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LATCH MECHANISM FOR DOORS

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FIG. 1

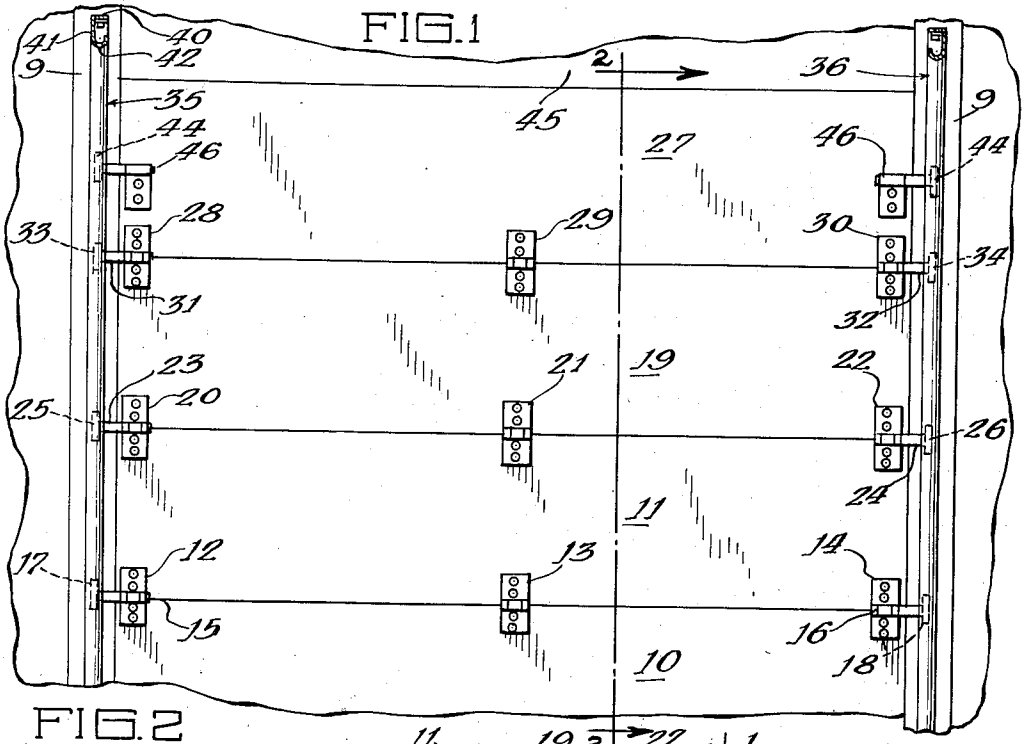


FIG. 2

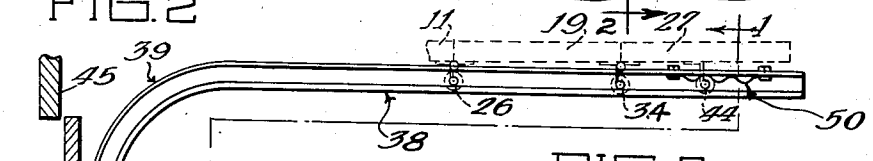


FIG. 3

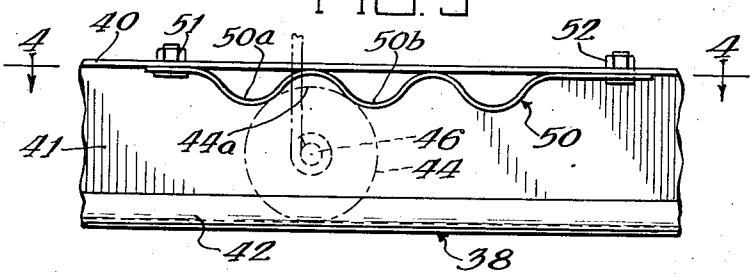
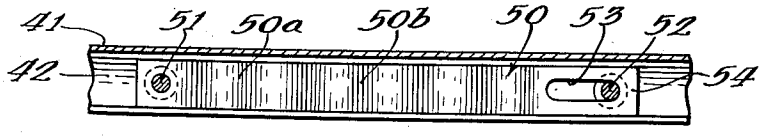
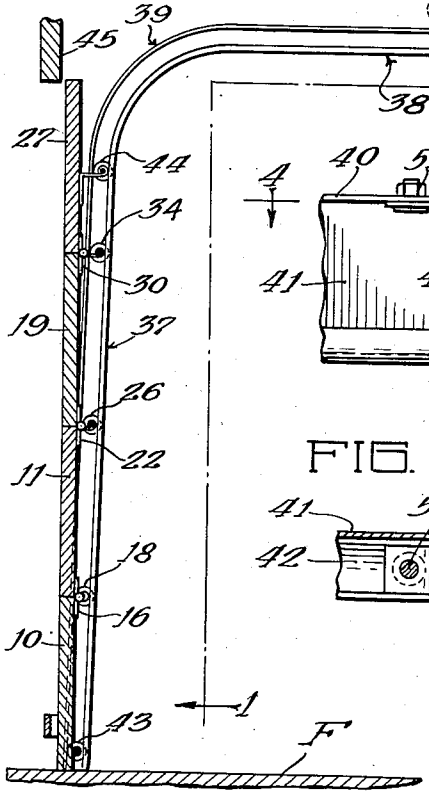


