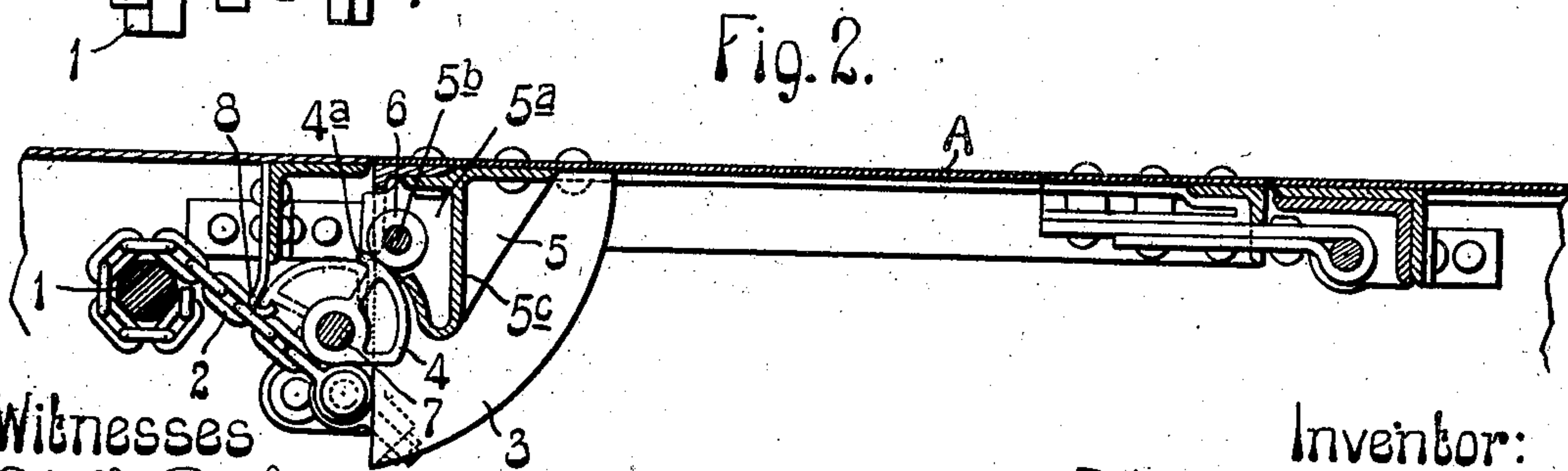
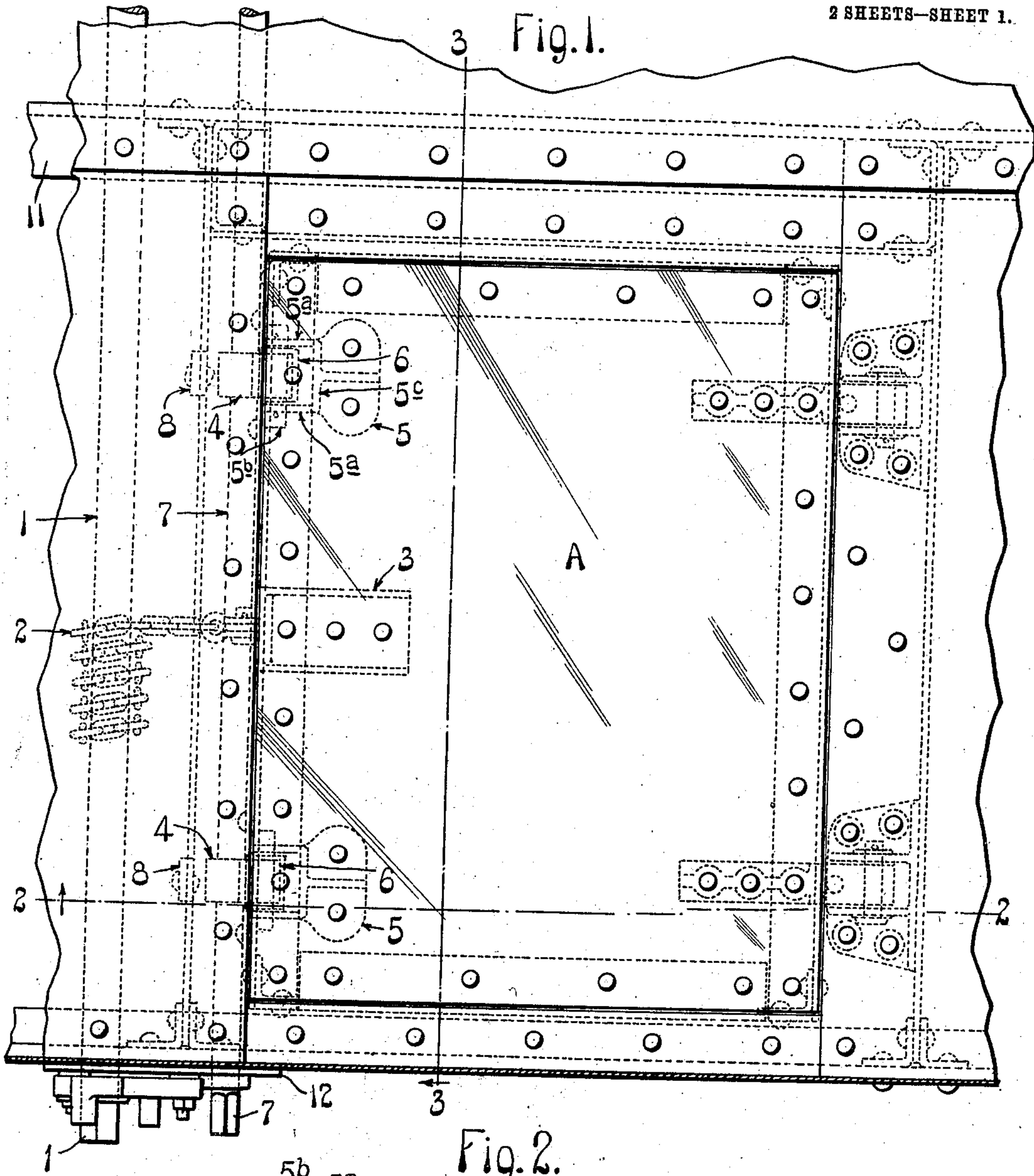


