

May 10, 1927.

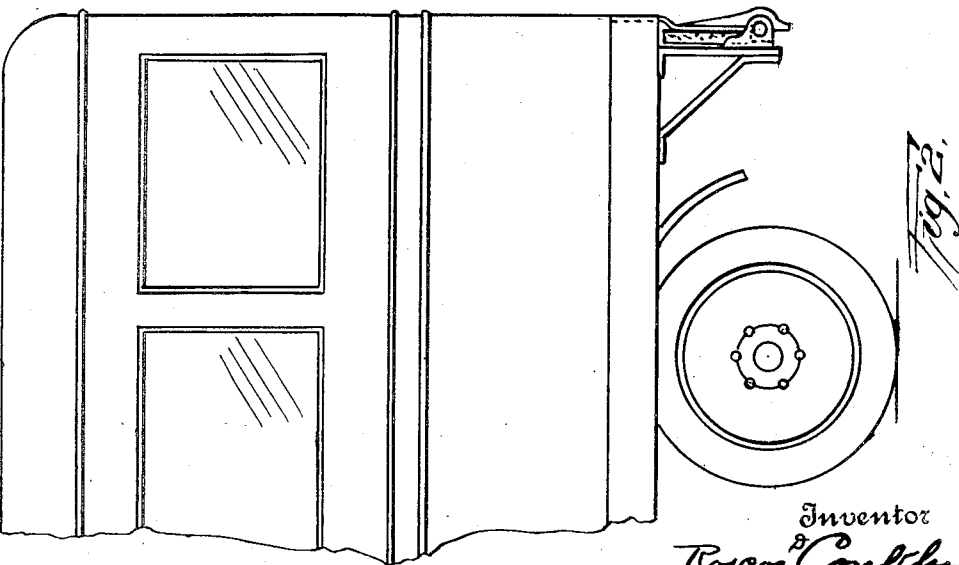
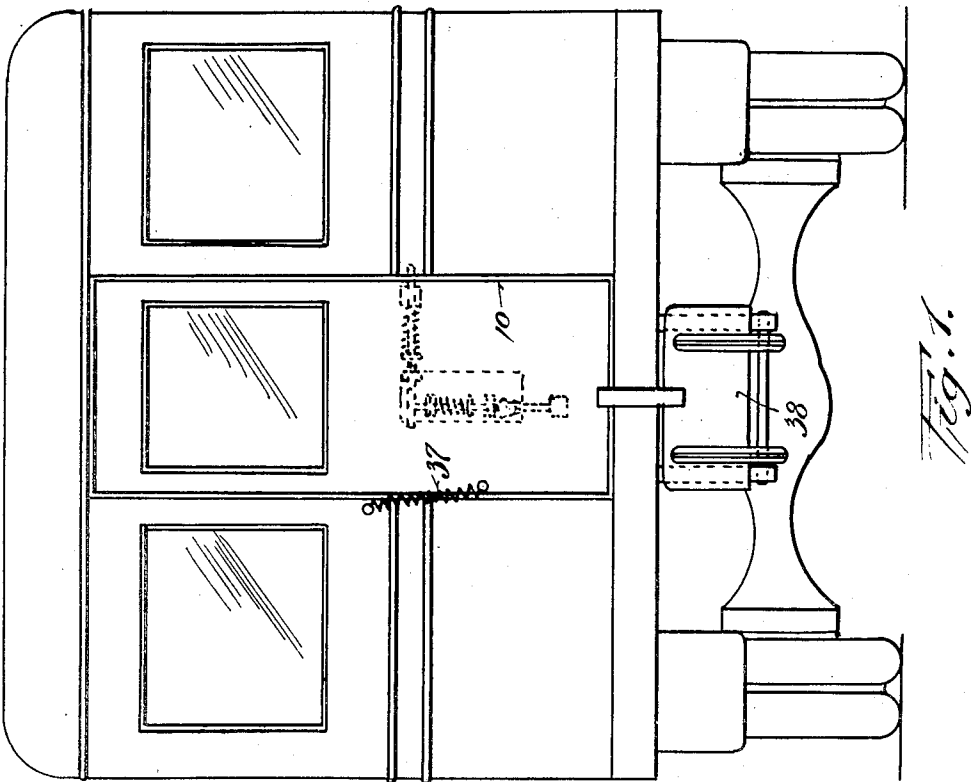
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EMERGENCY DOOR APPARATUS FOR VEHICLES

