

Halopoff et al.

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|-----------|--------|---------------------|----------|
| 626,341 | 6/1899 | Phelps | 70/146 |
| 1,167,610 | 1/1916 | Adams..... | 24/129 R |
| 1,583,343 | 5/1926 | Duerden | 24/129 R |
| 2,345,890 | 4/1944 | Daniels et al. | 24/129 R |

20,752 10/1901 Great Britain 24/129 B

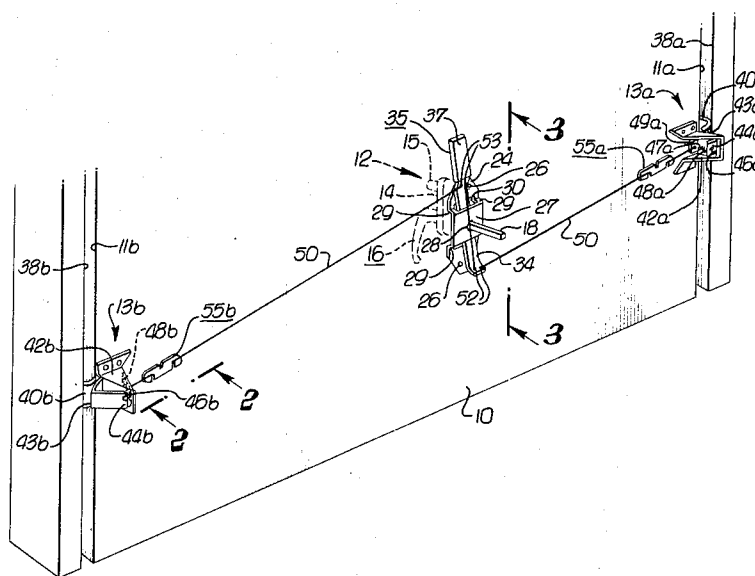
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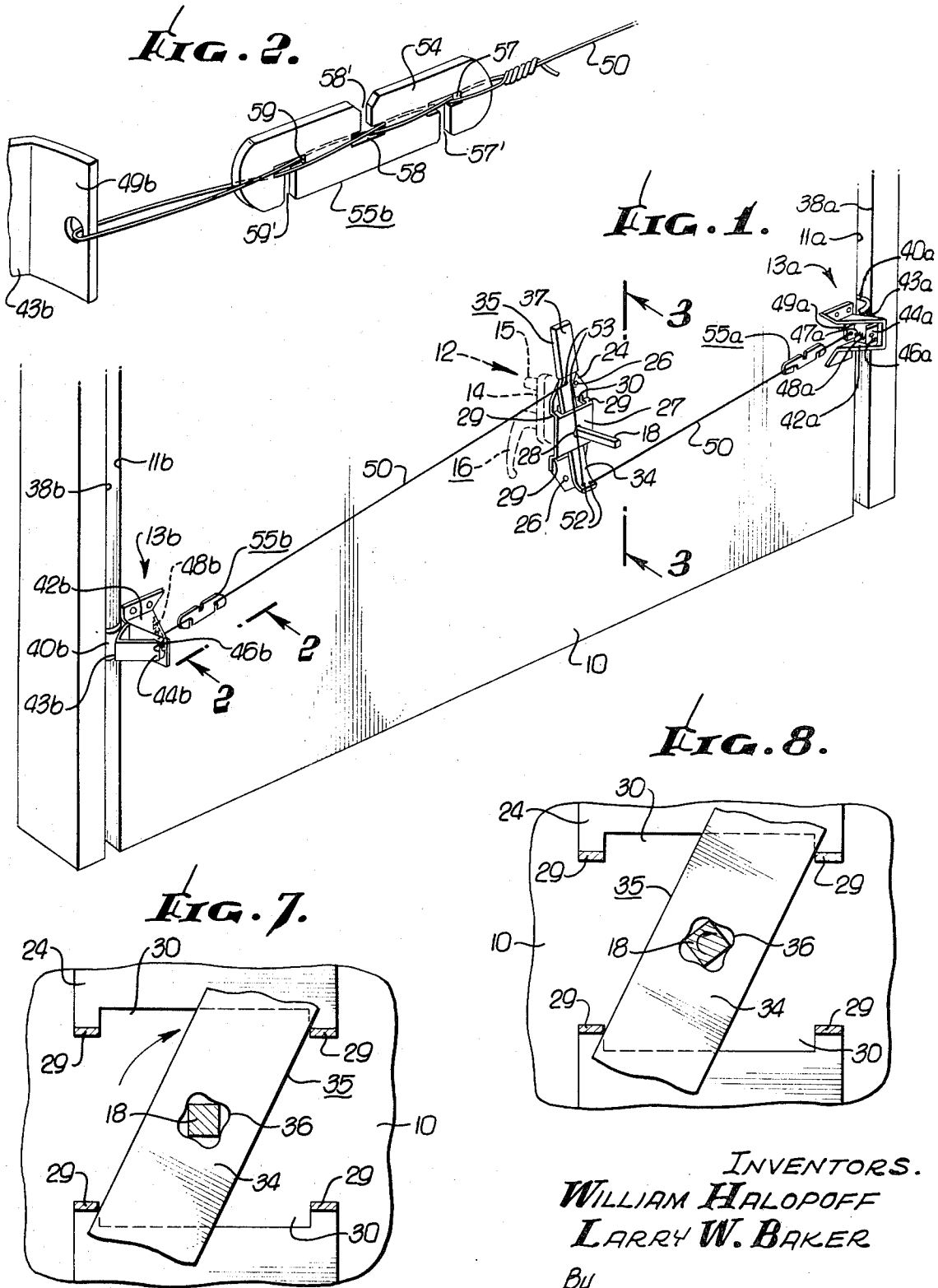
A latching mechanism for an overhead garage door comprised of a center lock on the outside of the door that controls the turning of an outside handle in unison with an inside handle which cooperates with spring latches attached on the sides of the inner surface of the garage door to release the door for opening when the center lock is in an unlocked condition. The inside handle can be turned independently of the outside handle to enable opening the door from the inside of the garage irrespective of whether the center lock on the outside of the door is in a locked or unlocked condition.

