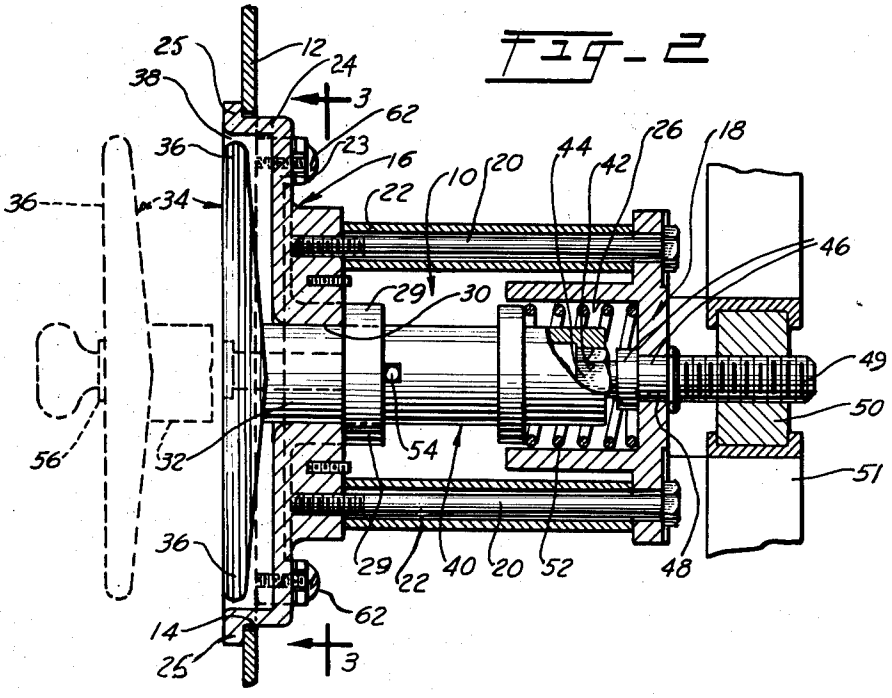
July 2, 1963 W. J. KERR 3,095,727

QUICK-RELEASE MEANS FOR SECURING LOCK ASSEMBLIES IN FITTED DOOR OPENINGS

Filed Nov. 24, 1961 2 Sheets-Sheet 1

Fig. 2



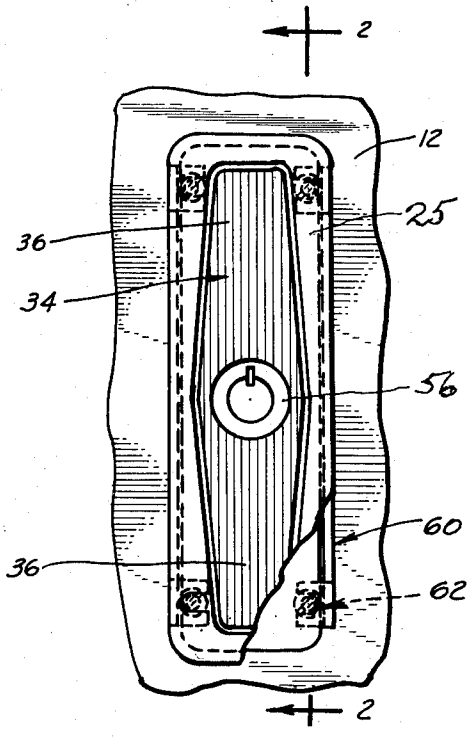


Fig. 1

INVENTOR.
WILLIAM J. KERR
BY
Norman Herlach
ATT'Y.

