

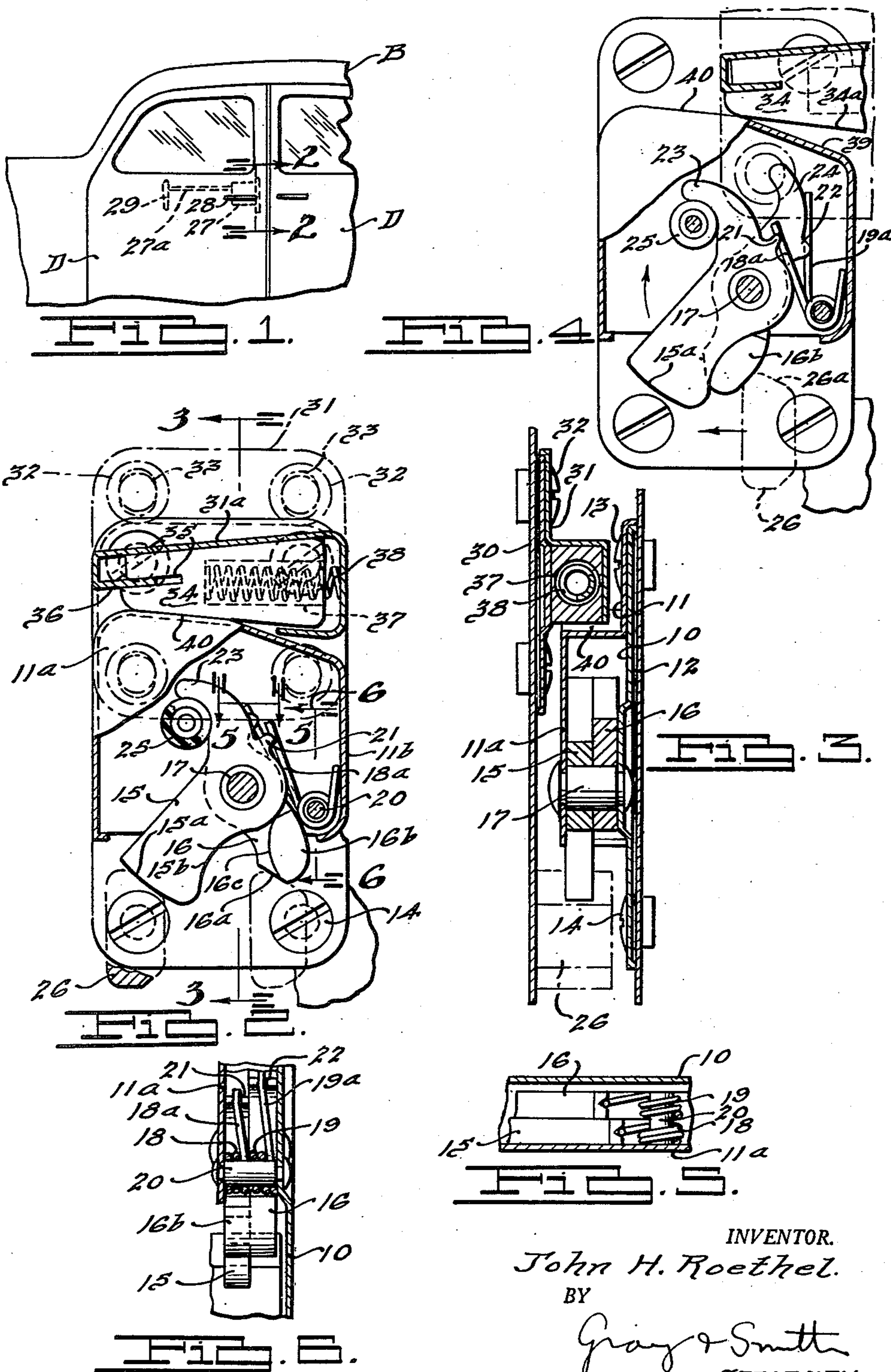
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DOOR LATCH

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DOOR LATCH

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This invention relates generally to door latches and particularly, although not exclusively, to latch devices adapted for use in connection with the doors of automobiles and other vehicles. The invention contemplates the provision of an improved device of this class including a latch bolt adapted to be installed upon the swinging door of the automobile or vehicle body, an improved striker mechanism cooperable with the latch bolt and adapted to be installed on the door post or pillar, and improved means associated with the latch bolt and striker mechanism for holding the door firmly in position against transverse and vertical movements during operation of the vehicle. An object of the invention is to provide an improved device of the above class or type which is relatively simple and compact in construction, economical to manufacture, durable and efficient in use and which in operation is also capable of providing an easy and relatively quiet closing door.