R. E. FRAME.
CAR DOOR OPERATING MECHANISM.
APPLICATION FILED DEC. 4, 1908.

944,261.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.



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Fig. 3.

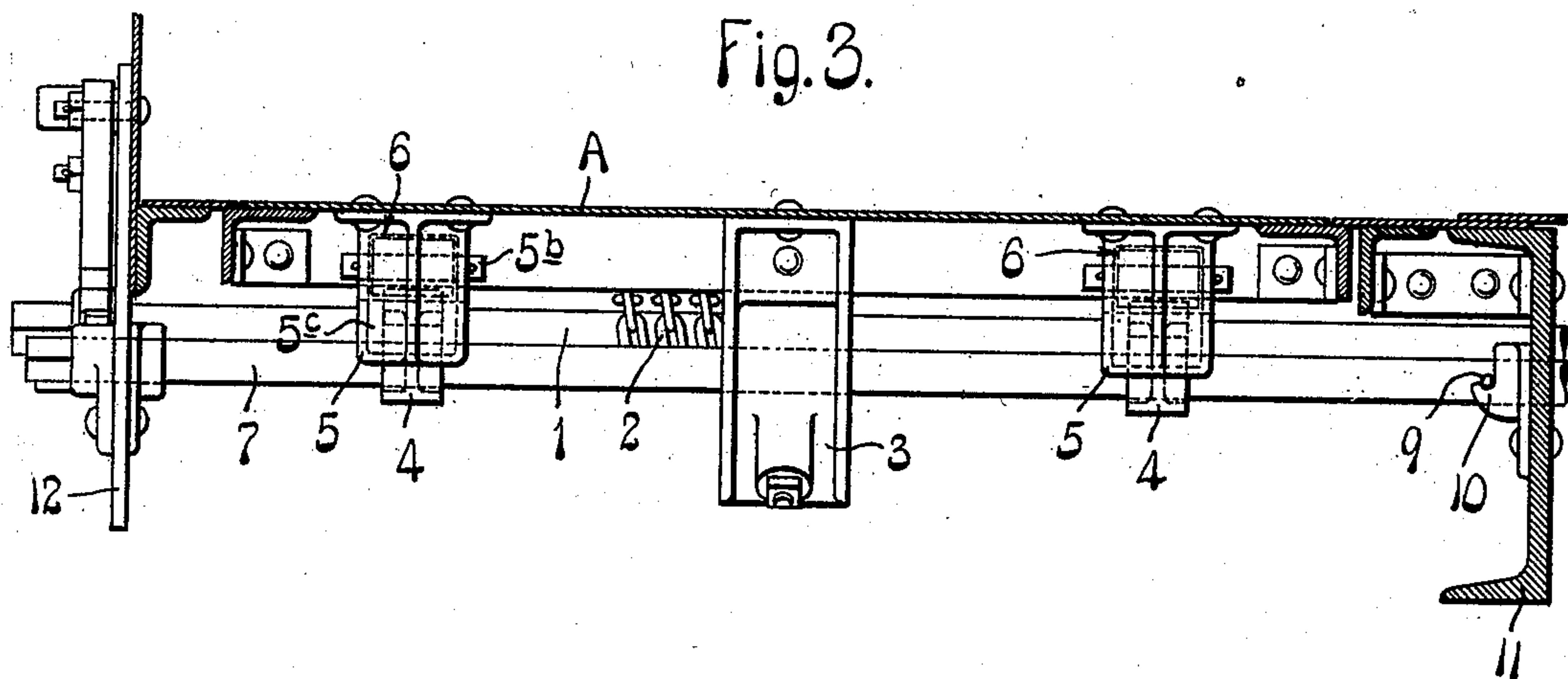
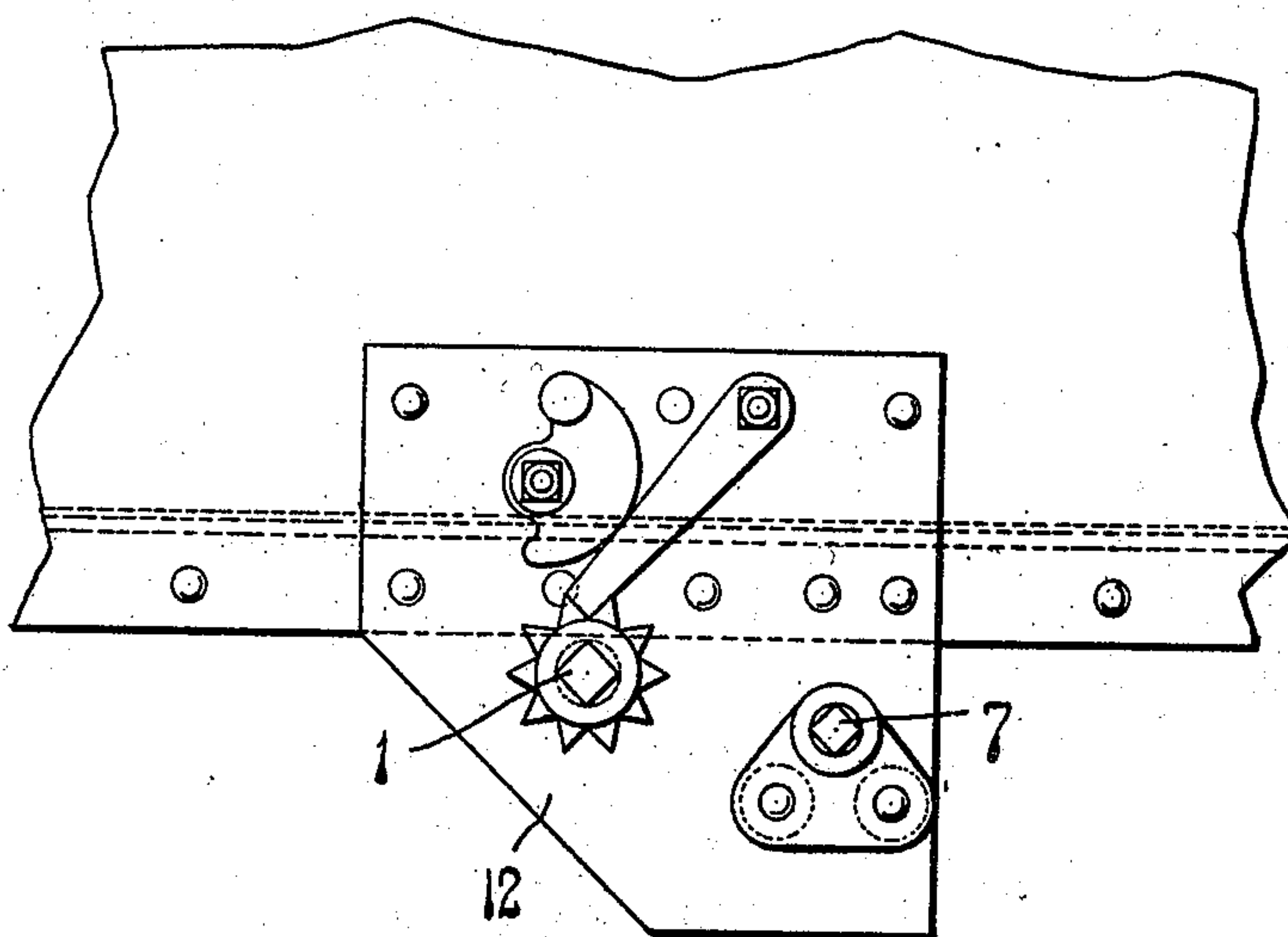


