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J. W. FITZ GERALD

2,382,985

DOOR LOCKING SYSTEM

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Fig. 1

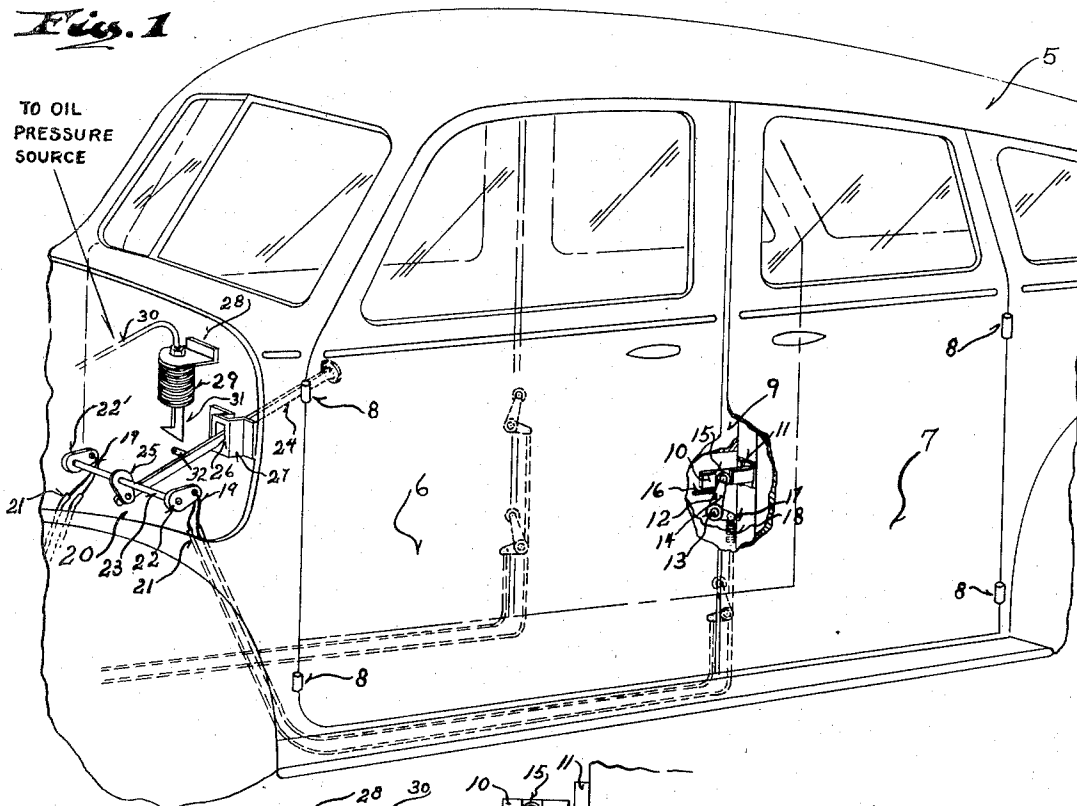


Fig. 2

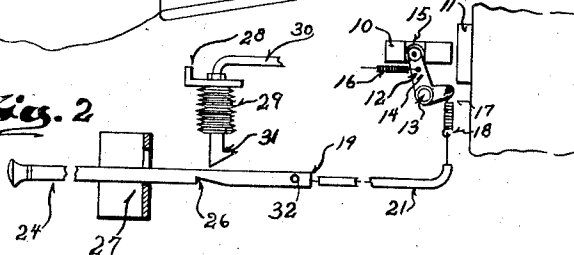


Fig. 3

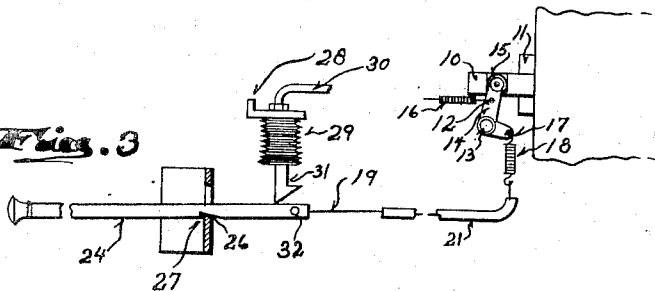


Fig. 4

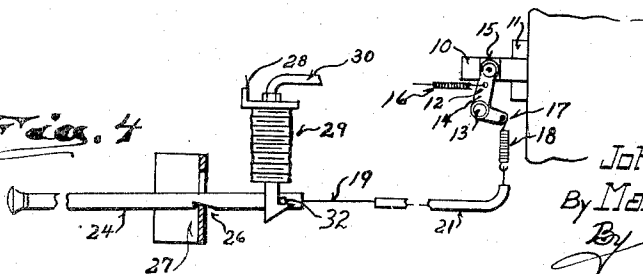
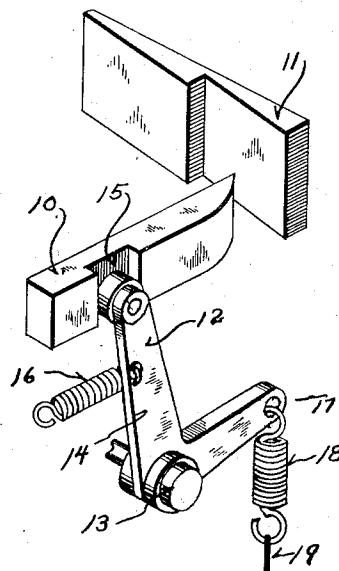


Fig. 5



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UNITED STATES PATENT OFFICE

2,382,985

DOOR LOCKING SYSTEM

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Application June 19, 1943, Serial No. 491,515

8 Claims. (Cl. 180—82)

This invention relates to door locking systems for automobiles and other engine driven vehicles and has as a general object the provision of a door locking system by which the doors may be locked closed against being opened from the inside or the outside as long as the engine is in operation, but to automatically release the doors for opening when the engine stops.

Patent No. 2,250,014 issued to John W. Fitz Gerald July 22, 1941, illustrates a door locking system in which this broad general object is achieved and the present invention has as its purpose to provide an improvement over the system there illustrated.

In the door locking system of the aforesaid patent oil pressure from the engine lubricating system is utilized to automatically engage the door latches upon starting of the engine. The present invention contemplates a door locking system wherein the engagement of the latches with the doors and also retraction of the latches is under control of the driver, while fluid pressure responsive means connected with the pressure lubricating system is automatically effective to release the latches for retraction to their inactive positions upon stopping of the engine or cessation of fluid pressure in the lubricating system for any other cause.