Another object of the invention is to provide an improved striker unit adapted to be mounted upon the body pillar or post and having a spring pressed striker member adapted normally to extend downwardly into the path of a longitudinally extending normally non-retractible latch bolt and adapted to be depressed or forced upwardly by the bolt, when the door is closed, thereby permitting the bolt to pass the striker and engage an inclined or tapered face thereof, firm and tight engagement of the bolt with the final locking step of the striker member being ensured under all conditions by means of yieldable wedging means whereby the door is held rigidly against chattering or vibratory motion during operation of the vehicle.

A further object of the invention is to provide an improved latch bolt and striker device embodying a normally non-retractible latch bolt, a vertically movable striker member adapted to project downwardly into the transverse path of movement of the bolt, and yieldable wedge means associated therewith and cooperable with the latch bolt and striker member to hold the door against vertical and transverse movements during operation of the vehicle, the improved construction being such as to provide a simple, compact and inexpensive mechanism producing an easy and quiet closing door which will be held firmly and positively under operating conditions of the vehicle.

Another object of the invention is to provide a striker assembly adapted to be mounted on the body post or pillar and embodying a plurality of

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relatively movable spring pressed striker members mounted to extend generally vertically into the path of a normally stationary longitudinally extending latch bolt, said striker member providing successive safety and final locking portions or steps effective to hold the latch bolt in successive positions when the door is closed.

Still a further object of the invention is to provide an assembly or device of the foregoing character having transversely spaced striker members mounted and constructed in improved manner, the improved construction and operation of the device being such that the door may be closed without slamming and with a minimum of effort and quietness, making it unnecessary to cause the bolt to retract by engagement with the striker when closing the door and permitting the door to be readily opened by turning the handle to retract the bolt sufficiently to clear the striker member or members, thereby enabling the end of the latch bolt to pass by the striker members as the door is pulled open.

A further object of the invention is to provide an improved latch bolt and striker mechanism in which two striker or keeper members are mounted on the casing for up and down movement and spaced apart transversely for successive engagement by the latch bolt, there being yieldable wedge means associated with the striker members and cooperable therewith to hold the door against vertical movement. The improved construction, in accordance with the invention, is such as to render the striker assembly very compact, simple and cheap in construction while at the same time reducing materially the space occupied by the assembly both vertically and transversely of the door jamb so as to facilitate its use in vehicle bodies having relatively thin door and pillar sections.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a fragmentary side elevation of a portion of an automobile body in which a device embodying the present invention is incorporated in connection with a front door thereof.

Fig. 2 is an enlarged section taken substantially through lines 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a section taken substantially through lines 3—3 of Fig. 2 looking in the direction of the arrows.

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Fig. 4 is a view somewhat similar to Fig. 2 but illustrating a different position of the parts of the mechanism.

Fig. 5 is a section taken substantially through lines 5—5 of Fig. 2 looking in the direction of the arrows.

Fig. 6 is a section taken substantially through lines 6—6 of Fig. 2 looking in the direction of the arrows.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

In the drawings there is illustrated, by way of example, one embodiment of the present invention as applied to an automobile body B having swinging doors D hinged at their remote edges so as to swing together against a common door post or body pillar in accordance with conventional practice, the mechanism embodying the present invention comprising a latch bolt device mounted upon the door, a striker device mounted upon the body pillar or door post at the jamb face of the door opening, and a yieldable wedge device mounted on the jamb edge of the door for cooperation with a wedge surface on the striker casing to hold the door against vertical movement when the door is closed.

Referring particularly to Figs. 2 and 3, the striker device, which is preferably mounted upon the fixed pillar or post of the body, comprises a backing plate 10 and a face plate 11, the latter being offset outwardly by a stamping operation to provide with the backing plate a casing for enclosing a portion of the striker mechanism, this casing having a front wall 11a and a side wall 11b extending continuously around three sides thereof. The backing plate and face plate at the top thereof are secured in common to the jamb 12 of the body pillar by screws 13 and the lower edge of the backing plate is also secured to the pillar by screws 14.

