Sept. 25, 1928. 1,685,079

J. C. ABEL

CANE CAR

Filed July 28, 1926 3 Sheets-Sheet 1

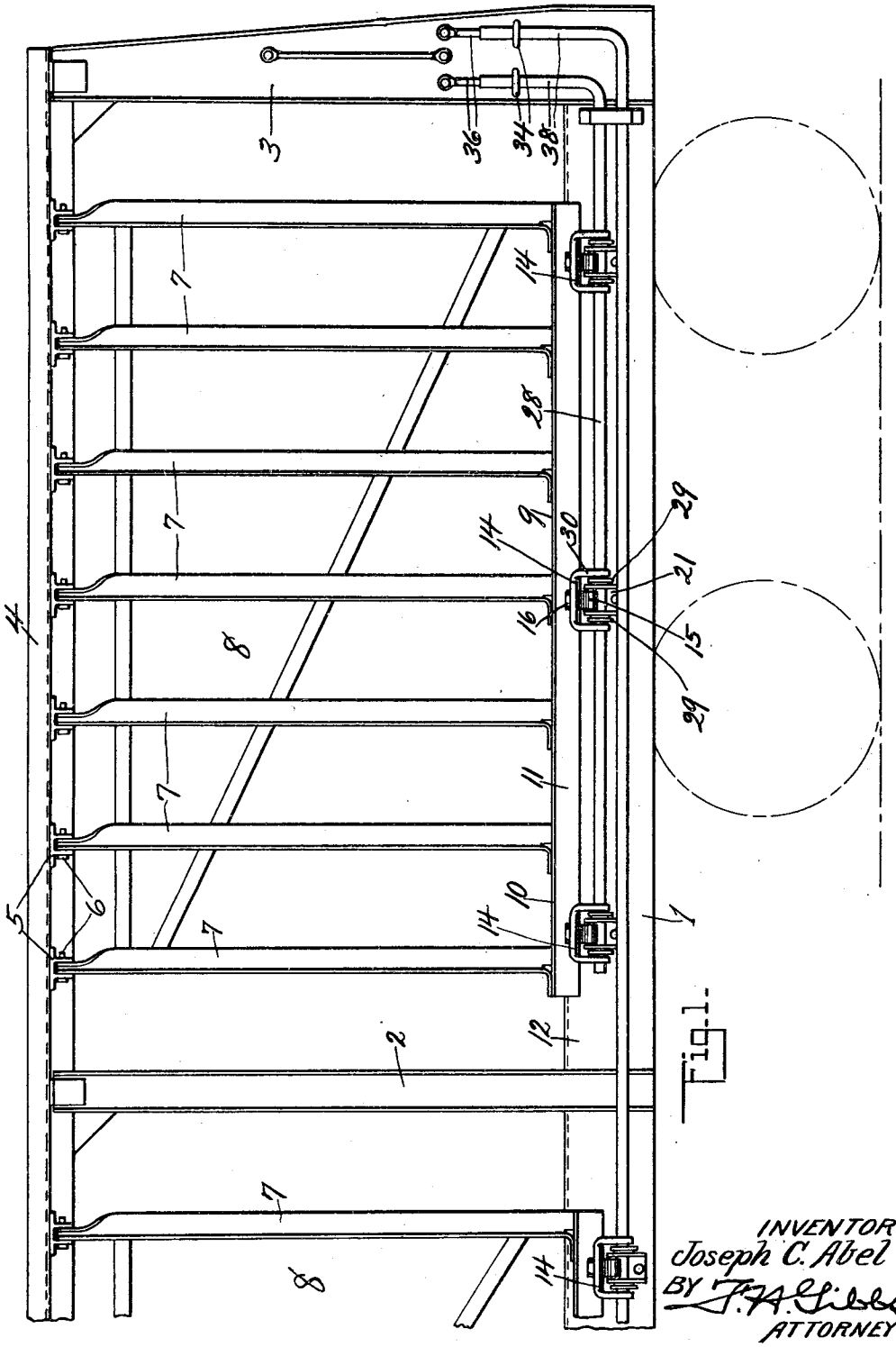


Fig. 1.

