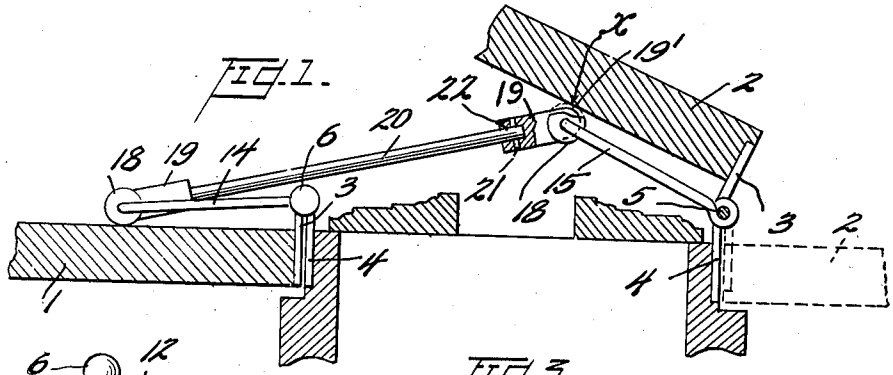
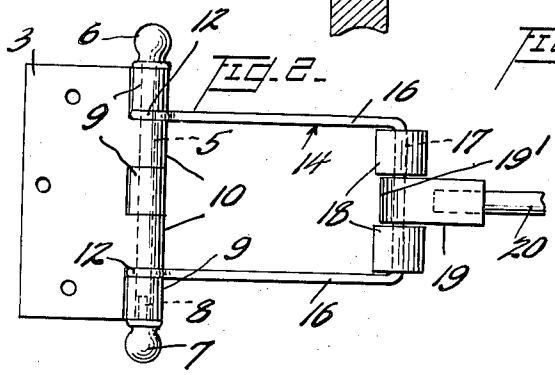
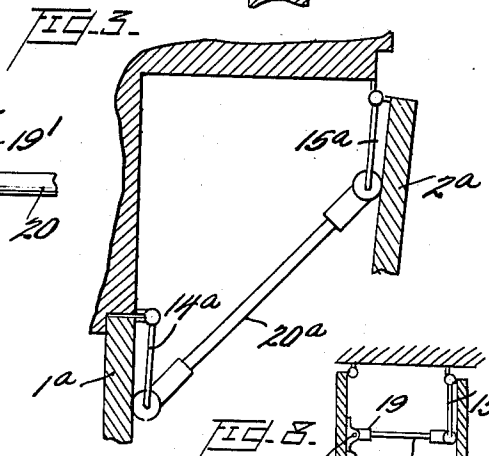
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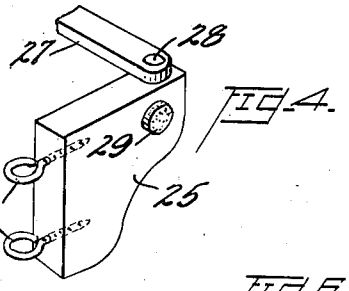
DOOR CHECK AND CLOSER

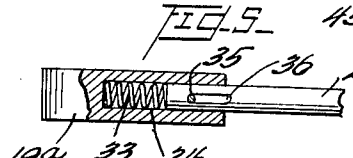
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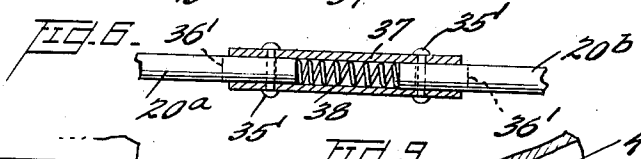


