G. A. ULRICH.

CAR DOOR BURGLAR ALARM.

APPLICATION FILED JAN. 18, 1909.

954,231.

Patented Apr. 5, 1910.

3 SHEETS—SHEET 1.

Fig 1.

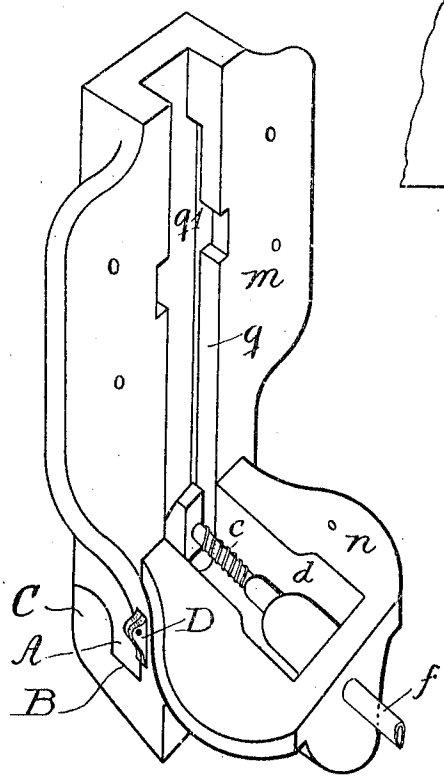


Fig 2.

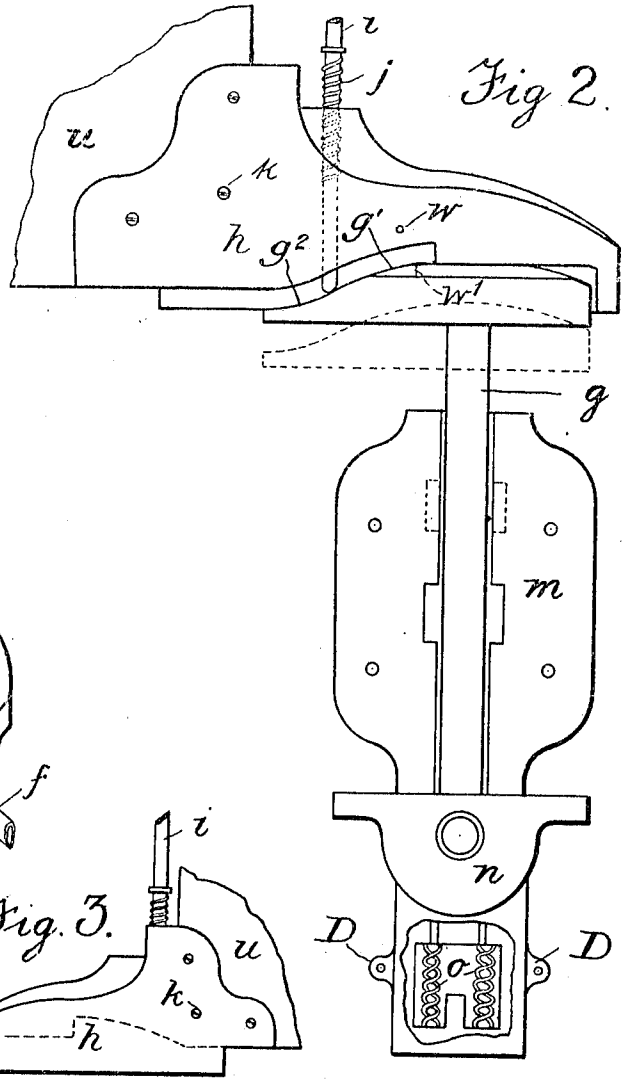
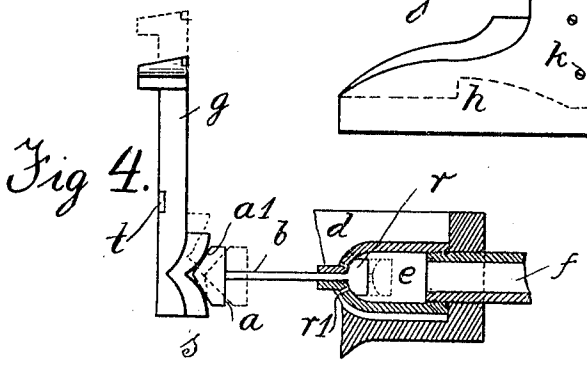


Fig. 3.

Fig 4.



Witnesses

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3 SHEETS—SHEET 2.