INVENTOR
Joseph C. Abel
BY T. A. Gibbs
ATTORNEY

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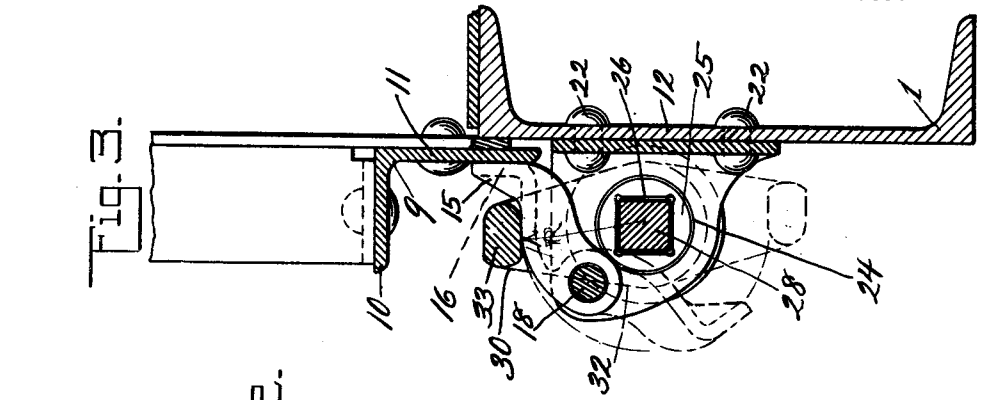


Fig. 3.

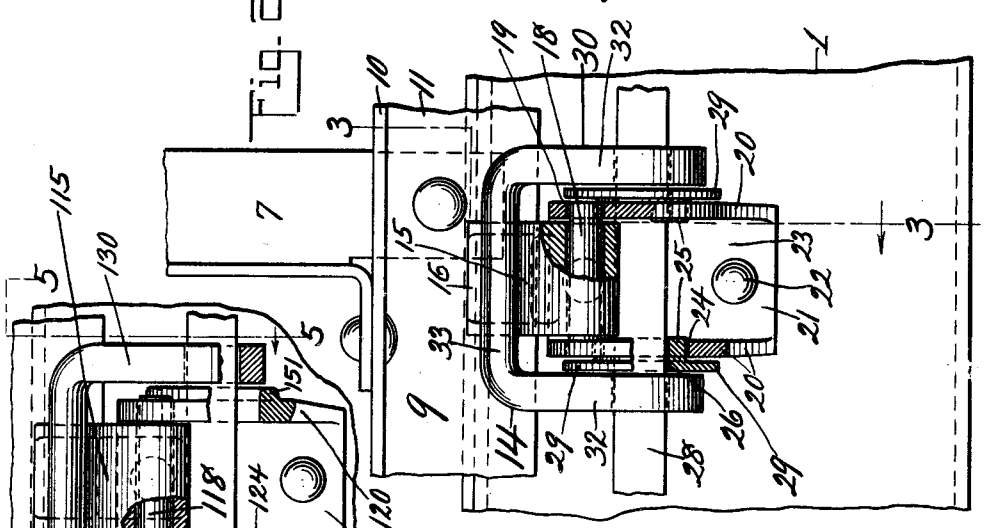


Fig. 2.

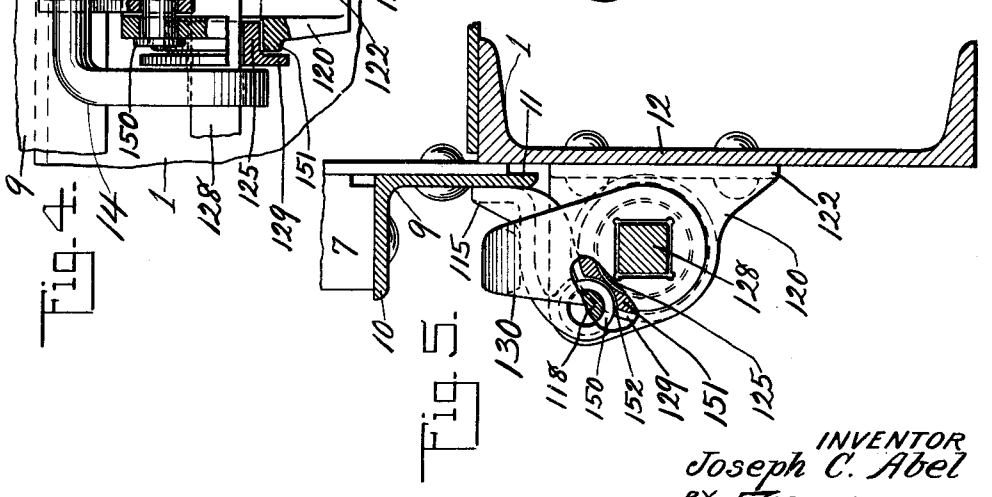


Fig. 4.

