

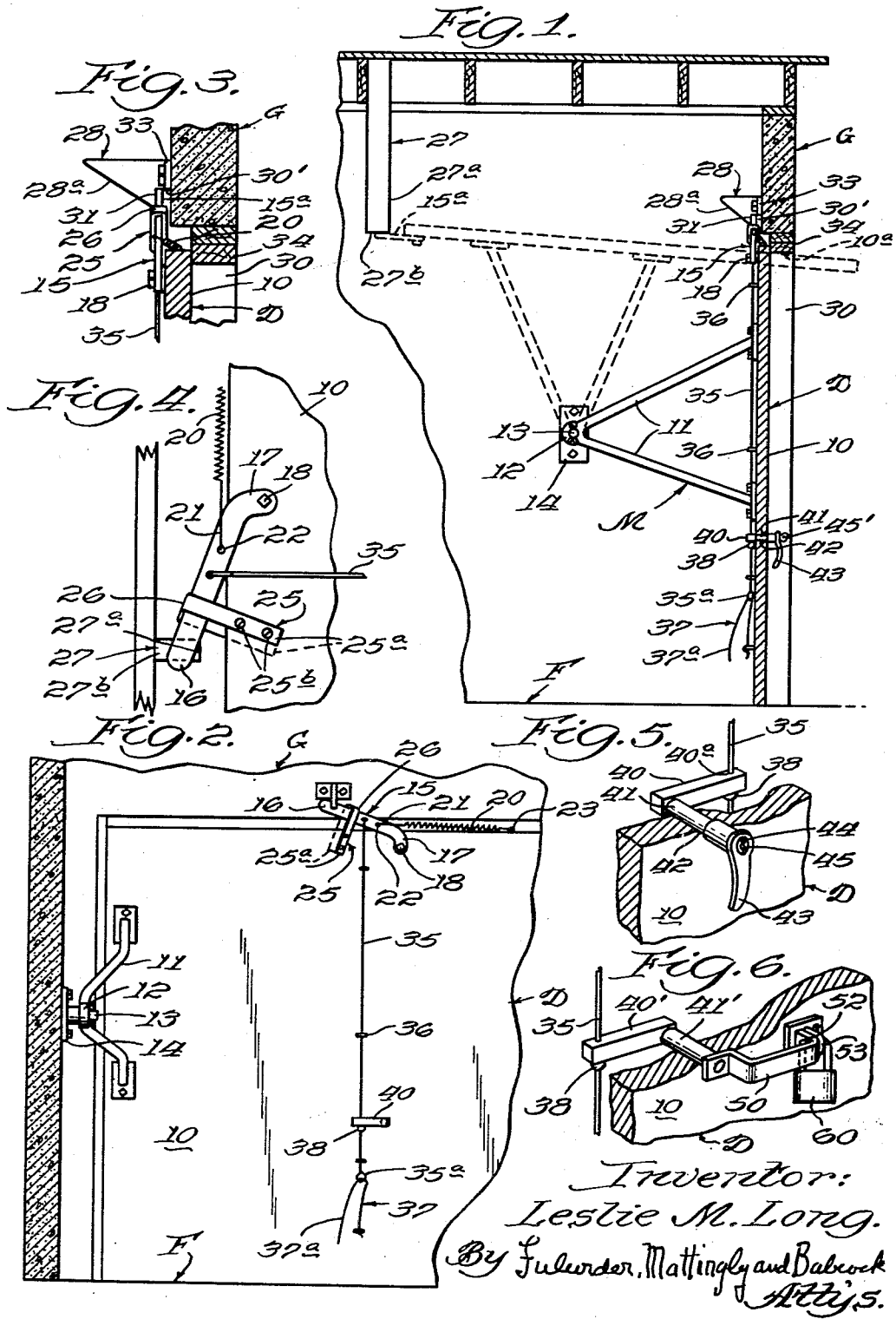
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CONTROL FOR GARAGE DOOR

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## CONTROL FOR GARAGE DOOR

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The present invention relates to the field of doors, and more particularly to means for controlling the operation of garage doors.

What is commonly known and commercially referred to as the "overhead door," has become extremely popular for use on private domestic garages, and for this purpose has practically superseded all other types of doors.

As is well known, the foremost advantage of the overhead garage door lies in the fact that it requires a minimum of space in which to swing open from the vertical closing position to the overhead position where it is substantially parallel to the roof of the garage in which it is installed.

However, the presently available garage overhead doors have the disadvantage that when in the overhead or open position, permitting unobstructed access to and from the interior of the garage, the door is not positively held in place. Failure to securely hold such a door in the overhead position presents a constant hazard in that it may be dislodged by heavy winds or jarring of the doorway of the garage, or by other accidental means to cause the door to descend upon the car or persons standing in the garage entrance in which such an overhead door is installed.