Fig.4.



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UNITED STATES PATENT OFFICE.

ROBERT E. FRAME, OF ST. LOUIS, MISSOURI, ASSIGNOR TO AMERICAN CAR & FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

CAR-DOOR-OPERATING MECHANISM.

944,261.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed December 4, 1908. Serial No. 465,941.

To all whom it may concern:

Be it known that I, ROBERT E. FRAME, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Car-Door-Operating Mechanisms, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of a portion of a car provided with a door operating mechanism constructed in accordance with my invention; Fig. 2 is a vertical sectional view taken approximately on the line 2—2 of Fig. 1; Fig. 3 is a vertical sectional view taken approximately on the line 3—3 of Fig. 1 looking in the direction of the arrow; and Fig. 4 is a detail side elevational view of a portion of the car shown in Fig. 1.

This invention relates to car door operating mechanisms, and particularly to that type which comprise means for opening and closing a hinged door, and means for relieving the strain on said door-actuating means when the door is closed.

The main object of my present invention is to provide a door-operating mechanism of the type referred to that is of simple construction and which will securely lock the door and relieve the strain on the door-operating means when the door is in its closed position.

Referring to the drawings which illustrate the preferred form of my invention, A designates a hinged door that forms part of the bottom of a car, and 1 designates a winding shaft arranged adjacent the front edge of the door and extending parallel thereto, said shaft being connected to the door by means of a chain 2 that has its lower end fastened to a member 3 which depends downwardly from the front edge of the door.

Means are provided for locking the door and relieving the strain on the chain 2 and winding shaft 1 when the door is in its closed position, and in the preferred form

of my invention as herein shown said means consists of one or more members 4 that are adapted to be moved into such a position that they will prevent the door from swinging downwardly. In the construction herein shown two members 4 are provided for each door and the door is provided on its underneath side with brackets 5 that carry rollers 6 which bear upon the members 4 when they are in their operative positions, as shown in full lines in Fig. 2. I prefer to connect the members 4 to a shaft 7 that extends parallel to the shaft 1, and the outer ends of both of said shafts are provided with non-circular heads for receiving a wrench or other suitable tool so as to enable said shafts to be turned.

The members 4 are preferably cam-shaped so that when they are moved into engagement with the rollers 6 on the door they will gradually force the door into its closed position in case the door is not fully closed. Each of the members 4 is provided at one end with a tooth or projection 4^a that co-operates with a stop 8 connected to the floor frame of the car so as to limit the movement of the shaft 7 in one direction, and said shaft is provided with a projection or pin 9 that coöperates with a stationary stop 10, as shown in Fig. 3, for limiting the movement of said shaft in the opposite direction. The stops 8 limit the movement of the shaft 7 when it is turned in a direction to withdraw the members 4 from the rollers 6 or move them into an inoperative position, as shown in dotted lines in Fig. 2, and when the projections 4^a on said members come into engagement with said stops 8 the operator will know that the door is released. When the shaft 7 is turned in the direction to move the members 4 into their operative positions the pin 9 on said shaft will engage the stop 10 and arrest the movement of said shaft when the high points of the cam surfaces on the members 4 come into engagement with the rollers 6.