July 2, 1963 W. J. KERR 3,095,727

QUICK-RELEASE MEANS FOR SECURING LOCK ASSEMBLIES IN FITTED DOOR OPENINGS

Filed Nov. 24, 1961 2 Sheets-Sheet 2

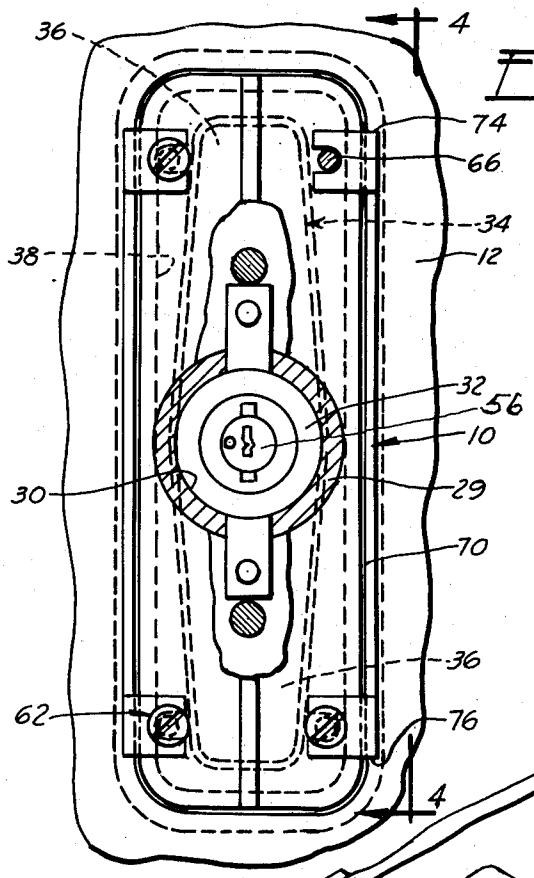
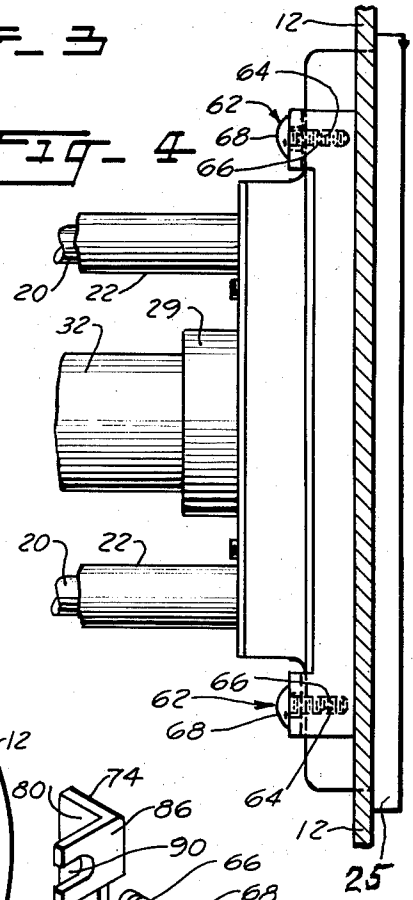
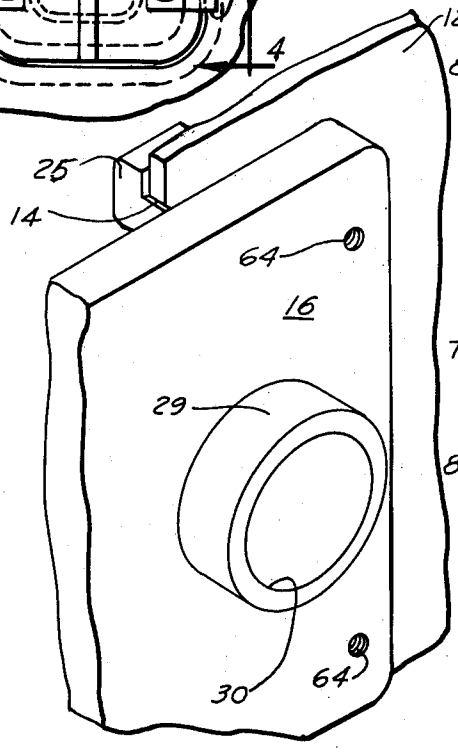


Fig. 3

Fig. 4





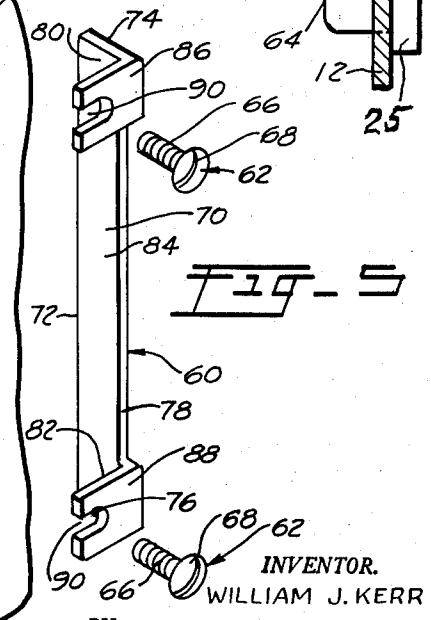


Fig. 5

INVENTOR.
WILLIAM J. KERR
BY
Norman Fleisher
ATT'Y.

