

Sept. 29, 1925.

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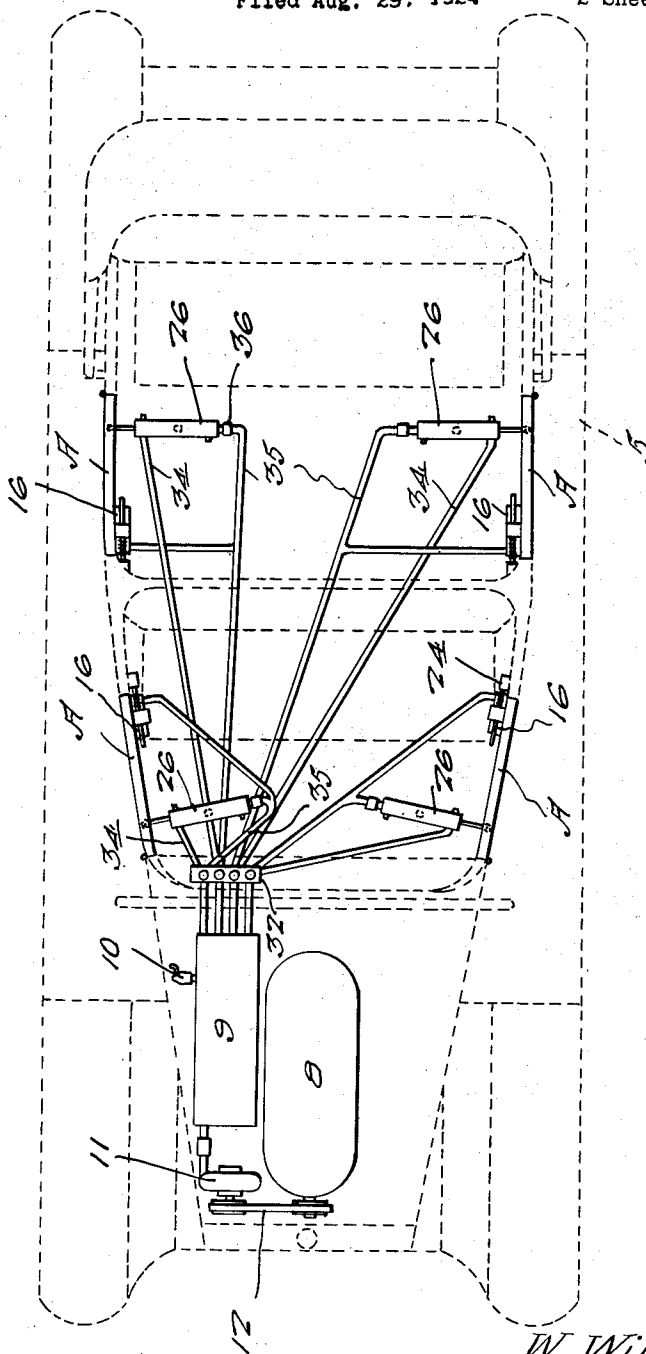
W. WILLIAMS

MOTOR OPERATED DOOR LATCH

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Fig. 1.



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Fig. 2.

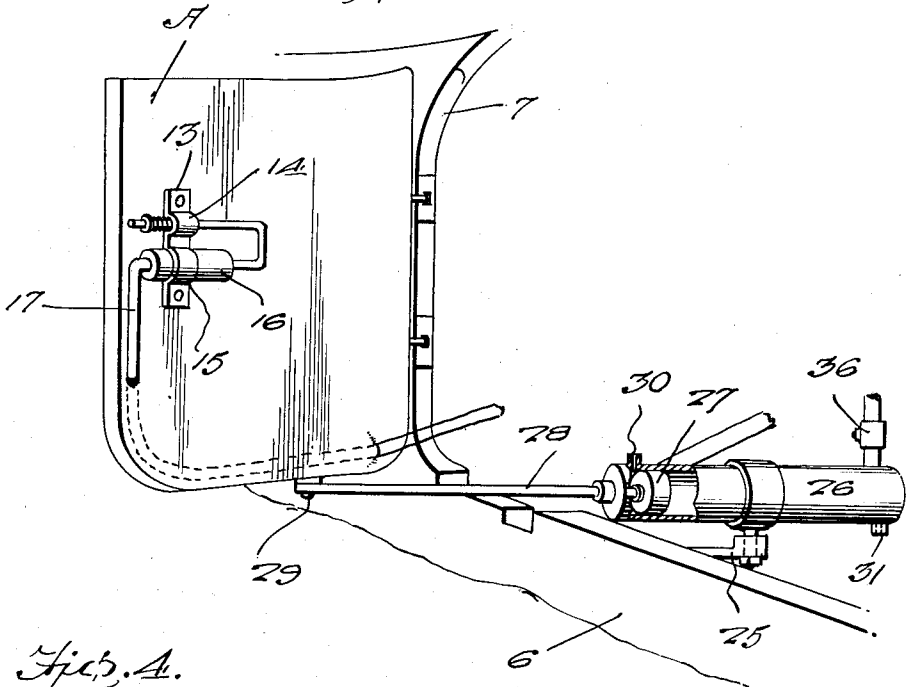


Fig. 4.

