

Miller

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- 3,630,094 12/1971 Carli.....49/139

9 Claims, 5 Drawing Figures

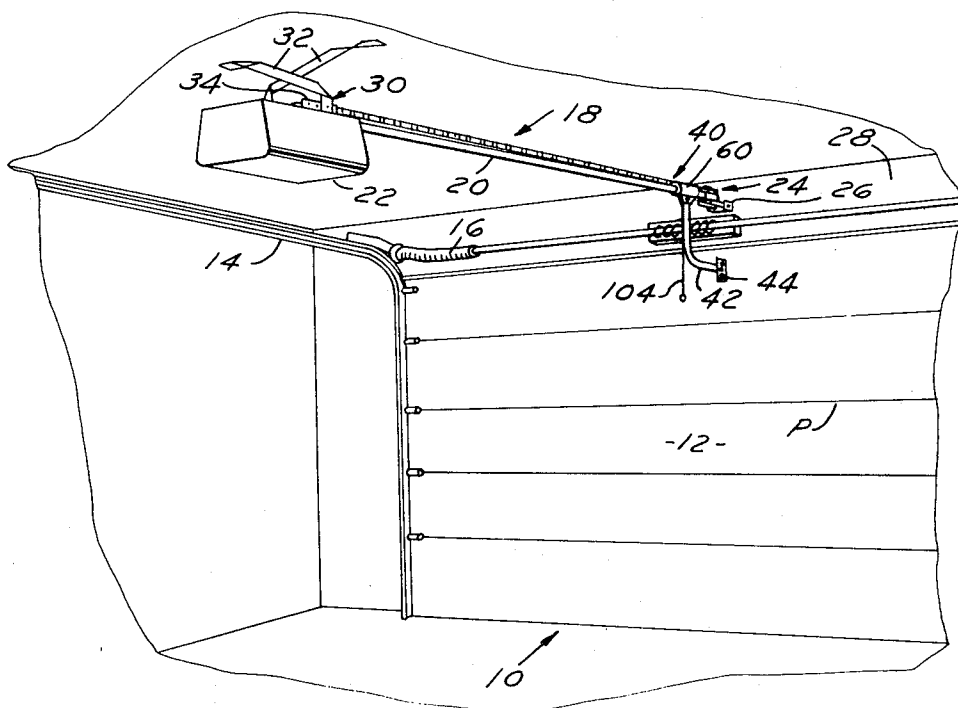


FIG. 1

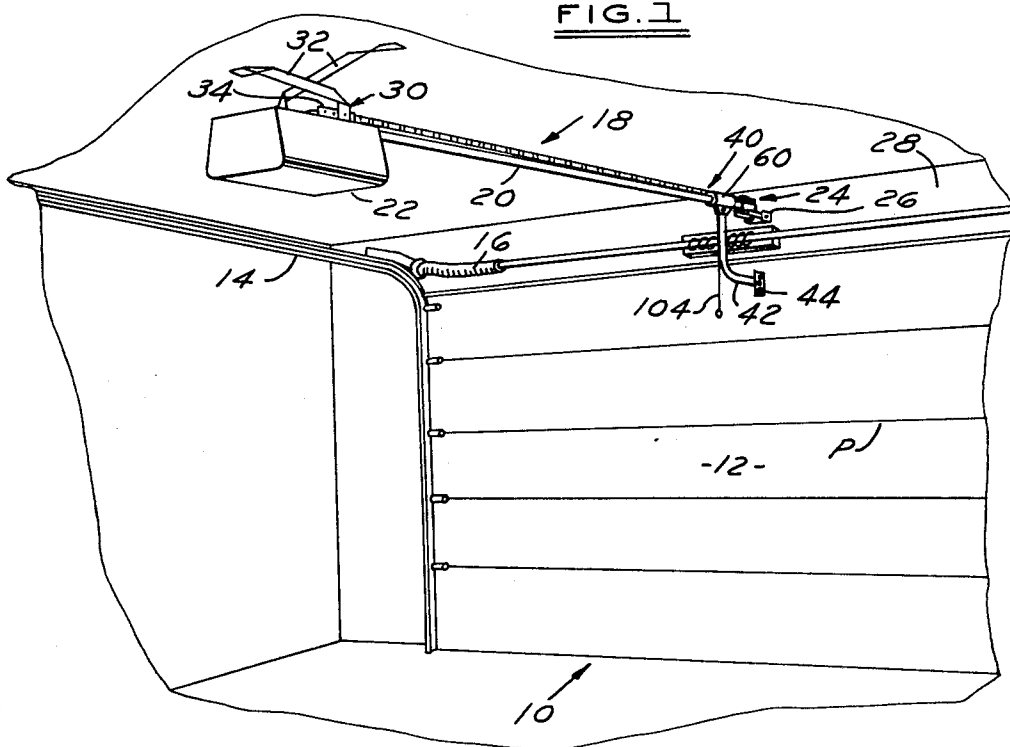
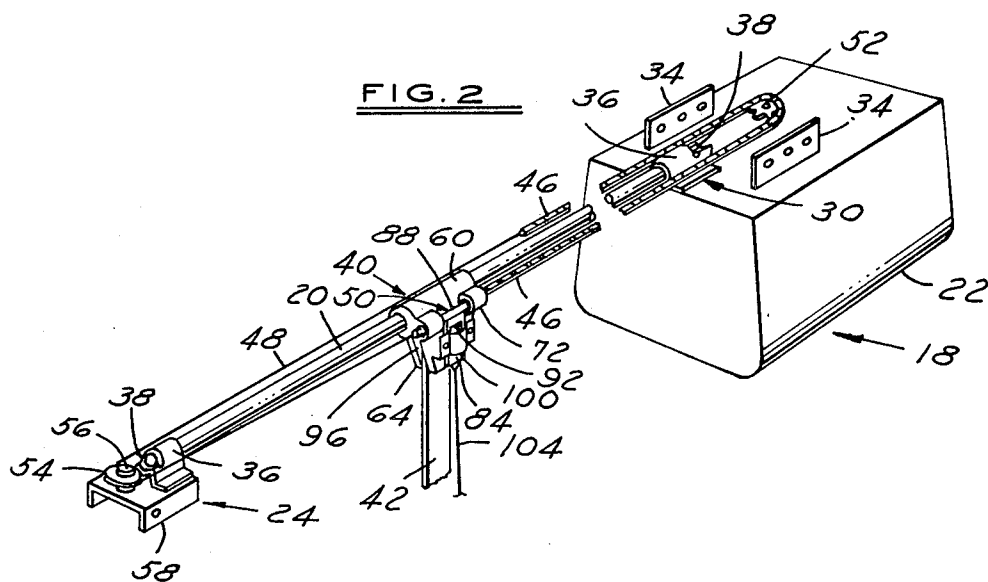