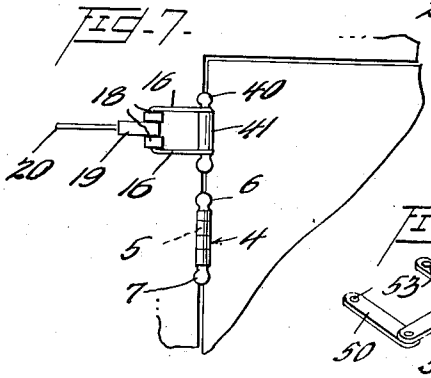


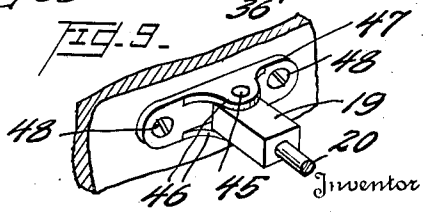












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DOOR CHECK AND CLOSER

Joseph B. Rawlings, Memphis, Tenn.

Application January 2, 1943, Serial No. 471,163

15 Claims. (Cl. 16—49)

The object of the invention is to provide a means whereby a door which is standing ajar and in the way of another door when the latter is being opened, will be automatically moved toward or into closed position by the door which is being opened, thereby preventing contact of one door with the other and consequently preventing damage that would otherwise result to either door and also preventing the usual latch-knob of one door from getting behind the latch-knob of the other door and causing the doors to become interlocked with each other.

With the above and other objects in view as will be set forth in the following description, reference will be had to the accompanying drawing forming a part of this specification and in which;

Fig. 1 is a horizontal sectional view taken from above;

Fig. 2 is a view in elevation of a conventional butt-hinge in closed position, illustrating one form of check-arm connected thereto;

Fig. 3 is a diagrammatical top plan view of the invention applied to doors in the corner of a room;

Fig. 4 is a perspective view of a modified form of check-arm and connecting link;

Fig. 5 is a view in elevation and partly in section of a modified link-head;

Fig. 6 is a similar view of a modified link;

Fig. 7 is a fragmentary view in elevation showing how the device may be applied apart from the door hinge;

Fig. 8 is a view similar to Fig. 1 of another modification but showing both doors in open position;

Fig. 9 is a perspective view of the attaching means used in the last mentioned modification; and

Fig. 10 is a perspective view of still another modified form, unmounted.

In the drawing, reference numerals 1 and 2 designate swinging doors, each mounted by its butt-hinge-leaf 3 to a complementary leaf 4, employing the usual pintle 5. A conventional knob 6 is provided on the upper end of the pintle and a dummy knob 7 has the usual stud 8 inserted in the lower barrel section 9 of one of the leaves. The leaf 3 has two barrel sections 10 interfingering with the three barrel sections 9 of the other leaf 4.

The lower face of the upper hinge-barrel section 9 and the upper face of the lower barrel section 9 of the hinge-leaf 4 are filed, or otherwise cut back to provide spaces between such sections and the adjacent barrel sections 10, into which spaces the eyes 12 of check-arm 14, or 15 are inserted. Obviously, the upper face of the upper barrel section 10 and the lower face of the lower barrel section 10 could be cut back to provide or assist in providing the necessary spaces to receive the said eyes 12. The pintle 5 passes through both eyes 12. The middle hinge-barrel section 9 closely engages the barrel sections 10 of the other hinge-leaf to keep the hinge-leaves 3 and 4 in usual normal relation.

Each of the check-arms 14 and 15 is bent from wire, or other suitable material, and is of U-shape with the branches 16 preferably parallel to each other. The bridge portion 17 passes axially through spaced rotatable rollers 18 which may be of wood, and if desired may obviously have outer cushioning treads (not shown), or they may be formed of rubber, compressed felt, or other non-door-marring material. Between the rollers 18 of each check-arm, is a link-head 19 pivotally arranged on said bridge portion 17. The end of each head 19 is of a width less than the diameter of the rollers 18 and its rounded end 19' (see Fig. 1) is shaped on a radius less than the radius of each roller 18. This is to prevent rubbing contact of the heads 19 with the doors. The two link-heads 19 are connected by a link 20, which may be a section cut from a rod of suitable material, such as from a conventional wooden dowel-stick, inserted and secured at its ends by glue or by pins 21 in bores 22 formed in the heads 19. The length of the link 20 will vary according to how far apart the hinges of the two doors may be spaced from each other and the position it is desired an opened door should occupy before it will begin to be moved toward closed position through the linkage by the opening movement of the other door.