Filed April 18, 1925

3 Sheets-Sheet 1



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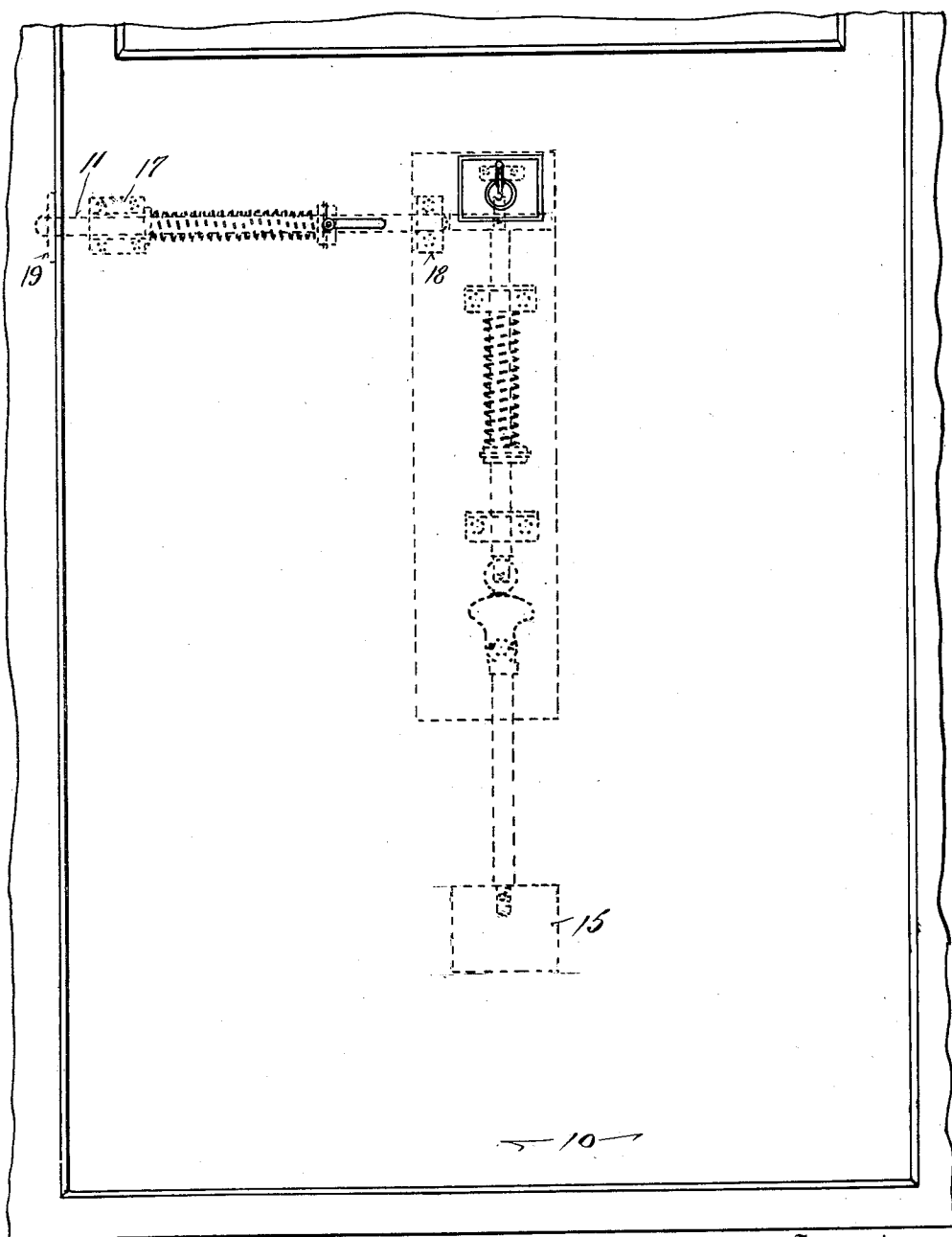


