Oct. 20, 1931. S. H. GAY 1,828,137

CLOSURE OPERATOR

Filed Nov. 14, 1930 2 Sheets-Sheet 1

Fig 1

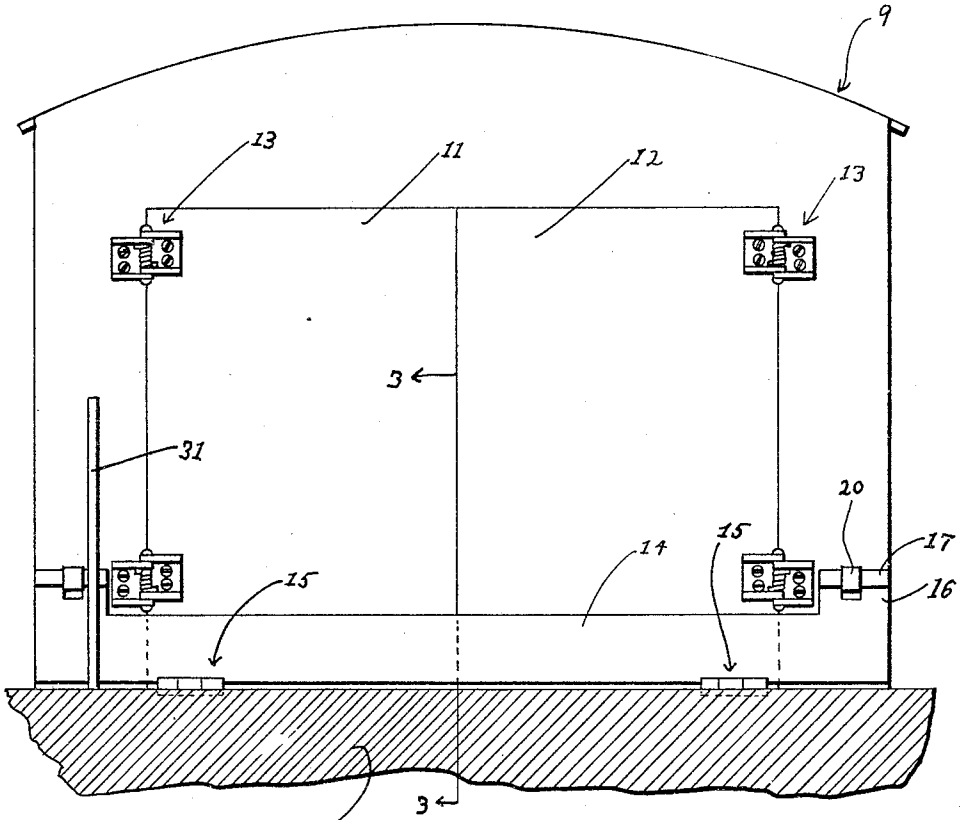


Fig 4

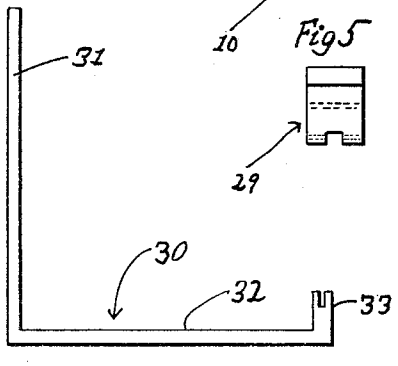


Fig 5

Fig 6

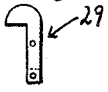
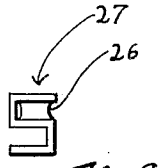


