Oct. 30, 1923. 1,472,531

G. T. MORRIS

ADJUSTABLE DOORSTOP

Filed May 27, 1922

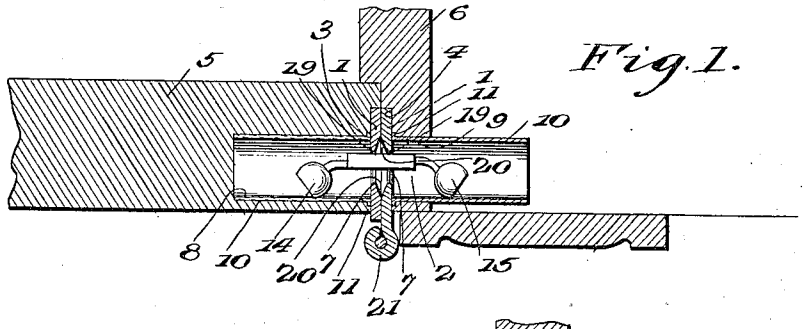


Fig. 1.

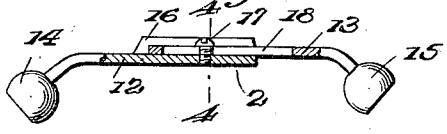


Fig. 3.

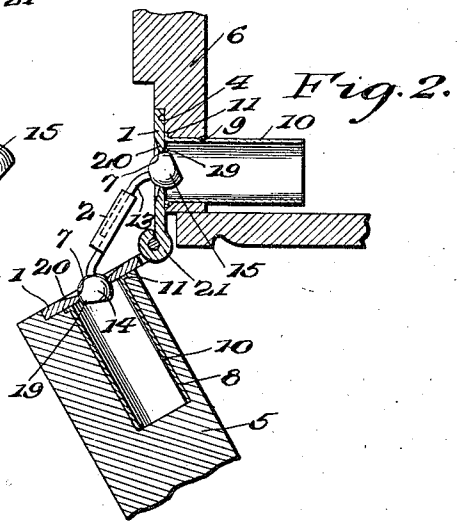


Fig. 2.

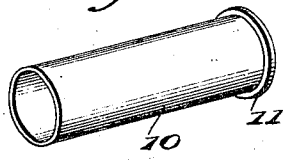


Fig. 5.

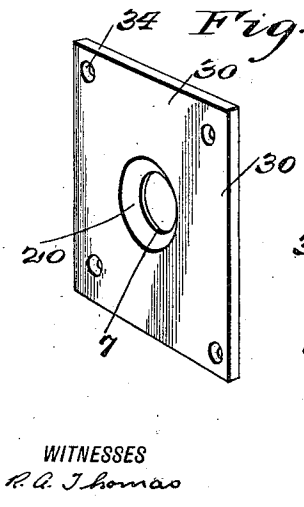


Fig. 7.

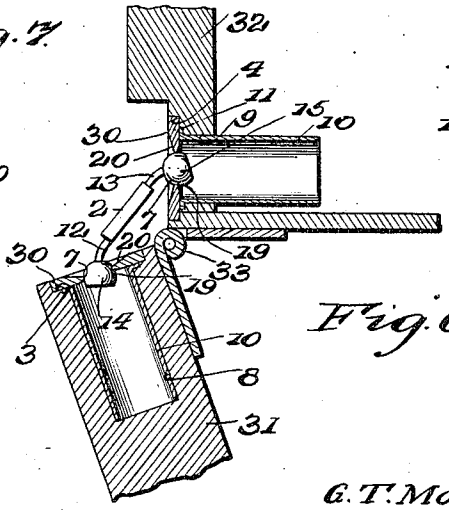


Fig. 6.

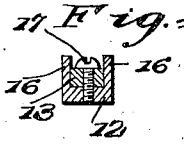


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

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ADJUSTABLE DOORSTOP.

Application filed May 27, 1922. Serial No. 564,032.

To all whom it may concern:

Be it known that I, GEORGE T. MORRIS, a citizen of the United States, and resident of Missoula, in the county of Missoula and State of Montana, have invented certain new and useful Improvements in Adjustable Doorstops, of which the following is a specification.

My invention relates to door stops, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a door stop of simplified construction which is readily adjustable to effect the stopping of a door to which applied at various predetermined points in its swinging movement from closed toward fully open position.