Although various types of locking mechanisms have been devised and marketed in the past for use with overhead doors, these devices have been unsatisfactory due either to the complicated mechanical structure thereof, or the fact that two locking mechanisms were required, one to hold the door in an overhead position, and another to lock the door in a vertical closed position.

The primary purpose in devising my present invention is to provide a device for removably locking an overhead door in both the vertical and overhead positions which is of such a simplified mechanical structure that it may be readily installed by a person with little or no mechanical skill.

A major object of my invention is to provide a control for an overhead door that may be quickly and easily operated from either the interior or exterior of a garage, and one that automatically locks the door in either an overhead or vertical position without conscious thought or effort.

Another object of my invention is to furnish a door control that will eliminate the possibility of accidental movement of the door due to heavy winds or other means whether it is in either the vertical or horizontal position.

Yet another object of my invention is to supply an overhead door control which serves the dual purpose of removably locking it in both the vertical as well as the overhead position.

A still further object of my invention is to furnish a control for an overhead garage door that may be fabricated from standard commercially available material, does not require elaborate plant facilities for its manufacture, to permit it to be retailed in the medium-priced merchandising field.

These and other objects and advantages of my inven-

tion will become apparent from the following description of a preferred and certain alternate forms thereof:

Figure 1 is a vertical cross-sectional view of an overhead door on which my control is mounted, the door in solid line being shown locked in the vertical position, and in the overhead position in phantom line;

Figure 2 is an elevational view of an overhead garage door in a vertical closed position with my control mounted thereon;

Figure 3 is an enlarged fragmentary vertical cross-sectional and elevational view of the latch portion of my invention disposed to maintain an overhead door in a vertical position;

Figure 4 is an enlarged plan view of the latch portion of my invention disposed to hold a garage door in an overhead position;

Figure 5 is a perspective view of an alternate form of the device for actuating my overhead door control; and

Figure 6 is a second alternate form of the device for actuating my overhead door control.

Referring now to the drawings for the general arrangement of my invention, it will be seen that a garage door D is pivotally supported by a mechanism M whereby the door may be disposed in either a vertical position for closing the doorway of a garage G, or in an overhead position (shown in phantom line in Figure 1) wherein the door is in a position substantially parallel to the floor F of the garage.

The door D, normally formed as a rectangular panel 10 from suitable material such as wood or metal sheeting, is supported on a rigid frame. Two V-shaped rigid members 11, forming no part of the present invention, are mounted on opposite sides of the panel 10, as may be seen in Figures 1 and 2. Each of the members 11 supports a bearing or journal 12 which rotatably engages a stub shaft 13 that permits the panel to be pivotally moved into either a vertical or substantially horizontal position. Each of the stub shafts 13 extends outwardly from plates 14 which are rigidly affixed in suitable positions of the garage G, as illustrated in Figure 2.

A rigid latch member 15, preferably stamped or formed from a rigid sheet material, is provided. This latch may take any number of shapes, but I prefer to employ an elongate rectangular portion 16 that has an off-set 17 formed on one end thereof. The off-set has a bore formed therein engaged by a pin or bolt 18. The latch is pivotally supported on bolt 18, rigidly mounted on panel 10, normally by-passing through a bore formed in the panel. It will be seen that when the latch 15 is so mounted, it may pivot in a plane parallel to the sides of the panel 10 of greatest area.

A helical spring 20 is provided having a hook 21 or other engaging means formed on one end thereof passing through a bore 22 formed in latch 15. The other end of spring 20 has a hook or eye formed thereon for engaging a rigid member 23 that is affixed to the upper portion of panel 10 (Figure 2). The spacing of member 23 relative to latch 15 is such that spring 20 is at all times in tension and tends to rotate the latch outwardly in a clockwise direction. Maximum outward movement of latch 15 is controlled by a U-shaped member 25 which has two laterally spaced legs 25a rigidly affixed to opposite sides of panel 10 by two longitudinally spaced bolts 25b. Although the U-shaped member may be fabricated in a number of different ways, I prefer to form it from a metallic strap bent into the desired shape. The outer ends of legs 25a are connected by a portion of strap 26 that acts as a stop against which the latch 15 normally rests due to the action of spring 20.