Extending between the spaced walls 10 and 11a of the striker casing are a pair of swinging striker members 15 and 16 which are mounted side by side upon a common longitudinally extending pivot which in the present instance is in the form of a shoulder rivet 17 secured to the backing plate 10 and the front wall 11a of the casing. The striker members 15 and 16 extend downwardly through the open bottom of the striker casing so as to provide working portions extending into the path of the latch bolt during the closing movement of the door. The striker member 15 provides the final locking step and the striker member 16 provides the safety locking step and they terminate respectively in curved or tapered bolt engaging faces 15a and 16a. The safety striker member 16, below the pivot 17, is provided with a thickened or outwardly projecting portion 16b corresponding to the thickness of the lower end of the main striker member 15 and lying in the plane thereof. The inner edge 16c of this portion 16b is preferably curved or convex so as to fit within the correspondingly curved or concave rear edge 15b of the striker member 15. As a result of this construction the projecting portion 16b will extend within the hollow rear edge of the main striker member and the two members will

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nest together when in the position shown in Fig. 4.

Upward swinging movement of the striker members 15 and 16 under the influence of the latch bolt is resisted by means of suitable spring means adapted to urge each striker member into latching position one independently of the other. Accordingly, separate springs 18 and 19 are provided for engagement, respectively, with the striker members 15 and 16. In the present instance these springs are of the tension type each having a number of coils embracing a transverse pin or rivet 20 secured to the walls of the casing. As shown in Fig. 6, the coils of the two springs 18 and 19 are arranged side by side on the supporting pin 20. Each spring has a rearward extension, as shown in Fig. 2, engaging the side wall 11b of the casing. The spring 18 has a forward extension 18a seated within a notched lug 21 extending from the back of the striker member 15 above the pivot 17. In like manner, the spring 19 has a forward and upward extension 19a seated within a notched lug 22 on the back of the striker member 16 above the pivot 17. The notched lug construction 21 and 22 anchors the spring extensions 18a and 19a against lateral displacement but permits them to slide along the notches in the lugs when the striker members swing about the pivot 17.

The striker members 15 and 16 terminate above the pivot 17 and also above the lugs 21 and 22 in forwardly extending hook portions 23 and 24, respectively. These hook portions are positioned side by side and are adapted to engage a rubber bumper 25 extending transversely between the backing plate 10 and wall 11a of the casing. The rubber bumper 25, therefore, provides a common abutment for the striker members limiting swinging or pivotal motion thereof in one direction, thereby holding the striker members in their full latching positions.

Cooperating with the striker or keeper members 15 and 16 is a longitudinally extending latch bolt 26 forming a part of a latch device 27 mounted upon the door, this bolt projecting through the jamb edge of the door and being non-retractible during closing movement of the door. The latch bolt may be retracted by means of an outside door handle 28 and by means of an inside door handle 29 connected to the latch bolt through any conventional remote control mechanism 27a. The construction of the latch device 27 is such that the bolt 26 will not retract in a longitudinal direction except by turning one or the other of the handles 28 and 29.

The latch bolt 26 has its upper rear corner beveled or tapered at 26a for cooperation with the tapered faces 16a and 15a of the striker members 16 and 15 so as to latch the door in the safety and final locking positions, as illustrated in Fig. 2.

In accordance with the preferred embodiment of the present invention yieldable wedge means is associated with the striker device and is co-operable therewith to hold the door against vertical movement, this wedge means in the present instance comprising a transversely yieldable wedge block on the jamb edge 30 of the door which is engageable with an upper inclined wall of the casing plate 11. As illustrated in Figs. 2 and 3, a casing member 31 is adjustably secured by four screws 32 to the jamb edge or member 30 of the door. The attaching screws 32 extend through vertical slots 33 in the plate 31 so as to permit the position of the plate to be adjusted vertically with respect to the striker casing. The

