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A. KUNEY

2,240,790

HINGE STOP ATTACHMENT

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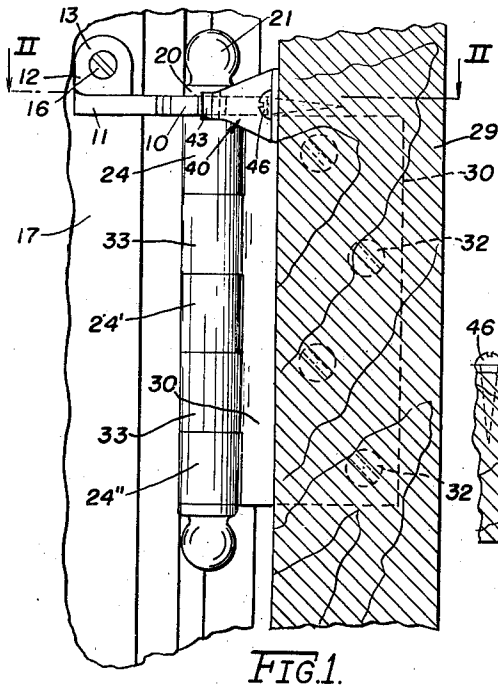


FIG. 1.

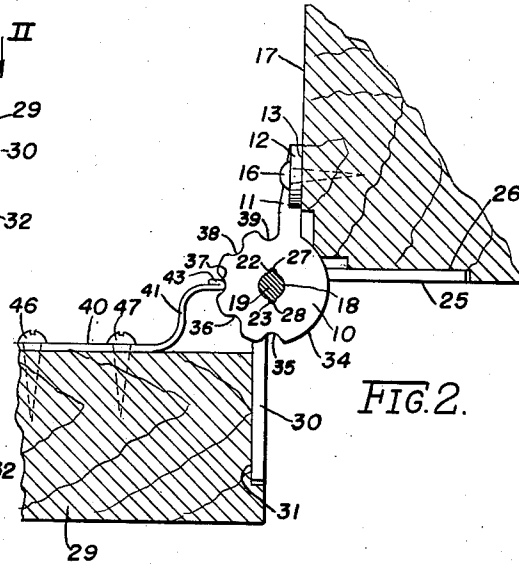


FIG. 2.

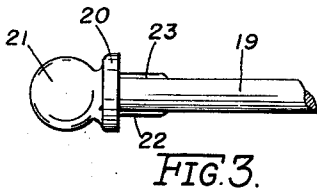


FIG. 3.

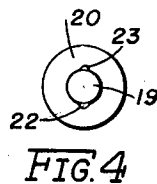


FIG. 4.

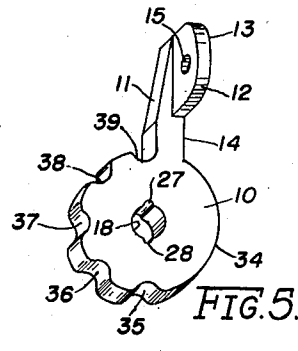


FIG. 5.

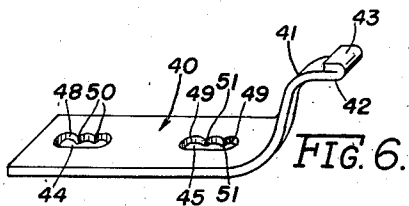


FIG. 6.

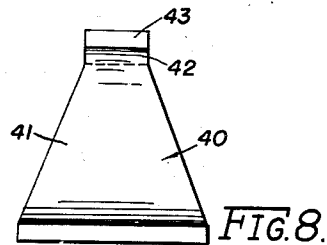


FIG. 8.

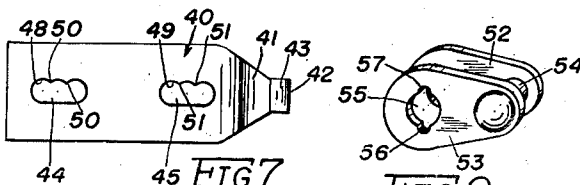


FIG. 7.

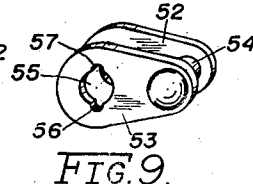


FIG. 9.

INVENTOR.
AGNES KUNEY
BY *Harry C. Schmitz*
ATTORNEY.

UNITED STATES PATENT OFFICE

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HINGE STOP ATTACHMENT

Agnes Kuney, La Grange, Ill.

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3 Claims. (Cl. 16—142)

This invention relates to a door stop and more particularly to a hinge stop attachment therefor, although certain features thereof may be employed with equal advantage for other purposes.

