Aug. 26, 1952 S. E. ANDERSON 2,608,010

DRIVE-THROUGH GATE

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FIG. 1.

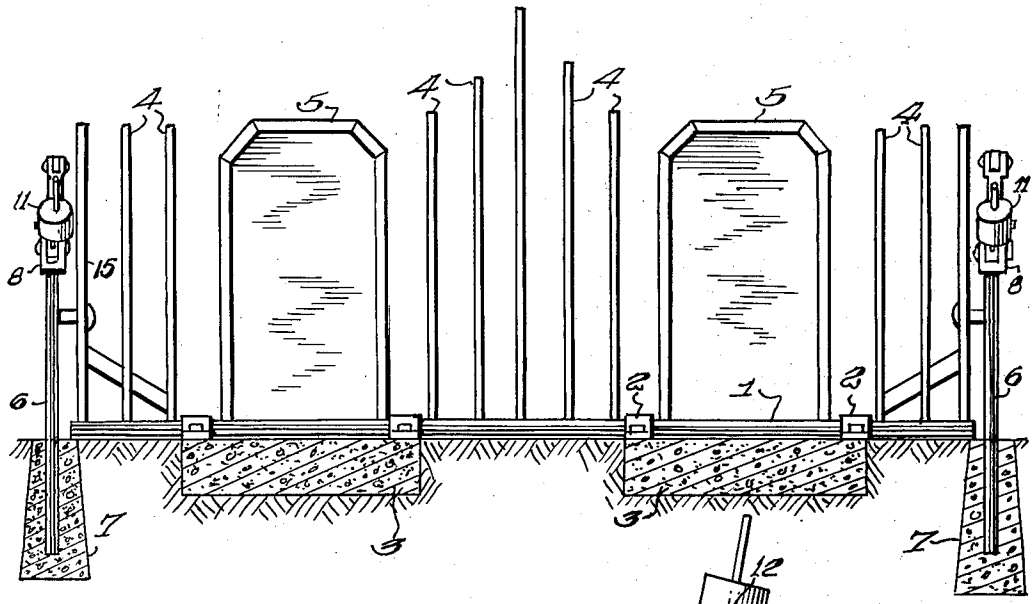
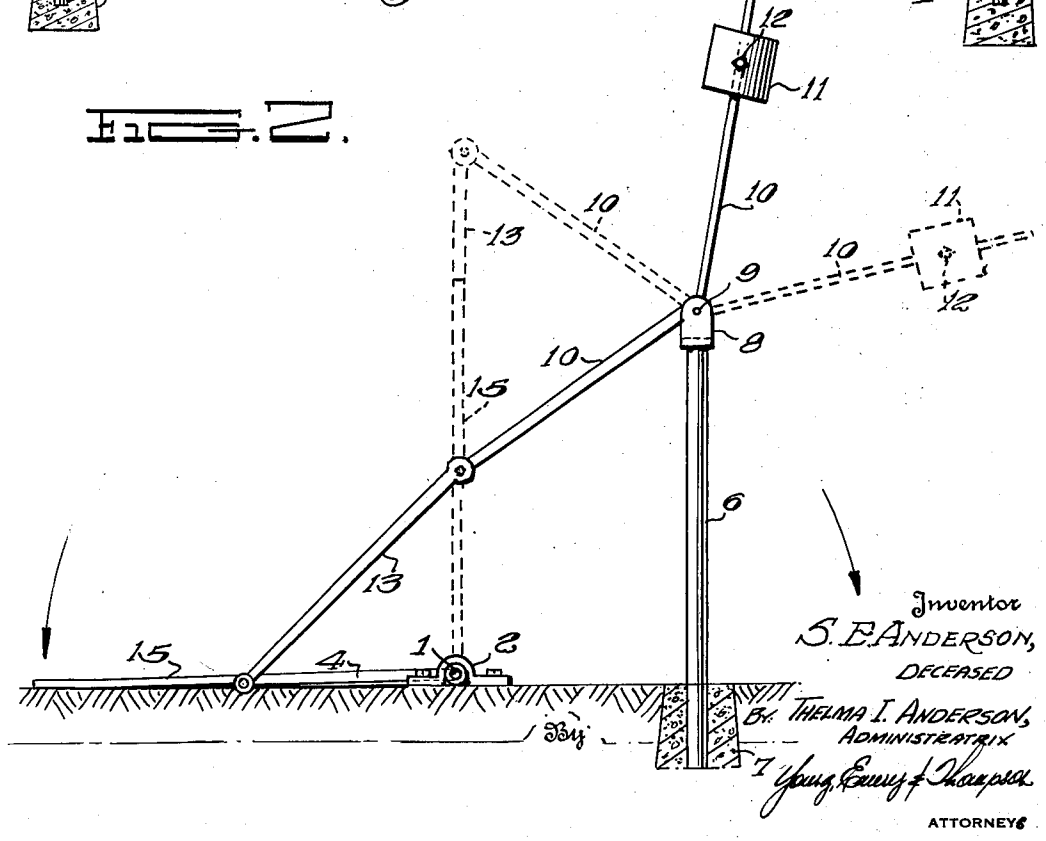


FIG. 2.