Fig. 5.

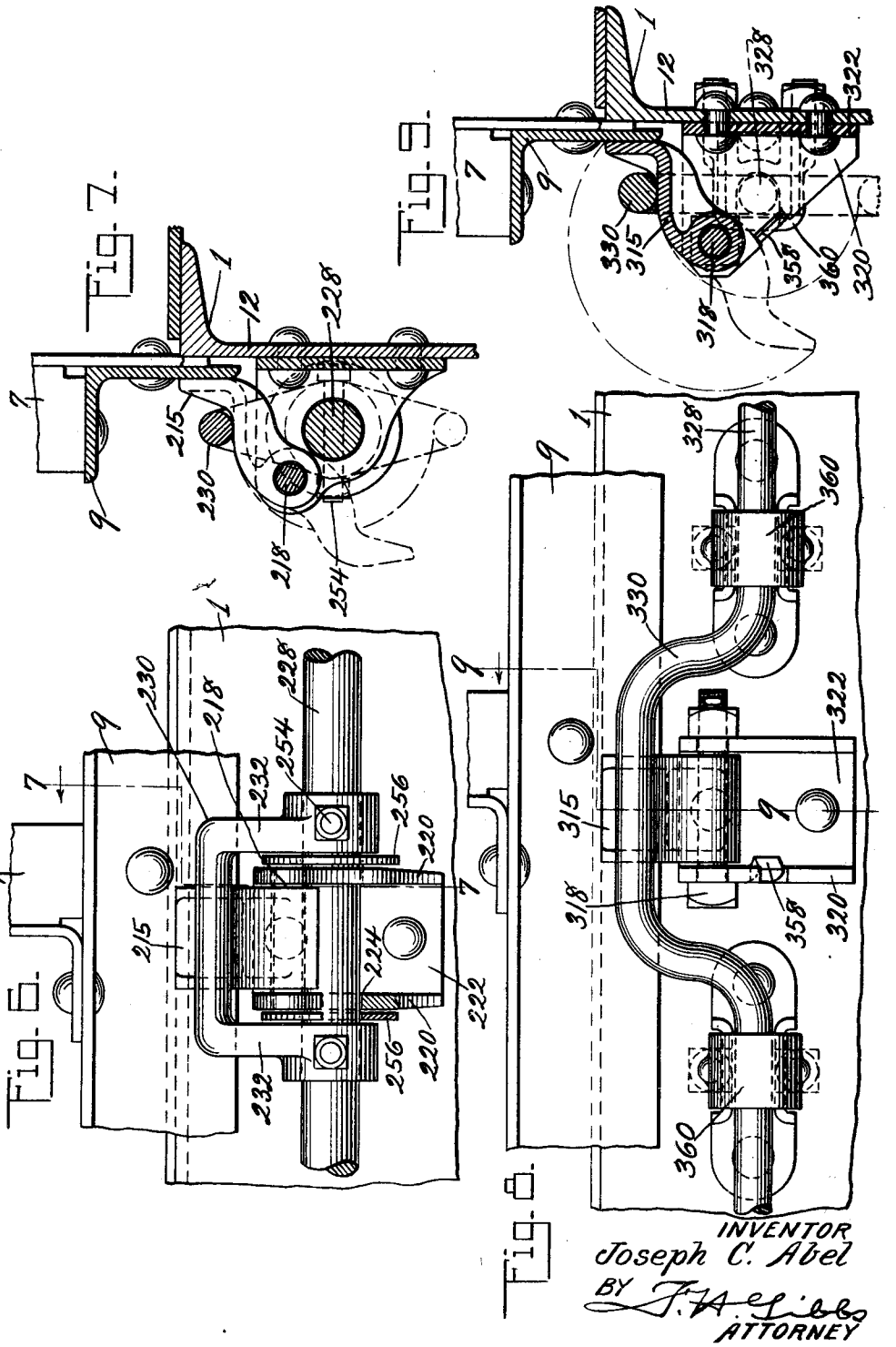
INVENTOR
Joseph C. Abel
BY F. A. Gibbs
ATTORNEY

Sept. 25, 1928. 1,685,079

J. C. ABEL

CANE CAR

Filed July 28, 1926 3 Sheets-Sheet 3



Patented Sept. 25, 1928. 1,685,079

UNITED STATES PATENT OFFICE.

JOSEPH C. ABEL, OF WESTWOOD, NEW JERSEY, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CANE CAR.