6 Claims, 8 Drawing Figures

UNITED STATES PATENTS

2,427,909	9/1947	Howell	70/216
3,177,022	4/1965	McKee et al.	292/50
1,858,804	5/1932	Carlson	70/146





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FIG. 3.

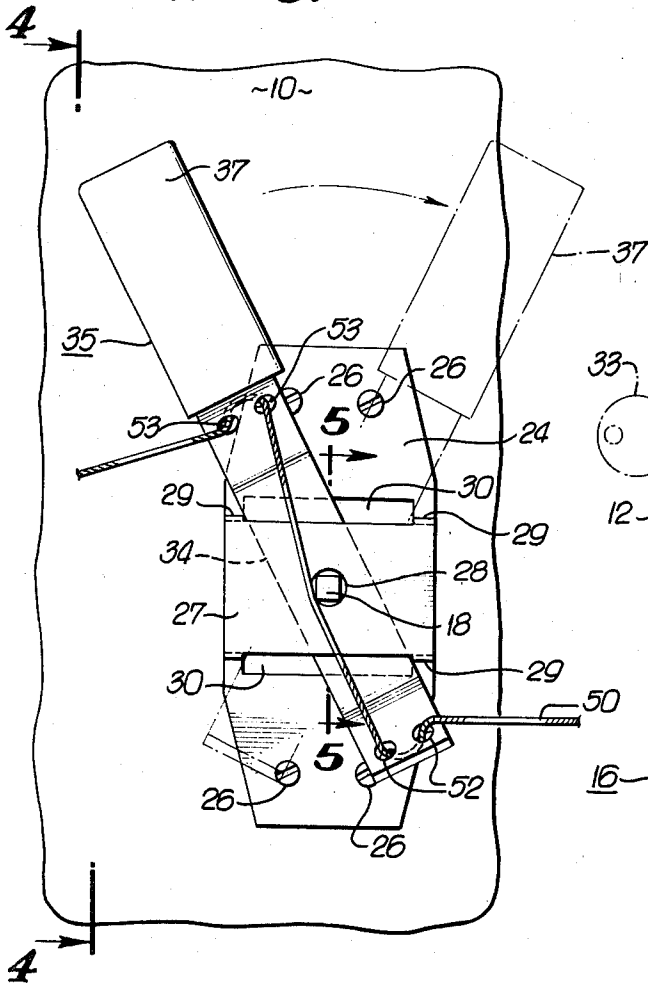


FIG. 4.