In Figure 1 it will be seen that an elongated rigid member 27 which acts as a stop, extends downwardly from the roof or upper portion of the garage G. A latch plate

28 of triangular shape is provided, disposed on the forward portion of the garage G above the doorway 30 thereof. Plate 28 is so disposed that side 28a, which is the hypotenuse thereof, extends upwardly and rearwardly. The forward portion of hypotenuse 28a has a rectangular notch 30' formed therein, providing a substantially rectangular body shoulder 31. Latch plate 28 is preferably supported in an outwardly extending position from a rigid member 33 that may be mounted by conventional holding means on the appropriate portion of the garage structure. Both the stop 27 and latch plate 28 are disposed on the garage structure in substantially the same vertical plane, and one in which they will be contacted by the latch 15 when panel 10 is moved to either the vertical or horizontal position.

The operation of my invention is extremely simple. When the panel 10 is pivoted upwardly to the overhead position, latch 15 is engaged by side 27a of the downwardly extending stop. Latch 15 is pivoted inwardly as a result of such contact until the panel 10 reaches the maximum horizontal position, which occurs when the lower outer side 10a of panel 10 is in contact with the garage door header 34. As the maximum horizontal position is reached by panel 10, latch 15 passes below the stop 27, and is immediately pivoted outwardly by spring 29. The upper face 15a of the latch is then in contact with end 27b of the stop, and panel 10 is positively locked in the overhead position until such time as the latch is pivoted in a counter clockwise direction to be disengaged from the stop.

A rod or other suitable elongated member 35 is pivotally connected on one end to latch 15 and extends downwardly therefrom (seen in Figure 2) to terminate in an eye 35a. Rod 35 is slidably held in place on panel 10 by a number of vertically spaced U-shaped members 36 such as staples. Eye 35a is engaged by one end of a rope 37 hanging downwardly in a loop 37a, the other end of which is affixed to panel 10.

When panel 10 is in the locked overhead position, as shown in Figure 1, loop 37a dangles downwardly therefrom at such an elevation to be easily grasped by a person of average height. When loop 37a is pulled downwardly, rod 35 moves to pivot latch 15 inwardly in a counter-clockwise direction to be disengaged from stop 27. Panel 10 is then freed to pivot into the vertical closed position shown in Figure 1 in solid line.

From experience it has been found that loop 37a operates very satisfactorily as actuating means to disengage latch 15 from the overhead holding position. However, if there is no other means of access to the garage G other than the overhead door thereof, when the panel 10 is in the vertical closed position shown in Figure 1, an additional actuating mechanism must be provided to move rod 35 downwardly to disengage latch 15 from plate 28. Two forms of such an actuating mechanism are illustrated in Figures 5 and 6, each of which is preferably installed on panel 10 in such a position as to be within convenient reach from the exterior of door D.

As may best be seen in Figure 2, rod 35 has a bead or enlarged portion 38 mounted or formed thereon. If desired, eye 35a may be employed in lieu of the enlarged portion or bead 38.

It will be seen (Figure 5) that the actuating mechanism includes a rigid member 40 having a downwardly extending bore 40a formed therein that slidably engages rod 35. Member 40 is transversely disposed on the inwardly located end of a shaft 41 that is rotatably supported in a bore 42 extending through panel 10. A handle 43 which has a lock 44 associated therewith, is mounted on the outwardly extending end of shaft 41. Lock 44 is preferably of a type that permits the handle 43 to be turned at will without rotating shaft 41 until such time as a key is inserted in the opening 45 and moved to a position where the handle 43 and shaft 41 must turn in unison. The bead 38 is disposed directly under member 40, and upon

rotation of handle 43 the key when properly disposed, locks both the handle 43 and the shaft 40 as an integral unit, with the result that the member 40 may be rotated to move the bead 38 downwardly. With this type of actuating handle, unless the key is put in the locking position, the handle 43 will not actuate the shaft 41. Such latch disengagement permits the panel 10 to be released from the vertical position shown in solid line in Figure 1, and rotated to the overhead position shown in phantom line in the same figure. It will be apparent that with such an actuating mechanism the loop 37a may be employed to disengage the latch 15 from either the stop 27 or plate 28 independently of the actuating mechanism shown in Figure 5.

My alternate form of actuating mechanism (Figure 6) includes a rigid member 40' and a shaft 41' identical to those described in connection with the device shown in Figure 5. However, the member 40' is disposed in the opposite direction to that occupied by member 40 and shaft 41' has a U-shaped handle 50 supported on the outer end thereof. An opening 52 is formed in the outer free end portion of handle 50. When the handle 50 is disposed as shown in Figure 6, the opening 52 is situated adjacent to a similar opening formed in a lug 53 that extends outwardly from the garage door. Handle 50 is held in a non-rotatable position by a padlock 60, a portion of which extends through openings 52.

