

Nov. 26, 1935.

L. D. GREGG

2,021,957

COMBINATION LATCH AND LEVER FOR CAR DOORS

Filed March 22, 1933

Fig. 1.

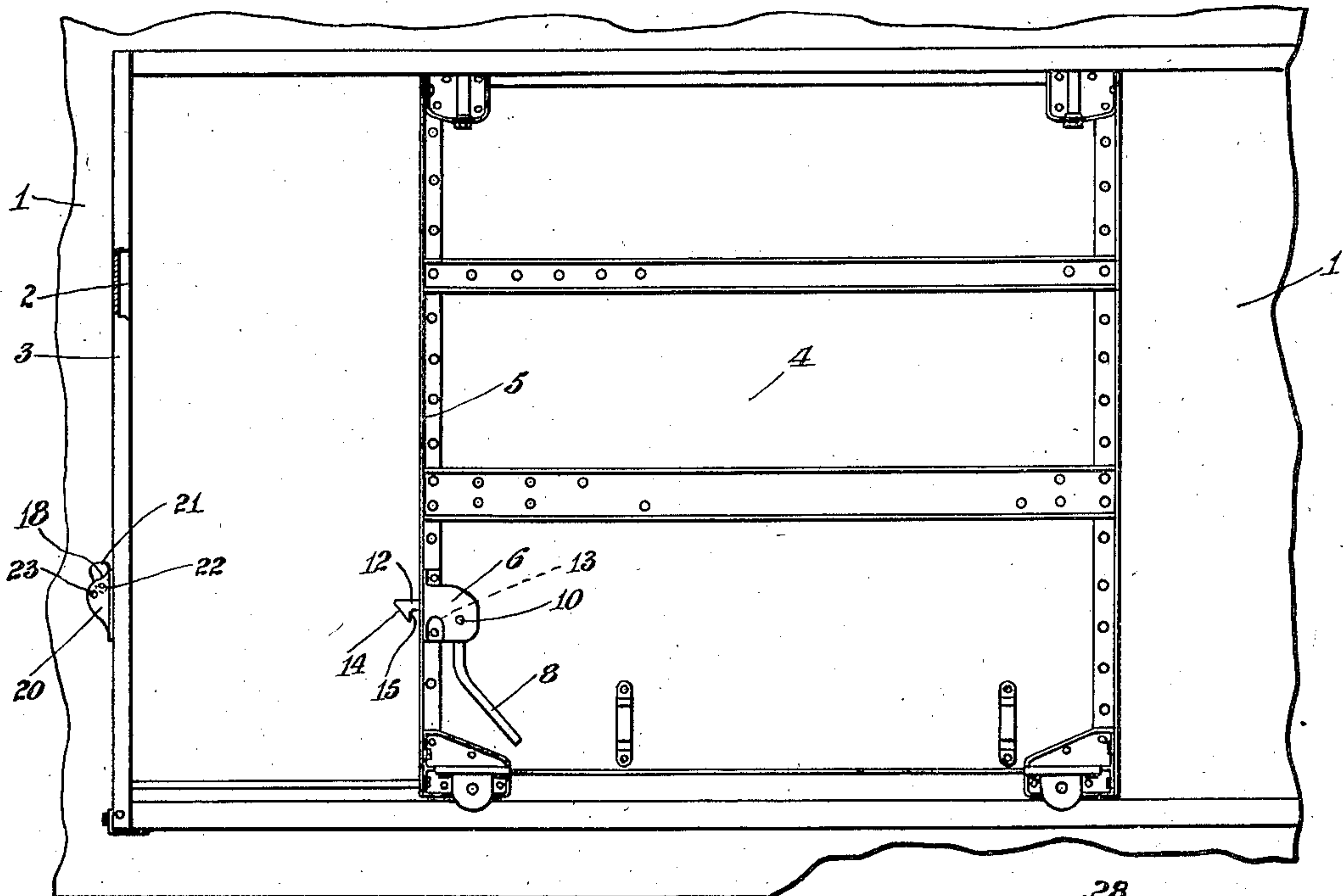


Fig. 2.