Thus while the locking system is under manual control, a function of the engine is utilized to automatically release the doors in the event of accident and to also guard against the driver locking himself out for he must either first stop the engine or manually release the latches before he can open the door to get out.

With the above and other objects in view, which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrates one complete example of the physical embodiment of the invention constructed in accordance with the best mode so far devised the practical application of the principles thereof, and in which:

Figure 1 is a perspective view diagrammatically illustrating the application of this invention to an automobile;

Figures 2, 3, and 4 are diagrammatic views illustrating the manner in which the latches are manually moved to their active positions to be

released for retraction to inactive positions either manually or by cessation of oil pressure; and

Figure 5 is a perspective view illustrating one of the latches per se.

Referring now particularly to the accompanying drawing in which like numerals indicate like parts, the numeral 5 generally designates the body of an automobile of the enclosed type having front and rear doors 6 and 7 at each side. The doors are hinged in the customary manner as at 8 and in the present instance have their free vertical edges adjacent to each other when in closed position.

It is to be appreciated, however, that the locking device of this invention is not dependent for its operation upon any particular arrangement of doors.

With the construction shown, the free vertical edges of the doors when closed overlies a common door post 9 which contains the conventional keeper sockets (not shown) for the ordinary spring projected bolts with which the doors are customarily equipped and which are controlled by the door handles. The door locking system of this invention does not in anywise interfere with these customary door securing bolts, but instead is entirely independent of them.