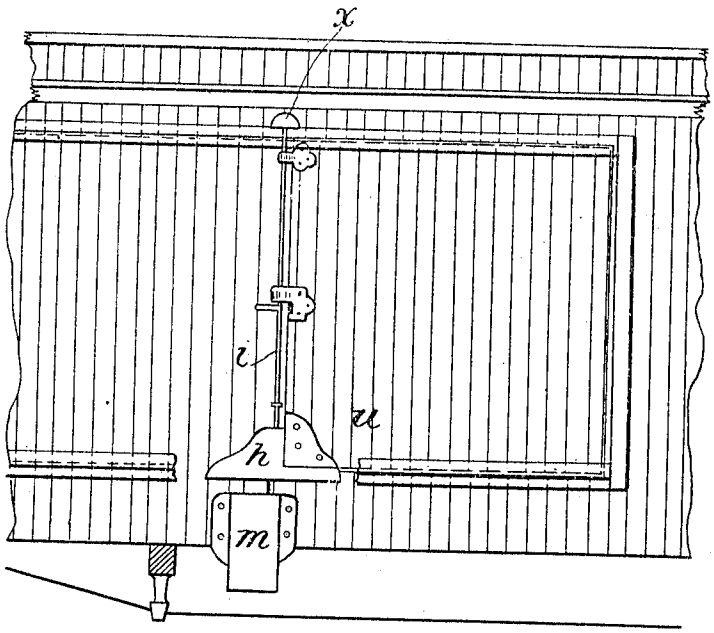

Fig. 5.

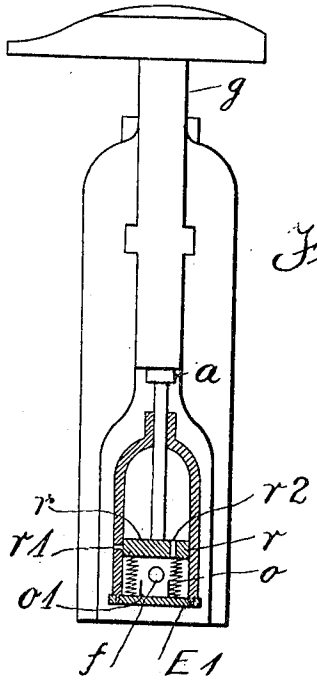

Fig. 7.

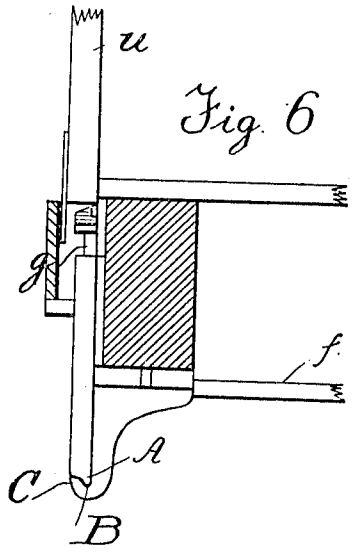

Fig. 6

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3 SHEETS—SHEET 3.