United States Patent Office

3,095,727

Patented July 2, 1963

3,095,727

QUICK-RELEASE MEANS FOR SECURING LOCK ASSEMBLIES IN FITTED DOOR OPENINGS

William J. Kerr, Glenview, Ill., assignor to Chicago Lock Company, Chicago, Ill., a corporation of Illinois

Filed Nov. 24, 1961, Ser. No. 154,436
2 Claims. (Cl. 70—451)

The present invention relates to securing means for lock assemblies and has particular reference to a quick-release securing means whereby a lock assembly may be releasably secured in a fitted door opening to the end that the lock assembly may be interchanged with other lock assemblies of a similar nature, the substitution of one lock for another being accomplished with a minimum amount of effort on the part of the operator and without requiring special tools.

The improved quick-release securing means comprising the present invention has been designed for use primarily in connection with the securing of a draw lock in the lock opening which is provided in the door of a refrigerated vending machine cabinet of the type which is commonly utilized in public places and serves as a medium for dispensing such products as milk, bottled soft drinks, measured quantities of soft drinks in paper containers, prepared sandwiches, and a wide variety of other food products and comestibles which must be kept in a refrigerated condition. A vending machine cabinet door of this type is heavily gasketed and, upon closure thereof, it is necessary to compress the gasket tightly so that there will be no heat losses around the door jamb. The degree of pressure which must be exerted by the marginal region of a given door against its sealing gasket to effect the necessary hermetic seal is appreciable, considering the size of the average refrigerated vending machine door. For this reason, sufficient torque cannot be applied to the usual closure cam through the medium of a key-operated lock cylinder of the door locking mechanism to move the locking cam to its operative or locked position. It has, therefore, been the practice to provide a sturdy lock assembly employing a rotatable draw screw which cooperates with a cage nut on a suitable fixed part of the cabinet framework. In order that the necessary degree of torque may be applied to the draw screw to drive the same into the cage nut and thus draw the door to its closed position against the sealing gasket, an operating handle is provided and a hub portion on the handle is connected through a key-operated, tumbler type lock unit to the draw screw. Due to the thickness of insulation that is required in connection with such a refrigerated cabinet door, the door itself is of appreciable thickness. Furthermore, there frequently is an inner door panel, behind which is contained the coin-controlled mechanism for the cabinet. It, therefore, is necessary to position the cage nut which receives the draw screw an appreciable distance inwards of the door opening and to make the draw screw of such length that it traverses the thickness of insulation of the door, as well as the thickness of the compartment which contains the coin-controlled mechanism. For these reasons, the draw lock assembly must be mounted on the door in a secure manner against angular tilting or lateral shifting so that when the door is moved toward its final closed position, the distal or inner end of the draw screw will become properly aligned with the cage nut which is to receive it for door tightening purposes.

It frequently is necessary or desirable to effect lock substitution of a draw lock assembly of the aforementioned character, either for lock repair purposes, or to prevent unauthorized access to the cabinet as, for example, when a key has become misplaced or lost, or when

an attendant has left the employ of the proprietor and has failed to return a key. It being impractical to effect a change of the tumbler and key combination or to effect a repair of the lock assembly at the scene of the installation, the entire lock assembly is usually removed for return to the factory or workshop, while a substitute lock is installed during the interim. The matter of lock substitutes has heretofore presented certain difficulties among which are the matter of nicety of adjustment to insure draw screw and nut alignment, the large number of securing elements employed, the need for special tools, the necessity of effecting axial alignment of certain bracket holes with threaded sockets for screw insertion purposes.