Fig 8



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CLOSURE OPERATOR

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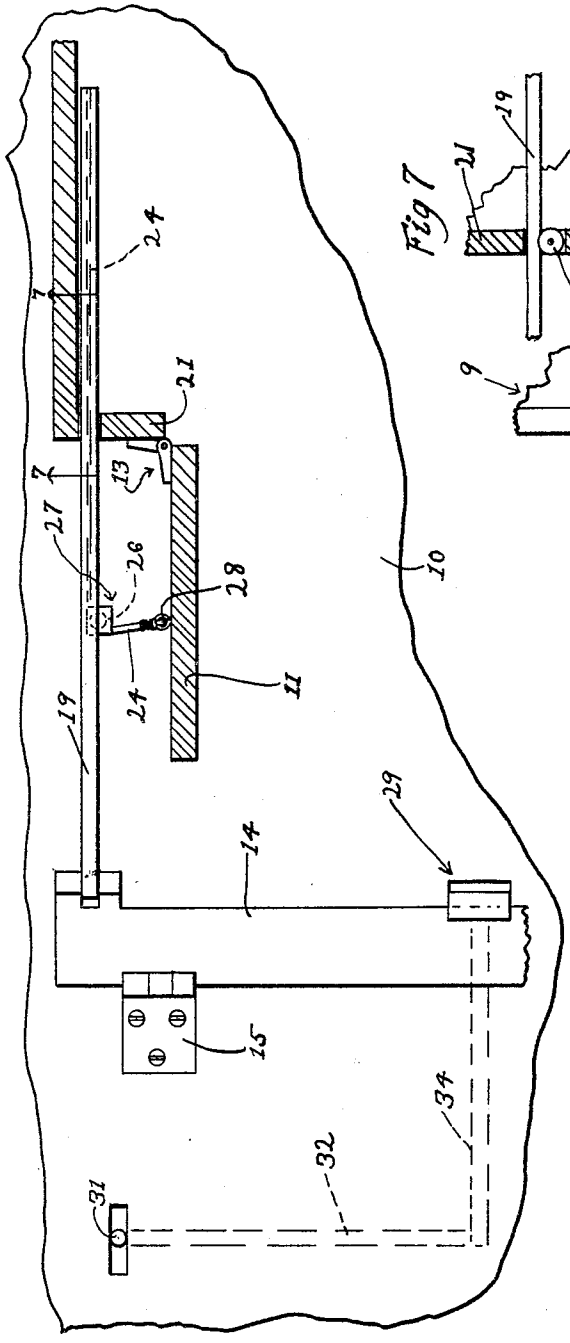


Fig 2

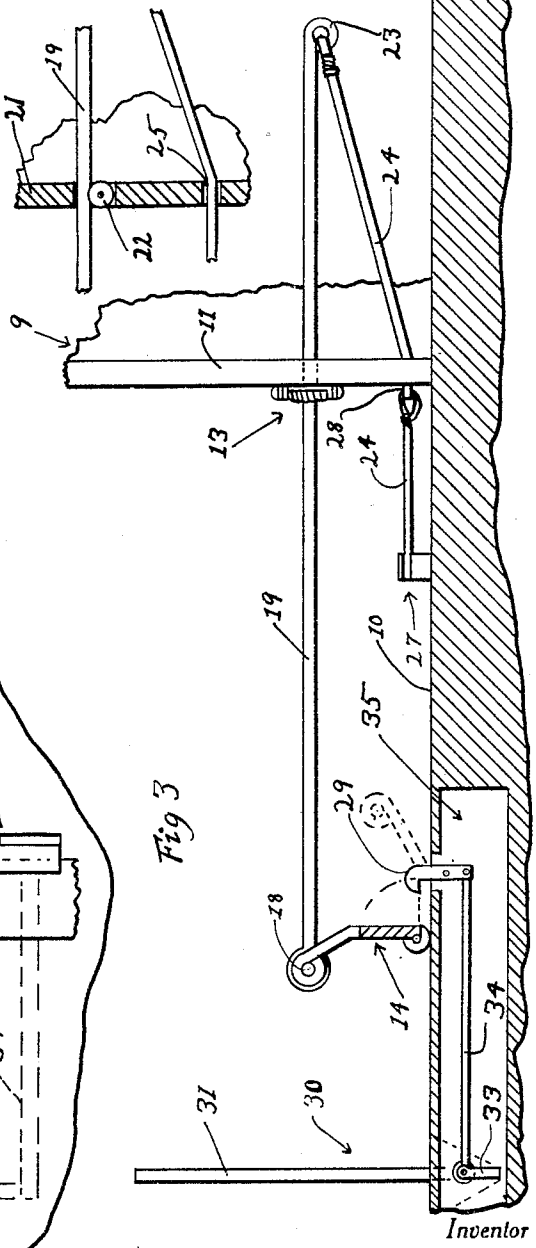


Fig 3

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Patented Oct. 20, 1931

1,828,137

UNITED STATES PATENT OFFICE

STEPHEN H. GAY, OF DALLAS, TEXAS

CLOSURE OPERATOR

Application filed November 14, 1930. Serial No. 495,759.