Fig. 3

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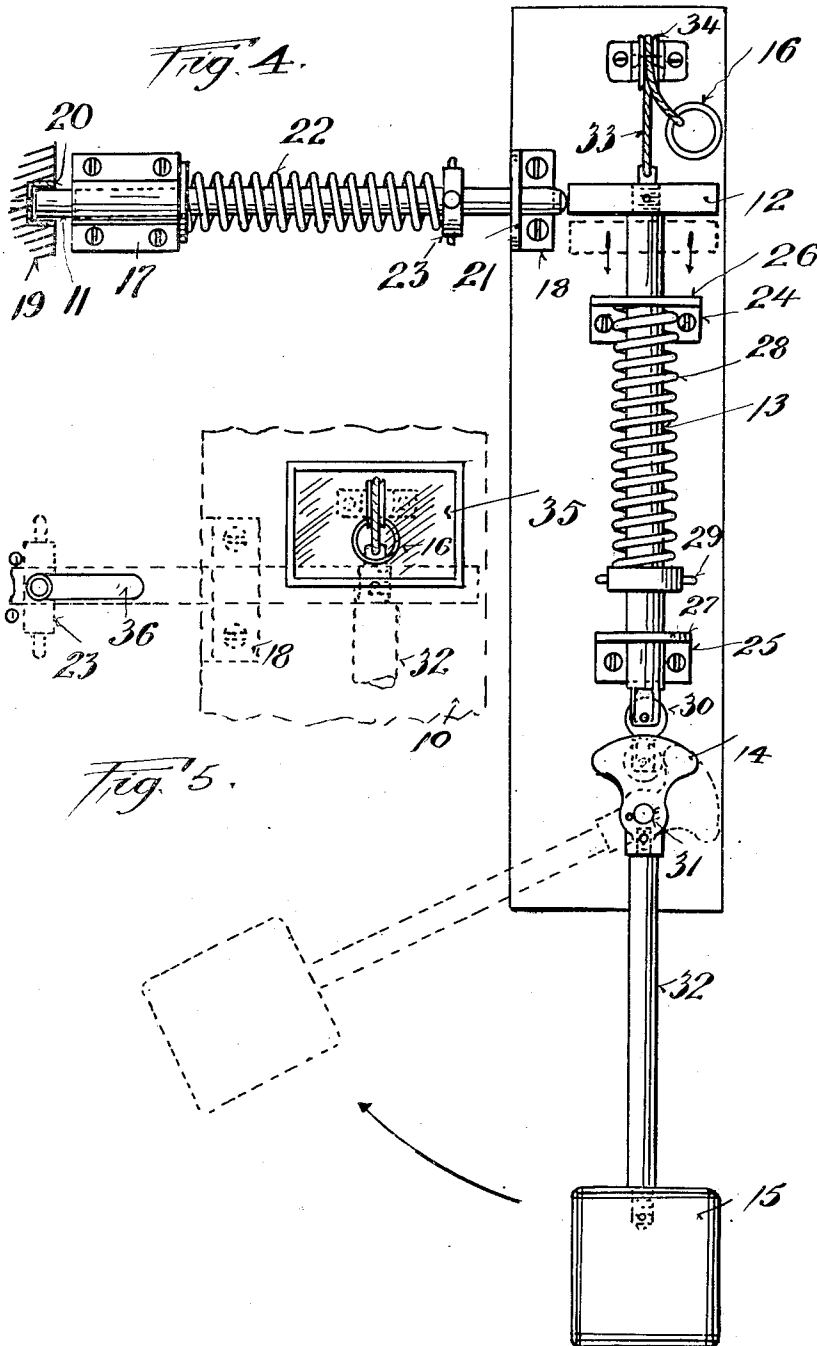
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EMERGENCY DOOR APPARATUS FOR VEHICLES

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3 Sheets-Sheet 3



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Patented May 10, 1927.

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UNITED STATES PATENT OFFICE.

ROSCOE D. CONKLIN, OF RAHWAY, NEW JERSEY, ASSIGNOR TO NATIONAL PNEUMATIC COMPANY, OF NEW YORK, N. Y., A CORPORATION OF WEST VIRGINIA.

EMERGENCY-DOOR APPARATUS FOR VEHICLES.

Application filed April 18, 1925. Serial No. 34,043.

This invention relates to an emergency door opening device, and has for its object the provision of means for opening emergency doors on vehicles, public buildings and the like, as an emergency exit to open an emergency door.

A further object includes the provision of efficient and inexpensive means that may be attached to an emergency door whereby the emergency door is automatically unlocked under certain conditions. Another object includes the provision of means for manually operating the emergency lock. The invention in its broadest sense contemplates the application of emergency unlocking mechanism for releasing locked doors wherever located.

Other objects will appear hereinafter, and I attain these results by the device illustrated in the accompanying drawings, of which—

Fig. 1 is an elevation of the rear end of the vehicle having an emergency door equipped with my emergency lock device.

Fig. 2 is a side elevation of the rear end of a vehicle showing emergency steps folded.

Fig. 3 is an enlarged view of a portion of an emergency door showing my device applied thereto.

Fig. 4 is a view showing the details of the emergency lock device; and

Fig. 5 is a view in elevation showing a portion of the door and the hand release device.

Like numerals refer to similar parts throughout the several views.

In closed public conveyances, such as automobiles, street cars or the like, it is essential that one or more emergency exits be provided. In automobiles, these exits are usually closed by a door in the rear end of the vehicle, and these doors are normally locked and not used. If, however, occasion arises, the door must be so arranged that it can be quickly opened for the purpose of letting the passengers out of the vehicle to safety. I propose to apply my improved locking and unlocking device directly to emergency doors wherever such doors are used, but for the purpose of illustration the same is shown applied to an autobus. The door 10 is normally locked by my improved device. In an emergency, however, as when the vehicle is overturned or tilted sidewise, the lock device is automatically released and the door may be opened. I further provide

means for manually assisting in unlatching said door mechanism, as in the case of a front end collision or in public buildings.

