

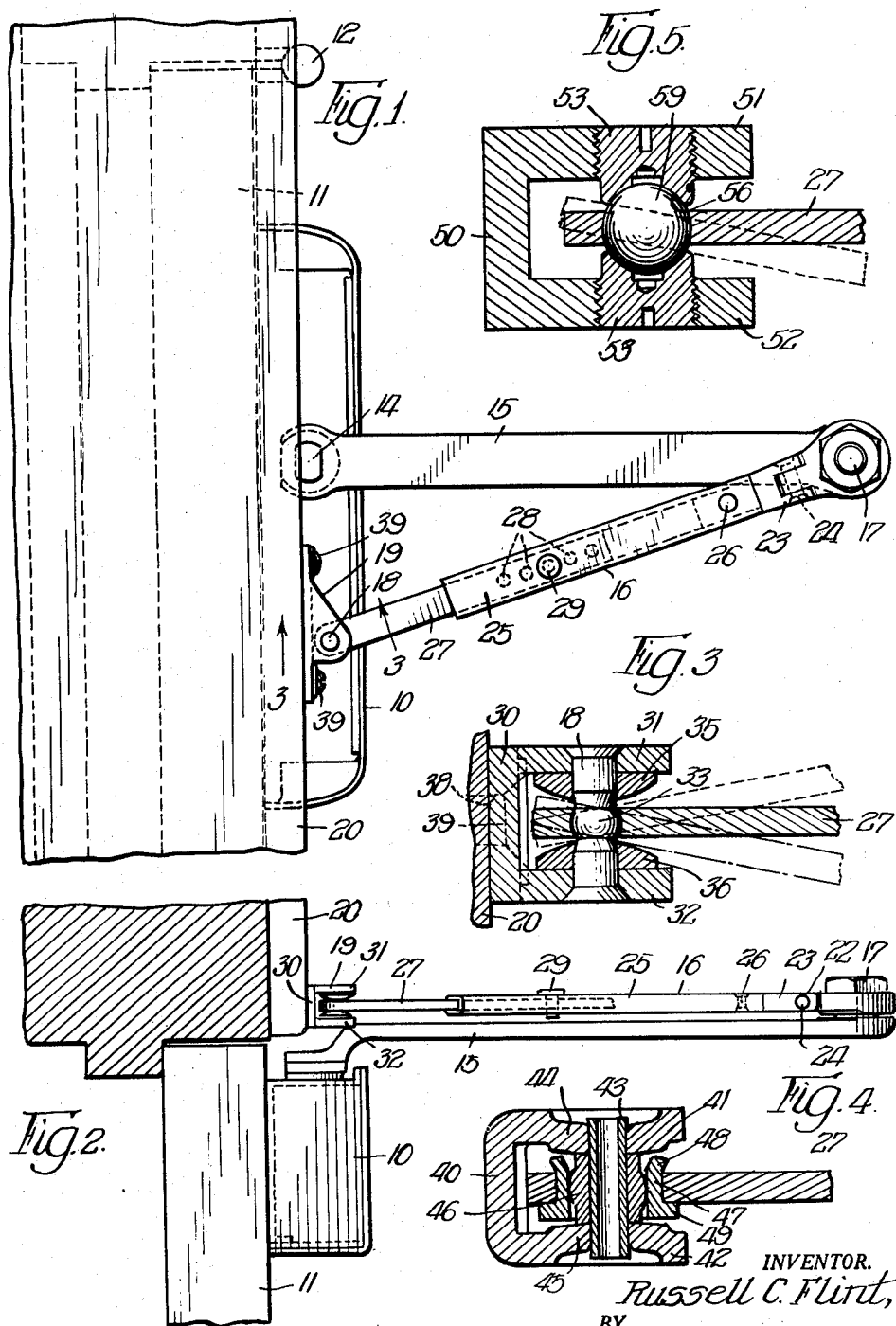
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DOOR CLOSING AND CHECKING DEVICE

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1

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DOOR CLOSING AND CHECKING DEVICE

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1 Claim. (Cl. 16—49)

This invention relates to a door closing and checking device, and more particularly to a door closing and checking device that has a high degree of flexibility in installation.

The usual surface type door closing and checking device has a main arm and a forearm. The main arm is secured to the door closing device. The forearm is pivotally secured to a shoe on a door frame.

In some installations the door frame does not permit the shoe to be secured to the normal position. This is true, for instance, where the door frame has ornamental designs or is beveled. Also, there is often some inaccuracy in mounting the shoe, even where the door frame is of a standard form.

It is, therefore, an object of the invention to provide a door-connecting arm and shoe that will allow for slight inaccuracy in installation.

It is a further object of the invention to provide a door closing and checking mechanism that will permit the shoe to be secured to the door frame within a larger area than has been possible heretofore.

It is another object of the invention to provide a shoe for a door closing device that is inexpensively and conveniently manufactured.

Further objects and advantages of this invention will become evident as the description proceeds and from an examination of the accompanying drawing which illustrates three embodiments of the invention and in which similar numerals refer to similar parts throughout the several views.