It contemplates more especially the provision of a simple, inexpensive and improved hinge stop attachment that can be utilized in conjunction with standard building door hinges serving as mounts for doors that open both parallel as well as angularly to a wall.

Numerous types of door stops have heretofore been proposed in conjunction with hinge mounts therefor, but these are expensive and require special hinge constructions that preclude their use with doors of standard construction now available and commonly used in building structures. Then, too, the hinge stops of known construction are not adaptable for use on present door constructions which are in use and cannot be advantageously changed to provide an adjustable stop therefor of known construction. It is often that doors cannot be permitted to swing to limit their open position adjacent a wall because there may be numerous obstructions such as the requirement to place furniture in the path thereof.

As a result, injury is occasioned to the door as well as the furniture unless a positive stop is provided. This usually takes the form of a floor mounted stop which is undesirable for numerous well known reasons such as impairment to the floor as well as the obstruction occasioned thereby when the door is not in its extreme open position. Floor mounted stops as well as the customary door stops on the base-board of the wall are not entirely advantageous or desirable in that they serve as obstructions causing damage to the person as well as appliances such as vacuum cleaners, buggies and other movable objects that are often displaced in the path thereof. All of these shortcomings render it undesirable to utilize the customary base-board and floor mounted door stops as well as the specially constructed hinges that have been provided for an equivalent purpose, the latter being too expensive as a substitute for standard hinges and for that reason have not been adopted to any extent.

One object of the present invention is to simplify the construction and improve the operation of devices of the character mentioned.

Another object is to provide a durable, inexpensive and effective hinge stop attachment that is operable in a variety of positions.

Still another object is to provide a resilient door catch and complementary stop hinge attachments

capable of radial engagement and disengagement for use with standard door hinges.

A further object is to provide a door stop having a plurality of obstructions for cooperation with a door catch to constitute hinge attachments to arrest the opening of a door in a variety of positions without shock.

A still further object is to provide a resilient door catch as a cooperable element with a door stop having a series of obstructions to define limiting positions in conjunction with standard hinge plates.

Still a further object is to provide door stop attachments capable of application to standard building door hinges to predetermine the positions of the door without resort to the usual base-board or floor mounted stops.

An additional object is to provide a plate mounted to the pintle of a hinge for cooperation with a resilient catch adjustably anchored to a door to limit the door opening movement to a variety of predetermined positions or a selected position.

Other objects and advantages will appear from the following description of an illustrative embodiment of the present invention.

In the drawing:

Figure 1 is a fragmentary front view in elevation of a door hinge and associated parts illustrating a hinge stop attachment embodying features of the present invention, the door being shown in section for contrast and to clarify the showing.

Figure 2 is a sectional plan view taken substantially along line II—II of Figure 1.

Figure 3 is a fragmentary side view of a standard door hinge pintle.

Figure 4 is a bottom end view of the pintle shown in Figure 3.

Figure 5 is a perspective view of a door stop attachment plate which is axially disposed of the hinge for connection therewith by a hinge pintle that projects therethrough.

Figure 6 is a perspective view of a resilient door catch plate comprising an element of the hinge stop attachment embodying features of the present invention.

Figure 7 is a plan view of the door catch plate shown in Figure 6.

Figure 8 is an enlarged end view of the door catch plate shown in Figure 6, it being shown approximately twice the size of the actual device.

Figure 9 is a perspective view of a limit trip attachment for the door stop shown in Figure 5.

The structure selected for illustration comprises

a substantially circular door stop plate or disc 10 that is cast, stamped or otherwise shaped from metal to define a hinge door attachment plate having an arm 11 projecting therefrom to serve as an auxiliary attachment therefor. To this end, the door catch arm 11 is provided with a laterally offset flange 12 provided with a bottom flat surface 13 in alignment with the edge 14 of the arm 11. An aperture 15 is formed or otherwise provided in the arm flange 12 to receive a fastener such as a wood screw 16 for attachment of the door catch plate 10 to a door frame 17 of the building structure.

The door catch plate 10 is provided preferably with an axial aperture 18 sized to fit the diameter of a standard hinge pintle shank 19 that terminates at its upper end in a peripheral flange 20 constituting a part of an ornamental head 21, in this instance and for the most part of substantially spherical shape in accordance with standard hinge pintle construction. Commonly the pintle shank 19 is provided with diametrically opposed nibs 22 and 23 in the region of the peripheral flange 20 for cooperation with a similarly shaped bore provided in the upper loop 24 of a standard hinge plate 25 that is screwed or otherwise attached to the door opening in the countersunk door opening surface 26 in the door frame 17.