Application filed July 28, 1926. Serial No. 125,442.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

Fig. 1 is a partial view of a side elevation of a cane car body having gates provided with a latching mechanism constructed in accordance with this invention;

Fig. 2 is a fragmentary side elevation drawn to a larger scale, of the car body shown in Fig. 1, and showing the latching mechanism, parts of the latching mechanism being shown in section;

Fig. 3 is a vertical transverse section taken on the line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 2 of a modified construction of the latching mechanism;

Fig. 5 is a vertical transverse section taken on the line 5—5 of Fig. 4, parts being broken away to show other parts more clearly;

Fig. 6 is a view similar to Fig. 2 of a modified construction of the latching mechanism;

Fig. 7 is a vertical transverse section taken on the line 7—7 of Fig. 6;

Fig. 8 is a view similar to Fig. 2 of a further modification of the latching mechanism, and

Fig. 9 is a vertical transverse section taken on the line 9—9 of Fig. 8.

This invention relates to cane cars and it is an object of this invention to provide a latching means for the side gates of cane cars which may be locked in the gate-holding position and in which the operation of the locking means to locking position will operate the latch to the gate-holding position. It is also an object of this invention to provide a device of the class described in which the locking means will be placed in tension by the pressure of the gate on the latch member. It is also an object of this invention to provide an improved device of the class described which is of simple and durable construction, positive in its operation, inexpensive to manufacture and which may be readily applied to cars now in use as well as to new cars.

In the drawings the invention is shown applied to a cane car having an underframe of suitable construction comprising side sills 1 to which are secured side posts 2 and end posts 3 which support side plates 4. To the side plates 4 are secured hinge brackets 5 to which pins 6 pivotally secure the upper ends of the vertical members 7 of the side gates 8. The lower ends of the members 7 of each gate are joined by a bottom member 9 shown as an angle bar having a horizontal outwardly projecting flange 10 and a vertical downwardly projecting flange 11 which overlaps the web 12 of the side sill 1.

To secure each gate 8 in closed position with the bottom member 9 adjacent the side sill 1 there are provided a plurality of latching mechanisms 14 each of which comprises a latch member 15 having a vertical portion 16 adapted to engage with the downwardly projecting flange 11 of the bottom member 9 and which, in the construction shown in Figs. 2 and 3, is pivotally mounted on a pin 18 carried in openings 19 in the side members 20 of a bracket 21. The bracket 21 is secured to the web 12 of the side sill by rivets 22 which pass through openings in the web of the side sill and in the web 23 of the bracket. The side members 20 are also provided with circular openings 24 in which are mounted flanged bushings 25 having rectangular openings 26 to receive a rectangular operating shaft 28. The flanges 29 of the bushings are of such width that they lap the ends of the pin 18 and secure the pin in position in the side members 20 of the bracket. Mounted on the shaft 28 is a U-shape locking member 30 having arms 32 provided with rectangular openings to receive the shaft 28 and joined by a connecting piece 33, the arms 32 being of such length that when the locking member 30 is in the position shown in Fig. 3 the connecting piece 33 will bear against the upper surface of the latch member 15 so as to prevent the latch member being operated by the pressure of the gate against the vertical portion 16 of the latch member. As shown in Fig. 2 the arms 32 of the locking member 30 which extend on opposite sides of the bracket 21, and are kept from movement longitudinally of the shaft 28, secure the flanged bushings 25 in the openings 24 in the sides 20 of the bracket while the flanges 29 of the bushings secure the pin 18 in position; thus the latching mechanism is held in assembled relation upon the insertion of the operating shaft. Rings 34 which are mounted on the slides 36 engage the operating handles 38 of the shafts 28 to hold the shafts in the position in which the latch mem-

bers 15 will be held against the bottom members 9 of the gates.

The upper surface of each latch member 15 is curved and the inner portion upon which the connecting piece 33 bears has its center, when in closed position, in the axis of the shaft 28 while the outer portion has a shorter radius. Forming the upper surface of the latch member of curves in this way provides an inner area or portion on which the connecting piece 33 will be retained even though it is not at the inner limit of its movement while the shorter radius of the outer portion of the latch provides a means which permits of the free movement of the locking member 30 to the release position once it is moved from the inner portion of the latch member 15. It will be noted that when the latch member 15 is in the release position it bears against the shaft 28 and is held in a position, as shown in dotted lines in Fig. 3, such that when the locking member 30 is raised from the release position, as shown in dotted lines in the same figure by rotation of shaft 28, the locking member 30 will engage the latch member 15 and return the latch member 15 to the gate-holding position as the locking member is brought to the locking position.

