L. E. VINING.

APPARATUS FOR PREVENTING THEFT FROM CLOSED COMPARTMENTS.

APPLICATION FILED DEC. 13, 1921.

1,429,306. Patented Sept. 19, 1922.

2 SHEETS—SHEET 1.

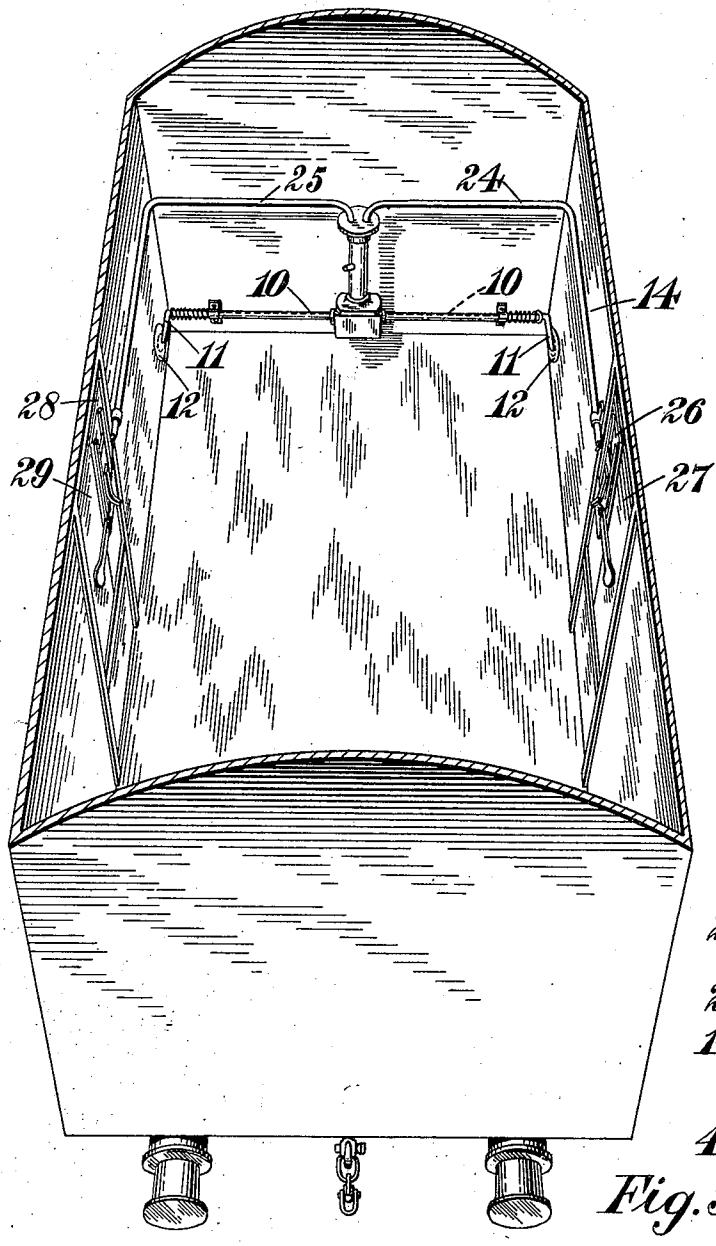


Fig. 1.

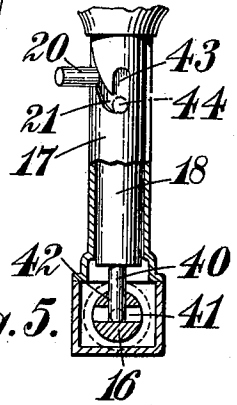


Fig. 5.

INVENTOR:

Leonard Edward Vining,

by Byrnes, Stebbins, Burgess & Parmelee,

his attys.

L. E. VINING.

APPARATUS FOR PREVENTING THEFT FROM CLOSED COMPARTMENTS.

APPLICATION FILED DEC. 13, 1921.

1,429,306. Patented Sept. 19, 1922.