The locking device comprises lock bolt 11, a lock release cross bar 12, a lock release rod 13, a lock release cam 14, a cam weight 15, and a hand operated emergency lock release 16. The lock bolt 11 is carried on and fastened to the door 10 by a holding strap 17 and 18. Strap 17 is provided with a socket through which the bolt slides freely. The other end of the bolt slides through the bar 21, which is turned up from the strap 18. A bolt releasing spring 22 is tensioned by the set collar 23 on said bar, and normally bears against the lock release cross bar 12. This bar is carried on the end of the lock release rod 13 and the lock release rod is screwed to the door by straps 24 and 25. These straps are provided with upstanding ears 26, 27, having holes in which rod 13 is slidably held. A tension spring 28 and set collar 29 on the lock release rod 13 hold said rod under tension and cause the cam roller 30 on the end of the lock release rod 13 to press against the release cam 14. This cam is pivotally mounted on a pivot 31 to be turned thereon by a weight 15 and the tie rod 32 when the vehicle tilts sidewise or when it is overturned. The upper end of the lock release rod 13 is provided with a cord 33 passing over a pulley 34 to the pull ring 16. A glass plate 35 protects the hand operated device, and a slot 36 in the door 10 affords access to the set collar 23 for resetting the device. A spring 37 may be provided to open the door when it is unlatched. A foldable step 38 is provided for the convenience of passengers forced to use the emergency door. This step can be lowered only when the door is open.

The operation of my emergency lock is readily understood from the disclosure thus far given. Normally the device locks the emergency door by bolt 11 engaging the socket 20 and the lock release cross bar 12 being held in the path of the lock bar, as is shown, for example, by Fig. 4. The lock release cross bar is carried on the lock release rod 13 and this rod is positively held in position by the release cam 14 and its tension spring 28. If, now, the lock release cross bar is displaced from its bolt engaging position, as will occur, for example, where

the release cam is displaced, then will the bolt 11 spring back out of its locking position on account of the action of the releasing spring. The door is then forced open by the spring on the door post.

The automatic action of my device is about as follows: In case of accident, whereby the vehicle is tilted to either side, the weight 15 will remain perpendicular and this causes the cam 14 to be displaced and roller 30 with its lock release rod will snap down, carrying with it the cross bar 12 to the positions indicated in dotted lines. The lock bolt will now spring back in the manner explained before.

The manually operated release device may be called into service under certain conditions noted above. When this release is used, the glass shield 35 is broken and by means of the pull ring 16 the cross bar is pulled out of its bolt engaging position to release the door.

While I have described a specific application of my invention, I do not thereby desire to be understood as having limited myself unduly. What I claim, therefore, as new and useful, of my own invention, and desire to secure by Letters Patent, is:—

1. In an emergency lock device, the combination of a lock bolt and door to be locked, means for tensioning said lock bolt in opening position, lock bolt opposing means normally positioned in the path of the lock bolt to prevent said tensioning means to be effective, and means operated by gravity for permitting said lock bolt opposing means to be displaced to permit the tensioning means to become effective.

2. In an emergency lock device, the combination of a lock bolt and door to be locked, lock bolt releasing means for holding said bolt in locked position, a tension member on said means, a release cam for holding said

lock bolt releasing means against movement caused by the tension member, and means for overcoming the effects of the tensioning member to thereby release said lock bolt.

3. In an emergency lock device, the combination of a lock bolt and a door to be locked, lock bolt releasing means for holding said bolt in locked position, a tension member on said means, a release cam for holding said lock bolt releasing means against movement caused by the tension member, and means including a gravity displaced cam member for permitting said lock bolt releasing means to be displaced and to permit the lock bolt to be withdrawn into unlocked position.

4. In an emergency lock device, the combination of a lock bolt, and a door to be locked, lock bolt releasing means for holding said bolt in locked position, a tension member on said means, a release cam for holding said lock bolt releasing means against movement caused by the tension member, and means including a cam member and a pendulum weight attached thereto whereby—when the lock device is tilted laterally—the cam member is displaced.

5. In an emergency lock device for unlocking a door on vehicles, a lock bolt and a lock release device to maintain said bolt in locked position, means on said lock release device for tensioning said device in one direction, a cam to oppose said tensioned release device and a pendulum on said cam whereby when the vehicle is tilted from its normal positive distance, said cam is displaced and the lock release is rendered ineffective to hold the bolt in locked position.

In testimony whereof I have hereunto set my hand on this 7th day of April A. D., 1925.

ROSCOE D. CONKLIN.