FIG. 2

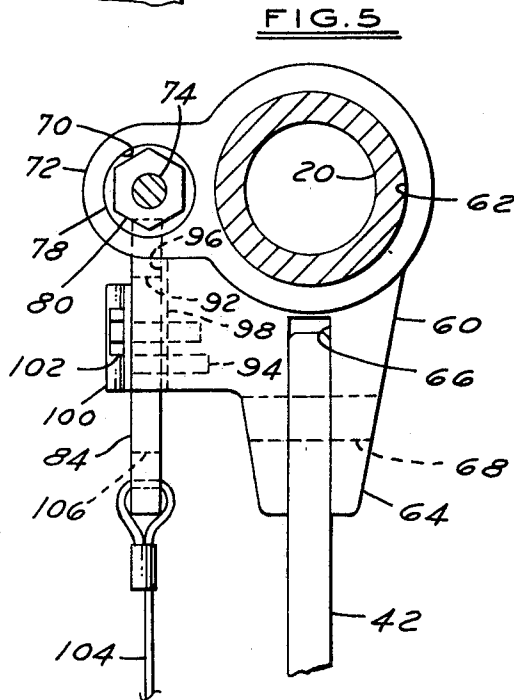
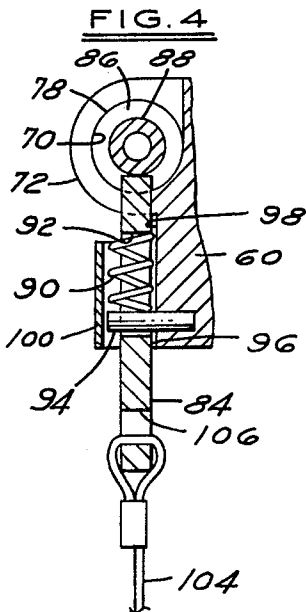
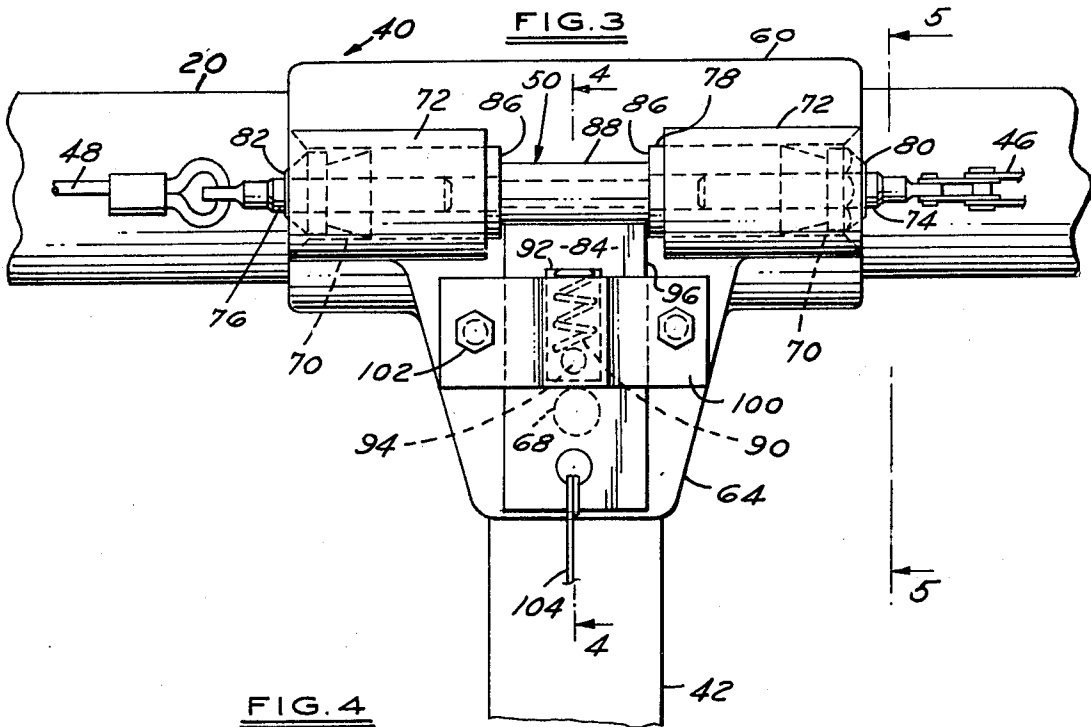


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OVERHEAD DOOR OPERATOR RELEASE

This invention relates to a device for operating garage doors and more particularly to a device for releasing a door actuating arm from the drive of the operating mechanism.

Door operating mechanisms with a device on a T-shape guide track for manually connecting and disconnecting a door actuating arm with the driving mechanism are known.

Objects of this invention are to provide a device for releasing a door actuator arm from the drive mechanism of a door opener which can be automatically re-connected to the drive mechanism to facilitate manual manipulation of the door and which is of economical manufacture and assembly and is relatively maintenance and service-free.

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

FIG. 1 is a perspective view of the interior of a garage with an overhead door connected to a door operator embodying this invention.

FIG. 2 is an enlarged perspective view of the door operator of FIG. 1.

FIG. 3 is a side view of the traveler of FIG. 2.

FIG. 4 is a fragmentary sectional view on line 4—4 of FIG. 3.

FIG. 5 is a sectional view on line 5—5 of FIG. 3.

