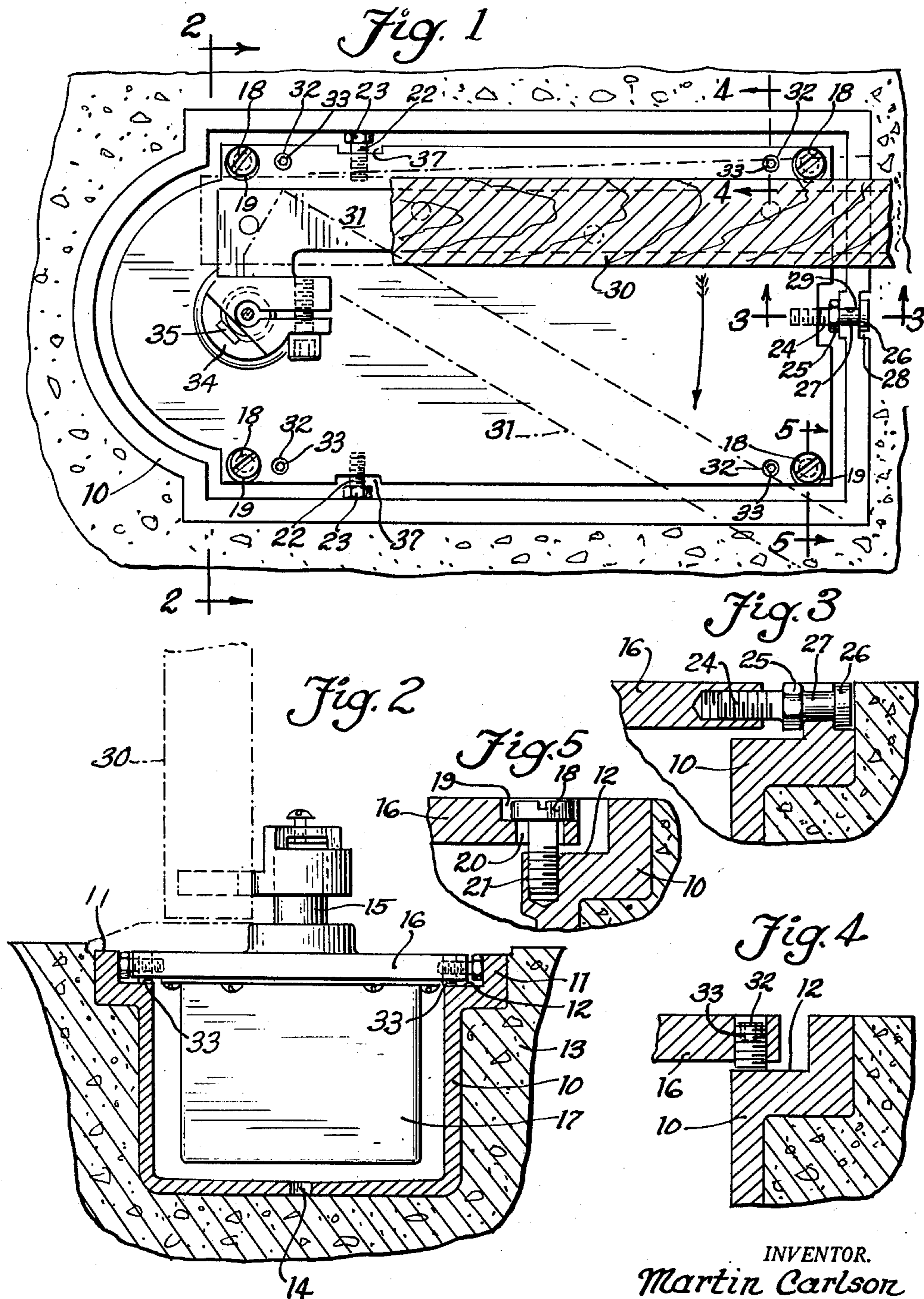
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DOOR CLOSER

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## UNITED STATES PATENT OFFICE

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## DOOR CLOSER

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This invention relates to improvements in door closers.

