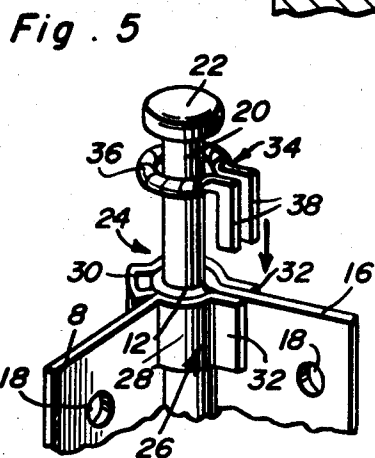
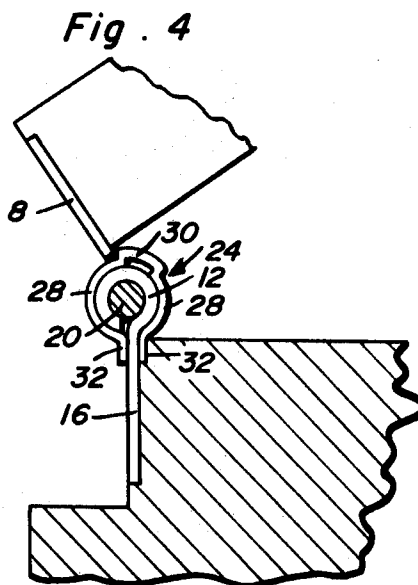
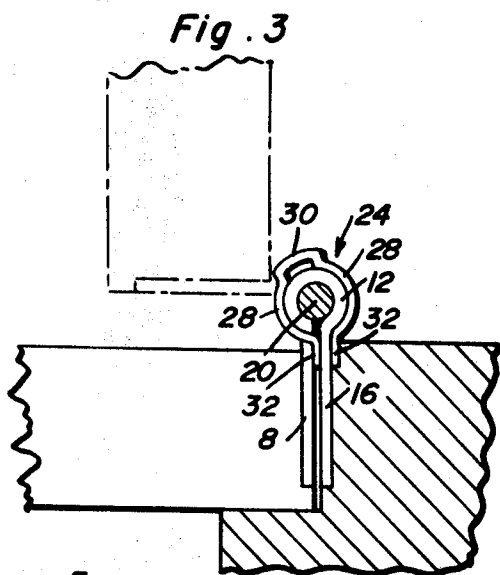
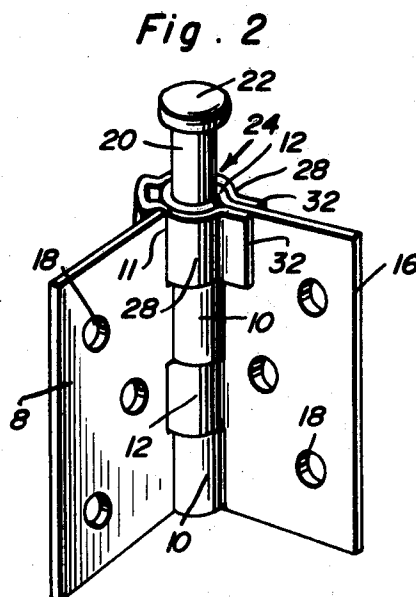
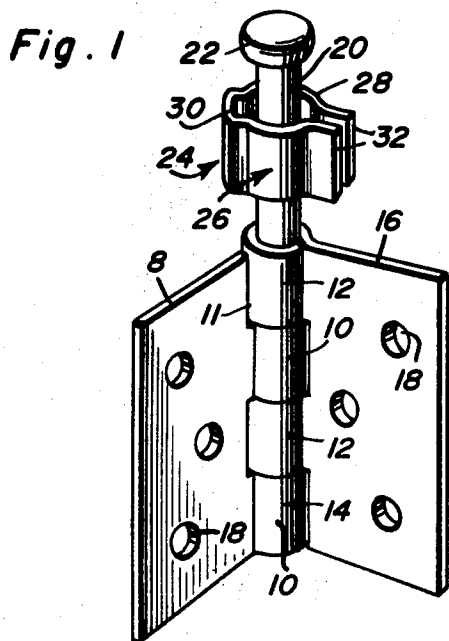


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[54] **DOOR HINGE STOP**  
**5 Claims, 6 Drawing Figs.**

