In a motor operated overhead garage door the operator is connected to a bell-crank lever pivotally mounted on the garage door so that the first movement of the operator swings the bell-crank lever to retract a spring pressed locking device for locking the door in closed position. Further movement of the operator lifts the door in a conventional manner.
LOCKING DEVICE FOR OVERHEAD GARAGE DOOR

BACKGROUND OF THE INVENTION

The present invention relates to operator overhead garage doors of the single panel type as well as the multiple panel type.

SUMMARY OF THE INVENTION

A motor operated overhead garage door of the single panel type or of the multiple hinged panel type actuates the garage door through a bell-crank pivotally secured to the door so that the first movement of the operator pivots the bell-crank. The bell-crank is connected to a spring pressed latch which is retracted by the initial movement of the operator while swinging the bell-crank after which the garage door is moved by the operator in a conventional manner.

The primary object of the invention is to provide a spring pressed latch for motor operated garage doors in which the initial movement of the motor operator releases the latch.

Other objects and advantages will become apparent in the following specification when considered in light of the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of the invention shown attached to a single panel garage door with parts broken away and in section for convenience of illustration;

FIG. 2 is an enlarged fragmentary horizontal sectional view taken along the line 2-2 of FIG. 1, looking in the direction of the arrows;

FIG. 3 is a fragmentary rear elevational view of the latch structure;

FIG. 4 is an enlarged vertical sectional view of the latch structure;

FIG. 5 is a view similar to FIG. 1 of a modified form of the invention;

FIG. 6 is a fragmentary rear elevational view of the latch structure; and

FIG. 7 is a fragmentary side elevation of the door track showing the keeper bore for the latch.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures the reference numeral 10 indicates generally a locking device for overhead garage doors constructed in accordance with the invention.

The locking device 10 is illustrated as applied to an overhead garage door structure indicated generally at 11 which includes a garage door opening 12, a frame 13 surrounding the opening 12, a concrete floor 14, and a single panel garage door 15 pivotally mounted in the conventional manner so that the upper edge swings inwardly and the lower edge swings outwardly as the door is opened. The conventional mounting of the door 15 is not disclosed herein as it forms no part of the present invention.

A latch 16 is secured to the lower edge of the inner surface of the garage door 15 and has a latch pin 17 mounted for vertical sliding movement therein. A coil spring 18 in the latch 16 normally urges the latch pin 17 downwardly to project the lower end of the latch pin 17 into a keeper socket 19 embedded in the concrete floor 14.

A bracket 20 is provided with a base 21 which extends at right angles to the bracket 20 and the base 21 is secured to the upper inner surface of the door 15. A stop 22 is integrally formed on the upper edge of the bracket 20 and extends perpendicularly thereto for reasons to be assigned. A bell-crank 23 is pivotally secured to the bracket 20 by means of a pivot pin 24 and has a lower arm 25 and an upper arm 26. The upper arm 26 is pivotally secured at its upper end to the operator arm 27 of a motor operated garage door opener indicated generally at 28. The operator arm 27 is adapted to move horizontally to pivot the door 15 into a raised position.

A flexible cable 29 extends from an eye 30 on the upper end of the latch pin 17 upwardly to the inner end of the lower arm 25 to which it is also secured.

In the use and operation of the locking device 10 illustrated in FIGS. 1 through 4 the motor actuated garage door opener 28 is energized in any conventional manner such as by radio and the operator 27 is caused to move horizontally away from the garage door 15. The initial movement of the operator 27 will swing the bell-crank 23 about its pivot 24 until the lower arm 25 thereof comes in contact with the stop 22 raising the cable 29 and thus the latch pin 17 to release the latch pin 17 from the keeper socket 19 in the garage floor 14.

Further movement of the operator 27 then causes the garage door 15 to conventional pivot and open to its fullest extent. On closing of the garage door the operator 27 is moved by a motor operated garage door opener 28 toward the garage door 15 so that the garage door 15 is pivoted to a closed position whereupon the latch pin 17 is engaged in the keeper latch 19 by the spring 18.

Referring now to FIGS. 5 through 7 a modified form of the invention is illustrated. A locking device for overhead garage doors is indicated generally at 40. The locking device 40 is used with an overhead garage door construction indicated generally at 41. The garage door construction 41 includes a door opening 42 surrounded by a door frame 43. A track 44 extends upwardly on each side of the opening 42 and curves to extend across the ceiling of the garage. A garage door generally indicated at 45 includes a plurality of hinged together panels 46 which are conventionally mounted for movement in the track 44 from a vertical closed position as illustrated in FIG. 5 to a horizontal position overlying the garage floor closely adjacent to the garage ceiling.

A latch surface 16 is secured to the upper most panel 46 of the garage door 45 adjacent one side edge thereof. The latch pin 17 is adapted to engage a sloping keeper plate 49 secured to the track 44, to prevent the door 45 from moving upwardly in the track 44. A bracket 20 is mounted on the upper inner surface of the door 45 and carries a bell-crank 23 pivotally secured thereto by the pivot pin 24. The bell-crank 23 has arms 25, 26 with the arm 26 secured to the operator 27 of a conventional motor operated garage door opener 28. A flexible cable 29 is trained over a pulley 50 mounted on the garage door 45 and has its upper end secured to the free end of the arm 25 and its lower end connected to the eye 30 of the latch pin 17.
In the use and operation of the invention as illustrated in FIGS. 5 through 7 the motor operated garage door opener 28 is actuated by any conventional means including radio and moves the operator 27 thereof horizontally initially swinging the bell-crank 23 on its pivot 24 to thus retract the cable 49 and withdraw the latch pin 17 from the keeper plate 49 on the track 44. Further movement of the operator 27 engages the arm 25 against the stop 22 of the bracket 20 and movement of the garage 45 upwardly in the track 44 occurs in a conventional manner. Upon closing operation of the motor operated garage door opener 28 the door 45 is moved downwardly in the track 44 until the latch pin 17 is first cammed inwardly by the sloping keeper plate 49 and then engages under the keeper plate 49, under pressure of the spring 18.

Having thus described the preferred embodiment of the invention it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the spirit of the invention.

What is claimed is:

1. A locking device for one piece overhead garage doors of the type which move from a closed position to an open position by swinging about a horizontal pivot and is actuated by a motor driven garage door opener which includes a horizontally movable operator comprising, a bracket secured to the upper inner surface of the garage door, a latch mechanism secured to the lower edge of the inner surface of said garage door and adapted to lock said garage door against outward swinging movement of its lower edge in an opening direction, means supported by said bracket extending from said operator to said latch for disengaging said latch upon initial horizontal movement of said operator said last named means including a bell-crank pivotally mounted on said bracket and having one arm thereof pivotally secured to said operator, a flexible cable extending from the other of said bell-crank arms to said latch, a stop integrally formed on said bracket for engagement with the other of said bell-crank arms for limiting the pivotal movement of said bell-crank in a latch disengaging direction, said latch being secured to the lower edge of said door and mounted for vertical reciprocation, and a keeper socket mounted in the garage floor for cooperation with said latch.