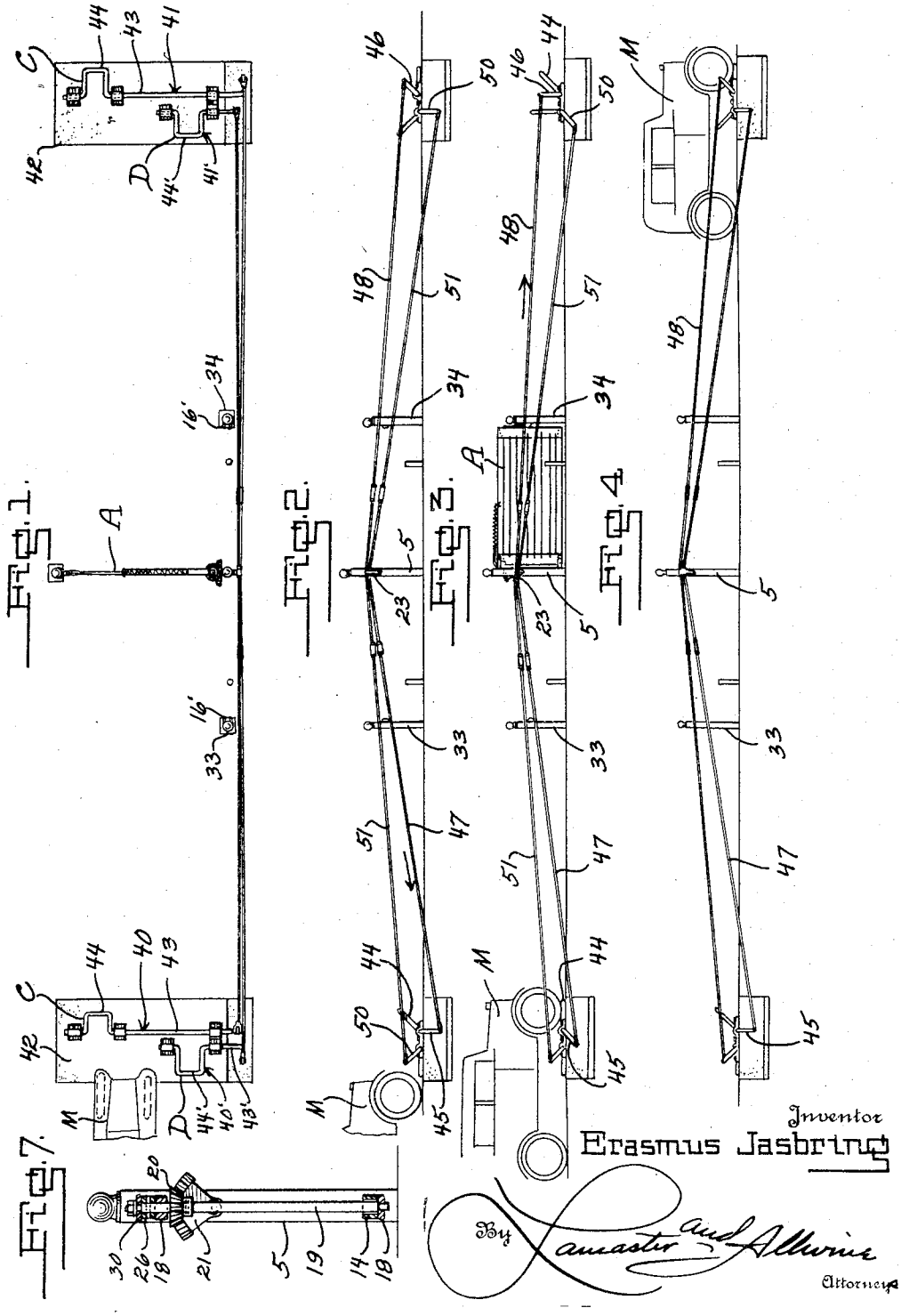
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AUTOMATIC GATE

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Fig. 5.

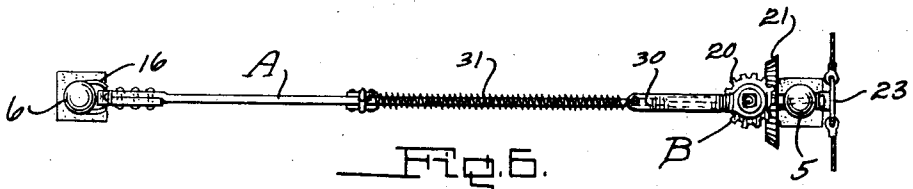


Fig. 6.

