March 29, 1960 B. DEUTCHMAN ET AL 2,930,075

HINGES

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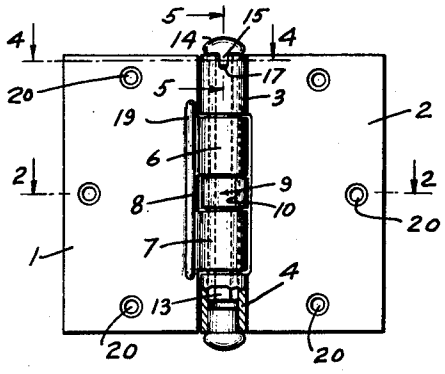


FIG. 1.

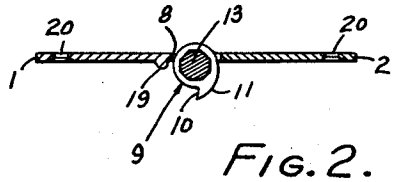


FIG. 2.

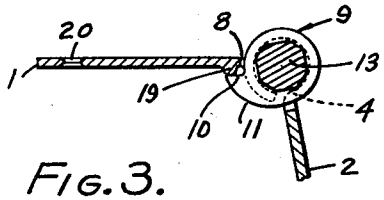


FIG. 3.

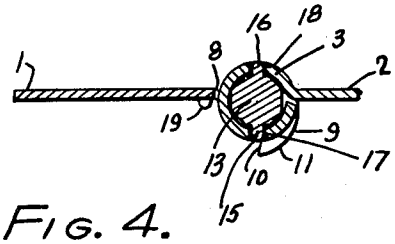


FIG. 4.

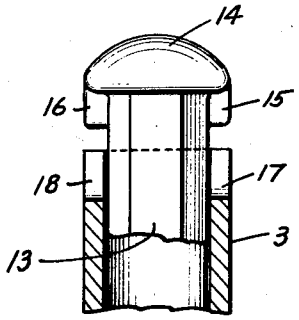


FIG. 5.

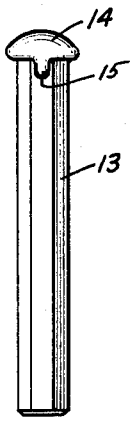


FIG. 7.

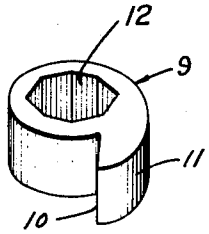


FIG. 6.

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HINGES

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1 Claim. (Cl. 16—191)

The present invention relates to hinges generally, and more specifically to a hinge stop construction. At the present time, it is customary to limit the opening of a door, casement window, and other swinging object by means of a stop of some character, usually attached to the floor or to a side wall. Such devices are not ornamental and oftentimes impose a hazard in that one may trip over the same.

The present invention has for an object a hinge construction so constituted as to provide an adjustable stop in the hinge itself so that a limiting angularity may be assumed by a door, window, or other device, relative to a fixed device, such as a framing.

The invention is easily installed and adjusted, foolproof in its operation, durable, economical in cost of manufacture, and generally superior to devices now known to the inventors.

With the above mentioned and other objects in view, the invention consists in the novel and useful provision, formation, construction, association, and relative arrangement of parts, members and features, all as shown in one embodiment in the accompanying drawing, described generally, and more particularly pointed out in the claim.

In the drawing:

Figure 1 is a plan view of the hinge and its stop shown as an entirety,

Figure 2 is a sectional view on the line 2—2 of Figure 1,

Figure 3 is a fragmentary sectional view similar to that of Figure 2, but on an enlarged scale, and showing one plate or leaf of the hinge in moved position,

Figure 4 is a sectional view on the line 4—4 of Figure 1,

Figure 5 is a fragmentary sectional view on an enlarged scale, taken on the line 5—5 of Figure 1,

Figure 6 is a perspective view of the stop member used in the practice of the invention, and,

Figure 7 is an elevation of the pintle pin of the hinge.