Accordingly, the axial aperture 18 in the hinge attaching plate 10 is shaped correspondingly with diametrically opposed grooves 27 and 28 to receive the correspondingly disposed, shaped, and sized pintle nibs 22—23 for registry therewith to hold the door catch plate 10 against relative movement with the pintle 19. The pintle nibs 22—23 are usually of sufficient length to be received for the entire extent of a top hinge loop 24 in the standard hinge plate 25 so that the comparatively narrower door catch plate 10 will still permit the pintle nibs 23 to engage with the diametrically opposed grooves 27—28 therein as well as afford the usual registry with a portion of the door loop 24 of the door hinge plate 25.

Consequently, the door catch and hinge attaching plate 10 will be held against movement by the pintle 19 as well as by its arm 11 anchored to the exterior surface of the door frame 17 by the fastener 16 projecting through the aperture 15 in the flange 12. As a result, even though the standard hinge should not be possessed with a provision for the pintle nibs 22—23 and such should not be found on any particular door mounting hinges in use, the door catch plate arm 11 together with its anchoring flange 12 will serve to retain the door stop 10 against relative rotation with a door 29.

As shown, the door 29 has its hinge plate 30 mounted in a countersunk end portion 31 provided therein as an expedient of common practice. Wood screws or other suitable fasteners 32 secure the moveable hinge plate 30 to the door 29 in the customary manner. It is to be noted that the movable hinge plate 30 terminates in spaced loops 33 in registry with correspondingly shaped and sized loops 24, 24', and 24'' constituting a part of the fixed hinge plate 25 so that the pintle 19 will extend therethrough to serve as a pivotal mount for the door 29. This constitutes a standard hinge mount for doors 29 to maintain same relative to a fixed door frame 17 constituting a part of the adjacent wall of a building structure.

Consequently, the door stop hinge attaching

plates 10 can be mounted beneath the pintle flange 20 against rotary movement with the door 29, hinge plate 30 and its integral pintle receiving loops 33. Additional rotary movement of the stop plate 10 is precluded by its arm 11 mounted by means of the screw fasteners 16 projecting through the apertures 15 in the flange 12 for anchored engagement in the exterior surface of the wood door frame 17. It is to be noted that the door stop plate 10 is, in this instance, provided with a circular periphery 34 having a series or plurality of transverse notches or grooves 35, 36, 37, 38 and 39, in this instance five, provided therein.

The transverse peripheral grooves 35, 36, 37, 38 and 39 provide an interrupted path for a door catch plate 40 preferably though not essentially stamped from spring steel to provide a resilient offset curved arm 41 that gradually converges to a fraction of its width at its extreme edge 42. The extreme edge 42 extends in the general direction and substantially parallel to the body of the plate 40 which is of substantially rectangular configuration. It is to be noted that the edge 42 is reversely bent to provide a reinforced groove engaging catch 43 that is resiliently disposed in the path of the periphery 34 of the door stop plate 10 and particularly to become lodged by the progressive intermittent movement from one groove to another depending upon the application of increased force in opening or closing the door 29 relative to its stationary frame 17.

In order to mount the door catch plate 40 in operative relation with the door stop 10, the body of the plate 40 is provided with longitudinally elongated slots 44 and 45, in this instance two, that are stamped or otherwise provided therein along the longitudinal median line thereof to receive fasteners therethrough such as wood screws 46 and 47, respectively. Consequently, the door catch 40 can be adjusted within the limit of the slots 44—45 relative to the door catch plate 10 to provide the desired frictional cooperation of the reinforced edge 43 of the door catch with the grooves 35, 36, 37, 38 and 39.

To preclude any accidental displacement of the door catch plate 40 relative to the door stop plate 10, the elongated fastener mounting slots 44—45 are provided with a series of arcuate interruptions 48 and 49 to present intermediate nibs 50 and 51, respectively, that obstruct the free movement of the plate 40 relative to the screw fasteners 46—47 even though the latter should become loose. Consequently, the resilient and engaging edge 43 of the door catch plate 40 can be maintained in any adjusted relation with the cooperating peripheral edge 34 and its plurality of notches 35 to 39 to effect the desired engagement and intermittent pause of the door 29 in any angular adjusted position relative to its frame 17, thereby limiting the movement as conditions may require in any particular building structure or room thereof.

In the closed position of the door 29, the door catch edge 43 will be lodged in the first notch 35 on the plate 10 and will retain the door against making movement even though the customary door lock is inoperative for that purpose. Then, too, the door 29 will be held against accidental opening in response to draught or other unusual air movement in a building structure. In the next position, the engaging edge 43 of the door catch 40 will become lodged in the next notch 36 and sequentially the notches 37, 38 and 39 depending upon the extent to which the opening of the door 29 should be limited.