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DRIVE-THROUGH GATE

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5 Claims. (Cl. 39—24)

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This invention relates in general to gates and more particularly has reference to gates of the horizontally hinged down-tilting type that are automatically opened by driving a vehicle against the same and closed by a force urging the gate to the closed position.

Gates of this type have been developed over the years but have not been entirely satisfactory primarily because of the complicated structures employed and because of the undesirable characteristics of the automatic closing mechanism. In regard to the closing mechanism, it has been found that those actuated by springs and counterweights have the disadvantage of exerting the greatest closing force on the gate when the gate is in its open position and the lowest closing force when the gate is in its closed position. This type of closing mechanism enables the gate to be rather easily opened by animals and yet has a tendency to interfere with the movement of vehicles through the gate when it is in its open position.

An object of this invention is to provide an automatically closed drive-through gate which avoids the disadvantages of the gates heretofore developed.

Another object of this invention is to provide an automatically closed drive-through gate equipped with a closing mechanism which exerts a varying closing force on the gate which increases as the gate moves from open to closed position and decreases as the gate moves from closed to open position.

A further object of this invention is to provide an automatically closed drive-through gate of simple construction that extends across a driveway, is hinged at the bottom to swing about a horizontal axis and which is equipped with a closing mechanism which exerts a varying closing force on the gate which increases as the gate moves from open to closed position and decreases as the gate moves from closed to open position.

With these and other objects in view, as will appear more fully hereinafter, the present invention resides in the parts and the combinations shown in the drawings and described in the following specification and set forth in the appended claims.

In order to facilitate an understanding of the invention, reference is made to the accompanying drawings in which:

Fig. 1 is an elevational view of a gate and its mounting and closing mechanism with some parts in section.

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Fig. 2 is an enlarged end view of the structure shown in Fig. 1.

As illustrated by way of example in the drawings, a gate embodying the features of the present invention comprises a bar or transverse base member 1 which extends across the driveway. This bar or base member may be of circular cross section and when so formed may be mounted for pivotal movement about its axis in bearings 2 carried by footings or other supports 3 embedded in the ground or the support may be part of the driveway.

Of course, other types of pivoting or hinging devices may be provided for mounting the bar 1 or bottom of the gate for pivotal movement about a horizontal axis. Obviously, the bar 1 may be of other than circular cross section.

Extending radially from one side of the bar or base 1 are a plurality of pickets 4, all of which are in alignment. Intermediate the ends of bar 1, as shown in the drawings, there extend a plurality of vehicle wheel treads 5 which serve as tracks over which the vehicle wheels pass when the gate is in its lowered open position. These tread members may be formed of plates or may comprise frames covered with sheet metal or other suitable material such as is generally employed for covering surfaces over which vehicles pass.

Obviously, the entire gate body may be of a construction similar to that of the tread members so that a vehicle may run over any portion thereof.

The gate is urged to a closed upright position by a closing mechanism which as illustrated comprises a support or standard 6 which is securely anchored in a concrete or other suitable footing 7. At its upper portion, standard 6 carries a clevis 8 having a pin 9 supported thereby. Pin 9 serves as a fulcrum for a lever 10 which, as illustrated, is a bell crank lever. On one arm of the lever 10 is adjustably slidably mounted a weight 11 which is secured in adjusted positions by a set screw 12. This structures enables the weight to be shifted toward and away from the fulcrum 9 to vary the moment effect of the weight.

Lever 10 is pivotally connected at the free end of its other arm to one end of a link 13. The other end of link 13 is connected to a pin 14 carried on one of the pickets 4 or to a special crank arm or actuating lever 15 fixed to the bar 1.

As indicated in Fig. 2 by full and dotted lines showing the open and closed positions of the gate respectively, the arms of lever 10 are of

such length and so angularly disposed in conjunction with the length of link 13 and its point of attachment to the arm 15 of the gate, that weight 11 will be in a position approaching the vertical above pivot pin 9 when the gate is open. In this position, the moment of the weight 11 about the pin 9 will be very small due to the small effective moment arm or horizontal distance between pin 9 and weight 11. The moment of the weight when the gate is open will however be great enough to cause the gate to move toward closed position. As the gate moves toward closed position, the arm carrying the weight will move about its pivot and the weight will move downwardly and horizontally away from pivot pin 9 to increase the effective moment arm and the moment of weight 11 and its arm. When the gate is closed, the horizontal distance between the pin 9 and weight 11 will be at its maximum which means that the moment of weight 11 and its effective arm will be at its greatest. This will cause weight 11 to exert its greatest closing effect when the gate is closed. Such a construction and system will serve to better prevent animals opening the gate when closed and will facilitate the passage of vehicles through and over the open gate. Actually, the tendency of the gate to close when open may be adjusted to be so small that upon driving a vehicle against the gate and fully opening the same, the gate will remain in open position for a short time as though the closing mechanism were equipped with a time delay device. This is desirable because the gate will not move up and strike the underside of the chassis between the front and rear wheels of a vehicle moving over the gate.