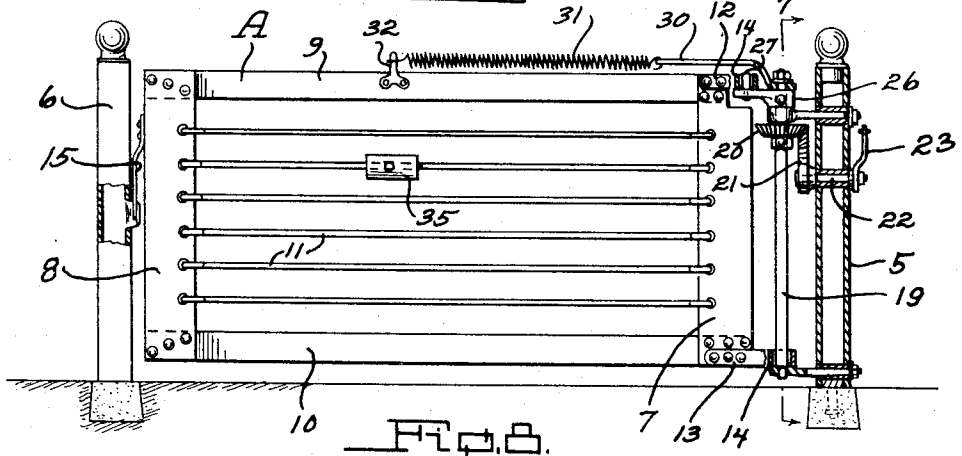


Fig. 8.

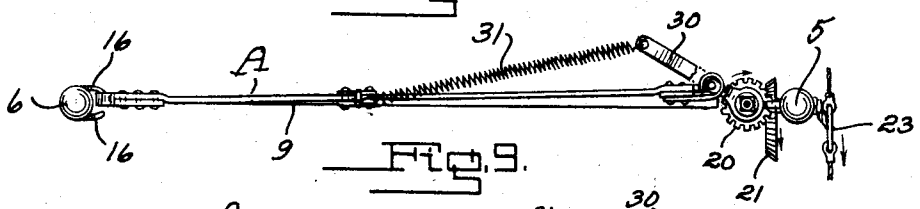


Fig. 9.

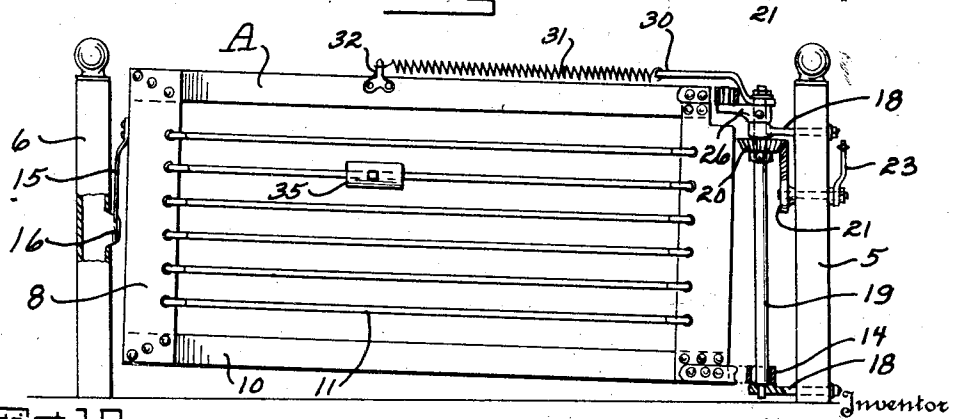
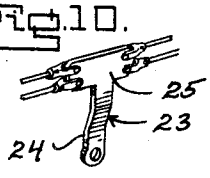


Fig. 10.



Inventor

Erasmus Jasbring

By Lancaster and Allwine

Attorneys

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UNITED STATES PATENT OFFICE.

ERASMUS JASBRING, OF COLLINSVILLE, OHIO.

AUTOMATIC GATE.

Application filed June 6, 1927. Serial No. 196,853.