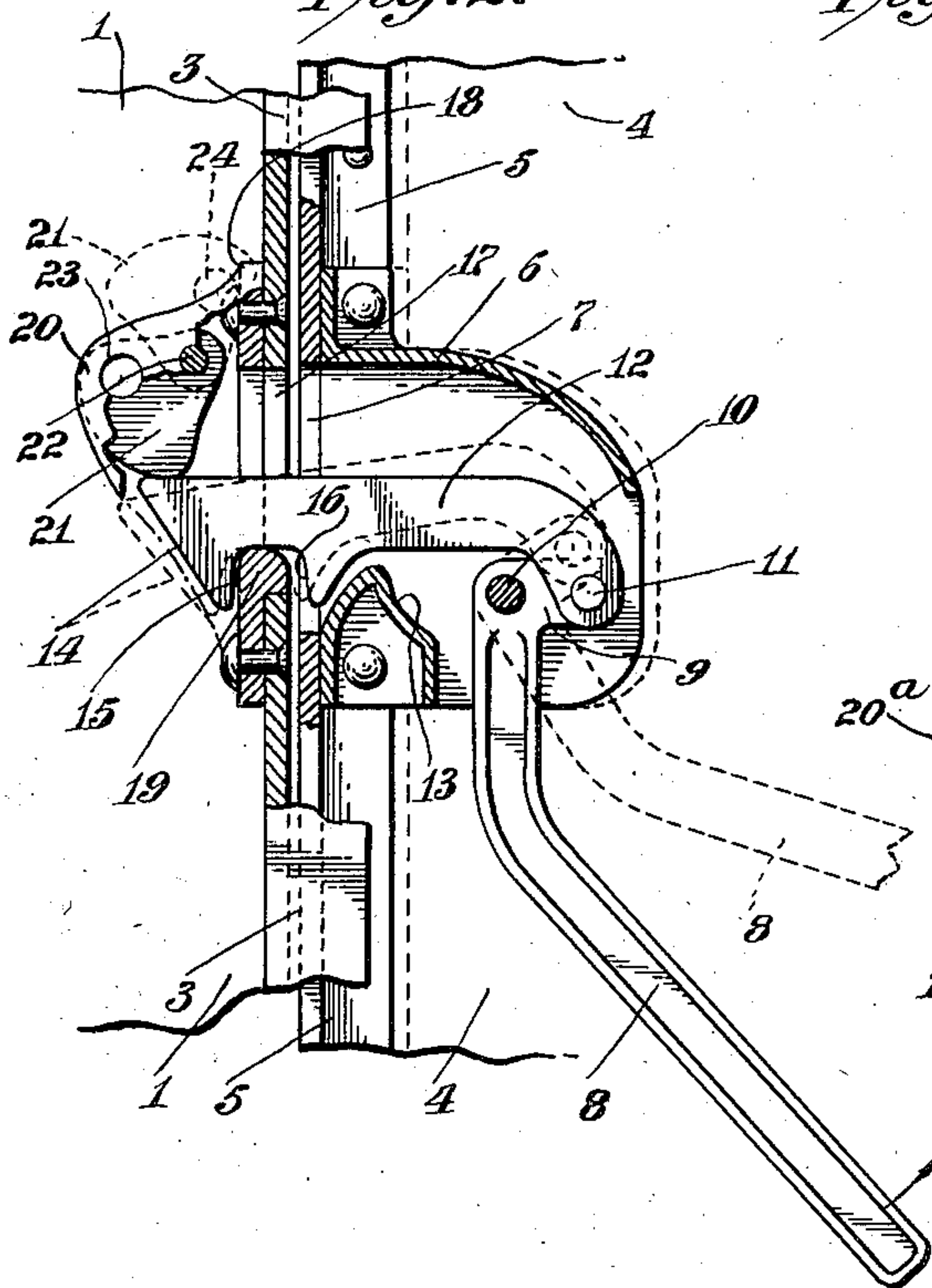