In the modification shown in Figs. 4 and 5 the pin 118 is provided with a head 150 at one end and the sides 120 of the bracket 122 are provided with bosses 151 about the openings 124, the bosses 151 being recessed, as at 152 in Fig. 5, to provide openings for the head 150 of the pin 118. A flanged bushing 125 is used in one of the openings 124, the flange 129 engaging the head 150 and preventing the withdrawal of the pin 118 while the head 150 prevents withdrawal of the pin 118 in the opposite direction. The bushing 125 is provided with a rectangular opening to receive a rectangular shaft 128 upon which is mounted the U-shape locking member 130. In this construction reliance is placed upon a single bushing 125 at each of the latching mechanisms 14 to serve as bearings for the operating shaft 128 and in order that the brackets 122 may be used in any location, both sides 120 of the brackets are provided with bosses 151, which are recessed as at 152 to provide an opening for the pin 150.

In the modification shown in Figs. 6 and 7, the shaft 228 is cylindrical and passes through cylindrical openings 224 in the sides 220 of the bracket 222 and has mounted thereon the U-shape locking member 230 which is fixed to the shaft 228 by pins 254 which pass through openings in the shaft 228 and the ends of the arms 232. Mounted on the shaft 228 between the arms 232 of the locking member 230 and the sides 220 of the bracket 222 are flat washers 256 of such dimensions that they lap the ends of the pin 218 which pivotally secures the latch member 215 to the bracket. In this construction as in the other modifications the latch member 215, when in release position, will bear against the shaft 228 and be held in position to be engaged by the locking member 230 and be moved from the release position to the gate-holding position as the locking member is operated to locking position.

In the modification shown in Figs. 8 and 9, the bottom member 9 is engaged by a latch member 315 pivotally supported by a bolt 318 mounted in the sides 320 of a bracket 322 secured to the side sill 1, one of the sides of the bracket being provided with a lug or projection 358 which serves as a stop to limit the movement of the latch member 315 when released. To operate the latch member 315 there is provided a shaft 328 journaled in brackets 360 secured to the side sill 1 and provided with U-shape portions 330 which engage with the latch member 315. In this, as in the other constructions, as the shaft 328 operates the U-shape or locking portion 330 of the shaft from the release position, shown in dotted lines, it will engage with the latch member 315 and move the latch member 315 to the gate-holding position as the locking portion 330 of the shaft is brought to the locking position in which it engages with the upper portion of the latch member 315 as shown in Fig. 9.

It will be noted that in each of the structures the locking member or locking portion of the shaft is journaled inwardly of and below the axis of rotation of the latch member so that in the locking position the pressure of the gate on the latch member which tends to rotate the latching member about its pivot places the locking member in tension. It will also be noted that curving the inner portion of the upper surface of the latch member as described provides a construction in which the locking means will engage the latch so as to be placed in tension and securely hold the latch even though the operating shaft be slightly distorted and the locking means be displaced from the full locking position when the shaft is in the full locking position.

The operation of all of the constructions is the same in that operating the shaft to remove the locking member from the latch member will permit the pressure of the lading against the gate to force the gate open, operating the latch member to release position. Upon the discharge of the contents of the car the gate will hang in substantially a vertical position, whereupon operation of the locking member to the locking position will cause the latch member to be returned to the gate-holding position. Placing the ring 34 upon the operating handle 38 will then secure the locking means in the locking position and secure the gate in closed position.

What is claimed is:

1. In a car, a gate pivotally mounted at its upper edge and adapted to swing to closed

position by gravity, a pivotally mounted latch for said gate and a pivotally mounted locking means for said latch mounted inwardly of and below said latch.

2. In a car, a gate pivotally mounted at its upper edge and adapted to swing to closed position by gravity, a pivotally mounted latch for said gate and a pivotally mounted locking means for said latch mounted inwardly of and below said latch and adapted to operate said latch to holding position as said locking means is moved to locking position.

3. In a car, a gate pivotally mounted at its upper edge and adapted to swing to closed position by gravity, a pivotally mounted latch for said gate and a pivotally mounted U-shape locking means for said latch, said locking means operating said latch to holding position.

4. In a car, a gate, a pivotally mounted latch for said gate and a pivotally mounted U-shape locking means for said latch, said locking means being placed in tension by the pressure of said gate on said latch.