The present invention relates to gates, and the primary object of the invention is to provide an automatically operable gate which may be readily opened and closed by vehicles approaching and passing thru the gate-way.

A further object of the invention is to provide a gate of this character embodying features whereby the gate becomes automatically locked in either its closed or opened position, and is released from either of its locked positions by the means for swinging the gate.

A further object of the invention is to provide means whereby the gate is automatically swung upwardly at its free end for releasing the gate from its locked position and allowing the gate to be swung either to a closed or to either of its open positions at either side of the hinge post.

A further object of the invention resides in the provision of an automatically operable gate of this character embodying a novel mounting for the gate whereby the gate is first swung upwardly at its free end and then moved with a quick motion to either an open or closed position for positive engagement with the locking means serving to retain the gate in either its open or closed positions.

A still further object of the invention resides in the provision of means whereby the gate may be swung with more or less positive movement toward its open or closed positions.

Other objects and advantages of the invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification and in which drawings:

Figure 1 is a top plan view of the gate and operating means therefor and showing the gate in a closed position.

Figure 2 is a side elevation of the same from the hinge post side of the gate and showing the position of the trip devices disposed at opposite sides of the gate when the gate is in a closed position.

Figure 3 is a view similar to Figure 2 but showing the gate having been swung to a locked open position by an approaching vehicle engaging one of the trip devices.

Figure 4 is a view showing the position of the trip devices after the vehicle has passed thru the gate and closed the same by engaging one of the trip devices at the far side of the gate.

Figure 5 is an enlarged top plan view of the gate shown in its closed position.

Figure 6 is a side plan view of the gate showing the same in its closed position and showing the gate post in fragmentary section for illustrating the manner of mounting the gate.

Figure 7 is a vertical section on line 7—7 of Figure 6.

Figure 8 is a top plan view of the gate and showing the swinging means for the gate partially operated for freeing the gate and allowing the same to be swung to either an open or closed position.

Figure 9 is a side elevation of the gate and showing the angular position of the same just prior to being released from its connection with the latch post.

Figure 10 is a perspective view of the lever arm for actuation of the gate swinging means.

Referring to the drawings in detail, and wherein similar reference characters designate corresponding parts thruout the several views, the letter A designates a suitable gate provided with releasing and swinging means B, the means B being operable by companion trip means C and D respectively, said companion set of trip means C serving to open and close the gate upon approach of a vehicle from one side of the gate and the companion set of trip means D serving to open and close the gate automatically upon approach of a vehicle from the opposite side of the gate.

Referring first to the gate A and which is intended to be hung for horizontal swinging between a pair of vertical hinge and latch posts 5 and 6 respectively, the same embodies vertical hinge and latch stiles 7 and 8 respectively connected by horizontal top and bottom rails 9 and 10 respectively. The frame formed by the stiles and rails may be closed in any suitable manner and in the example shown a series of horizontally aligned wires or rods 11 have been shown connected at their terminals to the stiles 7 and 8. Carried by the upper and lower portions of the gate adjacent the hinge stile 7 are top and bottom hinge straps 12 and 13 respectively each of which is provided with an eye 14 having its bore extending vertically. As will be observed in Figures 6 and 9, these eyes 14 are arranged in

offset relation to a vertical plane with the eye of the hinge strap at the upper edge of the gate spaced further from the hinge post 5 than the eye of the hinge strap 13 at the lower edge of the gate. Rigidly carried by the outer edge of the latch stile 8 and extending vertically with its lower free end offset from the outer edge of the stile, is a spring latch strip 15 the lower free end of which is capable of yieldable movement toward and away from the stile. Provided on the inner side of the latch post 6 is a pair of arcuate-shaped keeper arms or fingers 16 having their free ends converging toward one another as clearly illustrated in Figures 5 and 8. Thus it will be seen that during swinging movement of the gate the latch 15 will strike the outer convex side of the keeper arms and be guided in a locked position between the arms.

