

J. K. BARRY ET AL
DOOR OR PANEL FASTENER

DOOR OR PANEL FASTENER

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FIG. 5

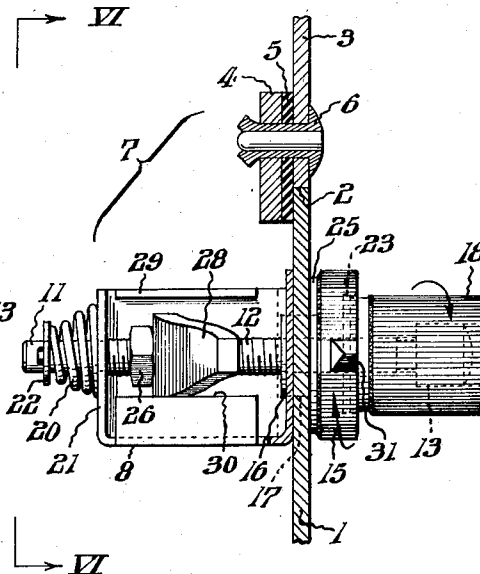
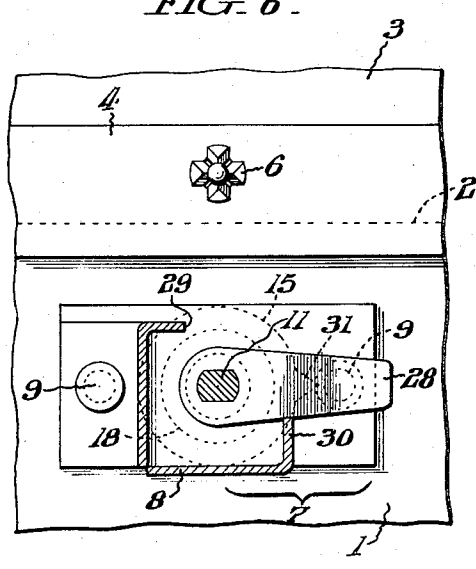


FIG. 6.



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2,860,904

DOOR OR PANEL FASTENER

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FIG. 7 -

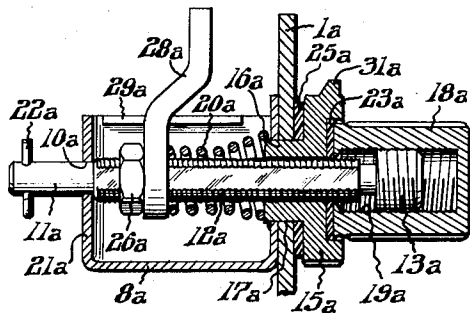


FIG. 8 -

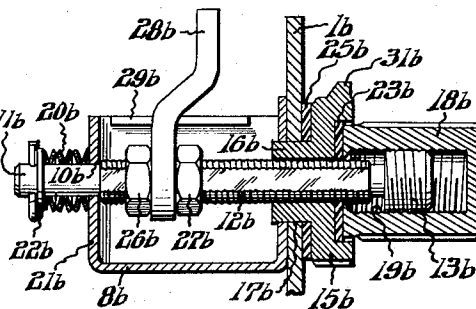


FIG. 9 -

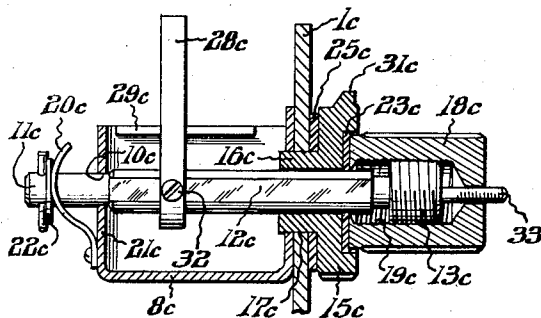


FIG. 10 -

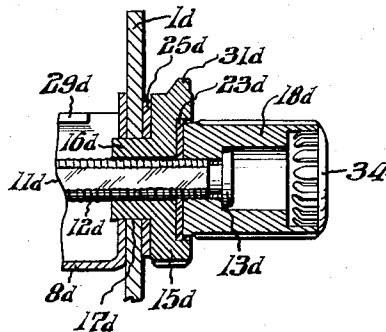


FIG. 11 -

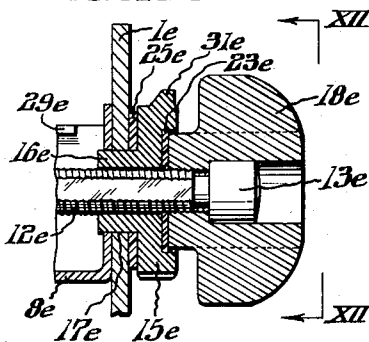


FIG. 12 -

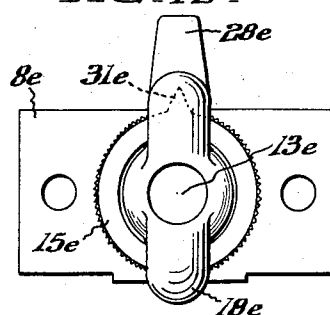


FIG. 13. FIG. 14. FIG. 15. FIG. 16. FIG. 17.