When the engaging edge 43 of the door catch 40 is lodged in the last notch 39 proximate to the door stop arm 11, the door 29 is in its extreme open position substantially parallel to the wall which extends from the external surface of the door frame 17, thereby holding the door in its extreme open position without permitting the door to engage or strike the wall and precluding the accidental closing thereof in response to any draught or unusual air movement. In this position, the door 29 will be retained open until purposely displaced by an attendant who will have to apply sufficient force to effect the displacement of the door catch edge 43 from the various grooves 35 to 39 provided on the periphery 34 of the door stop 10.

In order to have the door stop 10 together with its catch 43 serve to limit the open extent of displacement of the door 29 without contacting any of the grooves 35 to 39 and especially the intermediate grooves 36 to 38 inclusive, an auxiliary trip consisting, in this instance, of confronting plates 52—53 that are maintained in spaced parallel relation for a distance equivalent to the thickness of the door stop 10 which is freely received therebetween. This is effected by means of a spacing rivet 54 that projects through the smaller ends of the plates 52—53 and maintains them in rigid spaced relation and together with the plates 52—53 serves as a stop for the door catch engaging extremity 43 that will be disposed in the path thereof as will appear more fully hereinafter.

To enable the confronting plates 52—53 to be held in any selected radial position on the door stop 10, the plates 52—53 are provided with aligned apertures 55 that have diametrically opposed grooves 56—57 to correspond with the door stop axial aperture 18 and its diametrical grooves 27—28 for alignment therewith with the pintle 19 projecting therethrough so that the rivet 54 will be lodged in any of the grooves 36, 37 or 38. It will be noted that the radial distance between the axis of the trip rivet 54 and its aligned apertures 55, corresponds with the distance between the axis of the door stop aperture 18 and the parallel groove 35 to 39, thereby maintaining the trip 52—53 in any radial position so that the rivet 54 will serve as a stop or trip for the door catch extremity 43.

The door catch 43 with its engaging edge 42 is, in this instance, removed sufficiently from the periphery 34 of the door stop 10 to preclude engagement with the grooves 35 to 39 thereon and yet be disposed in the path of the trip rivet 54 to contact therewith after the door 29 has been swung to its maximum open limit determined by the position of attachment of the trip 52—53 thereon. It will be apparent, therefore, that a variety of functions can be acquired with the use of a comparatively simple structure serving as a hinge attachment and an adjustable stop for doors 29 relative to their mounting frames 17.

To render the door catch 40 inoperative relative to the stop plate 10, it will only be necessary to loosen the screws 46—47 and displace the plate 40 from the door stop 10 for a sufficient distance to avoid inter-engagement therebetween. This construction of parts having the features

described herein provides an effective and combined door stop and limit means. A very inexpensive, suitable, and effective hinge attachment is thus provided that is capable of use in conjunction with any standard hinge.

Various changes may be made in the embodiment of the invention herein specifically described without departing from the invention or sacrificing any of the advantages or features thereof, and nothing herein shall be construed as limitations on the invention, its concept or structural embodiment as to the whole or any part thereof except as defined in the appended claims.

I claim:

1. In a door stop hinge attachment, the combination with door swinging hinge plates in complementary connected association by a pintle extending therethrough, of a circular stop member having an opening axially therethrough to receive said pintle to effect the support of said stop member in operative axial association with said hinge plates, means for maintaining said stop member against movement with the door that is carried by said hinge plates, there being notches in the periphery of said circular stop member, and resilient plate means having an elongated slot for adjustable connection to said door in the path of said stop member for cooperative action with said notches therein to effect the retention of one hinge plate relative to the other hinge plate, said elongated slot in said resilient plate means being transversely notched therealong to receive securing fasteners against free displacement along said slot.

2. In a door stop hinge attachment, the combination with door swinging hinge plates in complementary connected association by a pintle extending therethrough, of a stop member having an opening therethrough to receive said pintle to effect the support of said stop member in operative axial association with said hinge plates, means for maintaining said stop member against movement with the door that is carried by said hinge plates, means for detachable association with said door stop in a variety of radial positions thereon, and means mounted to said door in the path of said stop member for cooperative action with said last named means to limit the swinging of one hinge plate relative to the other hinge plate.

3. In a door stop hinge attachment, the combination with door swinging hinge plates in complementary connected association by a pintle extending therethrough, of a stop member having an opening therethrough to receive said pintle to effect the support of said stop member in operative axial association with said hinge plates, means for maintaining said stop member against movement with the door that is carried by said hinge plates, an attachment for said door stop consisting of spaced members in radial embracing association therewith to serve as a radially extending trip therefor, and means mounted to said door in the path of said stop member for cooperative action with said trip to limit the swinging of one hinge plate relative to the other hinge plate.

AGNES KUNEY.