In operation, referring to Fig. 1, should the door 2 be closed as indicated by dotted lines, a gap of lost-motion will exist between its contact point X and the right-hand rollers 18. Should the door 1 then be opened to a right-angled position, the position of the linkage will have been changed, but the said gap, though diminished, will still exist. Now, should the door 2 be swung from closed to open position, this gap will be first taken up and then the door 2 will contact with the rollers 18 and, as opening movement of the door 2 continues, the linkage will be pushed to the left and immediately, or eventually, the left-hand rollers 18 will engage the door 1 and push it toward or into closed position, as illustrated in Fig. 1.

Should the door 1 then be opened, while the parts are in the Fig. 1 position, the door 1 will

immediately shift the linkage to move the door 2 to a position ajar or even completely closed, thereby preventing contact of one door with the other, and preventing the inside latch-knob of one door getting behind that of the other door and becoming interlocked.

Referring to Fig. 3, the same operation will occur even though the check-arms 14a, 15a and connecting link 20a form linkage between doors 1a and 2a which are in right-angled relation, as is believed to be apparent.

Fig. 4 is directed to a modification which substitutes bracket-shaped blocks 25, for the wire check-arms 14. These blocks 25, which are in effect check-arms, are preferably wooden, and are provided with screw-eyes 26 which function and are applied to the hinges in the same manner as the eyes 12 in the first form. In lieu of the dowel-strip links 20, thick ribbon-like links 27, which may also be of wood, are pivotally secured by pivots 28 to the check-arms 25. In this modification, buffer pads 29 of rubber, felt or other suitable material are applied to the check-arms to prevent abrasion of the door finish at the point of contact.

If desired, as shown in Fig. 5, the check-links 20' may be slidingly fitted into the heads 19a and cushioned by check-springs 33 arranged within the bores 34. Some means, such as a pin 35 and slot 36, may be employed to prevent displacement of the check-link from the heads. This cushioning may be applied to both heads or only to one of them, and any form of resilient cushioning material will suffice.

In lieu of the cushioning illustrated in Fig. 5, the form shown in Fig. 6 may be employed, though, as is obvious, both the forms shown in Figs. 5 and 6 may be used together. The Fig. 6 form contemplates dividing the check-link into two sections 20a and 20b and connecting them by a sleeve 37 containing a spring or other kind of cushioning 38, which is engaged by both link-sections 20a and 20b. Displacement of these link-sections is prevented by pin and slot elements 35' and 36' respectively, the same being similar to the connections 35 and 36 employed in Fig. 5.

Both forms illustrated in Figs. 5 and 6 provide for spring cushioning, preventing sudden jarring, offsetting tendency of the linkage to mutilate the finish of the doors, and rendering the contact of the doors with the check-arms virtually noiseless.

It is not essential that the check-arms be hinged to the door hinges. They may, as illustrated in Fig. 7, be hinged by a pintle 40 passing through a leaf 41 having the general structural characteristics of the hinge-leaf 4, and desirably having the axis of the pintle 40 occupying a coincidental relation to the axis of the door-hinge pintle 5, though the leaf 41 need not essentially be aligned with the door hinges. The pintles 5 and 40 could be out of axial alignment, but in that case the check-arms would have a rubbing contact with the doors. With the Fig. 4 form this would be more objectionable than with the Fig. 1 form, since in the latter case the rollers 18 would have rolling contact with the doors and such rubbing contact and resultant marring of the door finish would be avoided.