FIG. 4





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LATCH MECHANISM FOR DOORS

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2 Claims. (Cl. 292—76)

This invention relates to door hardware and more particularly to a latching mechanism for an overhead type garage door.

One popular type of domestic garage door is one formed in sections and running in a track which allows the door to be in effect rolled to an overhead position. Small wheels attached to the door sections are captive in the track to guide the door between its extreme positions relative to the door opening. Ordinarily, such doors are counterbalanced with springs and a cable and pulley system. Doors which do not have a latching mechanism to hold them in open overhead position may roll back and forth in the track before coming to rest, particularly if excessive force was applied to the door in starting it toward the open position. Injuries have occurred to persons unfamiliar with the fact that the door might bounce back partially toward closed position when opened with excessive force.

It has been proposed in the past to provide a catch to hold the door in its open position. These catches avoid injuries to persons, as mentioned above; however, they require an additional manual step of releasing the door prior to pulling it down from its overhead position to close the garage opening. Thus, there is an inconvenience in having a catch to hold the door in its open position.

The primary object of this invention is to provide a new and improved latch mechanism for garage doors and the like.

Another object of the invention is to provide a latching mechanism automatically operating to hold a garage door in a desired position without requiring movements by the person operating the door other than those ordinarily used to open and close the door.

Another object is to provide an improved door latching structure which may be added to existing door structures without modifying the existing door or its track.

Other features, objects and advantages of the present invention will be apparent from the following description of a preferred embodiment taken in conjunction with the accompanying drawing in which:

Figure 1 is a broken elevational view looking toward the inner side of a garage door having the invention therein and taken substantially along line 1—1 in Figure 2.

Figure 2 is a fragmentary sectional view through the door of Figure 1 taken generally along line 2—2 in Figure 1.

Figure 3 is a fragmentary enlarged elevational view of a section of the door track having the latching structure therein and,

Figure 4 is a sectional view of the latching mechanism taken substantially along line 4—4 in Figure 3.

The embodiment of the present invention as illustrated in the drawings involves a four panel door movable in a pair of side tracks between an overhead open position and a generally vertical closed position in the door opening. In order to more clearly illustrate the invention, the major portion of the door jamb and surrounding carpentry have been omitted from the drawings. Facing 9 is shown in part in Fig. 1.

Referring particularly to Figures 1 and 2, it will be noted that the door has four sections; a bottom section 10, which is relatively narrow and extends across the width of the door and is intended to seat against the floor F of the garage. The next section 11 is similar in shape and size to the bottom section 10 of the door and is connected by three hinges, 12, 13 and 14. Two of the hinges 12 and 14 are near the edges of the door sections and have outwardly extending pintle pins 15 and 16 respectively, serving as axles for rollers 17 and 18.

The next upper section 19 of the sectional door is similar to section 11 and is likewise hinged to it by hinges 20, 21 and 22. The outer most hinges 20 and 22 likewise have pintle pins 23 and 24, serving as the shafts carrying rollers 25 and 26.

The uppermost door section 27 is similarly connected to the section 19 by hinges 28, 29 and 30. Here again the outermost hinges have pintle pins 31 and 32 which serve as axles for rollers 33 and 34.

The rollers just described are all held captive in a pair of spaced tracks so as to guide the sections of the door in its movements opening and closing the doorway into the garage or other building with which the door is associated. It should be noted herein, that one track 35 is provided on one side of the opening and a similar track 36 on the other side. Track 36 is shown in Figure 2 to have a generally upright portion 37 and an overhead generally horizontal portion 38 joined by an arcuate or curved section 39.