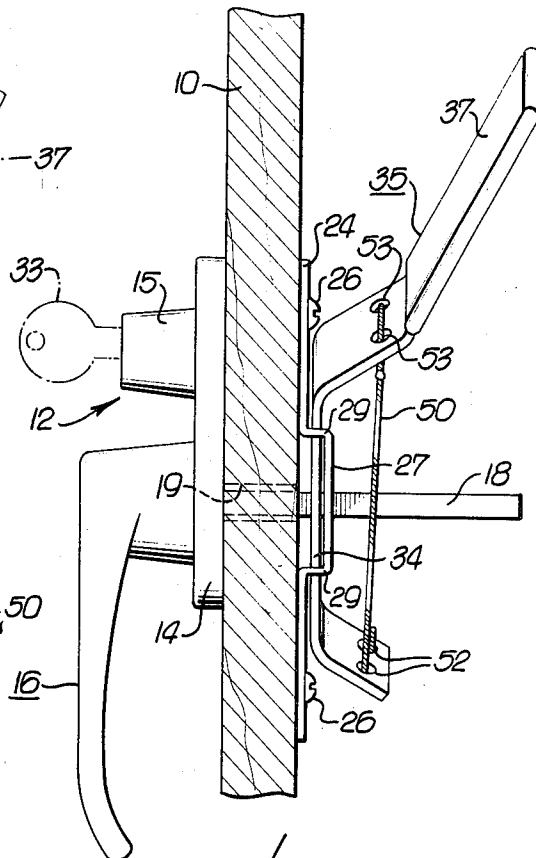


FIG. 5.

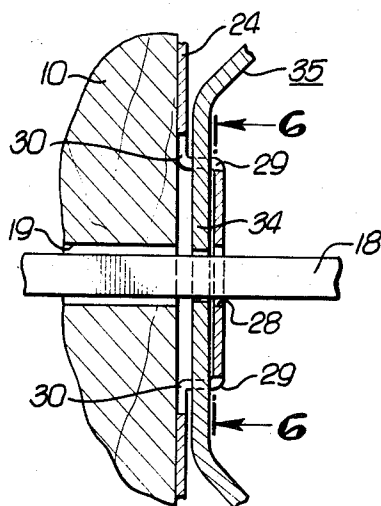
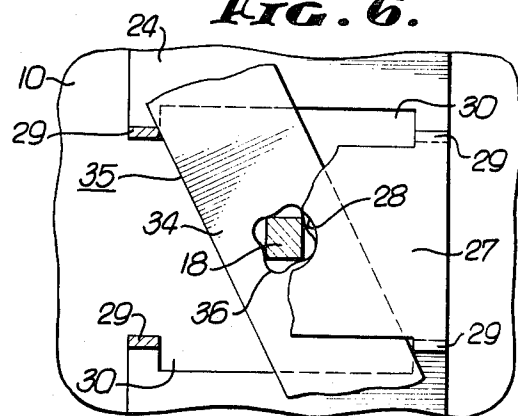


FIG. 6.



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CENTER LOCK INSIDE HANDLE KEEPER

This invention relates to latching mechanism for overhead garage doors and more particularly to improvements in the unlatching of such a mechanism for releasing the door.

It is known in the prior art to provide a lock on the outside of an overhead garage door which controls the rotating of a spindle by a handle provided on the lock. The rotating action of the spindle is coupled to release spring latches provided on the sides of the inner surface of the garage door. Thus when the lock is in a locked condition the handle is prevented from turning to rotate the spindle so as to release the spring latches as required to open the door.

When the opening of an overhead garage door is controlled in this manner, it often happens that one will enter the garage through a side door for the purpose of opening the garage door. If the outside lock on the door is in an unlocked condition, the lock can be provided with an inside handle which can be turned to rotate the spindle and thus release the spring latches. However, if the outside lock is in a locked condition, the spindle is in a fixed position such that it cannot be rotated by the inside handle. When this happens, it is necessary to go outside the garage to unlock the door with the key before it can be opened. In order to avoid such inconvenience, it is thus seen that it would be desirable to be able to open an overhead garage door from the inside of the garage even though the door had been locked from the outside.