The present invention is designed to overcome the above-noted limitations that are attendant upon the construction and use of present lock securing means and, toward this end, it contemplates the provision of an extremely simple and effective securing means for the draw lock of a refrigerated vending machine cabinet, and one which may be installed initially on the associated draw lock assembly and will remain a functional part thereof throughout the life of the assembly so that the operator or attendant at no time is obliged to sort out or keep track of any elements of the fastening means. More specifically, the invention contemplates the provision of two identical clamping brackets and four clamping screws, two for each bracket. The screws are initially installed in threaded sockets in the lock housing, and the brackets are formed with open-ended slots which are slipped beneath the heads of the screws and the screws tightened in place to hold the brackets on the lock housing. The slots of each bracket are spaced apart a distance precisely equal to the spacing of the two screws which hold the bracket so that alignment of the slot and screws is a comparatively simple and easy matter. The brackets, when fastened in place on the lock housing by means of the screws, remain with the lock assembly at all times. The operator, when instructed to effect a given lock substitution, need only transport the entire lock assembly, including the prepositioned clamping brackets, to the scene of installation and, after removing the existing lock, loosen the fastening screws on the lock to be substituted, slip the brackets from beneath the screw heads, insert the lock housing into the fitted opening in the cabinet door, slip the brackets beneath the screw heads, and again tighten the screws. Tightening of the screws will draw the lock housing firmly into position against the rim region of the fitted door opening.

The provision of a lock-securing means which is comprised of a minimum number of parts and, therefore, does not materially increase the manufacturing cost of the lock assembly; one which, in the main, is comprised of sheet metal stampings thereby further contributing to low cost of manufacture; and one which gives wide support for the lock housing at a multiplicity of spaced regions thereabout, are further desirable features which have been borne in mind in the production and development of the present invention.

Numerous other objects and advantages of the invention will become readily apparent as the following description ensues.

In the acompanying two sheets of drawings forming a part of this specification, one illustrative embodiment of the invention has been shown.

In these drawings:

FIG. 1 is a front elevational view of typical draw lock assembly showing the same operatively installed in a refrigerated vending machine cabinet door by means of the lock-securing means of the present invention, a portion of the lock housing being broken away in order more clearly to reveal the nature of the invention;

FIG. 2 is a sectional view taken substantially along

the line 2—2 of FIG. 1 and in the direction indicated by the arrows with a major portion of the lock assembly being shown in elevation;

FIG. 3 is a sectional view taken substantially along the line 3—3 of FIG. 2;

FIG. 4 is a fragmentary sectional view taken substantially along the line 4—4 of FIG. 3; and

FIG. 5 is an exploded fragmentary perspective view of one of the two identical clamping brackets which are employed in connection with the present invention, such bracket being shown in its positional relationship with respect to the associated draw lock and the door panel.

Referring now to the drawings in detail, the improved lock-securing means of the present invention has been shown as being employed for the purpose of removably fastening a draw lock assembly 10 in operative position on a refrigerated vending machine cabinet door, only a fragmentary portion of the outer door shell or panel being illustrated herein and designated by the reference numeral 12. The door panel 12 is provided with a generally rectangular lock opening 14 in which the generally rectangular front housing 16 of the lock assembly 10 fits and within which it is secured in a manner that will be made clear presently.

The draw lock assembly 10 is of conventional design and no claim is made herein to any novelty in it, the novelty of the present invention residing rather in the means whereby the lock assembly is secured within the opening 14. The lock assembly selected for illustration herein is of the type which is shown and described in copending United States patent application Serial No. 115,968, filed on June 9, 1961, by Martin H. Dettmer, and entitled "Draw Lock for a Sealed Cabinet Door." Insofar as the present invention is concerned, the lock assembly illustrated herein is purely exemplary and other forms of draw locks are capable of being secured within openings such as the opening 14 by means of the present lock-securing means, the only requisite of the lock assembly being that it be provided with a lock housing similar to the housing 16.

Briefly, the lock assembly 10 includes, in addition to the front housing 16, a rear housing 18, the two housings being connected together and maintained in spaced relationship by tie rods 20 and spacer sleeves 22 surrounding the tie rods. The front housing 16 is generally of shallow dished configuration, it being of vertically elongated, rectangular design as viewed in front elevation (see FIG. 1). It has an appreciable vertical extent and a small transverse width and is preferably in the form of an aluminum die casting having a vertically disposed bottom wall 23 from which there extends forwardly a rectangular marginal wall 24 having a laterally outturned rim flange 25. The rim flange 25 seats against the outside door panel 12, while the marginal wall 24 is shaped conformably to the opening 14 and fits snugly therein. The rear housing is in the form of an aluminum die casting of dished configuration and includes a forwardly extending open-ended socket 26. The front housing 16 is formed with a bearing sleeve 29 having an axial bore 30 within which there is rotatably and slidably received the cylindrical hub portion 32 of a rotatable torque-handle 34. The torque-handle 34 includes a pair of oppositely extending lever arms 36 and is slidable axially and horizontally in the bore 30 between the retracted full line position thereof shown in FIG. 2 and the extended dotted line position thereof also shown in FIG. 2. In its retracted position, the handle is disposed substantially wholly within the confines of a shallow recess 38 which is defined by the bottom wall 23 and the marginal side wall 24 of the front housing 16. In its extended position, the handle 34 is disposed an appreciable distance forwardly of the vertical plane of the door panel 12.