2 SHEETS—SHEET 2.

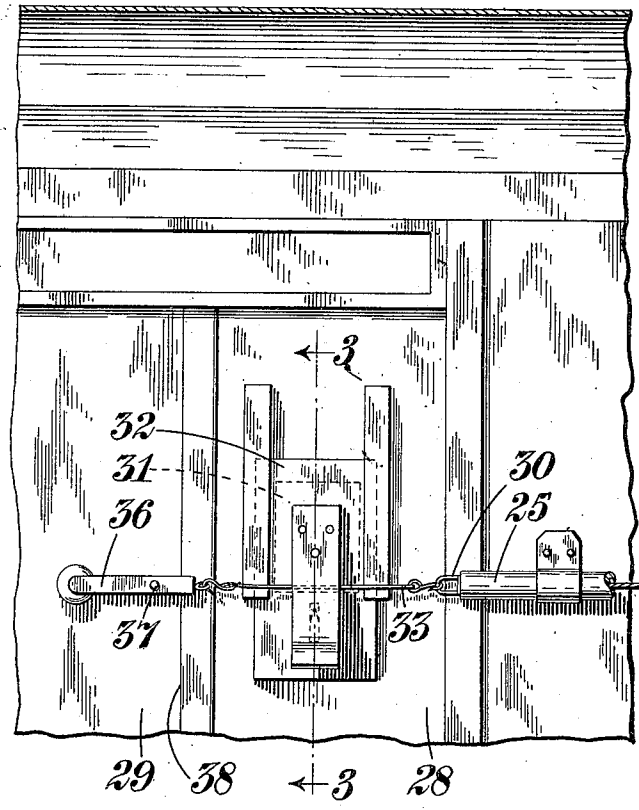


Fig. 2.

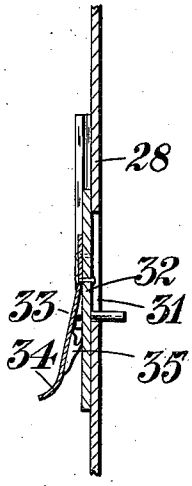


Fig. 3.

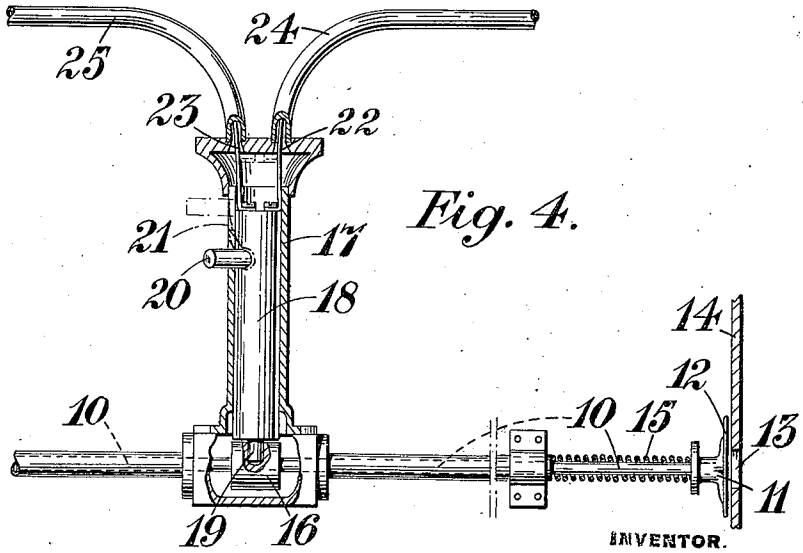


Fig. 4.

INVENTOR.

Leonard Edward Vining,

by Byrnes, Townsend, Burgess & Brinkerhoff,

his attys.

Patented Sept. 19, 1922. 1,429,306

UNITED STATES PATENT OFFICE.

LEONARD EDWARD VINING, OF LUCKNOW, INDIA.

APPARATUS FOR PREVENTING THEFT FROM CLOSED COMPARTMENTS.

Application filed December 13, 1921. Serial No. 522,053.

To all whom it may concern:

Be it known that I, LEONARD EDWARD VINING, a subject of the King of England, residing at Lucknow, India, have invented certain new and useful Improvements in Apparatus for Preventing Theft from Closed Compartments, of which the following is a specification.

This invention is for improvements in or relating to apparatus for preventing theft from closed compartments, and has for its particular object to prevent the theft of goods from closed railway wagons. Although these wagons, used for example in India, are provided with no means of access except the doors, and these are bolted and locked, it is found that the locks are frequently picked by natives and grain or other stores are stolen from the wagons. This invention, however, may equally well be applied to any stores, buildings, or other form of closed compartment.

According to this invention, theft-preventing apparatus for a closed compartment comprises in combination an indicator, a line controlling the indicator and operatively connected with the means of entrance to the compartment in such manner that the line moves the indicator from the "all right" position should the means of entrance be opened but will not return it on the closing of such means of entrance, and a movable cover for a trip-setting opening in the wall of the compartment, which cover carries a one-way engaging finger so situated relatively to the said line that it trails across it when the cover is moved in the closing direction but interlocks with it when the cover is moved in the opening direction, so that should the doors or other means of access to the compartment, or the cover aforesaid, be opened, the indicator will show that such opening has taken place even though they be afterwards closed.