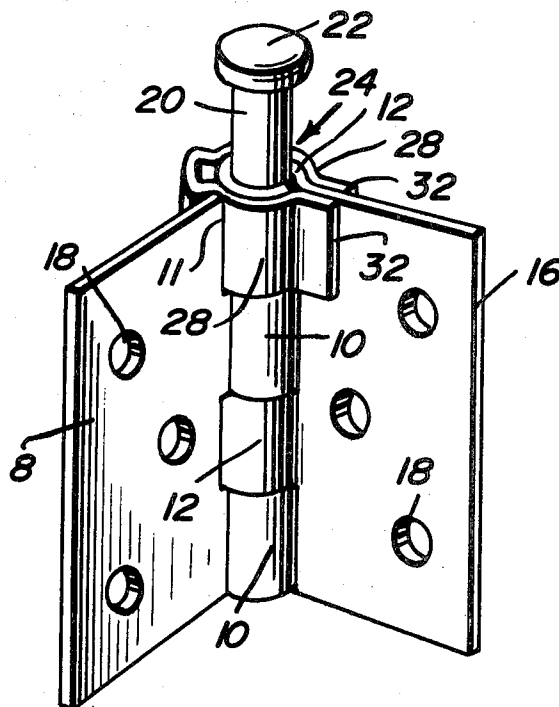
[52] U.S. Cl. .... 16/191  
 [51] Int. Cl. .... E05d 11/06  
 [50] Field of Search ..... 16/191,  
 138, 139, 143, 144, 82, 85, 137, 169; 24/257

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**ABSTRACT:** A readily applicable and removable self-contained butt hinge attachment which serves as a limit stop, that is, functions to check the angular spreading movement of the knuckle-equipped leaves. It comprises a C-shaped resilient clip conformingly slipped into place over either one (top or bottom) of the pintle-accommodating knuckles. The bight portion of the clip is formed with a projecting riblike stop shoulder. The spaced edges diametrically opposite the stop shoulder have flat liplike outstanding flanges which straddle and yieldingly contact the leaf which is sandwiched therebetween. An optional split spring-biased ring encircles the pintle and has stabilizing fingers embracing the respective flanges.



## DOOR HINGE STOP

This invention relates to certain new and useful improvements in limit stop means which lends itself to use on and in conjunction with either the top or bottom hinge pintle knuckle of a conventional-type unaltered butt hinge and which is readily applicable and removable, can be selectively set to achieve angular movement, one setting for an 80° adjustment, a second one for a 180° opening adjustment, and which will work equally well on left- or right-swinging doors.

With respect, generally stated, to the state of the art to which the present invention relates it can be pointed out at the outset that it is not new in the field of endeavor herein disclosed to regulate and limit the opening and closing of a hinged swingably mounted door by incorporating stop means of one type or another in at least one of the customarily used butt hinges. As exemplary of the usage of doors tops the reader may, if desired, examine the doorstop in Madsen U.S. Pat. No. 2,280,655 or, alternatively, the adjustable stop hinge revealed in a patent to Schwartzberg U.S. Pat. No. 2,990,572. It will be noted in connection with these prior patented door hinge stops that they are rigid in construction and lacking the desired property of yieldability would loosen and gradually dislodge the leaf-attaching screws or equivalent fasteners.

An object of the present invention is to structurally, functionally and in other practical ways improve upon the above and other known dual-leaf stops and, in so doing to advance the art and to provide a feasibly resilient limit stop which well serves the purposes for which it has been devised and acceptably used.

Briefly the means herein comprehended is characterized by a substantially C-shaped clip. The clip is of one-piece construction and is such in size and shape that it is adapted to be conformingly fitted over either one of the end knuckles in a manner to coordinate with the knuckle and the hinged marginal edges of the paired leaves. More particularly, the clip embodies a rounded bight portion a median part of which is provided with a lengthwise outwardly projecting rib. This rib is channel-shaped in cross section and constitutes a limit stop or an abutment and functions to provide a desired stop shoulder. The normally spaced parallel edges of the clip which are diametrically opposite the stop shoulder are provided with spaced parallel radially and outwardly projecting liplike flanges. These flanges are of duplicate construction and have flat faces which are expressly designed and adapted to straddle and contact the coordinating faces of the hinge leaf which is interposed therebetween. It is within the purview of the invention to supplement the clip by installing a coiled collar or split ring on the headed end portion of the hinge pintle and wherein the free ends are provided with laterally directed parallel fingers which are capable of straddling the aforementioned lips or flanges in a manner to strengthen the same and to insure a yieldable but firmly reliable result.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a view in perspective showing the conventional butt hinge with the upper-headed portion of the pintle withdrawn partly from the hinge knuckles and showing, what is more significant, the aforementioned C-shaped or equivalent resilient clip readied to be dropped down on the pintle for use.