In the modification illustrated in Fig. 8, one of the check-arms of the preceding forms is omitted and the link 20 has its head 19 directly connected to one of the doors by a pivot 45 which passes through ears 46 (Fig. 9) of a plate 47 which is secured to the door by screws 48. The check-link 15, link 20 and head 19 are the same as in Figs. 1 and 2 and may embody the cushioning features of Figs. 5 and 6 if desired. To the form illustrated in Fig. 4 may also be applied the idea of this modification, by employing only one check-arm 25 and pivotally securing the left-hand end of the link 27 directly to one of the doors by a plate similar to the one 47 of Figs. 8 and 9, or in lieu of this means of attachment, one of the two arms 25 of Fig. 4 may be secured directly to the door by simply driving a nail or screw through the arm 25 into the associated door. In this modified idea, the link and check-arm positively follow-up the movement of the door to which the link is attached, and the gap of lost motion referred to in the preferred form exists only between the check-arm and its associated door.

The modified form of Fig. 10 simply consists of check-arms 50, 51 which are connected together by link 52, and have apertures 53 through which pintles such as 5 or 40 may pass. The arms 50 and 51 are secured between the barrel sections of the hinge similar to the manner in which the arms 16 are secured in Fig. 2, or in a manner similar to that shown in Fig. 7. Obviously the check-arm 50 in this form may be omitted and the link 52 connected directly to one of the doors by a plate substantially like the one 47 shown in Figs. 8 and 9.

What is claimed:

1. A device of the character described, comprising a door-engaging means; means whereby said means may be hinged adjacent the plane of the hinging axis of a door of a pair of spaced-apart swinging doors, each of which doors closes an individual opening; means pivotally connected to the first mentioned means; and means connected to the last mentioned means to mount it in a position whereby it will be moved by the other of said pair of doors when the latter is being opened, to move the first mentioned means into engagement with its associated door and thereby move such door toward closed position.

2. A device of the character described, comprising a door-engaging means; means whereby said means may be hinged adjacent the plane of the hinging axis of a door of a pair of spaced-apart swinging doors, each of which doors closes an individual opening; a link pivotally connected to the first mentioned means; and means for pivotally connecting said link to the other of said pair of doors whereby opening movement of the latter door will be transmitted through said link to the first mentioned means to cause such first mentioned means to engage its associated door and thereby move it toward closed position.

3. A device of the character described for use in combination with doors which are spaced apart and which are hinged to a support and which doors close individual openings in the support; comprising means adapted to be hingedly secured to said support in a position to be engaged by and to be moved by one door when the said door is being opened; means adapted to be hingedly secured to said support in a position to engage and to move the other door when the latter is ajar; and means for transmitting motion from one of said means to the other.

4. A device of the character described for use in combination with doors which are spaced apart and which are hinged to a support and which doors close individual openings in the support; comprising means adapted to be hingedly secured to said support in a position to be engaged by and to be moved by one door when the said door is being opened; means adapted to be hingedly secured to said support in a position to engage and to move the other door when the latter is ajar; and means for transmitting motion from one of said means to the other; said two first mentioned means being spaced apart by the last mentioned means a distance permitting only one thereof to be in engagement with a door when both doors are fully closed.

5. A device of the character described for use in combination with doors which are spaced apart and which are hinged to a support and which doors close individual openings in the support; comprising means adapted to be hingedly mounted at a point axially in coincidence with the hinging point of one door and in a position to be engaged by and to be moved by said door when said door is being opened; means adapted to be similarly hinged with respect to the other door in a position to move said latter door when it is ajar; and means for transmitting motion from one of said means to the other.

6. A device of the character described for use in combination with doors which are spaced apart and which are hinged to a support and which doors close individual openings in the support; comprising means adapted to be hingedly secured to said support in a position to be engaged by and to be moved by one door when the latter is being opened; means adapted to be hingedly secured to said support in a position to engage and to move the other door when the latter is ajar; both of said means being arranged between the doors and extending outwardly from the support when the doors are well open; and means pivotally connected to both of said means a distance away from their hinging points to impart motion from one of said means to the other.