5. In a car, a gate, a pivotally mounted latch for said gate and a pivotally mounted U-shape locking means for said latch, said locking means operating said latch to holding position and being placed in tension by the pressure of said gate on said latch.

6. In a car, a gate, a pivotally mounted latch for said gate and a U-shape locking means for said latch pivotally mounted inwardly of and below said latch, said locking means being adapted to engage over said latch and be placed in tension by the pressure of said gate on said latch.

7. In a car, a gate, a pivotally mounted latch for said gate and a U-shape locking means for said latch pivotally mounted inwardly of and below said latch, said locking means being adapted to engage over said latch and to operate said latch to holding position as said locking means is operated to locking position.

8. In a car, a gate, a pivotally mounted latch for said gate and a pivotally mounted locking means for said latch mounted inwardly of and below said latch, said locking means operating said latch to holding position as said locking means is moved to locking position and being placed in tension by the pressure of said gate on said latch.

9. In a car, a gate, a pivotally mounted latch for said gate and a U-shape locking means for said latch pivotally mounted inwardly of and below said latch, said latch being operated to holding position by the operation of said locking means to locking position and said locking means engaging over said latch and being placed in tension by the pressure of said gate on said latch.

10. In a car, a gate mounted at its upper portion for swinging movement to closed position by gravity, and means for retaining said gate in closed position comprising a unit having a pivotally mounted locking means, and a pivotally mounted latch, for engaging said gate arranged eccentrically with respect to said locking means and adapted to be engaged by said locking means upon rotation of the latter.

11. In a car having a gate hingedly mounted at its upper portion to swing to closed position by gravity, locking means therefor comprising a unit carrying a rotatable operating shaft, a loosely mounted latch and a lock element: said latch being mounted eccentrically of said operating shaft and said lock element being rotatable on substantially the same axis as the operating shaft and being so arranged as to operate said latch to holding position upon rotation of said operating shaft.

12. In a car having a gate hingedly mounted at its upper portion to swing to closed position by gravity, a locking device for said gate comprising an operating shaft, means mounting said shaft and permitting rotation thereof, a latch carried by said mounting means, and a lock carried by said operating shaft and actuating said latch to holding position.

13. In a device of the kind described, a rotatable lock element and a latch element rotatable on an axis different than that of the lock element, said latch element having a bearing surface thereon formed on an arc the center of which is the center of rotation of the lock element and being normally urged to rotate to tightly engage at the bearing surface with the lock element to prevent release of the latch element.

14. In a device of the kind described, a rotatable lock element and a latch element rotatable on an axis different than that of the lock element, said latch element having a bearing surface thereon formed on an arc the center of which is the center of rotation of the lock element and being normally urged to rotate to tightly engage at the bearing surface with the lock element to prevent release of the latch element regardless of the position of the lock element on the bearing surface.

15. In a car having a swinging gate, lock means therefor comprising a rotatable operating shaft, a lock element rotatable on the same axis as the operating shaft, and a latch element rotatable on a different axis than that of the operating shaft and having a portion thereof formed on an arc the center of which is the operating shaft providing a bearing surface for the lock element, said latch element being adapted to be normally urged to rotate by said gate whereby to exert an upward pressure against the lock element regardless of its position on the bearing surface to retain the latch element in engagement with the gate.

16. In a car, a vertically hung gate adapt-

ed to swing to closed position by gravity, a rotatably mounted latch for the lower edge of the gate, and locking means for the latch placed in tension by the pressure of said gate on the latch.

17. In a car, a side gate pivotally mounted at its upper edge to swing by gravity to closed position, and means for retaining the gate in closed position comprising a latch for said gate, locking means for said latch, and operating means for said locking means, said locking means actuating the latch to holding position and said locking means being placed in tension by the pressure of the gate on said latch.

18. In a car, a gate mounted at its upper portion for swinging movement and adapted to swing to closed position by gravity, and means for locking said gate in closed position comprising a unit having a rotatably mounted locking means and a rotatably mounted latch having its center of rotation eccentric with respect to the locking means and in such position as to engage the gate and to be engaged by the locking means upon rotation of the latter to retain the latch in engagement with said gate.

19. In a car, a gate mounted at its upper portion for swinging movement to closed position by gravity, means for retaining said gate in closed position comprising a pivotally mounted latch for said gate, and a U-shaped locking means for said latch pivotally mounted inwardly of and below said latch.

In witness whereof I have hereunto set my hand.

JOSEPH C. ABEL.