One object of the invention is to provide a door closer structure that can be adjusted relative to a cement casing in which the structure is located to enable the door operating shaft or pin of the structure to be shifted longitudinally and transversely of the casing for procuring desired alignment of the door with respect to the door opening as well as with respect to the axis of an upper pivot pin at the top of the door.

A further object of the invention is to provide a door closer mechanism that is adapted to be mounted within a cement casing for movement therein for adjusting the pivot pin of the mechanism in longitudinal and transverse directions for alignment purposes, the adjusting means being accessible for operation after the door has been hung, as well as prior to the hanging of the door.

Another object of the invention is to provide a supporting plate for a door closer mechanism that is adapted for attachment to a cement casing and which can be adjusted with respect to the horizontal for altering the angle of a normally vertical door operating pin in compensation for inaccurate initial position of the cement casing in a floor structure, as well as the later changes in the position of the casing or for sagging of the door, for example.

Other objects of the invention relate to various features of construction and arrangement of parts which will be apparent from a consideration of the following specification and accompanying drawings, which disclose a structure that is illustrative of the present improvements:

In the drawing,

Figure 1 is a top plan view with parts broken away illustrating the improved door closer in operative position;

Fig. 2 is a broken sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a sectional view on a similar enlarged scale taken on line 4—4 of Fig. 1; and

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

The door closer mechanism illustrated in the drawings is of a type which is adapted to be located within a cement casing, which itself is adapted to be located in the floor structure and held in place by the surrounding cement of the floor structure. The casing, indicated generally by the numeral 10, generally is made of cast

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iron and is provided with a perimetrical flange 11 providing a horizontal shoulder 12 which extends around the upper edge of the casing. The top of the flange 11 is adapted to be seated flush, or approximately flush, with the floor structure, the casing being held in position by the surrounding cement 13, as shown in Figs. 1 and 2. The bottom of the casing is provided with one or more drain openings 14 which permits water which may find its way into the casing to seep from the casing.

The door operating mechanism is not, per se, a part of the present improvements. The mechanism of the type mentioned comprises an operating pin or shaft 15 which extends normally in a vertical direction through a top plate 16 and is adapted to be turned by the swinging of the associated door in a direction to store up energy in springs, or the like, forming a part of the door operating mechanism. The springs tend to return the door to the closed position. The springs and associated mechanism, in the present structure are supported by the plate 16 and are enclosed by a sheet metal housing 17 which is secured to the lower surface of the plate. The housing 17 is spaced at its sides, ends and bottom from the adjacent walls of the cement casing 10.

When the casing is set in the cement initially, the upper edge thereof is intended to be located substantially in the plane of the floor and in a horizontal position. The plate 16 is designed to rest upon and be supported by the perimetrical shoulder 12. The plate is secured to the casing by screws 18, four being shown. The heads of the screws seat in counter-bores 19 provided in the plate, while the shank of the screws pass through openings 20, somewhat larger in diameter than the shanks of the screws. The screws are received in threaded openings 21 provided in the cement casing 10, as shown in Fig. 5. The provision of openings 20 with a diameter somewhat larger than the shanks of the screws, enables the plate 16 to be adjusted in horizontal directions, that is longitudinally and transversely on the shoulders 12 of the casing, the plate being of sufficiently small dimensions to permit such adjustment.

For the purpose of effecting transverse adjustment of the plate for shifting the axis of the pin 15 in a corresponding direction, the plate is provided with two opposed adjusting screws 22 which are threaded into horizontal recesses provided in the plate, as shown in Figs. 1 and 2. The screws 22 are provided with heads 23, shown

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as being hexagonal, which are adapted to abut the adjacent vertical walls of the flange or rim 11 of the casing, as shown in Figs. 1 and 2. It will be seen that by adjustment of the screws 22 by screwing one inwardly of the plate and the other outwardly, the plate will be shifted transversely of the casing, thus shifting the axis of the pin 12 in a corresponding direction. A recess 37 is provided in each longitudinal edge of the plate adjacent each screw 22 to accommodate the head of the respective screw, if necessary, as the plate is shifted towards the flange portion adjacent which the head of the screw abuts.