REFERRING TO THE DRAWINGS

FIG. 1 illustrates the interior of a garage 10 with a conventional sectional overhead door 12 mounted for movement on a vertically and horizontally extending track 14 and having a conventional counterbalance mechanism 16. An overhead door operator 18 with a tubular guide track 20 and a power unit 22 is mounted above garage door 12. A mounting bracket 24 receives the distal end of track 20 and is pivotally connected to a U-shaped bracket 26 fixed to a header 28 of the opening for door 12. The other end of track 20 is received in a receptacle 30 fixed to power unit 22 which is suspended from the ceiling or overhead trusses of garage 10 by cross straps 32 connected to brackets 34 fixed to power unit 22. Receptacles 24 and 30 each have an inverted U-shape metal band 36 with a stop 38 at one end to receive and retain tubular track 20. Overhead operator 18 has a traveler 40 carried by track 20 and connected to door 12 by an actuator arm 42 pivotally connected at one end to a bracket 44 fixed to the door. As shown in FIG. 2, traveler 40 is reciprocated on track 20 by a closed loop of driving chain 46 and a cable 48 interconnected by a turnbuckle 50. Chain 46 is driven through a driving sprocket 52 connected through an appropriate clutch and drive mechanism to a motor (not shown) in power unit 22. Cable 48 is looped around an idler pulley 54 mounted for free rotation on a stud 56 fixed to a base plate 58 of receptacle 24. Alternatively, the closed loop can be of chain only rather than chain 46 and cable 48.

Traveler 40 is releasably connected to turnbuckle 50 for reciprocation on guide track 20 by the power shuttle and can be released from the turnbuckle for reciprocating movement with respect to the turnbuckle. As shown in FIGS. 3, 4 and 5, traveler 40 has a one-piece body 60 preferably formed of a high density

polyvinyl ethylene plastic material. Body 60 is mounted for sliding reciprocation on tubular guide track 20 by a bore 62 extending longitudinally therethrough. The plastic material of body 60 provides a low friction bearing surface for bore 62 so that body 60 readily slides on tubular track 20. Body 60 has an integral depending arm 64 with a longitudinally extending slot 66 therethrough which pivotally receives one end of actuator arm 42 which is retained therein by a transverse pivot pin 68. Turnbuckle 50 is slideably received in a bore 70 extending longitudinally through integral spaced projections 72 of body 60. Turnbuckle 50 has right-hand and left-hand threaded eyebolts 74 and 76 connected to chain 46 and cable 48, respectively, and threadably received in the opposite ends of an elongate bolt or body 78. Eyebolts 74 and 76 are locked in position in bolt 78 by jam nuts 80 and 82. Turnbuckle 50 is releasably retained in traveler body 60 by a latch 84 extending between opposed shoulders 86 of a central reduced shank portion 88 of bolt 78. Latch 84 is yieldably biased into reduced shank portion 88 by a spring 90 received in a rectangular aperture 92 in latch 84 and bearing on a transverse pin 94 fixed to body 60. Latch 84 is slideably received in a slot 96 in body 60 and clearance is provided for spring 90 by a longitudinal groove 98 in the slot. Spring 90 and latch 84 are retained in operable relation in body 60 by a bracket 100 fixed to the body by self-tapping screws 102. A trip cord 104 is connected to the lower end of latch 84 through a hole 106.

In normal operation of overhead door operator 18, a power shuttle, such as chain 46, cable 48 and turnbuckle 50, drives traveler 40 back and forth on guide track 20 to open and close door 12. Traveler 40 is pivotally connected with door 12 through actuator arm 42 and releasably connected to the power shuttle by yieldably biased latch 84 engaging in reduced shank portion 88 of turnbuckle 50 to bear on opposed shoulder 86 when traveler 40 is moved by the power shuttle. In the event of a power failure, malfunction of door operator 18, or if desired for any other reason, door 12 can be manually raised and lowered by releasing traveler 40 from its connection with the power shuttle. Traveler 40 is released from the power shuttle by pulling downward on trip cord 104 to move latch 84 against the bias of spring 90 and disengage the latch from reduced shank 88 and shoulders 86 of turnbuckle 50. Disengagement of latch 84 allows turnbuckle 50 to move with respect to and pass out of traveler 40 as door 12 is raised or lowered. Latch 84 automatically re-engages and retains turnbuckle 50 in traveler 40 whenever door 12 is manually manipulated so that the turnbuckle re-enters traveler 40 in the position shown in FIG. 3. This allows the traveler to be readily re-connected to the power shuttle when it is desired to resume using door operator 18 to open and close door 12.