Preferably the indicator is loaded to move into the "alarm" position, and the controlling line is connected to a trip whereby the indicator is locked in the "all right" position until the trip is operated by the said line.

The loading may be applied to a member which it tends to move angularly and the trip takes the form of a pin preferably weighted which engages the loaded member and prevents its angular movement until such time as the pin is withdrawn by the indicator-control line.

According to one method of carrying out this invention as applied to a railway wagon, the indicator takes the form of an arm pivoted to swing parallel with one wall of the wagon and carrying at one end a disc, for example painted red, which can be brought opposite an aperture in the wall, which aperture is preferably closed by glass or the like. When the disc is opposite the aperture it is in what will hereinafter be referred to as the "all right" position, but if it is swung away from the aperture it is in the "alarm" position, though obviously this could be reversed.

In the accompanying drawings which illustrate, by way of example, the application of this invention to a railway wagon—

Figure 1 is a perspective view showing the complete apparatus in the wagon;

Figure 2 is a partial view in elevation showing the door of a wagon viewed from the inside;

Figure 3 is a detail view, being a section on the line 3—3 of Figure 2;

Figure 4 is a view partly in section showing the indicator and its trip device; and

Figure 5 shows a modified construction.

Like reference characters indicate like parts throughout the drawings.

In the particular embodiment of the invention illustrated in Figures 1 to 4, there is provided at any convenient place in the wagon, say at one end, a rod 10 (see Figures 1 and 4) disposed horizontally and mounted in bearings so that angular movement can be imparted to it about a horizontal axis. This rod carries at each end an arm 11 and a disc 12. An aperture 13 is provided in the side walls 14 of the wagon, and is so positioned that the said turning movement of the rod 10 brings the disc 12 into or out from register with this opening. These discs 12 constitute the indicator, and they may be arranged so that they are normally set in register with the openings 13, so that this is the "all right" position, but that if the doors of the wagon are tampered with, the discs 12 move away from the apertures 13 and are no longer visible therethrough. This serves as an indication that an attempt has been made upon the wagon. In the par-

ticular construction illustrated, the rod 10 is loaded by means of spiral springs 15 which normally tend to turn it into the "alarm" position, but such movement is restrained in the manner hereinafter described.

At any convenient point in its length the shaft 10 is formed with an enlargement 16 having one or more holes in it whereof the axial direction is radial to the rod. Above the rod 10 there is mounted a casing or guide 17 wherein slides a weighted member 18 which has a pin 19 formed on its lower end, this pin being adapted to engage with the hole or holes aforesaid in the enlargement 16. The weight 18 is also provided with a laterally-projecting pin or holder 20, which extends outwards through a slot 21 in the casing 17 to provide means for manual operation of the weight 18. The slot 21 is conveniently helical and constitutes a guide for the pin 20 so that the weight 18 has a slight rotary movement as it is raised or lowered in its guide 17.

Two flexible lines or cords 22, 23 (see Figure 4) are connected to the weight 18 and are led through suitable tubular guides 24, 25 along the back and sides of the wagon to the doors on each side. These doors are illustrated as double folding doors 26, 27 and 28, 29 respectively. The tubular guides 24, 25 terminate adjacent their respective doors, and the flexible lines extend as far as the ends of their respective guides, being provided at those ends with loops 30 (see Figure 2) or other convenient means for attaching a further cord or line to them. Alternatively, each of the lines 22, 23 may be of sufficient length to extend from the end of its tubular guide across one of the doors, for example, 28, so as to be attached in any convenient manner to the companion door, for example 29.

The operation of this device is as follows:

The rod 10 is turned so as to bring the indicating discs 12 into the "all right" position, that is to say, in register with the openings 13, and the weight 18 is then moved downwards or allowed to fall so that its pin 19 engages one of the holes in the part 16 of the rod 10, so as to hold the rod against any turning movement under the action of the springs 15. This pin 19, therefore, constitutes a trip device which retains the indicator in the "all right" position until it is moved. The lines 22, 23 are then drawn comparatively tight in their guides and fixed across the doors in the manner hereinbefore described. Each line thereby crosses the meeting point of the two doors on each side of the wagon so that neither door can be opened without pulling upon one or other of the lines; such pull will immediately raise the weight 18 and disengage its pin 19 from the part 16 of the rod 10 and release the indicator so that it would move into the "alarm" position.