This invention relates to an operating device for closures, and it has more particular reference to a garage door assembly and vehicle actuated door opening means.

More specifically related, the inventive conception comprehends an arrangement which embodies a swingably mounted horizontally disposed barrier plate which is arranged in advance of the horizontally swinging garage doors and which has operating connection with the doors for drawing or pulling the doors to open position, manually manipulated release means being provided for permitting the doors to be returned to closed position through the medium of spring means.

The particular details and their relative arrangement thereof will become more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is a rear elevational view of a garage equipped with the invention as developed in accordance with the present conception.

Figure 2 is a plan or horizontal fragmentary sectional view with one of the doors swung to open position.

Figure 3 is a vertical sectional view taken approximately on the plane of the line 3—3 of Figure 1.

Figure 4 is a detail view of a rocker lever.

Figures 5 and 6 are details of the trip latch.

Figure 7 is a detail view approximately on the plane of the line 7—7 of Figure 2.

Figure 8 is a detail view of the pulley-equipped guide bracket.

Referring to the drawings in Figure 1, the garage or building is generally designated by the numeral 9. The foundation or floor is indicated at 10. The garage doors are represented by the numerals 11 and 12. The hinges are indicated generally by the numerals 13. These hinges are such as to permit the doors to swing open in a horizontal plane in the usual way and each hinge includes a coiled spring, the tendency of which is to swing the doors to closed position automatically. Mechanical means is therefore necessary to open these doors against the tension or action of the springs in the hinges.

Referring now to Figures 1, 2 and 3, it will be observed that the numeral 14 designates generally a barrier which is hingedly mounted at 15 on the foundation or floor. This is swingable in a direction toward the doors as seen in dotted lines in Figure 1. At its ends, the plate is provided with extensions 16 having knuckles 17 provided with a pin 18. There is a horizontal operating rod 19 pivotally connected as at 20 with the pin 18. The rod extends in a horizontal plane and in parallelism to the floor through a guide hole formed in the door frame 21. This is shown in Figure 7.

In this hole is an anti-friction pulley 22 to facilitate reciprocatory motion of the rod. At its inner end the rod terminates in an eye 23 with which a pull cable or cord 24 is connected. This cord extends downwardly and out through a guide hole 25 in the frame, where it is trained over a pulley 26, on an especially designed guide bracket 27. The guide bracket is anchored underneath the rod 19 as shown in Figure 2.

The opposite end of the cable is attached as at 28 to the lower intermediate portion of the adjacent door. As before stated, this arrangement is duplicated for each door. The result is that when a vehicle comes along the runway and runs against the barrier 14, it will push the barrier down to the dotted line position shown in Figure 3. This will exert a rearward thrust and sliding action upon the rod 19. The rod will in turn exert a pull on the cable 24 thus tightening the cables and swinging the doors outwardly to open position against the tension of the spring hinges 13.

As the barrier plate 14 is swung down, it is caught in this position by a pivotally mounted latch 29 as shown in Figure 3. There is a rocker provided at 30 and this includes an upstanding lever 31 and a horizontal rocker shaft 32 mounted for rotation in suitable bearings. On the inner end of the rocker shaft is a rocker arm 33 which is in turn connected with a link 34. The link extends inwardly into the recess or compart-

ment 35 where it is pivotally connected with the lower end portion of the latch 29.

It follows that by grasping the lever 31 and moving it in the proper direction, the latch 29 will be disengaged from the plate 14. Through the medium of the spring hinges, the door will be automatically swung to closed position.

Briefly, the operation of the device is as follows: The vehicle comes along the runway or foundation 10 and the front wheels come into contact with the abutment or barrier plate 14. The vehicle continues to move toward the doors and in so doing, swings the plate inwardly and downwardly to the dotted line position represented in Figure 3.