The shaft 7 is preferably journaled in one member 11 of the underframe of the car and in a plate 12 that depends from one of the vertical walls of the car body, and the stop

10 is connected to the underframe member 11, as shown in Fig. 3. The brackets 5 which carry the rollers 6 can be formed in various ways but I prefer to form them in the manner herein shown, each bracket being provided with a pair of ears 5^a that carry a pin 5^b on which the roller 6 is mounted. The ears 5^a are formed integral with a cross web 5^c and the lower portion of said web conforms to the curvature of the peripheral edge of the member 4 with which the bracket coöperates, so as to form an auxiliary stop that would prevent the member 4 from moving out of engagement with the roller 6 in case the pin 9 on the shaft or the stop 10 with which it coöperates, should break.

While I have herein illustrated a construction in which the means for raising and lowering the door consists of a winding shaft and a chain connected to the door, I do not wish it to be understood that my broad idea is limited to such a structure for any suitable door-actuating means could be used without departing from the spirit of my invention. I prefer, however, to use the construction herein shown on account of its simplicity and efficiency.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a car, a hinged door that forms part of the bottom of the car, means for closing said door, a shaft arranged under the door and adjacent the front edge of same, a plurality of cams on said shaft, brackets on the underside of the door provided with rollers which coöperate with said cams, and stops on said brackets that limit the movement of said cams in one direction.

2. A car door operating mechanism, comprising a hinged door, means for closing said door, a pivotally mounted device arranged underneath the door and adapted to be moved into position to support same when it is in its closed position, a bracket on the underside of the door provided with a roller that coöperates with said device, means separate and distinct from said door-actuating means for moving said device into and out of operative position, and a stop on said bracket that limits the movement of said device in one direction; substantially as described.

3. A car door operating mechanism, comprising a swinging door, means for closing said door, a shaft extending parallel to the front edge of the door and arranged out of the path of movement of same, approximately cam-shaped members on said shaft that move into position to lock the door in its closed position when said shaft is turned in one direction, and projections on said

cam-shaped members that engage stationary stops when said shaft is turned in the opposite direction; substantially as described.

4. A car door operating mechanism, comprising a swinging door, means for closing said door, a shaft extending parallel to the front edge of the door and arranged out of the path of movement of same, an approximately cam-shaped member on said shaft that moves into position to lock the door in its closed position and exert upward pressure on said door when said shaft is turned in one direction, and means for limiting the movement of said shaft so as to properly position the cam-shaped member thereon; substantially as described.

5. A car door operating mechanism, comprising a horizontally disposed hinged door, a winding shaft arranged adjacent the front edge of the door underneath the floor of the car, a chain connected to said shaft and to a depending bracket on the underside of the door for closing said door, a pivotally mounted device arranged adjacent the front edge of the door and in a lower horizontal plane than the door lies in when it is closed, means independent of the door-actuating means for moving said device underneath the door when it is closed so as to lock same and relieve the strain on the door-actuating means, and means for limiting the movement of said device when it is moved into operative position; substantially as described.

6. A car door operating mechanism, comprising a horizontally disposed hinged door, means for closing said door, a shaft arranged adjacent the front edge of the door in a lower horizontal plane than the door lies in when it is closed, members on said shaft that move underneath the door so as to support same when said shaft is turned in one direction, and stationary stops for limiting the movement of said shaft in opposite directions so as to properly position the door-supporting members thereon; substantially as described.

7. A car door operating mechanism, comprising a hinged door that forms part of the bottom of a car, means for closing said door, a shaft arranged parallel to the front edge of the door in a lower horizontal plane than the door occupies when it is closed, a number of substantially cam-shaped members on said shaft that engage rollers on the underneath side of the door when said shaft is turned in one direction, stationary stops with which said members coöperate to limit the movement of the shaft in one direction, and independent means for limiting the movement of the shaft in the opposite direction; substantially as described.

8. A car door operating mechanism, comprising a hinged door that forms part of

the bottom of a car; a bracket on the under side of said door provided with ears for receiving a pin or pintle on which a roller is mounted, a curved web arranged underneath said roller, and a pivotally mounted cam-shaped member adapted to be moved underneath said roller to form a support for the door; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, 10
this first day of December 1908.

ROBERT E. FRAME.

Witnesses:

WELLS L. CHURCH,

GEORGE BAKEWELL.