FIG. 8

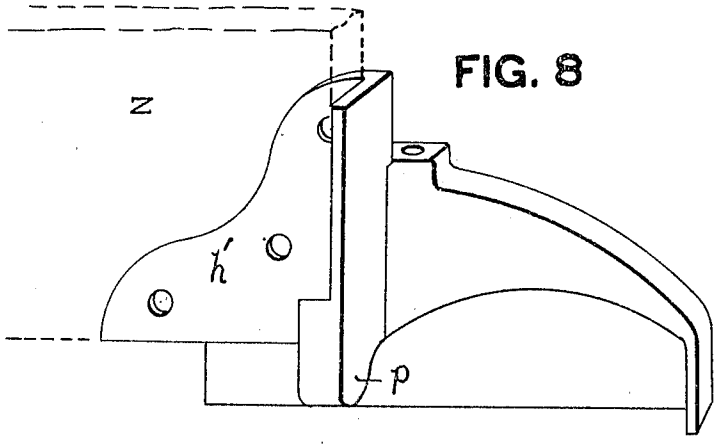


FIG. 9

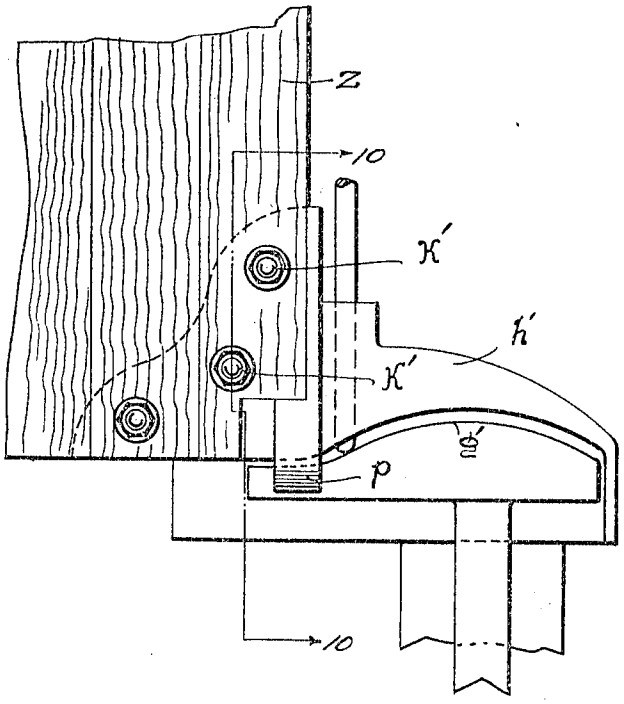
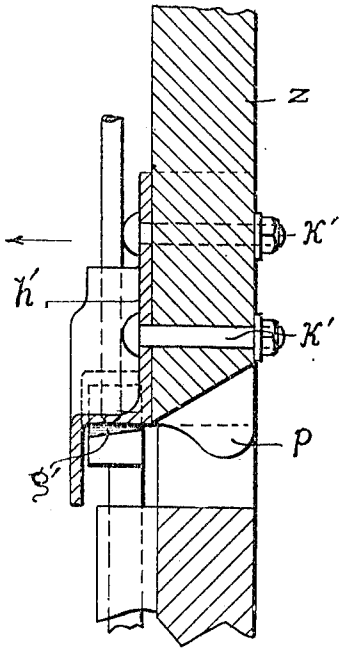


FIG. 10



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UNITED STATES PATENT OFFICE.

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CAR-DOOR BURGLAR-ALARM.

954,231. Specification of Letters Patent. Patented Apr. 5, 1910.

Application filed January 18, 1909. Serial No. 472,967.

To all whom it may concern:

Be it known that I, GEORGE ALFRED ULRICH, a citizen of the United States of America, residing at Guadalajara, Jalisco, Mexico, have invented certain new and useful Improvements in Car-Door Burglar-Alarms, of which the following is a specification.

My invention relates to car door burglar alarms. Its object is to provide a device to be applied to the doors of railroad cars, especially box cars, which automatically stops the train in case any car door protected is opened while the train is in motion. By my invention the entire train crew is then at once notified, thereby rendering it impossible to tamper with the closed door of any car in the train without the knowledge of the train crew.

In the accompanying drawings Figure 1 is a perspective view of part of my device; Fig. 2 is a rear elevation of the device partly in section; Fig. 3 is a front view of the case protecting the push-bar head; Fig. 4 is a detail side elevation; Fig. 5 is a front view of a car door showing the application of the device; Fig. 6 is a side elevation partly in section of the device as affixed to the car; Fig. 7 is a rear elevation partly in section illustrating a modification; Figs. 8 and 9 are detail side views; and Fig. 10 is a detail cross section illustrating my invention as applied to a different type of door.

Like symbols denote like parts in the different figures.

The apparatus consists essentially of the guide-housing *m* the valve stem housing *n* and the push-bar *g*. It is bolted to the side of the car under the lower corner of the lock-stile of the door; the guide housing being secured vertically to the side of the car and the valve stem-housing *m*, horizontally underneath the car, and bolted to the sill, the two housings being connected at right angles to each other by the projection A on the guide housing which fits into recess B in offset C of the valve stem housing and by bolts and nuts passing through lugs D, D, on both castings or any similar means.

The T shaped push-bar has a head preferably integral therewith and forming the cross-arms of the T. The upper surface of this head is fashioned into a cam beginning at its forward side, as mounted in place, with a concave curvature g^2 rising into a convex curve g' of slow ascent reaching its highest point over the middle of the bar, thence descending.

The push-bar moves in the guide slot *q* of the guide housing *m*, which slot has at both sides a recess or lateral enlargement q^1 not extending to the top of the guide, in order to prevent the push-bar from being forced too high by the springs *o* when the door is opened. It is kept in this recess by its side lugs *t*, *t*, integral with it. The push bar rests upon vertical spiral springs *o*, placed in the bottom of its housing, which return the bar to its resting intermediate position after the car door has been closed. In the closed position of the door these springs are under compression so that if the push-bar should for any reason be released from being held down by the car door the springs will drive it upward. On the rear side of the bar, near its lower end and directly opposite the valve-stem *b* there is fitted a double cam *s* which may be described as a notch having curved sides.