The rear end of the hub portion 32 of the handle 34 is provided with a clutch sleeve 40 presenting an internal clutch socket 42 of hexagonal configuration. The clutch socket 42 is designed for cooperation with an hexagonal clutch head 44 which is carried at the forward end of a draw shaft 46. The latter extends horizontally through a bore 48 in the rear housing 18. The portion 49 of the draw shaft 46 which projects rearwards of the housing 18 is threaded and constitutes a draw screw which is designed for cooperation with a cage nut 50. The latter is mounted on a fixed portion 51 of the cabinet framework. Normally, in the retracted position of the handle 34, the forward region of the draw shaft 46 projects through the clutch socket 42 and is telescopically received within the sleeve 40 so that the clutch head 44 assumes a disengaged position well within the confines of the sleeve 40. A compression spring 52 surrounds the sleeve 40 and yieldingly urges the sleeve and its attached handle 32 into their extended or forward position wherein the clutch head 44 and clutch socket 42 are engaged. In this position of these two parts, the handle may be rotated to cause the draw shaft to thread its projecting rear end portion 49 into the case nut 50 for door tightening purposes. When the door is in its fully closed or secured position, it is clamped against a resilient gasket or the like (not shown). A latch pin 54 is operable under the control of a tumbler type lock unit 56 and serves releasably to maintain the handle 34 in its retracted position against the action of the spring 52, all in a manner that is made clear in the aforementioned copending patent application Serial No. 115,968. In its fully advanced position as shown in dotted lines in FIG. 2, the clutch parts 42 and 44 are engaged and thus turning of the handle 34 in either direction will effect a corresponding turning movement of the draw screw for door tightening or door releasing purposes. During any given door tightening operation, after the handle has caused the draw shaft 46 to become threaded into the nut 50 to the desired degree, the handle may be pushed forwardly to such an extent that the clutch parts 42 and 44 become disengaged, after which the handle may be turned to a position wherein it registers with the elongated recess 38 without affecting the position of the draw screw, and then pushed into the recess and the parts latched in position by means of the latch pin 54.

According to the present invention, in order fixedly to secure the draw lock assembly 10 in position on the door panel 12 with the front housing 16 in position within the rectangular opening 14, there is provided a six-piece clamping assembly including two identical clamping brackets 60 and four clamping screws 62. As best shown in FIG. 4, the four screws are received in tapped or internally threaded holes 64 in the rear face of the lock front housing 16. Two of these holes are disposed adjacent to one elongated edge of the generally rectangular front housing and the two other holes are similarly disposed adjacent to the other elongated edge of the housing 16. The screws 62, once installed in their respective holes, are intended to remain permanently therein so as thus to constitute, in effect, elements of the lock housing as furnished by the manufacturer. Each screw is provided with the usual threaded shank 66 and an enlarged kerf-equipped head 68.

Each of the two identical brackets 60 is in the form of a sheet metal stamping of elongated design and comprises a flat body portion 70 with a straight linear vertical forward or front edge 72 as viewed in FIG. 5, short top and bottom edges 74 and 76 and a recessed vertical rear edge 78. The recessed rear edge 78 of each bracket 60 affords upper and lower full width portions 80 and 82, respectively, and an elongated medial portion 84 of reduced width. The rear edges of the two full width portions 80 and 82 of each bracket are turned or bent laterally to provide a pair of reaction flanges 86 and 88, each flange being formed with an open-ended slot 90 for reception therethrough of the shank 66 of its respective clamping screw 62 as will be described in greater detail presently.