FIG. 2 is a view similar to FIG. 1 and also in perspective and showing the clip in its installed ready-to-function position.

FIG. 3 is a horizontal sectional view showing the hinge and limit stop means set for use in the manner shown.

FIG. 4 is a view similar to FIG. 3 and showing the leaves of the hinge spread apart with the door swung open and with an edge portion of the leaf at the left abutting the limit stop shoulder.

FIG. 5 is a fragmentary perspective view based on FIG. 2 and showing the added optionally usable stabilizing guard.

FIG. 6 is a view with the guard applied but showing only the retaining fingers in section gripping and retaining the flanges in a seeming self-evident manner.

With reference first and particularly to FIGS. 1 and 2, it will be evident that the butt hinge shown is of a conventional type and embodies a first leaf 8 at the left having spaced, aligned knuckles 10 along the hinging edge 11 and which are related to the companion knuckles 12 on the opposed hinging edge 14. The knuckles 12 are integral with the right-hand leaf 16 and both of these are provided with screw holes 18 of suitable construction and relative placement. These knuckles as usual accommodate the pin or shank portion of the pintle 20 whose upper-headed end is denoted at 22.

The attachable and detachable limit stop means is denoted, generally stated, by the numeral 24 and comprises a substantially U-shaped spring metal clip 26 having opposed curvate body portions 28 joined by a bight portion, said bight portion being bent upon itself and having a hollow outstanding channel-shaped rib 30 which constitutes a limit stop shoulder and also as abutment. The diametrically opposite free end portions of the arcuate body portions of said clip are fashioned into and provide spaced parallel liplike flanges 32 which are flat faced are yieldingly resilient and which when in position serve to straddle and yieldingly clench opposite flat faces of the hinge leaf 16. The clip is shown ready for installed use in FIG. 1 and is shown in FIG. 2 in its usable or performing position. The spring or resilient metal of which the clip is made permits it to be fitted over the pintle by spreading the flanges or, alternatively, the body portion of the clip is of sufficient diameter that it can be fitted down over the headed end of the pintle.

It is believed that by considering FIG. 1 first the construction and manner of applying the clip 24 in readiness for use will be self-evident. Then, by comparing FIG. 2 therewith it will be evident how the clip when fitted into place has its split body portion snugly embracing the upper knuckle 12. When the clip is pressed down into place around the upper hinge knuckle the liplike flanges 32 embrace opposite surfaces of the intervening hinge leaf 16. The limit stop rib or shoulder projects at the desired angle and serves to check the angular swinging movement of the hinge leaf 8.

FIGS. 3 and 4 added to FIGS. 1 and 2 simply bring out the manner in which the hinge, hinge pintle, and limit stop clip coordinate and function in conjunction with a door and an associated doorjamb or frame.

The purpose of FIGS. 5 and 6 is to bring out, as before suggested, the addition of and optional use of a stabilizing guard. This guard is designated in FIG. 5 by the numeral 34. It comprises a split collar or ring, and more particularly, one which is fashioned from a length of strap metal which is bent upon itself intermediate its ends to provide the collar desired. More specifically, the collar or ring is coiled or twisted to provide what constitutes a coil spring 36. This resilient spring encircles the pintle and the free end portions are bent down to provide duplicate flat-faced stabilizing fingers 38. These fingers are of a length and spaced relationship that they are capable of straddling the aforementioned lips or flanges 32. Thus by shoving the finger-equipped collar or ring down from the position shown in FIG. 5 to that illustrated in FIG. 6 it will be evident that the fingers 38 then straddle the flanges and function to stabilize the flanges so that they will not be unduly spread or distorted and will maintain the desired resilient accommodating function.

It will be evident from the disclosure that the primary emphasis is on the one-piece spring steel or equivalent resilient C-shaped clip 24 featuring the limit stop shoulder or rib 30 and the outstanding spaced parallel leaf-straddling flanges 32. Nevertheless and where it is deemed by the installer to be desirable the coiled split ring or guard 34 is brought into play and is merely slipped over the pintle and then forced down into position so that the fingers 38 perform the reinforcing or stabilizing function illustrated in FIG. 6.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to falling within the scope of the invention.