The track is formed of metal having a generally flattened top portion 40, a depending flange 41, and a curved lower lip 42 in which the roller may run and be held captive.

In order to support and guide the lower-most and upper-most sections of the doors, auxiliary rollers are usually provided. Thus, rollers 43 are provided on the lower section 10 to guide the lower edge of the door into closed position, as illustrated in Figure 2. The upper-most section 27 has a pair of rollers 44 near its middle for holding the upper section, and causing it to seat against the door jamb 45 in closed position. This roller is shown in dotted outline in Figure 3 as mounted upon an axle 46 secured to the door section. These rollers 44 are used to retain the door in its open position in accordance with the present invention.

The door structure and its hardware described above are of usual construction found on overhead doors of this particular type. The latching mechanism of the present invention may be added to the structure without changing its usual operating functions.

As the sectional door is moved toward its open position, as illustrated in dotted outline, in Figure 2, the spring counterbalance (not shown) may cause the door to bounce back and forth in the track before expending its energy and coming to rest. The latching mechanism of the present invention will prevent this movement of the door and will seize it and hold it in open position. The particular means by which this function is achieved is best illustrated in Figures 2, 3 and 4. A sinuous flat spring generally indicated 50 is mounted on the under-side of the upper flange 40 in the track in a position to engage the roller 44. The spring 50 is secured by a rivet or bolt 51 at one end and a similar rivet or bolt 52 at the other end. The spring has a slot 53 surrounding the fastener 52 in order that the adjacent end 54 of the spring may move relative to its opposite end tending to flatten the spring longitudinally of the track. Referring particularly to Figure 3, it will be noted that roller 44 has an upper portion 44a extending upwardly above the low adjacent

portions **50***a* and **50***b* of the spring. In order for the roller to enter from the left of the figure to the position occupied in the illustration, an outwardly curved part of the spring **50***a* had to be moved upwardly relative to the track. As the roller engaged the spring, energy was expended in flattening out the curved portions of the spring. The energy of the moving door is thus expended in flattening the spring to allow the rollers **44** to move in under the undulated spring **50**. Since the springs are resilient, adjacent curved portions also grip the rollers, thus holding the door in position against bouncing back and forth.

Some door structures may be sufficiently well counterbalanced to permit the use of a single spring **50** in one track. It is preferred, however, to use a pair of springs, one in each track so arranged as to jointly grip a pair of rollers **44** at opposite sides of the door. This avoids placing any skewing force on the door structure.

It has been found that a spring having generally three portions similar to **50***a* and **50***b* extending into the path of rollers is sufficient to stop and grasp the most common door structures. Springs having fewer or more undulations can be used. The structure of this invention may be installed quite easily in existing garage door structures by using bolts as fasteners **51** and **52**; however, in factory installation rivets are preferred. It will be understood that the fastener **52** should be sufficiently loose to allow movement of the adjacent end of the spring about the fastener.

The latching mechanism has been described as in a position to hold the door open. It will readily be apparent that the latching structure would perform its intended function if placed in other positions in the track. The structure could equally be placed to grasp the rollers **43** to hold the door in closed position. In either instance, the door may be opened and closed with the usual manual operations requiring no additional steps. Latching occurs automatically merely by allowing the door to roll to its open position. Once the door is at rest, a slight closing pull on the door is sufficient to overcome the spring resiliency and move the rollers out of contact with the springs.

The foregoing detailed description has been given for clearness of understanding only and unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

I claim:

1. A latch mechanism for a sectional garage door and the like having rollers running in a pair of tracks for guiding the door sections between open and closed positions, comprising: a flat metal spring of undulating configuration mounted in one of the tracks so that portions of the undulations project into the path of one of said rollers running in said one track with spring portions between the undulations engaging the track, fastening means securing both end portions of the spring to the track, one of said fastening means comprising a pin and slot connection permitting elongation of the spring upon engagement by the roller to pass the roller into the confines of the spring, said undulations dissipating the momentum of the door and holding the door in desired position by clamping on said roller.

2. A latch mechanism as specified in claim 1 wherein the spring is positioned relative to a portion of the track to engage one of the rollers on the uppermost door section and to retain the door in open position and is positioned to allow the roller to engage the spring without placing the weight of the door thereon.

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