Referring now to the drawing, the improved hinge utilizes a pair of plates or leaves 1 and 2, the plate or leaf 2 being provided with top and bottom knuckles 3 and 4, between which are received the knuckles 6 and 7 of plate or leaf 1. The knuckles 6 and 7 are spaced apart to provide a space 8 for the reception therein of an adjustable stop member 9, shown in Figure 6. This adjustable stop member is provided with a transverse shoulder or abutment 10, formed by providing the stop member with an involute surface 11. The stop has a central bore 12 which is angular-sided or provided with internal grooves. For the purpose of securing the knuckles in working relationship, we have provided a pintle pin 13, shown in Figure 7, which is angular-sided or provided with spline-ways, so as to have a working, and preferably a drive fit within the bore 12 of the stop. Thus, the stop has axial but non-rotatable relationship to the pin, which for ease of description we define as a keyed relationship. The top of the said pintle pin is provided with a cap 14 having two diametrically positioned lugs 15 and 16. This cap is secured to the top of the pintle pin or is integral therewith. The knuckle 3 is provided with a pair of diametric grooves 17 and 18 for reception of the lugs 15 and 16 (see Figure 5). The bores in the knuckles of both plates or leaves 1 and 2 are substantially circular so that the pintle pin may revolve therein. The plate or leaf 1 is provided with an elongated rib 19.

The operation, uses and advantages of the invention just described are as follows:

As is usual, the plates or leaves 1 and 2 are provided with holes for receiving screws, as shown in Figure 1 and designated generally as 20, whereby the hinge or hinges may be secured to a door and its jamb. Thus, the plate 2 is secured to the door while the plate 1 is secured to the jamb, in the usual manner. The degree of angularity to be assumed by the door is first determined as, for instance, shown in Figure 3, which illustrates the extent of the opening of the door relative to the jamb or other leaf member. The pintle pin may be released from the knuckles of both leaves and the position of the adjustable stop determined. This adjustment is indicated by the position of the grooves 17 and 18 relative to the lugs 15 and 16. Thus, the adjustable stop may be removed from the pintle pin and reinserted thereon in accordance with the angularity to be assumed by the door or other device when at its greatest angularity relative to its jamb or, for that matter, at the greatest angularity desired for the leaves 1 and 2. The location for the adjustable stop having been determined, the pintle pin is again inserted through the knuckles and the said stop and assumes the position shown in Figure 1. The abutment or stop 10, when the leaf 2 is moved from, say, the position of Figure 2 to that of Figure 3, is such that it engages the said rib 19; this rib acts as an anvil and adds strength to the leaf 1.

It will be seen that we have provided a very simple structure which consists in the use of a pintle pin and a stop member carried thereon, which stop member is adjustable to different angular positions relative to the lugs 15 and 16, together with means whereby movement of one of the plates or leaves of the hinge will revolve the pintle pin within the knuckles of the plate 1. There is no relative movement between the pintle pin and knuckle 3 when the lugs 15 and 16 are received within the grooves 17 and 18 of said knuckle 3.

It is obvious that plate or leaf 2 may be secured to the jamb and plate or leaf 1 to the door, the result accomplished by our invention remaining the same. Further, the drive fit engagement between the pintle pin 13 and stop 9 prevents longitudinal travel of the pin within the knuckles during opening and closing of the door relative to its jamb.

We claim:

In hinge construction, a pair of plates, one of which is provided with a pair of spaced apart knuckles and the other being provided with two spaced apart knuckles adapted to be interposed between the knuckles of the first plate, a pintle pin passed through said knuckles, the said pintle pin provided with longitudinal splined ways; a stop member provided with grooves for fitting said splined ways of the pintle pin, the said stop member being interposed between the two knuckles of the second named plate; said stop member provided with a projecting abutment, means for anchoring the pintle pin against movement to one of the knuckles of the first named plate, whereby angular movement of one plate relative to the other plate brings the abutment into engagement with the other plate to limit angular movement therebetween.

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