As the plate is swung down, it is engaged and held down by the latch 29. This does not require the driver to get out of the machine, for as the plate 14 swings down, it operates the pull cables 24 through the medium of the operating rod 19. As before stated, this swings the doors to open position and allows the vehicle to enter the garage.

In order to close the doors however, it is necessary for the driver of the car to catch hold of the lever 31 and to move it to a position to release the latch 29 and to allow the springs of the hinges 13 to return the operating means to normal set position. In coming out of the garage, the doors may be swung open by hand so that the plate 14 may be held down to allow free exit to be made.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary. Minor changes in shape, size, and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice if desired.

I claim:

1. In a structure of the class described, in combination, a foundation, a garage including a door frame, a door mounted for horizontal swinging in said frame, spring means for normally urging the door to closed position, a pivotally mounted vehicle actuated operating plate on the foundation in advance of the door and frame, said frame being provided with upper and lower guide holes, an operating rod extending through the upper guide hole into the interior of the garage, the outer end of said rod being connected with one end of the plate, a cable connected with the inner end of said rod, a pulley equipped bracket on the outside of the garage, said cable extending out through the remaining guide opening in the frame and being trained over said guide bracket with its terminal fastened to the lower central portion of the door.

2. In a structure of the class described, in combination, a foundation, a garage including a door frame, a door mounted for horizontal swinging in said frame, spring means for normally urging the door to closed position, a pivotally mounted vehicle actuated operating plate on the foundation in advance of the door and frame, said frame being provided with upper and lower guide holes, an operating rod extending through the upper guide hole into the interior of the garage, the outer end of said rod being connected with one end of the plate, a cable, connected with the inner end of said rod, a pulley equipped bracket on the outside of the garage, said cable extending out through the remaining guide hole in the frame and being trained over said guide bracket with its terminal fastened to the lower central portion of the door, a rockshaft mounted in the foundation, an operating lever for said rockshaft, a latch engageable with said plate when the plate is in depressed position, and a link connection between the rockshaft and latch.

3. In a structure of the class described, in combination, a foundation, a garage on said foundation including a door frame, a pair of outwardly swingable doors mounted in said frame, spring means for automatically urging said doors to normally closed position, a barrier plate hingedly mounted on the foundation in advance of said doors, said plate being in the path of movement of a vehicle to permit the vehicle to run against the plate and to swing the plate down to depressed position, and operating connections between the end portions of the plate and doors, each connection comprising a horizontal rod pivotally connected at its outer end to an adjacent end portion of the plate and extending slidably through a guide hole in the frame into the interior of the garage, a pull cable connected to the inner end of said rod and extending outwardly through a guide opening in the frame, a pulley equipped bracket on the foundation spaced from the frame, the terminal end of said pull cable being trained over said pulley and extending in and anchored on the lower central portion of the adjacent door.

4. In a structure of the class described, in combination, a foundation, a garage on said foundation including a door frame, a pair of outwardly swingable doors mounted in said frame, spring means for automatically urging said doors to normally closed position, a barrier plate hingedly mounted on the foundation in advance of said doors, said plate being in the path of movement of a vehicle to permit the vehicle to run against the plate and to swing the plate down to depressed position, and operating connections between the end portions of the plate and doors, each connection comprising a horizontal rod pivotally connected at its outer end to an adjacent end portion of the plate and extending

slidably through a guide hole in the frame into the interior of the garage, a pull cable connected to the inner end of said rod and extending outwardly through a guide opening in the frame, a pulley equipped bracket on the foundation spaced from the frame, the terminal end of said pull cable being trained over said pulley and extending in and anchored on the lower central portion of the adjacent door, said foundation being formed with a latch compartment, a latch pivotally mounted in said compartment and having its upper end engageable with the plate when the latter is swung down to depressed position, a rockshaft mounted in said foundation and having a rocker arm on one end and an operating lever on the opposite end, said lever extending up above the foundation to permit it to be conveniently grasped by the driver, and a link connection between the rocker arm and latch.

In testimony whereof I affix my signature.

STEPHEN H. GAY.