I claim:

1. A traveler adapted to use in a door operating mechanism with a linear power shuttle having a closed driving loop, a tubular guide track extending generally parallel to the path of travel of the power shuttle closed driving loop, and an actuator arm adapted to be connected to a door to raise and lower the door comprising:

a one-piece body of a plastic material carried by the guide track for generally longitudinal movement thereon,
 means adapted to connect said body to the actuator arm,
 a bolt adapted to be connected in the closed driving loop of the power shuttle for reciprocating movement in the closed driving loop by the power shuttle,
 guide means integral with said body and adapted to slidably receive and allow said bolt and a portion of the closed driving loop to pass therethrough,
 a latch carried by said body for generally reciprocal movement in a path extending generally transversely to the longitudinal axis of said bolt when received in said guide means and adapted to releasably engage and retain said bolt within said guide means for reciprocating movement of said body with said bolt by the power shuttle without ever retaining any other portion of the closed driving loop when it passes through said body when said bolt is released by said latch, and biasing means continuously yieldably urging said latch into said guide means and into engagement with said bolt when received in said guide means for automatically retaining said bolt whenever said bolt is received in said guide means,
 whereby when said bolt is retained by said latch in said guide means, the power shuttle will reciprocate said body to move the actuator arm and open and close the door, and said latch can release said bolt so that said body can move with respect to said bolt and the closed driving loop of the power shuttle to allow the door to be manually moved without disconnecting the actuator arm from said body and will automatically reconnect said body with said bolt when said bolt reenters said body to recouple said body with the closed loop of the power shuttle for reciprocation thereby.

2. In combination, an overhead garage door operating mechanism with a tubular guide track and a linear reciprocating power shuttle operating an actuator arm adapted to be connected to a door to raise and lower the door, a traveler having a one-piece body of a plastic material having a bore therethrough slidably receiving said guide track for reciprocal movement of said body thereon, means adapted to pivotally connect said body to said actuator arm, an elongate bolt connected to said power shuttle for reciprocating movement therewith, said bolt having a reduced diameter intermediate its ends providing a notch with a pair of spaced generally opposed shoulders adapted to slidably receive said latch therebetween, a guide bore through said body adapted to slidably receive and allow said bolt to pass therethrough, a movable latch carried by said body for generally reciprocal movement in a path extending generally transversely to the longitudinal axis of said bolt when received in said guide bore and adapted to engage and releasably retain said bolt in said guide bore of said body, and biasing means continuously yieldably

urging said latch into said guide bore and into retaining engagement with said bolt by extending into said notch when said bolt is received in said guide bore with said notch aligned with said latch for automatically retaining said bolt whenever said bolt is received in said guide bore with said notch in alignment with said latch, whereby when said bolt is retained by said latch in said body, said power shuttle will reciprocate said body on said guide track to move said actuator arm to open and close the door and said latch can disengage from said bolt so that said body can move with respect to said bolt and the power shuttle to allow the door to be manually moved without disconnecting the actuator arm from said body and will automatically reconnect said body with said bolt when said bolt reenters said body to recouple said body with the power shuttle for reciprocation thereby.

3. The combination of claim 2 in which said power shuttle has a closed loop and said bolt comprises a turnbuckle connected to the closed loop to adjust the length thereof.

4. The combination of claim 2 in which said body has a groove therein slidably receiving said latch for generally longitudinal movement with respect to said body generally transversely to the axis of said guide bore.

5. The combination of claim 3 in which said body has a groove therein slidably receiving said latch for generally longitudinal movement with respect to said body generally transversely to the axis of said guide bore.

6. The combination of claim 4 in which said one-piece body has a depending integral homogeneous arm with a slot therethrough adapted to receive one end of the actuator arm therein for pivotal movement with respect to said body.

7. The combination of claim 5 in which said one-piece body has a depending integral homogeneous arm with a slot therethrough adapted to receive one end of the actuator arm therein for pivotal movement with respect to said body.

8. The combination of claim 2 in which said body has a groove therein for slidably receiving said latch for generally longitudinal movement with respect to said body generally transversely to the axis of said guide bore, said latch comprises an elongate member having a generally flat portion slidably received in said groove with an end of said flat portion adapted to be removably received in said reduced diameter portion of said bolt between said generally opposed shoulders of said bolt, said flat portion having a generally longitudinal elongate slot therethrough and said biasing means comprising a spring received in said slot and bearing on said elongate member to yieldably urge said end thereof into said reduced diameter portion of said bolt.

9. The combination of claim 8 which also comprises a bracket fixed to said body and adapted to retain said elongate member in said groove and said spring in said elongate member.

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