In the normal or closed position of the car-door the wedge shaped cam a^1 on the head *a* of the valve stem *b* projects into cam *s*, its sides resting upon the sides of the notch.

The head *a* moves in slot *d* provided in the valve-stem housing *n*. The valve chamber *e*, is seated in the rear of the housing, the rear wall of which forms part of said chamber, through which is screwed the branch pipe *f*, coming from the train-pipe controlling the air-brakes. The parts r^1, through the valve-chamber casing are normally closed by the valve *r*. Spring *c* on the valve stem returns the valve to its closed position when, after the stem has been pushed back by the cam on the push-bar-stem, the latter is returned to normal. The branch pipe should be run across the car, underneath so as to supply both doors. When the door is closed case *h*, secured by screws or bolts *k* to the lower corner of the door *u* covers the push-bar-head as shown in Fig. 2. This prevents tampering with the head while in no way interfering with its operation.

The door being closed, and air on the train, the bottom edge of the corner of the door is ready to slide over the concave branch g^1 of the cam on the push-bar-head. As soon as the door is slid forward to open it, the bottom edge commences to depress the push-bar, causing the upper side of the cam *s* to force back the valve-stem *b*. When

the door has reached the highest point of the cam on the push-bar-head the cam *s* on its stem will have caused valve *r* to have moved rearward entirely clear of its seat. Air rushing out through ports r^1 immediately sets the brakes, stopping the train.

On the inside of the case *h* there is a lug *w* shown in Fig. 2 which engages the slot w^1 on the outer side of the push-bar-head. When the door is closed the push-bar in rising under the action of springs *o* causes the lug to engage the vertical part of slot w^1, and pressing against the lower end of this slot it keeps the push-bar from being pressed farther up. When the door is slid open the lug *w* is released from the head by way of the horizontal part of said slot.

Should the door be pulled out from the bottom, the lug is pulled clear of the push-bar, releasing the same; the springs *o* will cause the lower side of cam *s* to push back the valve, again stopping the train. This is the position shown in dotted lines Fig. 4. The same result can be obtained by so affixing the device to the side of the car that when the door is closed the bottom of the forward corner will be over the low concave portion of the cam on top of the push-bar, far enough to prevent it being pushed up by the springs. When the door is pulled out at the bottom it releases the push-bar-head allowing the springs to cause the air-valve to open. This disposition has the advantage of insuring that the bottom of the door will always slide over the cam without danger of its being caught on the corner of the push-bar-head.

In Fig. 2 the lower part of the locking rod *i* is seen riding on the push-bar-head, which it reaches through a hole through the top of case *h*. As the top of the rod is held by the socket *x*, bolted to the side of the car, it must be pushed down to allow the door to be opened. Should this occur the rod will depress the push-bar-head, opening the air-valve and stopping the train as before. When the door is closed this rod must be pushed back into its fastening *x*, otherwise it will hold down the push-bar, keeping the air-valve open, thus preventing the train from being charged with air. Springs *j* resting on top of case *h* and pressing against a shoulder on the rod are to hold it up in its place in the upper fastening.

Figs. 8, 9 and 10 show a modified form of case *h'* having the curved lug *p* secured to the door *z* by the bolt *k*. The door *z* is of the "Wagner" type, opening outwardly from the car body, as indicated by the arrow. When the door is opened the lug *p* forces the push-bar *g* downwardly and sets the brakes, the action of the device being in all respects similar to that described above. I am thus enabled by a simple modification of the casing *h* to adapt my invention to different types of car doors.

In Figs. 5 and 7 a modified form of this device is shown, in which the horizontal valve-stem-housing is dispensed with while retaining all the essential features of the invention. The vertical push-bar-housing remains practically unchanged except that the springs *o* under it must be done away with and the valve stem housing *n* is now combined in the one casting with *m*. The foot of the push bar rests on the flat head *a* of the valve-stem. The valve *r* is of the piston type, covering in the normal position part r^1 now placed in the side of the valve-chamber casting. Several holes r^2 drilled through the disk of the piston valve allow the air entering through pipe *f* to exhaust from either side of the valve as well as to keep the air pressure substantially the same on each side. The bottom E^1 of the valve-chamber is made removable and secured to the body by tap-bolts or other suitable means. Spiral springs *o* provided with small guides o^1 are placed between the disk and the bottom of the valve chamber to take the place of former springs *o*, *o*, and *c*. They are normally under compression. When the push bar is depressed by the car door opening, valve *r* is pushed below the part r^1, allowing the air to escape, and when the push-bar is released by pulling out the door at the bottom the springs *o* push the valve *r*, above the part r^1, again causing the air to escape and the train to stop.