Briefly, the present invention provides a latching mechanism for an overhead garage door which includes an outside handle that turns a spindle that extends through the wall of the door to the interior of the garage. The spindle, in turn, rotates an inside handle which is mechanically coupled to withdraw spring latches provided on the sides of the inner surface of the door as required to open the door. A center lock provided on the outside of the garage door can be conditioned by a key to prevent the spindle from rotating when it is desired to lock the garage door. The inside handle is so mounted on the spindle that it can be manually rotated to enable opening the door from the inside of the garage even though the spindle is in a locked condition.

Accordingly, one of the objects of the present invention is to provide a simple latching mechanism that enables an overhead garage door to be opened from the inside of the garage even though the door has been locked from the outside.

Another object of the present invention is to provide a novel cable manipulation arrangement for a latching mechanism for an overhead garage door which facilitates the opening of the door from either the inside or the outside of the garage.

Still another object of the present invention is to provide a simplified latching mechanism using a minimum of parts for being able to manually open an overhead garage door from the inside of the garage irrespective of whether the door lock on the outside of the door is in a locked or unlocked condition.

Still another object of the present invention is to provide a center lock for an overhead garage door which cooperates with spring latch assemblies mounted on either edge of the inside of the door such that the door can be opened from the inside even though it is locked from the outside.

Still another object of the present invention is to provide a novel clip for securely attaching the end of a cable used in the latching mechanism of the present invention.

These and other objects and advantages of the present invention will be apparent from the following description in conjunction with the accompanying drawings, in which:

FIG. 1 is a view of the inside of an overhead garage door showing the preferred embodiment of the latching mechanism of the present invention mounted thereon;

FIG. 2 is a view of a clip for securing the end of the cable used in the latching mechanism taken in the direction of arrows 2—2 in FIG. 1;

FIG. 3 is a front view of the inside handle on the center lock taken in the direction of the arrows 3—3 in FIG. 1;

FIG. 4 is an overall side view of the center lock taken in the direction of the arrows 4—4 in FIG. 3;

FIG. 5 is a sectional view of the inside handle and supporting structure therefor as taken in the direction of the arrows 5—5 in FIG. 3;

FIG. 6 is a view showing the position of the inside handle on the spindle of the lock when the door is latched;

FIG. 7 is a view showing the position of the inside handle on the spindle of the lock when the door has been unlatched by manually turning the inside handle;

FIG. 8 is a view showing the position of the inside handle on the spindle of the lock when the door has been unlatched by manually turning the outside handle.

Referring to FIG. 1, an overhead garage door 10 provided with a latching mechanism in accordance with the present invention is shown as viewed from the inside of a garage. The latching mechanism comprises a center lock 12 mounted on the outside of the door which cooperates with spring latches 13a and 13b attached on the inside of the door adjacent the respective sides 11a and 11b thereof. The center lock 12 mounted on the outside surface of the door 10 includes a front plate 14 with a lock housing 15 on the upper portion thereof and with an outside handle 16 rotatably supported on the lower portion thereof. The outside handle 16 is attached to the outer end of an elongated spindle 18 which extends through an opening 19 (FIG. 5) provided on the door 10. It should be noted that the spindle 18 has a square cross section. A back plate 24 is attached by screws 26 onto the inside surface of the door 10. The back plate 24 is formed with a protruding flat center portion 27 which has a clearance opening 28 through which the spindle 18 extends. The back plate 24 has upper and lower corner extensions 29 which support the protruding flat center portion 27 thereof. An inside handle 35 which includes a spanner portion 34 extends through upper and lower slot 30 formed on the back plate 24 by the extension 29. The spanner portion 34 at the inside handle 35 has a generally square opening 36 (FIG. 6) in the center thereof through which the inner end of spindle 18 passes. The square opening 36 is oriented such that its sides are generally parallel and normal to the sides of the spanner portion 34. As will be described in greater detail hereinafter, the square opening 36 is larger than the square cross section of spindle 18.