While the standards 6 at each end of the gate have been shown mounted on the same side of the horizontal pivoting axis of the gate, it is within the concept of the present invention to mount these standards on opposite sides of said axis.

From the foregoing, it will be appreciated that the present invention provides a simple and highly satisfactory automatically closed drive-through gate.

I claim:

1. An automatic drive-through gate of the character described comprising a gate body extending across a driveway, means in the driveway for pivotally mounting the gate at its bottom for pivotal movement through an angle of about 180° from one horizontal position to another horizontal position about a horizontal axis extending transversely of the driveway, a bell crank lever, a vertical support disposed laterally from said gate pivoting axis for mounting said bell crank lever for rocking movement through an angle of less than 90° about an axis parallel to the gate pivoting axis, a weight on one end of the bell crank lever and means connecting the other end of the bell crank lever to the gate so that the arm of the bell crank lever carrying the weight is in a position slightly above horizontal position when the gate is closed and is in a position nearly vertical when the gate is open, whereby the closing effect of the weight will be greatest when the gate is closed.

2. An automatic self-closing drive-through gate comprising a bar extending across a driveway, means for mounting said bar for pivotal movement about a horizontal axis extending across said driveway, a plurality of aligned gate forming elements extending radially from one side of said bar and movable from an open position on the driveway on one side of said axis through a vertical closed position to an open position on the driveway on the other side of the axis upon rocking said bar about its axis of pivoting, an actuating lever fixed to said bar, a bell crank lever having two arms, a vertical support disposed laterally from said gate pivoting axis for mounting said bell crank lever about an axis parallel to the gate pivoting axis with one arm disposed directly above said gate axis, a weight on the other arm of the bell crank lever and means connecting the arm of the bell crank lever disposed directly above the gate axis to the gate actuating lever so that the arm of the bell crank lever carrying the weight is in a position slightly above horizontal position and the connecting means is vertical when the gate is closed and the bell crank lever carrying the weight is in a position nearly vertical when the gate is open in either direction, whereby the closing effect of the weight will be greatest when the gate is closed.

3. An automatic self-closing drive-through gate comprising a bar extending across a driveway, means for mounting said bar for pivotal movement about a horizontal axis extending across said driveway, a plurality of pickets extending radially from one side of the bar, vehicle wheel tread means carried by said bar and extending radially therefrom in alignment with said pickets, said tread means and pickets being movable in either direction about said axis from a vertical closed position to an open position upon the driveway by driving a vehicle against the same, and movable from an open to a closed position by rocking the same about the axis of said bar, a lever having two arms mounted for pivoting about a horizontal axis disposed laterally from and parallel to the gate axis with one arm disposed directly above the gate axis, a weight carried by one arm of said lever, and means connecting the arm of said lever disposed above the gate axis to said gate to transmit the effect of the weight on said lever to said gate to urge closing thereof, with the weight in a position approaching the vertical above the axis of said lever when the gate is open and with the weight in a position approaching the vertical level of the lever pivot but spaced a greater horizontal distance therefrom when the gate is closed.

4. An automatic self-closing drive-through gate comprising a gate, means for mounting said gate at its bottom for pivotal movement through an angle of about 180° about a horizontal axis, a lever having two arms mounted for pivoting about a horizontal axis parallel to the gate axis and laterally disposed thereto with one arm disposed directly above the gate axis, a weight carried by said lever, and means connecting the arm of said lever disposed above the gate axis to said gate to transmit the effect of the weight on said lever to said gate to urge closing thereof, with the weight in a position approaching the vertical above the axis of said lever when the gate is open and with the weight in a position approaching the vertical level of the lever pivot but spaced a greater horizontal distance therefrom when the gate is colsed.

5. An automatic self-closing drive-through gate of the character described comprising a gate extending across a driveway, means in the driveway for pivotally mounting the gate at its bottom for pivotal movement through an angle of about 180° about a horizontal axis extending transversely of the driveway, a bell crank lever having two arms, a vertical support disposed laterally

from said gate pivoting axis for pivotally mounting said bell crank lever about an axis parallel to the gate pivoting axis with one arm disposed directly above the gate axis, a weight mounted on the other arm of said bell crank lever, means connecting the arm of the bell crank lever above the gate axis to the gate so that the arm of the bell crank lever is in a nearly vertical position when the gate is open and is in a position slightly above the horizontal when the gate is closed, whereby the closing effect of the weight will be the greatest when the gate is closed, and means for adjusting the position of the weight on the lever arm.

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Administratrix of the Estate of Seymour Elmer Anderson, Deceased.

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