To this end each door has a latch, which as best shown in Figure 5, comprises a bolt 10 slidably mounted in the post 9 for engagement with a keeper 11 carried by the adjacent free edge of the door. A bell crank lever 12 having a fixed pivot 13 at its apex and having one arm 14 thereof drivingly connected with the bolt as at 15 provides means for sliding the bolt toward and from its active keeper engaging position.

A tension spring 16 having one end anchored and the other end connected to the arm 14 of the bell crank lever biases the bolt 10 to its inactive retracted position.

To move the bolt to its active door locking position a pull is exerted on the other arm 17 of the bell crank lever. This pull is applied through a spring 18 (which is considerably stronger than the spring 16) so that even though the bolt has been moved to its active position an open door may be slammed shut. Such closure of an open door, of course, entails retraction of the bolt, which is permitted by the spring 18 in the event the bolt is in its active position.

From the springs 18 of all of the latches wires or other flexible tension members 19 lead to a manually operable actuating mechanism indicated generally by the numeral 20. The wires 19 are suitably guided in tubes 21 and those of

the latches at one side of the vehicle are connected to a lever 22 on one end of a rock shaft 23, while those of the latches on the other side of the vehicle are connected to another lever 22' on the opposite end of the rock shaft.

The rock shaft 23 is mounted in any suitable manner and may be rocked by a handle member 24. This handle member is connected to the free end of a lever 25 fixed to the rock shaft and projects into the driver's compartment to be conveniently accessible to the driver. Upon exerting a pull on the handle member the rock shaft 23 is rocked or oscillated to impart a pull on all of the wires 19 thereby sliding all of the latches to their active positions.

The handle or actuating member may be releasably secured in its withdrawn position by engaging a notch 26 therein with a fixed keeper or catch 27. As long as the catch is engaged the latches are held in their active positions subject only to being snapped back against the tension of the springs 18 as by slamming an open door after the latches have been set.

Disengagement of the catch may be effected manually or automatically. Manual disengagement is accomplished by merely lifting upon the handle member. For automatic disengagement a fluid pressure responsive device indicated generally by the numeral 28 is provided. This fluid pressure responsive device comprises a Sylphon bellows 29 connected through a duct 30 with the oil pressure system of the engine to be expanded from its normal retracted condition by pressure in the lubricating system.

The Sylphon bellows is so mounted that one end thereof is fixed while its other end is movable toward and from the handle member 24. At this latter end the bellows carries a hook 31 adapted for engagement over a finger 32 on the handle member.

As diagrammatically illustrated in Figures 2, 3 and 4 this engagement can be effected only when the handle member is in its active position, that is, pulled out to engage its notch with the catch 27, and during the engagement the handle position is in nowise disturbed. It will also be clear that the handle member may be pulled out to lock the doors while the engine is running and the bellows are extended. In this case the finger 32 merely moves onto the hook 31 as the handle member is pulled out.

The position of the parts with the engine in operation and the latches set is shown in Figure 4. Thus upon cessation of oil pressure resulting from the stopping of the engine or from any other cause the contraction of the Sylphon bellows brought about by its inherent spring tension exerts a pull on the handle member 24 to disengage its notch 26 from the keeper or catch 27 and hence free the latches for retraction to their inactive positions releasing the doors for opening.

From the foregoing description taken in connection with the accompanying drawing, it will be readily seen to those skilled in the art that this invention provides a door locking system especially well adapted for use in automobiles in that it enables the driver to control locking and unlocking of all of the doors while affording assurance against having the doors remain locked in the event of an accident which generally results in stopping of the engine.

What is claimed as the invention is:

1. A door latching device for an engine powered vehicle having an oil pressure lubricating system, comprising: a latch for the door; means movably

mounting the latch to have a part thereof projectible into the door opening for locking engagement with the door; means biasing the latch to an inactive position; manually operable means for moving the latch to its active door locking position; means for releasably holding the latch in its active door locking position against the force of its biasing means; and means rendered potentially operative by oil pressure in the engine lubricating system for automatically releasing the latch from said holding means upon cessation of oil pressure, to thereby permit retraction by its biasing means.