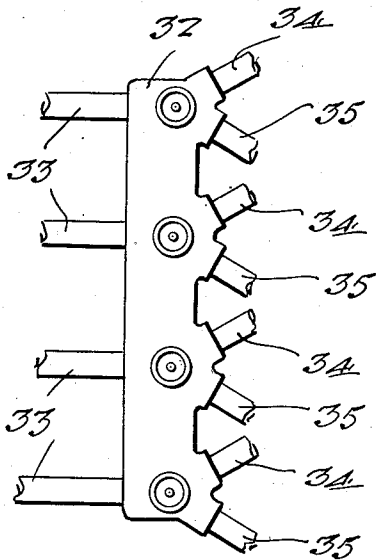
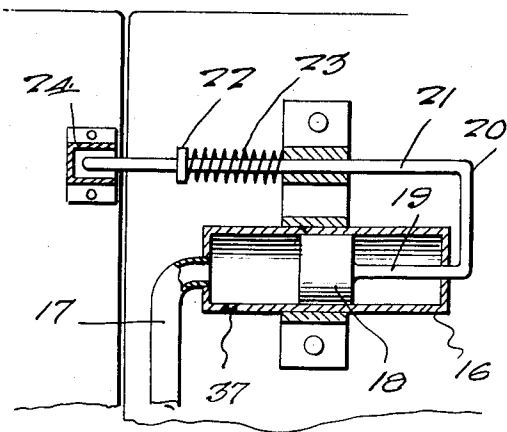


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIE WILLIAMS, OF BRENTWOOD, TENNESSEE.

MOTOR-OPERATED DOOR LATCH.

Application filed August 29, 1924. Serial No. 734,900.

To all whom it may concern:

Be it known that I, WILLIE WILLIAMS, a citizen of the United States, residing at Brentwood, in the county of Williamson and State of Tennessee, have invented certain new and useful Improvements in a Motor-Operated Door Latch, of which the following is a specification.

This invention relates generally to vehicles of the automobile type and has more particular reference to a means whereby the retaining latches of the doors may be released and the doors opened in an automatic manner, and wherein any one of the doors of the vehicle may be opened by the operator thereof without the necessity of leaving his seat.

An additional object of the invention is to provide latch releasing and door opening mechanism of this character that may be readily and inexpensively associated with practically all forms of vehicles and one that will require but little attention upon the part of the operator and that is so simple of construction as to be readily repairable by the operator of the vehicle.

In carrying out the present invention I provide an air storage tank that is preferably located alongside the vehicle motor and beneath the motor hood. An air compressor in communication with this tank is also part of the equipment and is adapted to be operated continuously during the operation of the vehicle motor. Associated with each of the door latch mechanisms is an air pressure responsive means for moving the latch bar to unlocked position. Associated with each door of the vehicle is a piston and cylinder construction, the piston of which is operatively connected to the door and immediately subsequent to the releasing of the particular door latch mechanism the air is led to the cylinder for operating the piston for moving the door to an open position. Additional means is provided for injecting the air pressure to the opposite end of the cylinder for reversing the movement of the piston in the closing of the door.

Other objects of the invention will become apparent as the nature thereof will be better

understood from the following description when taken in consideration with the accompanying drawings wherein like reference characters indicate corresponding parts throughout the several views.

In the drawings:—

Figure 1 is a diagrammatic top plan view of a conventional form of motor vehicle equipped with my latch releasing and door opening mechanism.

Figure 2 is a fragmentary perspective of one side of the vehicle, one of the doors thereof being shown in open position, the same having been moved to open position through the medium of the piston and cylinder construction forming an essential part of the invention and being disclosed in this view.

Figure 3 is a detail longitudinal sectional view through one of the air operated latch devices associated with each of the vehicle doors, and

Figure 4 is a top plan view of a particular form.

Now having particular reference to the drawings, the form of vehicle shown is designated generally by the reference character 5 and is of a conventional form of automobile, the same including chassis bars 6, a body 7, a power plant 8, and four doors all of which are designated by the reference character A.

My invention per se constitutes the provision of an air storage tank 9 that is preferably disposed beneath the hood of the vehicle and alongside of the motor 8, the same being provided with an automatic blow off cock 10 whereby after the air has reached a predetermined pressure therein the same will be allowed to discharge. This tank 9 has communication with an air compressor pump 11 that is operated through a suitable connection 12 by the motor 8 of the vehicle.