Mounted on the respective frame uprights 38a and 38b opposite sides 11a and 11b of the garage door 10 are door stop strikes 40a and 40b. The door stop strikes 40a and 40b are located opposite of the respective spring latches 13a and 13b provided on the sides of door 10. Spring latch 13a includes a bracket 42a for pivotally supporting a tongue 43a. An angular portion 44a of tongue 43a is inserted in a slot 46a provided on the outer portion of the bracket 42a. The end of the angular portion 44a is connected by a spring 48a to the inside edge 47a of the bracket 42a such that the action of the spring 48a normally causes the tongue 43a to be pivoted outwardly so as to engage the door stop strike 40a. The spring latch 13b, which is constructed similarly to spring latch 13a, has a tongue 43b which is normally pivoted outwardly so as to engage the other door stop strike 40b.

A continuous length of cable 50 interconnects the spring latches 13a and 13b via the spanner portion 34 of the inside handle 35. The cable 50 has one of its ends looped about an opening in the lower end 49a of the tongue 43a as shown on the right side of the door 10 in FIG. 1. The cable then passes through a pair of openings 52 provided on the lower end of the spanner portion 34 of the inside handle 35 and then extends upwardly to pass through a pair of openings 53 provided on the upper end of the spanner portion 34. The continuous length of cable 50 then extends so as to be looped to an opening in the lower end 49b of the tongue 43b on the left side of the door 10. Each of the looped ends of the cable 50 is securely held by winding it about the length of the cable and is held from slipping by clips 55a and 55b provided on the cable near each end of the ends thereof.

As shown in FIG. 2, clip 55b is formed of an elongated flat metal member 54 provided with three slots 57, 58, and 59 equally spaced along the length thereof. Slot 58 formed in the center portion of member 54 is provided with a side entrance 58' and slots 57 and 59 formed in the outer portions of member 54 are provided with respective side entrances 57' and 59'. The three slots 57, 58, and 59 of slot 55b are aligned such that the length of the cable 50 extending from the outer end of the spanner portion 34 of inside handle 35 can be woven in one direction through the three aligned slots 57, 58, and 59 and after looping through the opening provided on the lower end 49b of tongue 43b can be woven in the opposite direction and in reverse order through the three aligned slots 59, 58, and 57. Note that the cable 50 successively enters the three slots from the entrances on opposite sides of the clip 55b so as to pass over alternate portions of the respective faces of member 54 in one direction, and over opposite alternate portions of the respective faces in the member 54 when being woven in the opposite direction. The clips 55a and 55b effectively maintain the cable 50 taut by preventing slippage of the ends thereof inasmuch as the greater the stress applied on the cable 50 by the turning of inside handle 35 the greater is the effect of the clips in preventing the ends of the cable from slipping.

It should be understood that when the overhead garage door is in a closed position, the spindle 18 is positioned such that the upper and lower surfaces of its square cross section are horizontal and the inside han-

dle 35 is positioned thereon by its opening 36 at a small angle in a counterclockwise direction away from the vertical, as shown in FIG. 6. With the inside handle 35 in this position the cable 50 is held taut while permitting tongues 43a and 43b of the respective spring latches 13a and 13b to be held by their respective springs 48a and 48b so as to latch the door 10 shut. It should be further understood that when the inside handle 35 is in its closed position, as shown in FIG. 6, the handle 35 is rotated as far as it can rotate in the counterclockwise direction about the spindle 18 which is held in the center lock 12 from further rotating in this direction. It should also be noted that the rotative movement of the inside handle 35 is limited by the extension 29 provided on either end of the slot 30 on the back plate 24.

As will be made clear from FIGS. 3, 6 and 7 when it is desired to open the overhead garage door while still inside the garage, the inside handle 35 is turned in a clockwise direction about the spindle 18 by use of the plastic grip 37. This causes the ends of the cable 50 to be pulled inwardly such as to pivot the tongues 43a and 43b against their springs 48a and 48b so as to withdraw the tongues 43a and 43b from their contact with the door stop strikes 40a and 40b.