A further object of my invention is to provide a device of the character described which can be operatively applied to a door and frame construction without any extensive changes from the conventional being required in the latter.

A still further object of my invention is to provide a device of the character described which can be manufactured cheaply and which is thoroughly practical commercially.

Other objects and advantages will be apparent from the following description, and the novel features of the invention will be particularly outlined in the appended claims.

My invention is illustrated in the accompanying drawings, forming a part of this application, in which

Figure 1 is a fragmentary horizontal section through a door and frame equipped with a practical embodiment of the invention.

Figure 2 is a view similar to Fig. 1, showing the door at the end of the possible movement toward fully opened position permitted by one adjustment of the embodiment of the invention,

Figure 3 is a plan view of the device detached, portions thereof being broken away and other portions being shown in section,

Figure 4 is a section along the line 4—4 of Figure 3,

Figure 5 is a perspective view of a bush comprised in the device,

Figure 6 is a view similar to Figure 2, showing a modified form of the device exhibited in the preceding views, and

Figure 7 is an enlarged perspective view showing a stop plate comprised in the modified form of the device.

In carrying out my invention, I provide a pair of stop plates which are adapted to be attached to the confronting or abutting surfaces of a door and a frame member or support therefor and with which an adjustable connector cooperates so that the stop plates are movable relatively in flatwise relation in the arc of a circle of which the major portion of the connector is a chord.

In the form of the device illustrated in Figures 1 to 5 inclusive of the drawings, the pair of stop plates are indicated at 1, 1 and the adjustable connector is indicated generally at 2. The stop plates 1, 1 are substantially rectangular in form and are secured in flatwise contiguous relation in confronting recesses 3 and 4 in a door 5 and a support 6 therefor, respectively. The stop plates 1, 1 are provided with registering diametrically equal openings 7, 7 therethrough at the approximate centers thereof. The openings 7, 7 are concentric with a bore or socket 8 extending from the cavity 3 into the door 5 and with a bore or socket 9 extending from the cavity 4 through or into the support or frame member 6. Similar bushes or liners 10, 10 are disposed in the bores or sockets 8 and 9. Each of the bushes or liners 10 is provided with a flange 11 at one end thereof and the bushes or liners are arranged in the respective bores or sockets so that the flanges 10 are clamped by the stop plates 1, 1 against the adjacent ends of the bores or sockets, and are thus held in position.

The conector 2 comprises a stem consisting of longitudinal sections 12 and 13 respectively which sections are substantially straight from their proximate ends for the greater part of their length and are then turned laterally at an angle of approximately 45° and are merged into head portions 14, 15, which head portions are precisely identical in essential respects and are diametrically larger than the openings 7 through the stop plates, for a purpose which will hereinafter appear. The sections 12 and 13 are slidable longitudinally in respect to each other, the section 12 being provided with a pair of guide

flanges 16, 16 at the side edges of the end portion thereof proximate to the section 13 between which the straight portion of the section 13 may slide axially on the straight portion of the section 12. A set screw 17 extends through a longitudinal slot 18 in the straight portion of the section 13 and threadedly engages the section 12, whereby the section 13 can be releasably clamped against the section 12 and the effective length of the connector 2 thus adjusted within the limits set by the length of the slot 18.

The heads 14 and 15 are preferably substantially hemispherical or plano-convex in form, the curved or convexed portions thereof being merged into the sections of the stem at the ends of axes passing through the centers of the flat portions of the heads. The openings 7, 7 through the stop plates are beveled at their remote ends to provide seats 19, 19 for the curved portions of the heads 14 and 15 when the stop plates have been moved apart in the arc of a circle to the limit set. The openings 7, 7 are also beveled or enlarged at their inner ends, as indicated at 20, 20 so as to preclude any binding action on the stem of the connector as the stop plates are moved relatively to each other.

From the foregaing description of the various parts of the device, the operation thereof may be readily understood. In the application of the device illustrated in Figures 1 and 2, the stop plates 1, 1 also constitute the cooperating leaves of a hinge 21 which is one of the hinges employed to swingingly support the door 5 upon the frame member or support 6. The stem of the connector is arranged to extend through the openings 7, 7 of the stop plates so that the heads 14 and 15 will be disposed in the axially aligned bushes 10, 10 which line the bores or sockets formed in the portions of the door and support which are in abutting relation when the door is in closed position. The sections 12 and 13 of the stem of the connector are secured together by means of the set screws 17 to adjust the length of the connector so that the heads will rest in the seats 19, 19 when the door 5 has been swung a predetermined distance toward fully open position. Obviously, further movement of the door toward fully open position is prevented.