In the accompanying drawing:

Figure 1 is a top plan view of a device embodying the invention;

Figure 2 is an end view in elevation of the device shown in Figure 1;

Figure 3 is a view in section taken substantially along lines 3—3 of Figure 1;

Figure 4 is a view in section of an alternative form of shoe; and

Figure 5 is a view in section of still another alternative form of shoe.

Referring now to the drawing, there is shown a door closing and checking mechanism 10 secured to a door 11 which is independently hung on hinges 12. The door closer has a shaft 14 to which is secured a main arm 15. A forearm 16 is pivotally mounted at one end to the main arm at 17, and mounted at 18 at the other end on a shoe 19 fastened to the door frame 20.

In addition to the horizontal pivotal movements about the vertical pin 17, the forearm may also be pivoted vertically about a generally horizontal pivot. This pivot is adjacent to pivot 17 and constructed of a yoke 23 hinged on a pin 24. The forearm 16 has a hollow portion 25 fastened by a pin 26 to the end of the yoke 23. The hollow portion contains therein a slidable rod 27. Rod 27 telescopes within the hollow portion to extend the forearm to various selected lengths. A plurality of

2

apertures 28 in the rod are designed to be selectively held in alignment with the corresponding aperture in the hollow portion and secured in the selected position by a pin 29.

The shoe 19 in Figures 1 through 3 has a base member 30 and ears 31, 32. The pin 18 between the ears is offset from the center of the shoe so that the shoe may be reversed. It is sometimes desired to move the pivot point along the door frame to increase the power of the closer. By having the pin off center, the shoe may be unscrewed from the door frame, turned end to end and the screws replaced in the same screw holes, thus changing the position of pin 18, without drilling new screw holes in the door frame.

The pin 18 has a convex portion 33 which may be in the shape of a spherical section. Above and below the convex portion mounted on pin 18 against the ears 31, 32 are a pair of convex bearing members 35, 36. These bearing members hold the forearm on the convex portion of the pin, so that the forearm may be moved vertically as shown by the dotted lines in Figure 3.

The base member 30 is provided with a pair of screw holes 38 at the end portions thereof. Screws 39 are inserted through the screw holes for securing the shoe to the door frame.

In the alternative form shown in Figure 4, the shoe has a base 40 and a pair of ears 41, 42. A pivot pin 43 is fastened between the ears and may be offset from the center as in the form shown in Figures 1—3. The ears are formed with the convex portions 44, 45 at the point at which the pin 43 is fastened. Between the ears on the pin is a convex sleeve bearing 46. The forearm 16 is pivotally mounted for movements about the convex portion of the sleeve on the pivot pin 43. The convex sleeve member is of the shape of spherical section, so that the forearm may be moved vertically to permit the shoe to be secured at various vertical locations on the door frame. A bearing 47 is secured in the forearm and has portions 48, 49 extending above and below the forearm between the ears 41, 42 for holding the forearm on the convex section of the pivot pin 43.

In Figure 5 of the drawing is shown a shoe having a base 50 and a pair of spaced ears 51, 52. In each of the ears is threaded a socket member 53 having a concave end portion 56. The socket members are mounted in the ears opposite each other and with the concave end portions facing each other so as to form a hollow socket therebetween. Contained within the socket is a ball 59 that is press-fitted in an opening in the end of the forearm 27 so as to be rigidly secured thereto. Upper and lower sections of the ball project above and below the forearm to engage and be received in the upper and lower socket members respectively. The ball and socket joint between the forearm and the shoe permits the forearm to be moved in any direction within the confines of the shoe so that the shoe member may be mounted at various locations on the door frame.

From the foregoing the operation of the device should be apparent. The door closer 10 is secured to the door and connected to a shoe 19 on the door frame by forearm 16. The shoe may be mounted at several different vertical locations on the door frame, if, for example, the door frame has descriptive art work or is of unusual configuration or shape, without affecting the operation of the door closing and checking device. The shoe and forearm permit vertical motions with respect to the door frame. Also the forearm is provided with a pivot 24 for vertical movements. Furthermore, the forearm has an extensible telescoping rod 27 that may be extended or retracted to the particular length desired at the location.

In the drawing and specification there has been set

3

forth a preferred embodiment of the invention, and although specific terms are employed, these are used in a generic and descriptive sense only, and not for purposes of limitation. Changes in form and the proportion of parts, as well as the substitution of equivalents are contemplated, as circumstances may suggest or render expedient, without departing from the spirit or scope of this invention as further defined in the following claim.

I claim:

The combination comprising a shoe member having a base portion adapted to be secured to a door frame, a pair of oppositely spaced ear members connected to said base portion, socket members mounted on said ear members in opposed relationship, said socket members having concave end portions facing each other forming a socket there-

4

between, a ball member movably contained between said socket members, and a forearm secured at one end to said ball member for movements about the pivot formed by said ball member, said ear members being unsymmetrical, said ball and socket members located adjacent one end of said base so that the position of the pivot may be changed by reversing said shoe member.

References Cited in the file of this patent

UNITED STATES PATENTS

844,421	Stafford	Feb. 19, 1907
999,542	Bardwell	Aug. 1, 1911
1,028,460	Henry	June 4, 1912
1,668,341	Shaw et al.	May 1, 1928
2,782,453	Schlage	Feb. 26, 1957