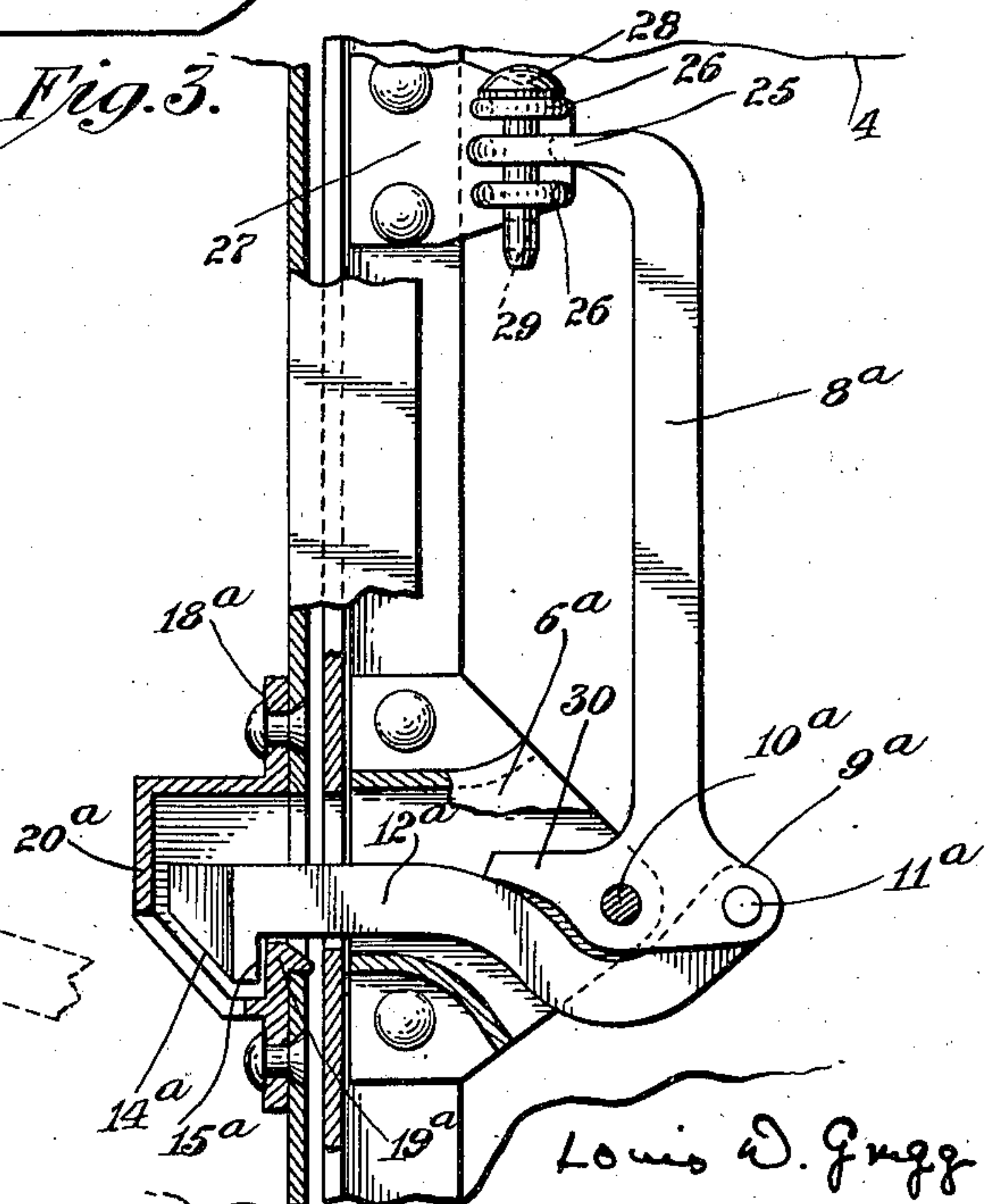