The device is simple in construction and can be adjusted to stop the door at various points in its travel toward open position so that the door cannot be swung against articles of furniture or the like located beyond the limit of travel determined by the adjustment of the connector. When the door is in closed position, the device is hidden from view and is protected from injury.

In the embodiment of the invention illustrated in Figures 6 and 7, a pair of stop plates 30—30 are employed, which stop plates are identical in essential respects with the stop plates 1, 1 but do not constitute elements of a hinge employed in swingingly supporting a door 31 upon a frame 32, separate hinges, such as indicated at 33 being used for that purpose. The stop plates 30—30 are provided with the openings 7, 7 therethrough, as heretofore described and are also formed with a plurality of openings 34 through which screws or like fastening means may be projected to secure the plates in the cavities 3 and 4 of the door and the frame member or support 31 and 32 respectively.

A further description of the form of the device illustrated in Figures 6 and 7 or of the application thereof is deemed unnecessary since like parts have been designated by the same reference characters throughout the several views of the drawings.

Obviously my invention is susceptible of embodiment in forms other than those illustrated in the accompanying drawings, and I therefore consider as my own all modifications and adaptations of the forms of the device disclosed herein, which fairly fall within the scope of the appended claims.

I claim:—

1. A device of the character described comprising a pair of stop plates having openings therethrough in confronting relation, and a connector comprising a rigid stem consisting of two separable sections provided at their remote ends with portions of such size as to be incapable of movement through the openings of the stop plates, said stem being arranged to extend through said confronting openings whereby the extent of movement of the plates apart is limited.

2. A device of the character described comprising a pair of stop plates provided with aligned openings therethrough, and a connector comprising a rigid stem extending through the openings and being movable in the direction of its length, said stem consisting of two separable longitudinal sections provided at their remote ends with heads of greater diameter than that of the openings through the stop plates.

3. A device of the character described comprising a pair of stop plates provided with aligned openings therethrough, a connector comprising a stem extending through the openings and being movable in the direction of its length, said stem consisting of two separable longitudinal sections provided at their remote ends with heads of greater diameter than that of the openings through the stop plates, and means for adjustably connecting the sections of the stem together substantially in longitudinal alignment.

4. A device of the character described comprising a pair of stop plates provided with alinged openings therethrough, a con-

nector comprising a rigid stem extending through the openings and being movable in the direction of its length, said stem consisting of two separable longitudinal sections provided at their remote ends with heads of greater diameter than that of the openings through the stop plates, and a pair of tubular members extending oppositely from the stop plates substantially in concentric relation to the openings through the latter, said tubular members being adapted to house the head portions of the connector.

5. A device of the character described comprising a pair of flat stop plates having central openings formed therethrough and a connector comprising a stem extending through the openings and consisting of two adjustably connected separable rigid sections provided with heads at the remote ends thereof, said sections being substantially straight from their adjacent ends for the greater part of their length and then being turned laterally.

6. A device of the character described comprising a pair of stop plates each swingingly attached at one edge to the other, said stop plates having openings therethrough in alignment with each other when the plates are in flatwise contiguous relation, and a connector comprising a rigid stem extending through said openings and being adjustable as to length, said stem having at its opposite ends heads of greater area than that of the openings through the plates, whereby said heads are adapted to cooperate with said plates to limit the movement of the latter apart.

7. A device of the character described comprising a pair of stop plates having openings therethrough in confronting relation, and a connector extending through the openings in said stop plates and having head portions at its remote ends of such size as to be incapable of movement through said openings, said stem comprising two longitudinal rigid sections adapted to slide longitudinally in respect to each other, one of said sections having a pair of flanges in sliding contact with the longitudinal edges of the second section and the latter being formed with a slot extending longitudinally thereof, and a set screw extending through the slot in the said second section into threaded engagement with the first section for clamping the second section to the first section in adjusted position longitudinally of the latter.

GEORGE T. MORRIS.