This form of my invention provides the advantage that when padlock 60 is removed from handle 50 and the handle grasped to raise door D, the door is automatically unlocked. It will be apparent that as upward force is applied to handle 50 the weight of door D will cause both the door and member 40' to pivot in a counter clockwise direction through a limited range, with this rotation of member 40' moving bead 38 downwardly to disengage latch 15 from plate 28. It is obvious that with the latch 15 disengaged, the door D is free to be pivoted upwardly into an overhead position.

The operation of my invention may be summarized as follows. The door D may be manually pivoted to either the overhead or vertical position as desired, and as it assumes either of these positions, the spring-loaded latch 15 is pivoted into an engaging position with stop 27 or plate 28. The door D is released from either of these locked positions by actuation of member 35 by use of loop 37a or either one of the actuating mechanisms shown in Figures 5 and 6.

Although the door control herein described is fully capable of achieving the objects and providing the advantages hereinbefore mentioned, it is merely the presently preferred embodiment of my invention, and I do not mean to be limited to the details of construction herein shown other than as defined in the appended claims.

I claim:

1. A garage door construction and control therefor, comprising: a garage wall having a doorway formed therein; a rigid panel forming a door; pivotal supporting means for said door whereby it may be swung between a vertically disposed doorway-closing position to an overhead horizontally disposed doorway-opening position; an elongate member movably supported on the interior surface of said door and extending beyond the upper edge thereof; a bead rigidly mounted on said elongate member; an arm slidably mounted on said elongate member and contacting the upper surface of said bead; a shaft extending through said door and rotatably supported therein, which shaft is rigidly connected to said arm; a handle rigidly affixed to the exterior end portion of said shaft, which handle when manually pivoted causes said arm to exert sufficient force on said bead to move said elongate member toward the bottom edge of said door; means to lock said handle in a non-rotatable position; a cord affixed to said elongate member, which cord when pulled draws said elongate member toward

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the bottom edge of said door; a latch pivotally mounted on the upper interior surface of said door, which latch is connected to the upper end of said elongate member; a spring affixed to said latch and door, constantly biasing said latch toward a position wherein a portion of said latch protrudes beyond the upper edge of said door; stop means affixed to said door limiting the biasing action of said spring and said latch; a rigid member mounted over said doorway on the interior surface of said garage wall, said member having a vertically disposed recess therein from which recess an edge of said member inclines upwardly toward the interior of said garage and into which recess said latch extends when said door is in the closed position; and an elongate stop extending downwardly from the upper portion of said garage, against the lower end of which stop a portion of said latch is in engagement when said door is in the overhead position, said vertically disposed recess and said elongate stop being so positioned that when said elongate member is drawn toward the bottom edge of said door, thus pulling the protruding end of said latch in the same direction, said latch will be withdrawn from its extended position within said vertically disposed recess or from engagement with the lower end of said elongate stop whereby said door may be swung between the overhead position and the closed position, and the inclined edge of said rigid member and the forward surface of said stop being so positioned that as said door is swung into the closed position or into the overhead position, said latch slidably engages said inclined edge or said forward surface respectively, thus sliding into said vertically disposed recess or into engagement with the lower end of said stop, respectively.

2. A garage door construction and control therefor, comprising: a garage wall having a doorway formed therein; a rigid panel forming a door; pivotal supporting means for said door whereby it may be swung between a vertically disposed doorway-closing position to an overhead horizontally disposed doorway-opening position; an elongate member movably supported on the interior surface of said door and extending beyond the upper edge thereof; a latch pivotally mounted on the upper interior surface of said door, which latch is connected to the up-

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per end of said elongate member; a spring affixed to said latch and door, constantly biasing said latch toward a position wherein a portion of said latch protrudes beyond the upper edge of said door; stop means affixed to said door limiting the biasing action of said spring and said latch; a rigid member mounted over said doorway on the interior surface of said garage wall, said member having a vertically disposed recess therein from which recess an edge of said member inclines upwardly toward the interior of said garage and into which recess said latch extends when said door is in the closed position; an elongate stop extending downwardly from the upper portion of said garage, against the lower end of which stop a portion of said latch is in engagement when said door is in the overhead position, said vertically disposed recess and said elongate stop being so positioned that when said elongate member is drawn toward the bottom edge of said door, thus pulling the protruding end of said latch in the same direction, said latch will be withdrawn from its extended position within said vertically disposed recess or from engagement with the lower end of said elongate stop whereby said door may be swung between the overhead position and the closed position, and the inclined edge of said rigid member and the forward surface of said stop being so positioned that as said door is swung into the closed position or into the overhead position, said latch slidably engages said inclined edge or said forward surface, respectively, thus sliding into said vertically disposed recess or into engagement with the lower end of said stop, respectively; and means operable from either the inside or outside of said garage for moving said elongate member to disengage said latch from said stop or said recess whereby said door may be pivoted to either a vertical or overhead position.

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