To make the door alarm positive in its working there should be a small hole in the conductor valve in the caboose that allows the air to escape making an appreciable noise. As soon as the noise is not heard the conductor or whoever may be in the caboose will at once know that the air has been cut off the train, or part of the train, causing him to examine into the fact. This arrangement will insure the door alarms having air to work on. It is evident that this device is susceptible of many mechanical modifications without detracting from or prejudicing its novelty or the inventive idea.

I claim:

1. In a car door burglar alarm, a valve connected to the train air pipe, a cam connected to said valve, and means for moving said cam on the movement of the car door and thereby actuating said valve.

2. In a car door burglar alarm, a valve supported by the car body and connected to the train air pipe, a bar connected to said valve and provided with a cam, and means on the car door for moving said bar longitudinally on the transverse movement of the door across the cam and thereby actuating said valve.

3. In a car door burglar alarm, a connection to the train air pipe, a valve therein,

a movable bar adapted to open said valve, a suitable housing for said valve, a bar supported by the car, a cam on said bar, and a casing attached to the car door normally fitting over said cam and adapted to move said cam and thereby actuate said valve on the opening of the car door.

4. In a car door burglar alarm, a connection to the train air pipe, a valve therein, a movable bar adapted to open said valve, a spring acting on said bar, a suitable housing for said valve, bar and spring, a cam on said bar, and means on the car door for acting on said cam when the car door is moved.

5. In a car-door alarm a valve closing an outlet to the train air-pipe as long as the car-door is closed, a push bar working in vertical guides secured to the side of the car, on the top of said bar a cam connected therewith and placed in the path the bottom of said door moves in when opening, a part of said cam reaching above said path, a valve-stem to said valve in direct contact with said bar, and moving to open and close said valve with a movement of said bar.

6. In a car-door alarm a valve-chamber, a pipe connecting said chamber with the train pipe of the air-brake system of a train, an opening in said chamber normally closed by the valve, a valve-stem having a cam on the top of its head, a push-bar working in vertical guides secured to the side of the car and resting on springs normally under compression, on the head of said push bar a curved cam having a low portion nearest to and lower than the bottom of the lock-stile end of the car door and a high portion above said bottom when closed, on the side of said push-bar a cam of the shape of a notch having curved sides, both sides of said cam normally inclosing said cam on said valve-stem-head, a case on said car-door covering said head of said push-bar when said door is closed, and a projection on the inside of said case engaging said head of said push-bar, a vertical lock-rod of said car-door resting on said push-bar cam, a spring between a shoulder on said rod and the top of said case.

7. In a car door alarm a valve chamber, a pipe connecting said chamber with the train pipe of the air-brake system of a train, an opening in said chamber normally closed by a valve when the car door is shut, a valve-stem having a wedge-shaped cam on the top of its head, a push-bar working in vertical guides secured to the side of the car and resting on springs normally under compression, on the head of said push-bar a curved cam having a low portion nearest to and extending for a short distance under the bottom of the lock-stile end of the car door and a high portion above said bottom when closed, on the side of said push-bar a cam of the shape of a notch having curved sides both sides of said cam normally inclosing said cam on said valve-stem head, a case on said car-door, covering said head of said push-bar when said door is closed, a vertical lock-rod of said car-door resting on said cam on the head of said push-bar, a spiral spring between a shoulder on said rod and the top of said case.

8. In a car-door alarm a valve-chamber, a pipe connecting said chamber with a train-pipe of the air-brake system of a train, an opening in said chamber normally closed by a valve, a valve-stem, a push-bar-working in vertical guides secured to the sides of the car, on the head of said push-bar a curved cam having a low portion nearest to the lock-stile end of said car-door and extending for a short distance under and pressing against its bottom when said door is closed, spiral springs pushing said push-bar upward, a case on said car-door covering said head of said push-bar in the normal position of door, a vertical lock rod of said car-door resting on said push-bar cam.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE ALFRED ULRICH.

Witnesses:

OTIS BRENNAN,

W. W. SCHOETTLIN.