FIG. 13 -

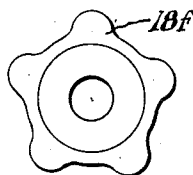
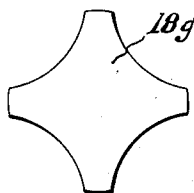


FIG. 14 -



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DOOR OR PANEL FASTENER

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12 Claims. (Cl. 292—256)

This invention relates to door or panel fasteners. More particularly, it is concerned with fastening devices of a type adapted to be mounted at intervals along the edges of the doors or panels and having latch fingers which are swingable over the inside margins of door openings in walls or partitions.

An object of our invention is to provide in connection with fastening devices of the kind referred to, incorporated means whereby, after the latch fingers have been turned to latching position, they can be drawn up for firm engagement of edge margins of the doors or panels with sealing gasketing perimetricaly of the door openings.

Another object of our invention is to provide incorporated means to visibly indicate the degree to which the fingers of the fastening devices are drawn up to insure perfect pressure contact of the doors or panels uniformly all around with the gasketed edges of the wall openings.

Another object of our invention is to provide incorporated means by which the latched position of the fasteners is visibly indicated at the outer faces of the doors.

Other objects and attendant advantages will appear from the following detailed description of the attached drawings, wherein:

Fig. 1 is a fragmentary view showing a wall or partition with a door or panel secured in place by plural fastening devices conveniently embodying our invention in one form.

Fig. 2 is a fragmentary view corresponding to Fig. 1 drawn to a larger scale and showing but one of the fastening devices.

Fig. 3 is a fragmentary view in section taken as indicated by the angled arrows III—III in Fig. 2.

Fig. 4 is a view in elevation looking as indicated by the angled arrows IV—IV in Fig. 3.

Fig. 5 is a view similar to Fig. 3 but showing the device unlatched.

Fig. 6 is a view similar to Fig. 4 but with portions in section taken as indicated by the angled arrows VI—VI in Fig. 5.

Figs. 7, 8, 9, 10 and 11 are views similar to Fig. 3, showing modified forms of the fastening device.

Fig. 12 is a view in elevation looking as indicated by the angled arrows XII—XII in Fig. 11.

Figs. 13 and 14 show various modifications of certain components of the device hereinafter more particularly referred to; and

Figs. 15, 16 and 17 show various cross sectional modifications of a shaft component of the device.

In Figs. 1—4, the numeral 1 in each instance designates a door or panel which fits flush into an opening 2 in a wall or partition 3 against stop strips 4 marginally fixed about the said opening at the back of the wall, with interposition of sealing gasketing 5 by rivets 6. The door is shown as being completely removable and as secured along all of its edges by suitably spaced fastening devices 7 of our invention. However, if desired, the door may

be hingedly connected at one of its edges to the wall or partition and the devices arranged along the remaining edges of the door.

As more clearly shown in Figs. 2—4, each latch device 7 comprises an open bracket 8, which may be fashioned from suitably stiff sheet metal, and which is secured, by rivets 9, to the back of the door 1 adjacent the corresponding edge of the latter. The bracket 8 provides a bearing at 10 for one end of a shaft 11 which extends through the door 1, said shaft having a medial flat sided threaded portion 12 and a cylindrical head 13 at its outer terminal end. Surrounding the outer end portion of the shaft 11 is a knurled manipulating collar 15 whereof the diametrically-reduced axial boss 16 extends inwardly through a bearing aperture 17 in the panel. It will be noted that the bore of the collar 15 is flat sided to correspond with the cross section of the medial portion 12 of the shaft 11 so as to have a sliding key connection therewith. Screw engaged with the threaded portion 12 of the shaft 11 outwardly of the collar 15, is a knurled finger knob 18 which is counterbored as at 19 to clear the terminal head 13 of said shaft. A helical spring 20, in compression between the back 21 of the bracket 8 and a cotter pin restrained washer 22 on the inner protruding end of said shaft, serves to draw axially upon the latter for maintenance of the knob 18 in frictional engagement with a sealing washer 23 recessed into the outer face of the manipulating collar 15, and for maintenance of said collar in frictional engagement with another sealing washer 25 interposed between it and the outer face of the panel 1. Mounted between a pair of nuts 26 and 27 on the portion of the shaft 11 within the hollow of the bracket 8, is a latch finger 28 which is adapted to engage behind the stop strip 4 along the contiguous edge of the door opening 2 in the wall or partition 3. As will be best understood from Fig. 6, the finger 28 is constrained to rotate with the shaft 11 by virtue of having a flat sided aperture to correspond with the cross section of the shaft. The swing of the finger 28 in opposite direction is limited, as shown in Figs. 4 and 6, by stop projections 29 and 30 on the bracket 8.

