This invention relates to new and useful improvements in garage door openers and locking means and more particularly to automatic means whereby garage doors can be controlled by a vehicle as it approaches the door.

An important object of the present invention is to provide an automatically opening garage door which will open without manual assistance upon release.

Another important object of the invention is to provide a door opening mechanism and latch means therefor, said latch means being adapted to be operated to unlatched position by the weight imposition of a vehicle.

Still another important object of the invention is to provide a door opening mechanism and latch means therefor which is substantially concealed and not capable of being easily tampered with.

Other objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 represents a fragmentary horizontal sectional view taken substantially on the line 1--1 of Figure 2.

Figure 2 is an enlarged vertical sectional view taken substantially on the line 2--2 of Figure 1.

Figure 3 is a horizontal sectional view through the entire lock mechanism.

Figure 4 is a sectional view taken substantially on the line 4--4 of Figure 3.

Figure 5 is a fragmentary elevation and sectional view looking at the inside of the automatic door.

Figure 6 is a vertical sectional view taken substantially on the line 6--6 of Figure 5.

Figure 7 is a perspective view of the connecting rod.

Figure 8 is a perspective view of the latch member.

Referring to the drawings wherein like numerals designate like parts, it can be seen that numeral 5 generally refers to the garage door proper which is made up of a plurality of horizontally elongated door sections 6 hingedly connected together as at 7 and having their end portions disposed in vertical guides 8, the upper portions of which curve as at 9 to extend under the top 10 of a garage structure.

The garage structure has a door frame 10 and on each vertical portion thereof is mounted a pulley 11 over which is disposed a cable 12, one end of which extends downwardly to connect to a spring 13 which, in turn, connects as at 14 to an arm 15 on the lowermost door section 6, while the other end of the cable is equipped with an overbalancing weight 16, to the end that when the door is released the weights 16 will cause raising of the door to open position.

The lowermost door section 6 has a plate 17 at its lower edge slotted to receive a swingable latch member 18, swingably mounted on the base plate 19, this to the end that the garage door may be secured from the inside.

Numerals 20, 20 denotes the latch means which comprises an elongated conduit 21 which at one end extends under the door structure. This means includes an elongated spacer sleeve 21a mounted on a shaft 22 disposed transversely in the conduit 21 and extending between the side walls thereof, this sleeve having a headed latch member 23 extending laterally therefrom and provided with a lip 24 which is engageable over a headed latch member 25 depending from the lower portion of the door 5. In the conduit 21 is a stop member 26 for the latch member 23, which is, of course, rockable with its sleeve 21a on the shaft 22.

A lock 29 is provided just under the top of the conduit 21 and is of the key operated type, this having a bolt 30 which can be projected to a position behind the shoulder portion 2 of the swingable latch 23 to prevent operation of the latch by unauthorized persons.

A tension spring 31 is interposed between the connecting rod 28 and an anchor 32 for the purpose of always maintaining the latch member 23 in a latched position or in a position so that when the door 5 is moved downwardly the latch 25 can easily engage thereunder.

In order that the latch member 23 can be operated without necessarily applying weight to the weight responsive mechanism generally referred to by numeral 33, a pull cord 34 extending from the connecting rod 28 through an opening 35 in the top of the conduit 21 is provided and this pull cord has a finger ring 35 at its outer end.

Furthermore, in order that the latch can be operated from the inside of the door, a rocker 37 is provided at the inside of the conduit 21 with one end pivotally connected as at 38 to the connecting rod 28 while the other end is connected by a cable 39 to a finger ring 40 at the inside of the door 5, this cable 39 extending through a duct 40a formed in a concrete base 41. The concrete
base 41 also receives a laterally disposed conduit 42 in which is a rocker shaft 43, one end of which has an upstanding arm 44 provided with a yoke 45 at its upper end embracing the adjacent end of the connecting rod 28. Said adjacent end of the connecting rod 28 is formed with a slot 46 for receiving a pin 47 which passes through the yoke 45. Thus the connecting rod 28 can be operated by either the ring 40 or the ring 36 without affecting the shaft 43.

The other end of the shaft 43 extends into a box 49 in which there is a pair of shelves 50, 50 on each of which is a compression spring 51 and a compression spring 52. Numeral 53 denotes a cover for the box 49 and this cover rests upon the heads 54 of pins 55 which extend slidably through openings in the shelves 50. The cover 53 also rests upon the heads 56 of pins 57 which extend downwardly through openings in the shelves 50 after passing through the spring 51, and these rods 51 are pivotally connected at their lower ends as at 58 to arms 59 which project laterally from the shaft 43.

Vertically disposed stop members 60 have their upper ends extending through the cover 53 and bent laterally as at 61, these end portions being capped as at 62. The lower ends of the stop members 60 are disposed laterally as at 63 and under a horizontal stop rod 64. Thus the rise of the cover 53 is regulated by the position of the stop member 64 and the lateral portion 63 of the stop member 60.

It can now be seen, that assuming that the door 5 is in closed position, and a car drives along the driveway 70, 16, the wheels of the vehicle being denoted by numeral 71. When one wheel reaches the weight responsive device 33, the cover 53 is depressed resulting in the actuation of the arm 59 on the shaft 43. The shaft 43 is now rotated and exerts a pull on the connecting rod 28, which, in turn, pulls on the latch member 23, disconnecting the lip or snout 24 from the latch member 25 on the lower end of the door 5. The weight 6 now pulls the door 5 to an open position without any manual assistance.

Of course, springs of some other suitable means may be used for elevating the door 5.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. In combination with a garage driveway, a vehicle wheel operative treadle toward one side of the driveway, an underground rocker shaft disposed horizontally transversely of the driveway, a connection between the treadle and one end of the shaft for rocking the shaft when the treadle is depressed, a garage door, an underground connecting rod extending horizontally at a right angle to the shaft, a latch for the door and to which one end of the rod is connected, and operating connections between the other end of the rod and the other end of the shaft, including an upstanding arm on said shaft, said latch being swingably supported.

2. In combination, a garage door, a keeper depending from the lower portion of the door, an underground rod adapted for endwise movement by a treadle, a swingable latch cooperative with the keeper for latching the door in closed position when said rod is moved in one direction, a rocker, one end of the rocker being pivotally secured to the rod to move the same in the opposite direction, a manually operative member at the inside of the door, and a pull connection between the manually operative member and the rocker for rocking the same.

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