7. A device of the character described for use in combination with doors which are spaced apart and are mounted to swing on pintle hinges and which doors close individual openings; comprising means adapted to be engaged by and to be moved by one door when the latter is being opened; means adapted to engage and to move the other door if ajar out of door-interfering position; an eye provided on each of said means whereby it may be pivotally mounted by the pintle of the hinge of its associated door; and means for transmitting motion from one of said two first mentioned means to the other.

8. A device of the character described for use in combination with doors which are spaced apart and are mounted to swing on pintle hinges and which doors close individual openings; comprising means adapted to be engaged by and to be moved by one door when the latter is being opened; means adapted to engage and to move the other door if ajar out of door-interfering position; an eye provided on each of said means whereby it may be pivotally mounted by the pintle of the hinge of its associated door; and yielding means connecting together said two first mentioned means whereby motion will be imparted from one to the other.

9. A device of the character described for use in combination with doors which are spaced apart and which are hinged to a support and which doors close individual openings in the support; comprising means adapted to be engaged by and to be moved by one door when the latter is being opened; means adapted to engage and to move the other door if ajar out of door-interfering position; means whereby each of said means may be hinged adjacent the plane of the axis of the hinging point of its associated door; means adapted to have rolling contact with a door provided on each of said two first mentioned means; and means for transmitting motion from one of said two first mentioned means to the other.

10. A device of the character described, comprising two door-engaging means; means whereby one of said means may be hinged adjacent the plane of the hinging point of one of two swinging doors, which doors close individual openings, and the other of said means may be hinged adjacent the plane of the hinging point of the other of said doors; means adapted to have rolling contact with a door provided on each of said door-engaging means; and means connected to each of the door-engaging means for transmitting motion from one thereof to the other; said last mentioned means being prevented from contact with either door by the means which has rolling contact with the doors.

11. A device of the character described, comprising two door-engaging means; means whereby one of said means may be hinged adjacent the plane of the hinging point of one of two swinging doors, which doors close individual openings, and the other of said means may be hinged adjacent the plane of the hinging point of the other of said doors; a pair of door contacting rollers journaled on each door-engaging means; and a link pivotally connected at each of its ends to door-engaging means and between said rollers; the rollers extending beyond the ends of the link to prevent the ends of the link from contacting the doors.

12. A device of the character described, comprising two substantially U-shaped door-engaging means; eyes on the free ends of said means whereby each may be hingedly secured adjacent the plane of the hinging point of one door of a pair of doors each of which closes an individual opening; a roller on each of said door-engaging means; connecting means having pivotal connection at each of its ends with one of said door-engaging means; each roller extending beyond the connecting means to prevent contact of the connecting means with a door.

13. A device of the character described, comprising two door-engaging members, each having spaced-apart arms and a connecting portion; eyes provided on the ends of the arms whereby each door-engaging member may be hingedly secured adjacent the plane of the hinging point of one door of a pair of doors each of which closes an individual opening; a pair of rollers mounted on each of said connecting portions; a link having pivotal connection at each of its ends to one of said connecting portions and at a point between a pair of rollers; the rollers being of a diameter to extend beyond the ends of the link to prevent such ends from engaging the doors.

14. A device of the character described, comprising two door-engaging means; means whereby each of said means may be hinged adjacent the plane of the hinging axis of a door of a pair of spaced-apart swinging doors, each of which doors closes an individual opening; a sectional link pivotally connected at its ends to the door-

engaging means; and yielding means connecting the sections of the link together to permit relative movement between said sections.

15. A device of the character described, comprising a pair of arms; a pair of members having stems and eyes, the stems of which are inserted in said arms and the eyes of which provide means whereby each arm may be hinged adjacent the plane of the axis of the hinges of a pair of spaced-apart doors which close individual openings; and a link pivotally connected at its ends to said arms whereby motion may be transmitted from one arm which may be engaged by a door which is being opened to the other arm to cause it to move the other door if ajar out of the way of the door being opened.

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