Operation

With the knob 18 backed off counterclockwise on the threaded portion 12 of the shaft 11 as in Fig. 5, the collar 15 is turned clockwise as indicated by the arrow in Fig. 5 and the shaft 11 is turned therewith to swing the finger 28 from the position of Fig. 6 until arrested in the position of Fig. 4 by the stop projection 29 of the bracket 8, the end of the finger being thereby brought behind the strip 4. With this accomplished, the knob 18 is turned clockwise on the threaded portion 12 of the shaft 11 which latter is thereby drawn forward in opposition to the spring 20 and the finger 28 is brought into clamping engagement with the stop strip 4 as in Fig. 3, with result that the edge margin of the door 1 is sealed fluid tight against the gasket 5. As shown, the manipulating collar 15 is provided with a pointer 31 in line with the finger 28 to indicate the locked position of the device at the exterior of the door. The same procedure is followed to operate all of the fastening devices on the door in Fig. 1.

To release the latch, the above operation is reversed, i. e., the knob 18 is backed off as far as permitted by the head 13 of the shaft 11 incident to which the spring 20, in expanding, draws the shaft 11 inwardly, with attendant retraction of the finger 28 from the strip 4. Finally the shaft 11 is turned counterclockwise by means of the manipulating collar 15 to swing the finger 28 back to the position of Fig. 5. In this connection, it will be observed that, by action of the spring 20 upon the shaft 11, the knob is at all times maintained in frictional en-

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gement with the washer 23 and the collar 15 in frictional engagement with the washer 25.

In practice, the fingers 28 of the several devices in Fig. 1 are adjusted along the shafts 11 by means of the nuts 26 and 27, so that when the knobs 18 are drawn up and their outer ends are flush with the outer ends of the heads 13 of the shafts 11 as instanced in Fig. 3, the gasketing 5 will be compressed to a uniform degree all around the door opening.

In the form of our invention illustrated in Fig. 7, the spring 20a surrounds the medial portion 12a of the shaft 11a, and is in compression between the inside face of the bracket 8a and the finger 28a which latter is maintained in engagement with the single nut designated 26a under the influence of the spring. In this instance, the knob 18a is closed at its outer end and is in threaded engagement with the head 13a at the outer distal end of the shaft 11a. Otherwise the construction here is identical with that shown in Figs. 3-6, and the component elements not specifically referred to but having their counterparts in the first described embodiment, are identified by the same reference numerals previously employed, with addition in each instance—in this case of the letter "a" for convenience of more ready distinction. Other letters are used for the same purpose with the numerals designating such corresponding parts in the detailed descriptions which follow of the modifications.

In Fig. 8, the finger 28b is secured between nuts 26b and 27b engaged on the medial portion 12b of the shaft 11b as in the first embodiment, and the knob 18b is in threaded engagement with the head 13b on said shaft as in Fig. 7. Fig. 8 shows that spring disks 20b may be used instead of a helical spring 20 of Figs. 3 and 5.

The modification of Fig. 9 differs from the previous ones in that a finger spring 20c is utilized in place of a helical spring, and in that a set screw 32 is shown for fixing the finger 28c in adjusted position on the medial portion 12c of the shaft 11c. As in Figs. 7 and 8, the knob 18c is in threaded engagement with the head 13c of the shaft 11c. But here, the shaft 11c is additionally provided beyond the head 13c with a diametrically-reduced extension 33 which passes freely through the closed outer end of said knob and which is provided with graduations to indicate the extent to which the finger 28c is drawn forward by rotation of the knob in securing the door.

In Fig. 10 a cap 34 is force fitted into the open outer end of the knob 18d, and the head 13d of the shaft 11d is shorter from the standpoint of length than the heads of the previous embodiments. Otherwise, the construction here may be identical with that of the first described embodiment.