For the purpose of shifting the plate 16 longitudinally, an adjusting screw 24 is provided at one end of the plate. The screw 24 is provided with a wrench-engageable member 25 of hexagonal form in the embodiment shown, and a head 26 spaced from the member 25 by a neck 27 of reduced diameter. The flange 11 at the right-hand end of the casing, as shown in Fig. 1, is provided with a re-entrant portion providing a recess 23 for receiving the head 26, and an open channel 29 of smaller dimension for receiving the neck 27. By use of a wrench, or the like, the member 25 can be engaged and the screw turned with reference to the plate 16 for shifting the latter longitudinally of the casing, and thus shifting the axis of the pin 12 in a corresponding direction. In making adjustments, it may sometimes be necessary to adjust not only the screws 22 but the screw 24 as well. Where the screws 22 only are adjusted for shifting the axis of the pin, the slight angular movement of the screw 24 that is thus produced is accommodated by the recess 23 and the slot 29 that receives the neck 27. When the casing 10 is initially positioned in the floor structure and embedded in concrete, a strip of material, such as card board, tape or other appropriate strip of material is placed across the re-entrant portion to exclude freshly poured concrete from the recess 23.

In Fig. 1, a door 30 is shown fragmentarily in the normally closed position, the door being of the single acting type that swings to one side only of the door opening. In so swinging, the door carries with it an arm 31 which is attached in a groove in the lower edge of the door and which arm is secured to the pin 15 for effecting the turning of the pin on a vertical axis and storing energy in the door closer mechanism, above referred to, which is contained within the housing 17. At the upper end of the door in vertical alignment with the pin 15 is a hinge member that cooperates with the mechanism above described for supporting the door.

It is desirable that the axis of the pin 15 coincide with the axis of the upper hinge member, and the adjustment above described permits the plate 16, which carries the door operating mechanism, including the pin 15, to be shifted, as described, with reference to the permanently anchored cement casing 10 for effecting adjustments of the door, such as in aligning the door with respect to a desired vertical plane or in adjusting the vertical edges of the door with reference to the corresponding portions of the framework of the door opening, or with reference to another door where the invention is used in connection with a double door structure.

In the event the cement casing 10 is not located in a strictly horizontal position, or in the event after the door is hung, due to settling of the building or to other causes, the casing is slightly displaced from the horizontal, the plate

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16 can be adjusted with reference to the horizontal plane to bring it into a desired position. For this purpose, the plate 16 is provided with threaded openings 32, four being shown, for receiving adjusting screws 33, as shown in Figs. 1 and 4. The screws 33 are adapted to contact the shoulder 12 of the cement casing and lift or tilt the plate with reference to the shoulder as may be required in adjusting the plate with reference to the horizontal. For effecting such adjustment, the screws 18 must first be loosened, and after effecting the desired adjustment of the screws 33, the screws 18 are again tightened to retain the plate in the newly adjusted position.

In Figs. 2 to 5 of the drawing, the plate 16 is shown in a slightly raised position out of contact with the shoulder 12. The arm 31 is shown as comprising a clamp head 34 which secures the arm to the pin 15, although a key or spline member 35 between the head and pin is relied on to prevent movement of the arm with respect to the pin.

The above described structure making provision for the adjustment of the plate 16 with respect to the cement casing is particularly desirable during the hanging of a door since it is not always possible for workmen to procure the desired substantially precise alignment of the pintle of the hinge structure at the upper end of the door with the pin 15 of the door closer member. Likewise, after a period of use, due to wear of parts or shifting or settling of parts of the building or of the door the position of the pin may require re-adjustment. The adjustments for the purposes mentioned can be effected without removal of the door from its pivotal supports by reason of the provisions made for adjusting the plate 16 with respect to the cement casing notwithstanding that normally the plate is secured to the cement casing against displacement by the screws 18.

Normally a finish or dress plate is provided over the top of plate 16 and an ornamental cover or hood is provided on the head 34 for the sake of appearance but these elements are not shown in the drawings.

While I have shown a structure which is illustrative of the present improvements, it will be seen that various changes in the precise details thereof may be resorted to without departure from the spirit of the invention defined by the accompanying claims.