Fig. 3.



Louis D. Gregg
INVENTOR

BY *W. B. Whitney*
ATTORNEY

UNITED STATES PATENT OFFICE

2,021,957

COMBINATION LATCH AND LEVER FOR
CAR DOORS

Louis D. Gregg, Hackensack, N. J., assignor to
The Gregg Company, Limited, New York, N. Y.,
a corporation of New York

Application March 22, 1933, Serial No. 662,067

7 Claims. (Cl. 292—113)

This invention relates primarily to box cars, and more particularly to the doors of such cars, although also adapted for other uses; and the object thereof is to provide a simple, efficient and convenient mechanism in which there is combined with a latch for locking a door means for effecting both the final closing movement of the door and the initial opening thereof.

Car doors of the type in question are usually locked by a hasp which is set by hand and may be sealed whenever required. And, since these doors usually stick between the sides of the pocket provided at the front door post as a housing for the forward edge of the door and hence are pushed to closed position therein and withdrawn therefrom with difficulty, it has been a more or less common practice to provide an independent lever, or levers, with which to complete the closure and/or start the opening of the door.

With the aforestated object in view, my new latch and lever combination consists, essentially, of a latch and lever carried by the door and a latch socket carried by the front door post which are so constructed and combined that the projecting latch may be thrust slightly forward and will automatically lock itself within the latch socket when the door is nearly closed and then serve as a fulcrum upon which the lever may be rocked, with an extra powerful leverage, to complete the closure and later to start the opening of the door, and the latch can be sealed or otherwise secured in locking engagement with the latch socket to thereby lock the door.

Two practical embodiments of the invention, which is capable of use on warehouse doors, for example, as well as cars and of wide variations in its several details, are shown by way of illustration and not of limitation in the accompanying drawing, in which—

Figure 1 is a view showing, in side elevation, that portion of the side of a box car surrounding the door opening and a partially opened door, equipped with my new latch and lever combination; Fig. 2 is a view, on an enlarged scale and partly in elevation and partly in section, of portions of the front door post and of the closed door, showing the latch in its door locking position; and Fig. 3 is a view, similar to Fig. 2, showing one modified form of the device.

Referring first to Figs. 1 and 2 of the drawing, 1 indicates the side of the car which is framed, at the forward end of the door opening therein, by a door post 2, and on the outside of this post is mounted a pocket plate 3. The car door 4 car-

ries at its forward edge an edge-angle 5 the out-turned flange of which makes a fairly close sliding fit with the sides of the pocket formed by the door post and pocket plate as the door is closed.

A latch casing 6 is riveted at a convenient height upon the edge-angle of the door with its open forward end abutting the flange of the angle and the opening therein in registry with a slot 7 formed in the flange. The lever 8, which at its head has a short rearwardly projecting elbow arm 9, is pivotally mounted upon a pin 10 set in the sides of the casing, and extends normally downwards through and rocks up and down within an elongated opening provided therefor in the bottom and upwardly therefrom in the rear end of the casing. The short lever arm 9 has a slotted outer end and within this slot is pivoted, on a pin 11, the downturned rear end or heel of the latch 12 which projects forwardly over the pivoted head of the lever and thence through the open end of the casing and the slot in the flange of the door edge-angle, normally resting upon and supported in substantially horizontal position by an upward projection 13 in the bottom wall of the casing. The latch has at its forward end or toe the usual inclined under face 14 and rearwardly facing lock shoulder 15, and, in addition, is provided with an opposed forwardly projecting shoulder 16, the two shoulders providing between them a notch adapted to receive the catch or lip of the complementary latch socket. The end wall of the pocket plate 3 is slotted at 17, in registry with the slot 7 in the door edge-angle, and the slotted latch socket 18 is riveted thereto, providing a thickened and rounded lip or catch 19 which extends somewhat above and over the bottom of the slot 17 and in turn provided with an integral front or cover plate 20. A cam 21 is pivotally mounted at the back of the cover plate on a pin 22, and both cover plate and cam are provided with holes 23 and 24, respectively, which are in registry when the cam rests upon the top of the locked latch and so adapted to receive the hasp of a padlock or the wire of the usual car door seal.

In operation, the car door being closed and locked by the latch as shown, an initial rocking of the lever rearwardly and upwardly raises the pivoted heel of the latch and thrusts its rear shoulder 16 forward against the catch 19, as shown in dotted lines in Fig. 2, and then the further movement of the lever upon the pivot pin of the lock latch, which now serves as a fulcrum therefor, easily pries the door out of the pocket

on the door post; after which, the cam having been swung clear thereof and the toe of the latch raised by hand, the further opening of the door is readily effected, and especially so if the door is mounted as set forth in a companion application. To close the door, the lever is rocked back and up and there held as the door is pushed forward until, as the forward edge of the door approaches the pocket on the door post, the inclined face on the toe of the forwardly projected latch rides up over and its shoulder drops down in front of the inner face of the catch on the latch socket, the cam being thrust forward and upward thereby and then bearing down against the top of the latch, and thereafter, a downward and forward pressure on the lever rocks it upon the pivot pin of the latch as a fulcrum and forces the door forward into the pocket on the door post and completes the closure of the door. The cam insures against an accidental displacement of the latch when locked, and, whenever desired, can in turn be locked in place by a padlock or wire and seal to hold the latch down and the door securely locked.