Associated with each of the doors A of the vehicle is a particular form of compressed air actuated latch mechanism and air operated mechanism for moving the door to open and closed position. It will therefore not be necessary to describe all of these mechanisms for the different doors, a description of one sufficing for each.

Now particularly referring to Figures 2 and 3 the door A is provided upon its inner side and adjacent its free edge with a lock mechanism which constitutes the provision of a vertically disposed bracket 13 formed at its opposite end with sleeves 14 and 15 of various diameters. Arranged within the sleeve 15 is a cylinder 16 closed at its opposite end and with the forward end of which communicates an air hose 17 preferably of flexible material that extends downwardly and passes into the door for a certain length and then outwardly therefrom to a point hereinafter to be more fully described. Rectilinearly movable within this cylinder 16 is a piston 18 carried by the front end of a rearwardly extending piston rod 19 that slides through an opening in the rear wall of the cylinder and that is formed at its external end with an upwardly extending portion 20 that is in turn formed with a forwardly extending horizontal portion 21 that effects a latch bolt, the same being slidably engaged through the uppermost sleeve 14 of said bracket 13. Between this sleeve 14 and an abutment 22 formed upon the latch bolt is an expansible spring 23 that serves as a means for normally projecting the forward end of the bolt 21 outwardly of the free edge of the door A in order that the same may automatically engage within a keeper 24 carried by the adjacent edge of the door frame provided by the vehicle body 7.

Extending inwardly from the frame bars of the vehicle adjacent each of the doors thereof is a bracket 25 to which is swivelly connected a horizontally arranged cylinder 26 within which is movable rectilinearly a piston 27 upon the inner end of a rod 28 that extends outwardly through a packed opening in the front wall of the cylinder and that has pivotal connection at 29 at its opposite end with the respective door A at the lower edge thereof as clearly shown in Figure 2. At the front and rear ends of said cylinder are air vents 30 and 31 respectively for an obvious purpose.

Arranged preferably upon the instrument board of a vehicle is a valve casing 32 equipped with a hand operated valve complementary to each of the doors of the vehicle which in this instance is four in number. These valves are of the two-way construction and leading from the supply tank 9 to the inlet of each of these valves are communicating pipes 33. From one of the discharge pipes of each of these valves is a flexible tube 34 that has communication with the forward end of a respective cylinder 26 as shown in Figure 2. From the remaining discharge of the particular valve is a flexible pipe 35 that has communication with the rear end of the cylinder also as shown in Figure 2. This pipe is formed or pro-

vided with, at a point directly adjacent the cylinder, a desirable check valve 36 this pipe being also in communication with at a point forward of the check valve with the inlet pipe 17 of the latch mechanism.

From the foregoing description when considered in conjunction with the accompanying drawings it will be obvious that when any one of the doors is moved from an open to a closed position a particular valve will be moved to such a position in order to inject the compressed air into the cylinder 16 of the latch mechanism, the check valve 36 in the lead to the cylinder 26 preventing entrance of air thereinto at that time. As soon as the piston 18 and the cylinder 16 has moved rearwardly to the limit of its movement the latch bar 21 will be moved to open position and the pressure of the air will then be such as to overcome the check valve 36 after which it will move the piston 27 in the cylinder 26 forwardly for consequently opening the particular door.

The cylinder 16 of the latch mechanism is formed adjacent its forward end with air vent 37 for allowing the piston 18 to again move forwardly under the action of the spring 23 when the air supply has been cut off. After this air supply has been cut off and it is desired to close the door, the particular valve is turned in an opposite direction for discharging the air to the forward end of the cylinder 26.

It will thus be seen that I have provided a highly novel, simple and efficient means for releasing the latches and opening the doors of motor vehicles, and one I believe meets all the requirements for a successful commercial use.

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

1. A latch mechanism including in combination, a bracket provided with a pair of sleeve portions, a cylinder mounted in one of the sleeve portions, a U-shaped member having one side slidable into the cylinder and the other side slidable through the other sleeve portion, a piston on the end of the side of the U-shaped member within the cylinder, means for directing compressed air into the cylinder for moving the piston and the U-shaped member, and means associated with the U-shaped member for holding it in a predetermined position.

2. In combination, a door, and a latch mechanism associated with the door including a vertically disposed bracket having a pair of spaced sleeve portions one smaller than the other, a cylinder disposed in the larger sleeve portion, a U-shaped member having one side slidable through the smaller sleeve portion, and the other side slidable into the cylinder, a piston on the side slidable into the cylinder, means for delivering com-

pressed air to the cylinder for moving the piston, a stop on the side slidable through the smaller sleeve and a spring disposed between the stop and the smaller sleeve for holding the U-shaped member and the piston in a predetermined position so that the end of the side slidable through the smaller sleeve may function as a latch and when compressed air is allowed to flow into the cylinder, the piston will be moved for releasing the latch. 10

In testimony whereof I affix my signature.

WILLIE WILLIAMS.