2. Door locking means for an engine driven vehicle having an oil pressure lubricating system and a door comprising: a latch member; means mounting the latch member adjacent to an edge of the door for movement of a part thereof into and out of locking engagement with the door, said latch being biased to an inactive position; manually operable means for moving the latch to its active door locking position; means for releasably holding the latch in its active door locking position; and means rendered potentially operative by the oil pressure in the engine lubricating system for releasing the latch from said holding means and freeing the same for retraction by its biasing means to release the door for opening upon cessation of pressure in the lubricating system.

3. In an automobile having doors and a pressure lubricating system, means in addition to the customary door latches for securing the doors closed as long as pressure obtains in the lubricating system, comprising: a latch for each door biased to an inactive position and movable to an active door locking position, said latches having their door engaging portions formed to permit closure of an open door while its latch is in its active position; manual means for moving the latches to active positions and for releasing them for retraction to inactive positions; a manually engageable catch for securing the latches in their active positions; means for disengaging said catch; and means responsive to the oil pressure of the lubricating system for rendering said catch releasing means potentially operative by pressure in the system to be operable upon cessation of oil pressure to effect disengagement of said catch.

4. In combination with a source of fluid pressure and a door to be locked closed as long as fluid pressure obtains: a latch biased to an inactive position and movable to an active door locking position; manually operable means for moving the latch to its active door locking position including a movable member through which manually produced motion is transmitted to the latch; a catch for releasably holding said member in a position to which it is moved in the act of moving the latch to its active position; and fluid pressure actuated means biased to a predetermined normal position and movable in response to fluid pressure into engagement with said member to render the same potentially operative to disengage said member from the catch upon failure of fluid pressure.

5. In an automobile having a body equipped with doors and having a pressure lubricating system, means for locking the doors closed as long as pressure obtains in the lubricating system, comprising: a latch for each door; means mounting said latches adjacent to the door openings to have locking engagement with the doors when the latches are in their active positions; means biasing the latches to inactive positions; an

actuating member adapted to be manually moved from one position to another; driving connections between said actuating member and the latches through which actuation of said member to a predetermined position moves all of the latches to their active positions; a catch for securing said actuating member in said predetermined position from which it may be disengaged manually to free the latches for retraction to their inactive positions; an expansible member connected with the lubricating system to be expanded by oil pressure therein; and a part on said expansible member engageable with the actuating member and operable during contraction of said expansible member upon cessation of oil pressure for releasing the actuating member from the catch.

6. A device for locking a door of an engine driven vehicle comprising: a door latch for locking the door; manually operable means for operating the latch from inside the vehicle; means for releasably retaining the latch in its operative door locking position; means for retracting the latch upon release of the latch from said retaining means; spring means operable for releasing said retaining means; and means responsive to a function of the engine while in operation for loading said spring means and retaining it in its loaded position potentially operative to effect release of the latch.

7. A device for locking a door of an engine driven vehicle comprising: a door latch for locking the door; a spring for retracting the latch; manually operable means for operating the latch from inside the vehicle; a catch for releasably securing the manually operable means in its position holding the latch engaged with the door to lock the same; and a power energized organ adapted to be engaged with the manually operable means, by engine operation, and operable to disengage the catch upon stopping the engine to free the latch for retraction by its spring.

8. A device for locking a door of an engine driven vehicle comprising: a door latch for locking the door; a spring for retracting the latch; a manual operator for operating the latch from inside the vehicle including a spring link; a catch releasably engageable with the manual operator for holding the latch engaged with the door; and a power instrumentality adapted to be energized from the engine by its operation to engage the manual operator and disengage it from the catch on stopping of the engine whereby the spring link is released and the retracting spring is enabled to retract the latch.

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