March 8, 1932. O. E. BROWER 1,848,311

OVERHEAD DOOR

Filed Jan. 30, 1930

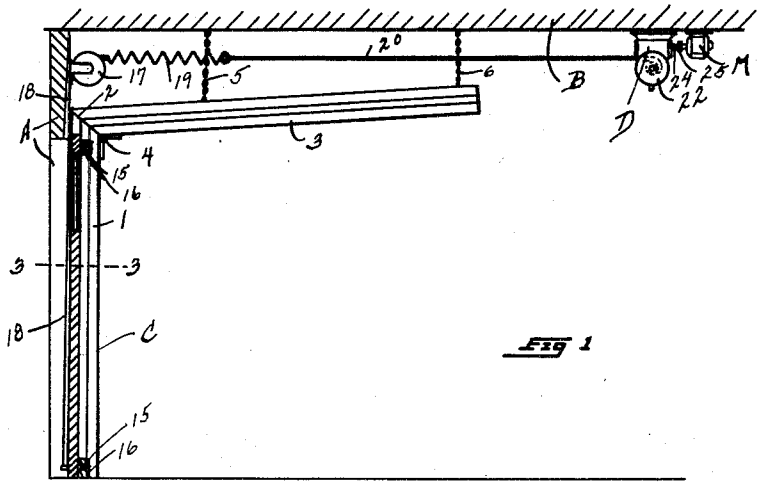


Fig 1

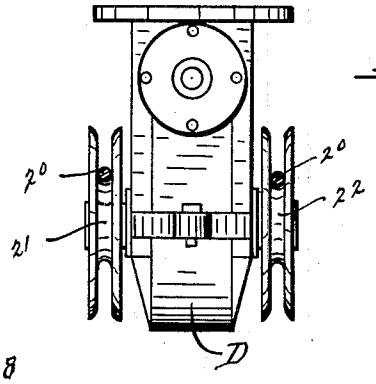


Fig 2

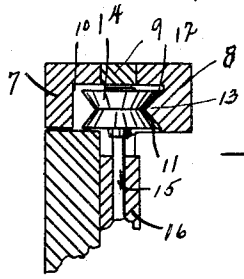


Fig 3

Inventor

Ormus E. Brower

By R. M. Thomas

Attorney

Patented Mar. 8, 1932 1,848,311

UNITED STATES PATENT OFFICE

ORMUS E. BROWER, OF SALT LAKE CITY, UTAH

OVERHEAD DOOR

Application filed January 30, 1930. Serial No. 424,704.

My invention relates to overhead doors and has for its object to provide a new and efficient mechanism for raising doors up overhead out of the way and at the same time open the door and place the door in such a position as to be out of the way.

A further object is to provide an overhead door which will raise the door to a position approximately horizontal and which raising mechanism will be motor operated to eliminate manual labor.

A still further object is to provide an overhead closure which will raise the closure efficiently, quickly and with little power expended and which will lower the closure to its position just as quickly and easily, with means to take up the excess speed, due to the weight of the closure, when it is closing.

This device may be used to operate any closure such as doors for garages, warehouses etc., for gates, partitions and other temporary closures, or for any closure where it is desired to raise the closure overhead and where there is not sufficient room to allow for anything but a horizontal position over the opening.

These objects I accomplish with the device illustrated in the accompanying drawings in which similar numerals and letters of reference indicate like parts throughout the several views and as described in the specification forming a part of this application, and pointed out in the appended claim.

In the drawings in which I have shown the best and most preferred manner of building my invention Figure 1 is a section longitudinally through the closure or door and showing the operating mechanism in elevation. Figure 2 is an end view of the operating mechanism for winding the cables. Figure 3 is a section on line 3—3 of Figure 1.

In the drawings I have shown the door frame as A, and the roof of the building as B. Adjacent the door frame on each side I mount a vertical track 1, and the top end of the track 1 is cut on an angle at 2, and inclined track 3 is hinged thereto by a hinge 4. The inclined track slopes slightly toward the roof with support members 5 and 6 supporting it from the roof, flexible so that it may adjust itself to the correct position and to the width of the door used. The tracks 1 and 3 are made the same and are made of two, two by four pieces of timber 7 and 8, secured together by a spaced timber 9. The track 7 is cut away in a right angled hole 10 and the track 8 has its outer edge beveled at 11 and a groove 12 cut in said track adjacent the bevel so that when the piece is finished it leaves an angled guide 13 near the edge thereof. The door C of my garage is made in one piece with rollers 14 secured at or near all four corners thereof, said rollers being carried on stub shafts 15 with the stub shafts secured to the door by blocks 16. The rollers are made with a grooved face therein similar to sheave wheels with the grooved face adapted to run over and engage with the angled guide 13 of the tracks 1 and 3.

Directly above the center of the door I secure a sheave wheel 17 which sheave wheel carries a cable 18. One end of the cable 18 is secured to the outer lower edge of the door C, and the other end is secured to a tension spring 19. The other end of the spring 19 has two cables 20 attached thereto and the cables 20 are carried and operated and wound on two spaced apart grooved drums 21 and 22. The drums 21 and 22 are carried on a horizontal shaft operated from a worm gear speed reducer D of any suitable type and of about 80 to 1 reduction. A motor M drives the speed reducer by the direct drive shaft 24 and a flexible coupling 25. Both speed reducer and the motor are mounted on the roof or on the side wall of the building and suitable switches are provided to control the motor to rotate it in either direction as required and to stop it when the door is completely open and just before the door is completely closed.

The operation of my invention is as follows:—

The motor is operated which winds the cables 20 on the drums 21 and 22 and flexes the spring 19 until the tension of the spring is sufficient to overcome the weight of the door. the door is then raised and as it is raised the direction of the track directs the top and end inwardly and the lower end directly upwardly until the lower edge has been raised

around the joint of the tracks when the entire door may roll in along the track 3 if desired. Preferably the motor will be stopped before the door has quite reached its highest position when the spring tension will completely raise the door. To lower the door the motor is started and the weight of the door will draw the cables from the drums 21 and 22 and the door will close. When the door is nearly closed the motor is shut off and the weight of the door will close itself with the tension of the spring 19 to hold the door from falling too fast after it has reached its lower positions and to prevent the door from hitting the floor too hard.

Having thus described my invention I desire to secure by Letters Patent and claim:—

In an overhead door the combination of a door having guide rollers mounted at each corner thereof; vertical tracks mounted at each edge of said door in which said rollers are operated; sloping tracks hingedly secured to said vertical tracks in alignment therewith; the outer free ends of which are supported from overhead by flexible means; and means to raise said door comprising a motor actuated drum; a cable secured to said drum and to a spring; another cable secured to the other end of said spring and to the bottom of the door substantially as described.

In testimony whereof he has affixed his signature.

ORMUS E. BROWER.