Figs. 11 and 12 and Figs. 13 and 14 respectively show knobs 18e, 18f and 18g of different shapes which may be used in lieu of those illustrated in Figs. 3 and 7-10; and Figs. 15, 16 and 17 show different cross sections 12h, 12i and 12j which may be given to the shafts used in the different embodiments of my improved fastening means.

While in accordance with the provisions of the statutes, I have illustrated and described the best forms of embodiment of my invention now known to me it will be apparent to those skilled in the art that changes may be made in the form of the apparatus described without departing from the spirit and scope of the invention, as set forth in the appended claims, and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features.

Having thus described our invention, we claim:

1. In a fastening device of the character described, a rotary shaft extending transversely through a door or panel perimetricaly lapping an opening in the outer side of a wall; a latch finger mounted on the shaft and adapted, when in latching position, to engage over an inside edge margin of the opening at the back of the wall; a manipulating member having a sliding key connection with the

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outer end portion of the shaft; a finger knob threadedly engaged with the outer end of the shaft; and yielding means operative to resist outward axial movement of the shaft as the knob is turned to draw up the shaft and finger after the latter has been turned to latching position and thereby to bring the finger into firm bearing contact with the inside face of the wall.

2. A fastening device according to claim 1, further including sealing washers interposed respectively between the outer face of the door and the manipulating member, and between said manipulating member and the knob; said washers acting as a seal for dust and moisture and as a friction means to prevent accidental rotation of the shaft when the finger is in unlatched position.

3. A fastening device according to claim 1, wherein the manipulating member has a pointer in line with the finger to indicate at the outer side of the door when said finger is in latching position.

4. A fastening device according to claim 1, wherein the outer distal end of the shaft has a terminal head and wherein the knob is counterbored from its outer end to clear the terminal head of said shaft.

5. A fastening device according to claim 1, in which the manipulating member is in the form of a collar with an axial boss engaged in a bearing aperture in the door.

6. A fastening device according to claim 1, further including an open bracket which is secured to the inner face of the door and which affords a bearing for the inner end portion of the shaft; wherein the finger has a sliding key connection with the shaft within the hollow of the bracket for adjustment along the shaft; and wherein the finger is securable in adjusted position between clamp nuts threadedly engaged upon the shaft.

7. A fastening device according to claim 1, wherein an open bracket secured to the inner face of the door affords a bearing for the inner end portion of the shaft; wherein the inner end portion of the shaft protrudes beyond the bracket; and wherein the yielding means is in the form of a spring in compression between the bracket and a projection at the inner distal end of the shaft.

8. A fastening device according to claim 1, wherein an open bracket secured to the inner face of the door affords a bearing for the inner end portion of the shaft; wherein the finger is secured to the shaft within the hollow of the bracket; and wherein the bracket affords stops to limit the movement of the finger to an arc between latched and unlatched positions.

9. A fastening device according to claim 1, wherein an open bracket secured to the inner face of the door affords a bearing for the inner end portion of the shaft; wherein the finger has a sliding key connection with the shaft within the hollow of the bracket for adjustment along the shaft; wherein the yielding means is in the form of a spring in compression between one side of the finger and the bracket; and wherein an adjusting nut is threadedly engaged upon the shaft and abuts the other side of the finger.

10. A fastening device according to claim 1, in which an open bracket secured to the inner face of the door affords a bearing for the inner end portion of the shaft; wherein the shaft has a flat side within the hollow of the bracket; wherein the finger has a flat sided aperture to correspond with the cross section of the shaft for adjustability therealong while restrained against relative rotation; and wherein the finger is fixed in adjusted positions on the shaft by a set screw.

11. A fastening device according to claim 1, wherein the shaft has a diametrically reduced projection at its outer distal end passing through the knob and provided with graduations as and for the purpose set forth.

12. A fastening device according to claim 1, wherein the shaft has a terminal head at its outer distal end; and wherein the knob is threadedly engaged with the head.

(References on following page)

2,860,904

5

References Cited in the file of this patent

UNITED STATES PATENTS

960,585	Rosenberg	June 7, 1910	1,763,914
1,072,593	Erz	Sept. 9, 1913	2,197,824
1,327,011	Arndt	Jan. 6, 1920	2,283,225
			2,624,605
			2,693,100

6

Vitale	Apr. 23, 1940
Young	Apr. 23, 1940
Parsek	May 19, 1942
Ratte	Jan. 6, 1953
Wiegel	Nov. 2, 1954