When the various parts of the clamping assembly are in their operative position wherein they serve to maintain the lock assembly **10** in position on the door panel **12**, the rim flange **25** bears against the outside face of the panel and the remainder of the front housing **16** projects through the rectangular opening **14**. The two brackets **60** are disposed along the opposite vertical sides of the front housing **16** with their body portions **70** lying flat against these sides and with the vertical edges **72** bearing against the inside face of the panel **12**. The reaction flanges **86** and **88** overlie the rear face of the front housing **16** and remain slightly spaced therefrom, while the shanks **66** of the clamping screws **62** pass through the open-ended slots **90** and are threadedly received within the holes **64**. The screw heads **68** bear against the outside or rear faces of the reaction flanges and, when the screws are tightened, the front housing **16** is drawn bodily as a unit toward the reaction flanges so that the rim flange **25** is tightly drawn against the outside or front face of the door panel **12**. Such drawing of the rim flange **25** against the panel is made possible by reason of the fact that the combined thickness of the panel **12** and the width of the portions **80** and **82** is slightly greater than the projected height of the front housing **16**.

When it is desired to make a lock substitution, the operator merely loosens the clamping screws **62** without removing the shanks **66** from the holes **64** so that the screw heads **68** release their pressure against the reaction flanges **86** and **88**. The housing is thus loosened within the fitted opening **14** and the brackets **60** are free to be slid laterally of the housing to withdraw the opened slots **90** from their straddling relationship with respect to the screw shanks **66**. The entire lock assembly may then be removed from the door panel **12** by moving the same forwardly to withdraw the front housing from the fitted opening **14** and thereafter withdraw the remaining parts of the lock assembly. A new lock is then inserted in the fitted opening **14**, the reaction flanges **86** and **88** slid beneath the screw heads **68**, and the screws **62** again tightened. Before tightening the screws **62** it is desirable to force the two brackets **60** firmly against the sides of the front housing **16** so that their body portions **70** lie flatly against these sides.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit or scope of the invention. Therefore, only insofar as the invention has particularly been pointed out in the accompanying claims, is the same to be limited.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a flat door panel having a lock opening therein presenting a pair of opposed parallel straight side edges, and a lock housing extending through and substantially filling said opening, said lock housing presenting a pair of oppositely facing planar side faces fitting closely against said opposed pair of side edges and extending normal to the plane of said door panel, a rear face disposed rearwardly of the door panel, and a rim flange bearing against the outside face of the door panel and surrounding said opening, said rear face being formed with two threaded holes disposed in spaced relationship adjacent to but spaced inwardly of each of said side faces, of a pair of identical sheet metal clamping brackets for fixedly securing the lock housing in position on said door panel, each of said brackets comprising a flat body portion in face-to-face coextensive contact with one of said side edges of the housing, and having an edge region thereof bearing against the inner face of the door panel, and a pair of spaced laterally turned reaction flanges overlying but spaced from the rear face of the housing, each reaction flange being formed with an open-ended slot therein extending inwardly from an edge of the flange and in register with one of the tapped holes, and a clamping screw for each slot and having a shank projecting through the slot and threadedly received in the adjacent threaded hole, and an enlarged head in engagement with the flange in which the slot is formed, the clamping screws serving collectively to draw the lock housing rearwardly of the panel and thus draw the rim flange of the housing tightly against the front face of the door panel.

2. The combination with a flat door panel having a lock opening therein presenting a pair of opposed parallel straight side edges, and a lock housing presenting a pair of oppositely facing planar side faces fitting closely against said opposed pair of side edges and extending normal to the plane of said door panel, a rear face disposed rearwardly of the door panel, and a rim flange bearing against the outside face of the door panel and surrounding said opening, said rear face being formed with two threaded holes disposed in spaced relationship adjacent to but spaced inwardly of each of said side faces, of a pair of identical sheet metal clamping brackets for fixedly securing the lock housing in position on said door panel, each of said backets comprising an elongated flat body portion in face-to-face coextensive contact with one of said side edges of the housing, and having a longitudinal edge thereof bearing coextensively against the inner face of the door panel, and a pair of spaced laterally turned reaction flanges on the other longitudinal edge and overlying but spaced from the rear face of the housing, each reaction flange being formed with an open-ended slot therein extending inwardly from the distal edge of the flange and in register with one of the tapped holes, and a clamping screw for each slot and having a shank projecting through the slot and threadedly received in the adjacent threaded hole, and an enlarged head in engagement with the flange in which the slot is formed, the clamping screws serving collectively to draw the lock housing rearwardly of the panel and thus draw the rim flange of the housing tightly against the front face of the door panel.

References Cited in the file of this patent

UNITED STATES PATENTS

2,584,581	Harris	Feb. 5, 1952
3,026,704	Baker	Mar. 27, 1962