Mounted vertically in suitable bracket arms 18 upon the inner side of the hinge post 5 and spaced therefrom, is a hinge or pivot rod 19 the upper end of which projects above the bracket arm at the upper end of the hinge post. Rigidly mounted on the rod 19 below the upper bracket arm 18 is a bevel gear 20 which meshes with a segmental gear 21 rigidly carried by the inner end of a shaft 22 mounted horizontally in the hinge post 5. This shaft 22 extends clear thru the post 5 and carries at its outer end a T-shaped lever arm 23 embodying a stem portion 24 and a cross head 25. As will be observed, the lower portion of the stem 24 is mounted upon the shaft 22 and the cross head 25 is disposed above the shaft so that upon swinging movement of the arm 23 the segmental gear 21 will be moved in an arc for imparting rotation to the pivot rod 19, in accordance with the direction in which the lever arm is moved.

Rigidly mounted upon the rod 19 above the upper bracket arm 18 is a relatively short crank arm 26 provided at its end with an upstanding pivot pin 27 having its axis extending in parallel offset relation to the vertical axis of the pivot rod 19. This pivot pin 27 is intended to be swung in a horizontal arc upon rotation of the rod 19, and this pin 27 is intended to extend upwardly thru the eye of the upper hinge strap 12. As will be observed in Figures 8 and 9, this pin 27 is of considerably less diameter than the diameter of the eye of the hinge strap 12 and allows for considerable play being had between the eye of the hinge strap and the pivot pin. The lower portion of the pivot rod 19 extends thru the eye of the lower hinge strap 13 and as will be observed in Figures 6 and 9 the bore of the eye is of greater diameter than that of the rod 19 and allows for considerable play being formed at the joints whereby the gate is free to swing upwardly at its free end as illustrated in Figure 9 without creating a binding action either on the pivot pin 27 or hinge rod 19. The lower hinge strap 13 preferably rests on the lower bracket arm 18. By observing Figures 8 and 9 it will be seen that when the lever arm 23 is swung in the direction of the arrow in Figure 8, the crank arm 26 will swing the pin 27 in an arc whereby the free end of the gate will be swung upwardly for a distance whereby the lower free end of the latch strip 15 will be moved upwardly out of its position between the keeper arms 16 for allowing the gate to be swung to its open position.

Rigidly mounted at one end upon the upper end of the pivot rod 19 and extending in overlying relation to the pivot pin 27 and top rail 9 of the gate, is a swing arm 30 having one end of a coil spring 31 connected with the free end thereof and which spring has its opposite end rigidly anchored to the top rail 9 as by a suitable attaching fixture 32. This spring arm 30 and spring 31 serve as means for swinging the gate with a quick action to either its open or closed position when the latch 15 is freed from its latched position. By observing Figure 8 it will be seen that when the latch 15 is freed from the keeper arms 16 the spring 31 will have been stretched by the arm 30 which moves in advance of the gate, and the gate will be quickly swung to an open position immediately upon being released from the keeper arms.

Mounted at points spaced equi-distant from each side of the hinge post 5 are suitable posts 33 and 34 which serve for retaining the gate A in an open position at either side of the hinge post, and these posts 33 and 34 are each provided with a pair of keeper arms 16′ which are intended to be engaged by the latch 15 in a manner as are the keeper arms 15 of the latch post 6. In Figure 3 of the drawings, the gate A is shown held in an open position by the keeper post 34.

Carried by the gate A, and in the example shown, by one of the crossrods 11, is a suitable weight 35 which is adjustable longitudinally of the gate toward and away from the hinged end thereof. This weight 35 when adjusted toward and away from the pivot end of the gate will tend to increase or decrease the swinging momentum of the gate for insuring proper movement of the latch 15 to a position between the keeper arms 16 of either the latch post 6 or keeper post 33 and 34. As the weight 35 is moved toward the free end of the gate, such will cause the gate to swing with greater force and permit of the spring latch 15 to yield toward the stile 8 when striking one of the keeper arms.

Referring now to the trip means for swinging the gate horizontally to either an open or

closed position, and particularly to the trip means C wherein in Figure 1 to 4 inclusive has been illustrated the complete cycle of operation for opening and closing the gate automatically upon approach of a vehicle, the same embodies a pair of trip devices 40 and 41 mounted in suitable bed plates 42 in the roadway at each side of the gate A. Each of the trip devices 40 and 41 embodies a rock shaft 43 and a crank portion 44, the crank portions 44 being arranged in alignment longitudinally of the roadway as illustrated in Figure 1. Provided at one end of the rock shaft 43 of the trip device 40 is a depending crank arm 45, while provided at a like end of the rock shaft 43 of the trip device 41, is an upstanding crank arm 46. These crank arms 45 and 46 are clearly illustrated in Figures 2 to 4 inclusive. Connected at one end to the free end of the crank arm 45 and at its opposite end to the cross head 25 of the lever arm 23, is an operating rod or cable 47 which is intended to impart movement to the gate A to an open position upon downward swinging of the crank portion 44 of the trip device 40. Connected at one end to the free end of the crank arm 46 of the trip device 41, and having its opposite end connected with the cross head 25 of the lever arm 23, is an operating rod or cable 48 which is intended to swing the gate A to a closed position upon downward swinging movement of the crank arm 46.