The modification illustrated in Fig. 3, while differing from the device already described in the form and arrangement of most of its parts, is practically the same in its operation. The latch casing 6^a is of course riveted to the door at its forward edge, as before; but the lever 8^a, pivotally mounted therein on the pin 10^a, stands normally in an upright position and at its free outer end is bent forwardly at 25 to swing between two outwardly projecting lugs 26 carried by a plate 27 riveted to the door edge-angle, the bent lever end and the lugs being provided with aligned openings adapted to receive a retaining pin 28 also preferably as shown provided with a hole 29 near its tip for the hasp of a padlock or wire of a seal, by which means the lever is held in place and the pin in turn is or may be also locked or sealed. The latch 12^a extends rearwardly below the pivoted head of the lever and its upturned rear end is pivoted within the slotted end of the short arm 9^a of the lever by the pin 11^a. This latch is also provided at its forward end or toe with the usual inclined under face 14^a and rearwardly facing lock shoulder 15^a. The function of the opposed forwardly facing shoulder of the latch first described is, however, here performed by the end wall 20^a of the cover or casing which is formed as an integral part of the latch socket 18^a; this wall, abutting and taking the thrust of the forward end or toe of the latch, holds it against forward movement as the lever is rocked outwardly and downwardly and the lever, fulcrumed upon the pivot pin of the latch as already described, pries the car door out of the pocket. The lever is here further provided with a second short arm or locking lug 30 which when the lever is in raised position projects forwardly and bears against the top of the locked latch and so secures it against displacement, this short locking arm of the lever and the locking device provided for its free outer end performing the functions of the cam 22 in the device first described.

While I have illustrated and hereinabove described my new door latch and lever in what I now consider to be the best forms for the practical application thereof to a car door, it is, as stated, capable of other uses and of wide variations in its several details and hence may be further modified and the door and post parts reversed, within the scope of the appended claims,

without departing from the principle or sacrificing the substantial advantages of the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. A device of the character described comprising, for combination with a sliding car door and forward door post, a hand lever adapted to be pivotally mounted on the door adjacent its forward edge to swing in a plane parallel to that of the door, a latch pivotally mounted at its rear end on the head of the lever at a point eccentric of and directly to the rear of the pivotal axis thereof when the lever is at the limit of its forward swing and having adjacent said end an offset carrying it to one side of the pivot of the lever and thence extending forwardly over a fixed support to project and be reciprocated forwards and backwards beyond the forward edge of the door by the rocking of the lever a latch socket adapted to be mounted upon the forward door post in the path of the horizontal movement of the latch, and complementary elements carried respectively by the forward end of the latch and by the latch socket adapted to automatically engage on the closing movement of the door and jointly operative to lock the latch within the latch socket against further horizontal movement in either direction whereby in case the door sticks to effect both its final closure and initial opening by a rocking of the lever.

2. A device of the character described comprising, for combination with a sliding car door and forward door post, an integral hand lever adapted to be pivotally mounted on the door adjacent its forward edge to swing in a plane parallel to the plane of the door, a latch pivotally mounted at its rear end upon the head of the lever eccentrically of and to the rear of the pivotal axis thereof and extending forwardly therefrom over a fixed support to project horizontally beyond the forward edge of the door to an extent determined by the position of the lever and supported in such substantially horizontal position by the fixed support, a latch socket adapted to be mounted upon the forward door post in the path of movement of the latch, and complementary elements carried respectively by the latch and latch socket operative to automatically engage on the horizontal approach of the extended latch and by their engagement to lock the latch against further movement either forward or rearward with respect to the door post and thereby enable the lever to effect with a powerful thrust both the final closure and the initial opening of the door, the pivotal axes of the lever and latch being spaced apart a short distance relative to the length of the lever and lying in a substantially horizontal plane when the lever is at the limit of its forward swing.

3. A device of the character described comprising, for combination with a sliding car door and forward door post, a casing adapted to be mounted on the door adjacent its forward edge, an integral hand lever with its head pivotally mounted within the casing to swing in a plane parallel to the plane of the door, a latch pivotally mounted within the casing upon the head of the lever slightly eccentrically of and directly to the rear of the pivotal axis of the lever when substantially at the limit of its forward swing and extending forwardly therefrom to project through an opening in the forward casing wall and be reciprocated forwardly and rearwardly beyond the forward edge of the door by the rocking of the lever, means provided by the casing for sup-

porting and maintaining the projecting forward end of the latch substantially at the level of its rear pivotal axis, a latch socket adapted to be mounted upon the door post in the path of the horizontal movement of the latch, and complementary elements carried respectively by the latch and latch socket automatically engageable by the horizontal movement of the door to lock the latch within the latch socket against both forward and rearward horizontal movement, and means for securing the latch against displacement when in locked position within the latch socket.