I claim:

1. In a door closer, a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the flange for supporting a cover plate, a cover plate for supporting a door closer mechanism within the casing comprising a door actuating pin extending vertically through said plate for attachment thereto of a door operating arm, said plate being adapted to rest on said shoulder and being of a superficial area and shape to enable the same to be spaced at the edges thereof from said flange, screws for securing the plate to the casing and permitting relative adjustment of the plate in transverse and longitudinal directions when loosened, and threaded means cooperating with the plate and flange for shifting the plate in a horizontal plane within the confines of said flange for adjusting the pin relative to the casing.

2. In a door closer, a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the

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flange for supporting a cover plate, a cover plate for supporting a door closer mechanism within the casing comprising a door actuating pin extending vertically through said plate for attachment thereto of a door operating arm, said plate being adapted for support by said shoulder and being of a superficial area and shape adapting the same to be spaced at the edges thereof from said flange to permit horizontal adjustment of the plate on said shoulder within the confines of the flange for shifting the pin relative to the casing, releasable means for securing the plate to the casing, and cooperating adjusting screws coacting with the plate and said flange for shifting the plate horizontally in different directions when said securing means are released.

3. In a door closer, a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the flange for supporting a cover plate, a cover plate for supporting a door closer mechanism within the casing comprising a door actuating pin extending vertically through said plate for attachment thereto of a door operating arm, said plate being adapted for support by said shoulder and being of a superficial area and shape adapting the same to be spaced at the edges thereof from said flange to permit horizontal adjustment of the plate on said shoulder within the confines of the flange for shifting the pin relative to the casing, means comprising openings in said plate and cooperating screws of less diameter than the respective openings and extending into the casing for securing the cover in position on the casing and permitting horizontal shifting of the plate when the screws are loosened, and threaded members carried by the plate and adapted for abutting contact with the inner wall of the flange and operable manually for effecting the adjustment of the plate horizontally within the confines of the flange.

4. In a door closer, a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the flange for supporting a cover plate, a cover plate for supporting a door closer mechanism within the casing comprising a door actuating pin extending vertically through said plate for attachment thereto of a door operating arm, said plate being adapted for support by said shoulder and being of a superficial area and shape adapting the same to be spaced at the edges thereof from said flange to permit horizontal adjustment of the plate on said shoulder within the confines of the flange for shifting the pin relative to the casing, means comprising openings in said plate and cooperating screws of less diameter than the respective openings and extending into the casing for securing the cover in position on the casing and permitting horizontal shifting of the plate when the screws are loosened, and adjust-

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able screws extending horizontally into the plate at the edge thereof and provided with outer ends adapted to abut the adjacent portion of the inner wall of said flange for retaining the plate in horizontally-adjusted position within the confines of the flange.

5. A door closer comprising a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the flange for supporting a cover plate, a cover plate adapted to support a door closer mechanism within the casing comprising a door operating pin extending vertically through the plate, said plate having a superficial area and shape enabling the same to rest upon the shoulder in spaced relation with respect to said flange, means for adjusting the plate horizontally upon said shoulder within the confines of the flange with the plate resting upon said shoulder, and releasable means for securing the plate to the casing.

6. A door closer comprising a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the flange for supporting a cover plate, a cover plate adapted to support a door closer mechanism within the casing comprising a door operating pin extending vertically through the plate, said plate having a superficial area and shape enabling the same to rest upon the shoulder in spaced relation with respect to said flange, and threaded adjusting studs carried by the plate and adapted to be turned into contact with the shoulder for shifting the plate relative to the horizontal for adjusting the pin relative to the vertical.

7. A door closer comprising a cement casing provided with a perimetrical flange at the upper edge and a horizontal shoulder located inwardly of the flange for supporting a cover plate, a cover plate adapted to support a door closer mechanism within the casing comprising a door operating pin extending vertically through the plate, said plate having a superficial area and shape enabling the same to rest upon the shoulder in spaced relation with respect to said flange, means for adjusting the plate horizontally within the confines of said flange and means for adjusting the plate vertically and angularly with respect to the shoulder.

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## REFERENCES CITED

The following references are of record in the file of this patent:

## UNITED STATES PATENTS

Number	Name	Date
1,120,544	Rosentreter	Dec. 8, 1914
1,227,292	Mills	May 22, 1917
1,655,485	Wheelock	Jan. 10, 1928