Referring to FIGS. 6 and 7 it should be noted that the generally square opening 36 provided on the spanner portion 34 of the inside handle 35 through which the spindle 18 extends is larger than the square cross section of spindle 18. Further, as shown, the sides of opening 36 preferably have a slightly concave shape. When the inside handle is in its closed position, as shown in FIG. 6, it is rotated as far as it can in the counterclockwise direction at a small angle to the vertical such that the sides of the opening 36 bear against the sides of the spindle 18. Thus when the inside handle 35 is manually turned in a clockwise direction from the inside of the garage it is able to freely rotate about the spindle 18 from its closed position shown in FIG. 6 to its open position shown in FIG. 7, so as to pull the ends of the cable 50 inwardly and thus unlatch the tongues 43a and 43b. Note that the inside handle 35 can thus be freely turned to unlatch the door 10 even though the spindle 18 is fixed in position, i.e., locked from the outside. Thus irrespective of whether the overhead garage door 10 is locked or unlocked from the outside the door is able to be unlatched from the inside of the garage by manually turning the inside handle 35.

It should be understood that when the door 10 is locked from the outside the outside handle 16 is unable to rotate the spindle 18 which is held in its fixed position by the center lock 12. When it is desired to open the garage door 10 from the outside, the door 10 is unlocked as shown in FIGS. 4 and 8, by inserting a key 33 in the keyhole of the lock housing 15 to free the spindle 18 such that it can be rotated by the manual turning of the outside handle 16 in a clockwise direction. As a result of this rotating of the spindle 18 by the outside handles 16 the inside handle 35 is made to rotate therewith because of the size and shape of the opening 36 in the spanner portion 34 of inner handle 35 which enables the square sides of the spindle 18 to bear against the concave sides of the opening 36. The rotating of the inner handle 35 in this manner by the outside handle 16, as before, pulls the ends of the cable 50 in-

wardly and thus unlatches the tongues 43a and 43b so as to release the door.

From the above description it will be apparent that there is thus provided a device of the character described and possessing the particular features of advantage before enumerated as desirable but which obviously is susceptible of modification in its form, proportion, detailed construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

What is claimed is:

1. A latching mechanism for an overhead garage door including: door stop strikes for attachment on frame uprights on either side of the door; spring latches for attachment on either side of the door for engaging said door stop strikes when the door is closed; a lock on the outside of the door, said lock including a spindle extending through the door and an outside handle connected to rotate said spindle when turned, said lock being capable of being placed in a locked condition to prevent said outside handle from being turned to rotate said spindle; a stationary back plate anchored to the door and comprising a center portion spaced from the door and providing a space thereunder and a means forming a clearance opening through said center portion having said spindle extending therethrough, an inside handle mounted on the inside of the door on said spindle so as to be turned by the rotation thereof from a closed to an open position; said inside handle having a location extending through said space and beneath said center portion, and a cable connecting said spring latches to said inside handle for withdrawing said spring latches to release the door for opening when said inside handle is turned to its open position; said inside handle being mounted on said spindle with a rotatable lost mo-

tion connection so as to be capable of being turned to its open position to withdraw said spring latches even though said spindle is prevented from being rotated by said lock when said lock is in a locked condition; whereby said overhead garage door can be opened from the inside of the garage even though the door is locked from the outside.

2. The invention in accordance with claim 1 including clips having cable twisting and adjusting openings therein for securing the ends of said cable after being connected to the respective spring latches.

3. The invention in accordance with claim 1 wherein the ends of the cable connected to the respective spring latches extend inwardly to attach to outer portions of said inside handle on opposite sides of said spindle to facilitate the withdrawing of said spring latches to unlatch the door by the turning of said inside handle.

4. The invention in accordance with claim 3 wherein said spindle and said opening in said inside handle are shaped to enable said spindle to bear against said opening to cause the inside handle to be turned when the outside handle is turned to open the door, and to enable the inside handle to freely turn on said spindle when said inside handle is directly turned to open the door.

5. The invention in accordance with claim 1 wherein said spindle has a square cross section and said inside handle has an opening through which the spindle extends of larger square configuration with concave sides; wherein the sides of the spindle bear against the sides of the opening in the inside handle when said inside handle is in its closed position; whereby when said outside lock is in an unlocked condition said spindle and said inside handle can be rotated together by said outside handle for the purpose of opening the door; and whereby irrespective of whether said outside lock is in a locked or unlocked condition said inside handle can be turned on said spindle for the purpose of opening the door.

6. A latching mechanism according to claim 1 wherein there are stop means on said center portion on respective opposite sides of said inside handle having positions of engagement with said inside handle at opposite extreme positions of rotation whereby to limit the extent of rotation of said inside handle.

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