4. A device of the character described comprising, for combination with a sliding car door and forward door post, an integral hand lever adapted to be pivotally mounted on the door near its forward edge to project normally downward from and be rocked rearwardly and upwardly on its pivot, a latch with its rear end pivotally mounted upon the pivoted head of the lever eccentrically of and directly to the rear of the pivotal axis of the lever when in normal position and extending forwardly therefrom beyond the forward edge of the door to an extent determined by the position of the lever, and a slotted latch socket adapted to be mounted on the forward door post having a lower lip catch substantially on a level with the pivotal axis of the lever, said latch having on the lower edge of its projecting outer end an inclined face and a notch with oppositely facing shoulders and being supported on and confined by fixed supports on the door in position to meet and when extended to automatically ride over and with its notch operatively engage the catch of the latch socket as the door is moved towards closed position to thereby lock it against horizontal movement in either direction and so enable the lever by a rocking movement to effect the final closure and initial opening of the door.

5. A device of the character described comprising, for combination with a sliding car door and forward door post, a latch casing adapted to be fixed to the car door at its forward edge, an integral hand lever pivotally mounted within the casing to project normally downward therefrom and to rock rearwardly and upwardly, a latch with its rear end pivotally mounted within the casing upon the pivoted head of the lever, at a point directly to the rear of the pivotal axis of the lever when in normal downward position and at a short distance therefrom relative to the length of the lever, and extending forwardly from its pivotal axis through a slot in the forward end of the casing and supported thereby in substantially horizontal position to reciprocate forwardly and rearwardly beyond the forward edge of the door by the rocking of the lever, a slotted latch socket adapted to be mounted on the forward door post in registry with the slot in the forward end of the latch casing, said latch socket having a lip catch at the lower edge of its slot and said latch having on the lower edge of its projecting forward end an inclined face and a notch with oppositely facing shoulders automatically operative when extended and as the door is moved towards closed position to ride over and then with its notch to engage the catch of the latch socket to thereby lock the latch against

both forward and rearward horizontal movement under a thrust thereon due to the rocking movement of the lever, and means including a cam pivotally mounted on the latch socket to bear against the upper edge of the latch for locking the catch of the latch socket within the notch of the latch.

6. A device of the character described comprising, in combination with a door and forward door post, a latch casing fixed to the door at its forward edge, a lever pivotally mounted within the casing to project upwards therefrom and to rock rearwardly and downwardly, a latch with rear end pivotally mounted upon the pivoted head of the lever eccentrically of and to the rear of its pivotal axis when the lever is in upright position and supported from below in substantially horizontal position extending forwardly below the lever head and out through the forward open end of the casing and beyond the forward edge of the door and provided on the lower edge of its projecting outer end with an inclined face and a rearwardly facing locking shoulder, a slotted latch socket and socket casing mounted on the forward door post with its slot in register with the open forward end of the latch casing and providing at the lower edge of its slot a catch adapted to cooperate with the lock shoulder of the latch and a casing wall abutting the end of the latch when locked therein, a locking lug forwardly projecting from the pivoted head of the lever adapted to bear against the top of the latch when the lever is in raised upright position, and means for securing the lever in such upright position.

7. A device of the character described comprising, in combination with a door and forward door post, a latch casing fixed to the door at its forward edge, a lever pivotally mounted within the casing to project upwardly therefrom and to rock rearwardly and downwardly, a latch with rear end pivotally mounted in the end of a short elbow arm projecting rearwardly from the pivoted head of the lever when in upright position and itself supported from below in substantially horizontal position and extending forwardly below the lever head and out through the forward open end of the casing and beyond the forward edge of the door and provided on the lower edge of its projecting outer end with an inclined face and a rearwardly facing locking shoulder, a slotted latch socket and socket casing mounted on the forward door post with its slot in registry with the open forward end of the latch casing and providing at the lower edge of its slot a catch adapted to cooperate with the lock shoulder of the latch and a casing wall abutting the end of the latch when locked therein, a locking lug forwardly projecting from the pivoted head of the lever to bear against the top of the latch when the latch is in locking position within the latch socket and the lever is swung to its upright position, and means for securing the lever in such upright position comprising a pierced elbow bend at the outer end of the lever, two pierced lugs mounted on the car door to straddle the elbow bend of the lever, and a retaining pin fitting the openings in the lugs and lever end.

LOUIS D. GREGG.