What is claimed as new is as follows:

1. In combination, a butt hinge comprising a pair of companion plate-type leaves having screw holes and adapted to be seated and fastened in suitably formed mortises provided therefor in an edge of a swinging door and surface of a complementary door frame, adjacent marginal edges of said leaves having end-to-end interfitting axially aligned hinging knuckles, a hinge pintle passing removably through and hingedly uniting the respectively cooperating knuckles, and a hinge stop comprising a clip fitted over and encompassing an end one of said knuckles, said clip having a limit stop abutment embodied therein at a predetermined place and with which one of said marginal edges is engageable in a manner to limit the angular swinging movement of said leaves in a direction away from each other, said clip being substantially C-shaped and embodying a median bight portion and spaced parallel free edge portions substantially diametrically opposite said bight portion, each edge portion having an outstanding liplike flange, the respective flanges straddling and normally contacting opposite faces of one of said leaves, said bight portion being formed with an outstanding rib and said rib providing the aforementioned limit stop abutment, and, in combination, a guard separate from, but complementary to said clip and adapted to surround a portion of the pintle between the headed end and an adjacent end of said clip, said guard having a pair of retainer fingers which are adapted to straddle the respectively cooperable flanges in a manner to reinforce and stabilize said flanges and, in so doing, to guard against dislodgement and consequent displacement of said clip from its given hinge stop position.

2. The combination defined in and according to claim 1, and wherein said guard comprises a split resilient ring having spaced ends, said ends provided with the aforementioned retainer fingers.

3. For use on and in conjunction with a butt hinge and the usual headed pintle which is passed through and pivotally joins the hinge pintle knuckles, a hinge-leaf angular movement limit stop comprising a substantially C-shaped clip adapted to be snugly but conformingly fitted over an end one of said knuckles, said clip being of one-piece construction, made of flexible resilient sheet material embodying opposed arcuate

body portions having like ends joined by a bight portion, a median portion of which is formed with an outwardly projecting hollow but rigid rib which is channel-shaped in form and constitutes a limit stop and having spaced parallel spreadable edges substantially diametrically opposite said limit stop rib and provided with spaced parallel radially projecting liplike flanges, said flanges being expressly designed and adapted to straddle and yieldingly contact coordinating faces of an intervening hinge leaf, said clip being made of springy material whereby said flanges are resilient and are normally clenched against the intervening leaf but are permissibly capable of yielding and spreading apart if and when the angular movement of the hinged leaves calls for such spreading, and, in combination, a guard, said guard being separate from but complementary to said clip and adapted to surround a portion of the pintle between the headed end and an adjacent end of said clip, said guard having a pair of retainer fingers which are adapted to straddle the respectively cooperable flanges in a manner to reinforce and stabilize said flanges and, in so doing, to guard against dislodgement and consequent displacement of said clip from its given hinge stop position.

4. For use on and in conjunction with a butt hinge and the usual headed pintle which is passed through and pivotally joins the cooperating hinge pintle knuckles, a hinge-leaf angular-movement limit stop comprising a clip, said clip being substantially C-shaped in plan and adapted to be snugly but conformingly fitted over an end of one of said knuckles, said clip being of one-piece construction and embodying opposed arcuate body portions having like ends integrally joined and cooperatively connected by an intervening bight portion, a median portion of said bight portion being formed with an outwardly bent hollow but rigid rib, said rib being channel-shaped in form and constituting an outstanding limit stop shoulder, said arcuate body portions having spaced parallel spreadable edges which are approximately diametrically opposite to the locale of said limit stop shoulder and terminate in spaced parallel radially projecting liplike flanges, said flanges being expressly designed and adapted to straddle and yieldably contact coordinating faces of an intervening hinge leaf.

5. The hinge-leaf angular-movement limit stop defined in and according to claim 10 wherein said clip is made of flexible resilient sheet material of uniform cross-sectional thickness from end to end, said flanges being disposed in close but spaced parallel relationship and in conjunction with said body portions being forcibly spreadable in a manner that the clip can be fitted over the usual headed end of the hinge pintle and thereafter retained in its functioning position by the head of said pintle.

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