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plate 31 is pressed out to provide a housing 31a for a sliding wedge block 34. This housing has an upper inclined wall engageable by the correspondingly inclined upper surface of the wedge block. The wedge block 34 is anchored within the housing 31a by means of a slot 35 in the nose thereof into which is received a projection or tongue 36 formed on the housing. The rear end of the wedge block 34 is provided with a blind hole 37 into which extends a compression spring 38, the ends of the spring engaging the bottom of the hole 37 and the back wall of the housing 31a. The lower face of the wedge block 34 has an inclined surface 34a adapted to cooperate with the upper inclined wall 40 of the face plate 11 so as to exert a wedging action, as the door is closed, tending to lift the door and hold the latch bolt 26 firmly against the working face 15a of the striker member 15. Since the wedge block 34 is continuously urged outwardly by its spring 38, thereby tending to raise the door relatively to the pillar by reason of the inclined wall 40, any play between the bolt and striker face 15a when the latter is forced home to its lowermost position, shown in Fig. 2, will be taken up by outward movement of the wedge 34. Thus, any play between the bolt and striker, tending to cause rattling or chattering when the door vibrates vertically, will immediately be taken up by the continuous wedging action of the wedge member 34 and the surface 40, and the door will be held tightly against vertical movement due to the tendency of the wedge to continuously move inwardly under the influence of its spring.

An important feature of the present construction resides in the fact that the wedge member 34 and its inclined working surface 34a do not have a fixed vertical relation to the striker members 15 and 16. Since the yieldable wedge member 34 is mounted upon the edge of the door, its position is not dependent upon the position of the striker casing and striker members 15 and 16 which must be assembled on the pillar in correct relation to the latch bolt 26. Since the position of the inclined wall 40 of the striker casing is fixed with relation to the working surfaces of the striker members, any variations due to inaccuracies in production, tolerances and wear may be accommodated, after the striker assembly and latch bolt have been installed, by adjusting the wedge block casing 31 vertically through the medium of the screws 32 and slots 33, thereby correctly positioning the wedge block 34 with respect to the wall 40. In the preferred construction, in order to facilitate closing of the door, the inclined wall 40 of the striker casing terminates in a more abrupt inclined wall 39 which may be engaged at any point by the round nose of the wedge block 34 so as to exert a camming action effective to carry the wedge block onto the inclined surface 40.

From the foregoing it will be seen that I have provided a simplified and compact structure comprising a pair of pivoted striker members 15 and 16 mounted upon a common pivot 17 and extending downwardly in diverging relation so as to be normally spaced apart in a transverse direction sufficiently to permit independent latching engagement of the striker members by the bolt 26. The striker members are urged into their latching positions, one independently of the other, by the springs 18 and 19. In this connection it is preferred that the spring 18, acting upon the main locking member, be materially heavier or stronger than the spring 19 which

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acts upon the safety locking member 16. In addition, it will be seen that a common stop bumper 25 is provided for the striker members. Also it will be noted that the striker members, although mounted side by side, have working portions extending in the same plane due to the provision of the offset portion 16b on the safety striker member 16. This offset portion insures full engagement of the end of the bolt with the safety striker member regardless of variations in the length of the bolt. It will be seen that when the door is closed the bolt 26 will first engage the safety striker member 16 and swing it to its nested position with the main striker member 15, as shown in Fig. 4. Continued closing movement of the door will cause the bolt to lift both striker members, against the action of the spring, until the upper edge of the bolt passes by the rounded lower end of the offset 16b, whereupon the spring 19 will snap the safety striker 16 into the position shown in Fig. 2. If the door does not fully close, the bolt will be locked against the safety striker as shown in Fig. 2. If the door moves to fully closed position, the bolt 26 will pass over the lower rounded end of the main striker 15 and the spring 18 will force this striker downwardly into the path of the bolt as also shown in Fig. 2. During this operation the yieldable wedge block 34, riding up on the inclined wall 40, will draw the bolt 26 upwardly and hold it tightly against the working face 15a of the main striker.

I claim:

1. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of members having bolt latching steps normally projecting into the path of the bolt and spaced apart in the direction of closing of the door, and a common pivot for mounting said members for swinging movement in said direction relatively to the bolt and each member relatively to the other.

2. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of members having bolt latching steps normally projecting into the path of the bolt and spaced apart in the direction of closing of the door, and a common pivot upon which said members are mounted side by side for relative swinging movement in said direction.

3. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of members having bolt latching steps normally projecting into the path of the bolt and spaced apart in the direction of closing of the door, and a common pivot upon which said members are mounted side by side for relative swinging movement, said members adapted to be positioned in nested relation upon movement of one thereof under the influence of the bolt.

4. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of members having bolt latching steps normally projecting into the path of the bolt and spaced apart in the direction of closing of the door, and a common pivot extending in the longitudinal direction of the door and upon which said members are mounted side by side for relative swinging movement in said first named direction, said members having portions extending in substantially the same transverse plane for engagement by the bolt.

5. A striker device for use in cooperation with a latch bolt and in association with a swinging

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door, comprising a pair of independently swingable striker members having a common pivotal axis and bolt engaging portions extending in spaced relation in the direction of closing of the door transversely of said axis.

6. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of independently swingable spring pressed striker members having a common pivotal axis and bolt engaging portions extending in spaced relation in the direction of closing of the door transversely of said axis.

7. A striker device for use with a latch bolt comprising a pair of independently swingable striker members having portions arranged side by side on a common pivotal axis and also having latch bolt engaging portions spaced apart transversely of said axis.

8. A striker device for use with a latch bolt comprising a pair of independently swingable striker members having portions arranged side by side on a common longitudinal pivotal axis and also having latch bolt engaging portions arranged in line and spaced apart transversely of said axis in the direction of closing of the latch bolt.

9. A striker device for use with a latch bolt comprising a pair of independently swingable striker members having portions arranged side by side in a longitudinal direction of the door and mounted on a common longitudinal pivotal axis and also having latch bolt engaging portions arranged in line transversely of said axis in the direction of closing of the latch bolt, yieldable means for urging said members in one direction, and a common stop for said members limiting their movement in said last direction.

10. A striker device for use with a latch bolt comprising a pair of independently swingable striker members having portions arranged side by side and mounted on a common longitudinal pivotal axis and also having latch bolt engaging portions arranged in line transversely of said axis in the direction of closing of the latch bolt, and a common stop for said members limiting their movement in one direction.

11. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of members having bolt latching steps normally projecting into the path of the bolt and spaced apart transversely in the direction of closing of the door, a common means for pivotally mounting said members for swinging movement relatively to the bolt about a longitudinal axis and each member relatively to the other in said transverse direction, and spring means urging said striker members toward the bolt.

12. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of independently swingable striker members pivoted on a common longitudinal axis and having bolt engaging portions spaced apart transversely of said axis in the direction of closing of one edge of the door, and a casing for said members having a transverse inclined wall engageable by a guide member adapted to be mounted on the edge of the door.

13. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of independently swingable striker members pivoted on a common longitudinal axis and having vertically extending diverging bolt engaging portions spaced apart transversely of said axis in the direction of closing

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ing of one edge of the door, and a casing for said members having a transverse inclined wall engageable by a guide member adapted to be mounted on the edge of the door.

14. A striker device, comprising a pair of striker members swingable side by side on a common longitudinal pivotal axis and having bolt engaging portions arranged substantially in line transversely of said axis, separate springs acting against said members, a common support for the springs, and a common stop engaged by the members for limiting movement thereof under the action of the springs.

15. A striker device, comprising a pair of striker members swingable side by side on a common pivotal axis and having bolt engaging portions arranged substantially in line transversely of said axis.

16. A striker or keeper for a door latch, comprising a pair of shiftable members mounted side by side with overlapping portions thereof arranged one beyond the other in a direction longitudinally of the door, said members also having latch engaging end portions overlapping each other in a direction transversely of the door.

17. A striker or keeper for a door latch, comprising a pair of shiftable members mounted side by side with overlapping portions thereof arranged one beyond the other in a direction longitudinally of the door, said members also having latch engaging end portions overlapping each other in a direction transversely of the door, one of said end portions being widened longitudinally to increase its surface engageable with the latch.

18. A striker device comprising a pair of striker members swingable side by side on a common pivotal axis and having latch bolt engaging portions spaced apart transversely of said axis a sufficient distance to permit the bolt to extend between said portions.

19. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of independently swingable striker members having a common pivotal axis and bolt engaging portions extending in spaced relation in the direction of closing of the door transversely of said axis, and a common stop for said members limiting their movement in one direction.

20. A striker device for use in cooperation with a latch bolt and in association with a swinging door, comprising a pair of independently swingable striker members pivoted on a common longitudinal axis and having vertically extending diverging bolt engaging portions spaced apart transversely of said axis in the direction of closing of one edge of the door, said striker members being provided with latch engaging portions arranged substantially in line transversely of said axis.

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