The trip means D, which operates for opening and closing of the gate upon approach of a vehicle from the opposite side of the gate, embodies a companion pair of trip devices 40′ and 41′ mounted upon the bed plates 42 respectively with the trip devices 40 and 41. These trip devices 40′ and 41′ each embody a rock shaft 43′ provided with a crank portion 44′. Each of the rock shafts 43′ are provided with crank arms 50 each being connected as by an operating cable or rod 51 with the cross head 25 of the lever arm 23.

In operation of the gate, and assuming that the vehicle M is approaching the gate A from the left side thereof and with the gate in a closed position as illustrated in Figure 1, the vehicle wheels pass over the forwardly inclined crank portion 44 of the trip device 40 and depresses the same for causing the rod 47 thru swinging movement of the crank arm 45 to be moved in the direction of the arrow in Figure 2 and rocking the lever arm 23 in a counter-direction of movement from the direction of travel of the vehicle. This swinging of the lever arm 23 will, thru the segmental gear 21 and bevel gear 20, cause the gate A to be raised from its connection with the keeper arms 16 and swung to the position as illustrated in Figure 3 with the latch 15 engaged between the keeper fingers 16′ of the post 34. The vehicle passing thru the gate then passes over the inclined crank portion 44 of the keeper device 41 and depresses the same for moving the operating rod 48 in the direction of the arrow in Figure 3 and thus rocking the lever arm 23 for freeing the gate from its latched position with the post 34 and swinging the gate to a closed position. By observing Figure 4 it will be seen that when the trip device 40 is operated after the vehicle has passed thru the gate, the trip device 40 is returned to its normal position with its crank portion 44 at an incline to again be engaged for opening the gate.

The operation of the trip means C is identical to that of the trip means D when a vehicle approaches the gate from the opposite side than that illustrated in Figures 1 to 4 inclusive.

From the foregoing description it will be apparent that a novel automatic operating means for horizontally swinging gates has been provided embodying a novel arrangement whereby the gate is tilted upwardly at its free end for freeing the same from either its latched open or latched closed positions, and also embodying an arrangement whereby the gate after being unlatched is quickly and positively moved into the desired position and there remains until further operation of the trip means for operation of the gate.

Changes in detail may be made to the specific form of the invention as herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. An automatically operable gate construction including a hinge post, a pivot rod supported vertically upon the post, a horizontally swinging gate pivotally supported at one end by said rod, a latch post for the gate, cooperative latch elements carried respectively by the latch post and free end of the gate and serving to releasably retain the gate closed, trip means operable for rotation of said pivot rod, means operable upon rotation of the pivot rod for moving the free end of the gate vertically for releasing the latch elements, means for swinging the gate horizontally away from the latch post including a swing arm carried by the pivot rod for movement in advance of the freeing of the latch elements and a spring connected between the free end of the arm and intermediate portion of the gate, and a weight adjustable on the gate toward and away from the free end thereof.

2. An automatically operable gate construction including a hinge post, a pivot rod mounted vertically upon the post, a crank arm mounted upon the upper end of the rod and carrying an upstanding pivot pin extending parallel to the pivot rod, a gate, hinge straps carried by the upper and lower

portions of the gate at one end thereof and each being provided with an eye, said eye of the upper hinge strap to loosely receive the pivot pin of the crank arm and the eye of the lower strap to loosely receive the pivot rod, a latch post for the gate, latch elements carried respectively by the latch post and free end of the gate for retaining the gate closed, trip means operable for rotating said pivot rod, a swing arm carried by the upper end of the pivot rod and extending in overlying relation to the crank arm, and a spring connecting the swing arm and intermediate portion of the gate.

ERASMUS JASBRING.