In order to provide for setting the lines after the doors have been closed, there is provided in the doors, or in any other convenient position, a setting opening 31, with a vertically sliding cover- or closure-plate 32. This opening 31 is so positioned that the line 23 (see Figure 2) or the extension 33 thereof extends across it or in close proximity to it.

After the wagon doors have been closed and locked in the ordinary manner, the cover-plate 32 is raised from outside and the operator can insert his hand through the opening 31 to adjust the line across the door in the manner hereinbefore described.

In order to prevent access to the interior of the wagon through the opening 31 without operating the indicator, the cover-plate 32 is provided on its inner surface with means for engaging the line which trips the indicator. This may be effected by providing on the inside of the cover-plate a trailing arm which is hinged to swing about a horizontal axis parallel with the line 23, the hinge being such that the arm can swing upwards freely but will not swing downwards beyond the horizontal position. This arm is so positioned that when the cover-plate 32 is open, the arm is above the horizontal position occupied by the line 33, and when the plate is allowed to fall to close the opening 31 the arm trails across the line 33 and comes sufficiently far below it to be released and fall into a horizontal position. When thus readjusted this arm will engage and pull on the line 32 after the cover-plate is raised to open the aperture 31. In a modified construction, however, which is illustrated in Figures 2 and 3, the cover-plate 32 is provided on its inner surface with a tongue-like member 34 extending inwards and downwards from it, and an upwardly directed hook 35 is fixed on that side of the tongue which is adjacent the cover-plate. This tongue is so shaped and disposed that after the cord 33 has been put in place, and the cover-plate 32 is allowed to fall, the line is engaged between the tongue 34 and the plate 32 as shown most clearly in Figure 3. The upwardly-directed hook 35 does not offer any obstruction to the entry of the line 33 into the position shown in Figure 3, but it acts as a barb to engage the line 33 should the cover plate 32 be raised to open the aperture 31.

It was stated above that the lines 22, 23 may terminate at the ends of their tubular guides or may be of sufficient length to extend across the door; the preferred construction is that in which the lines terminate near the ends of their guides, being

provided with suitable stops to prevent them being withdrawn into the guides and to permit of the easy attachment of separate lines or cords to them these extra portions being of sufficient length to extend across the door; such an extension-piece is indicated at 33 in Figure 2. The ends of the lines may be connected to the doors by means of ordinary staples, but it is preferred to attach them to a locking bar 36 as shown in Figure 2. This is a weighted bar which is pivotally mounted at 37 on one of the doors 29 so that it normally hangs vertically clear of the line of junction 38 of the two doors. This bar is used to receive the end of the line 33, being for example provided with an eye to receive a hook on the end of the line, and it is so proportioned that when thus connected to the line the bar swings into position across the line of junction 38 aforesaid. It thereby provides a lock for the doors which prevents them being opened and which is situated inside the wagon.

Figure 5 shows a modified construction providing further safeguards. This figure is a partly sectional view in a plane at right-angles to the plane of section in Figure 4. In this construction the pin 40 on the lower end of the weight 18 is made somewhat longer than in the previously-described construction, and the enlargement 16 on the shaft 10 is provided with two bores 41, 42 to receive the pin. The bore 41 is so positioned that it is in alignment with the pin 40 when the indicator discs 12 are in the "alarm" position, and the bore 42 is arranged to be in alignment with the pin in the "all right" position. Further, the bore 41 is deeper than the bore 42 so that the pin can enter further into it. Conveniently, the bore 41 extends right through the enlargement 16 and the bore 42 opens into the bore 41 in a T-formation.

The slot 21 wherein the pin 20 moves is helical or inclined, and is provided at its lower end with an upward extension 43.

The various parts are so proportioned that when the indicator is set in the "all right" position with the pin 40 engaging the hole 42, the pin 20 does not fall to the bottom of the slot 21, but occupies a position as shown in Figure 5.

In the operation of this construction of the device, any pull on the cords, in the manner above described, lifts the pin 40 out from engagement with the hole 42 and allows the indicator to move into the "alarm" position. This turning of the shaft 10 thereby brings the hole 41 into alignment with the pin 40, and as soon as the tension on the cords is released, the weight 18 falls and the pin 40 enters the hole 41 to its full depth, so that the pin 20 travels down the slot 21 to the bottom, then occupying the position shown at 44 in Figure 5. The indicator is therefore locked in the "alarm" position, and any attempt to release it by pulling on the cords merely lifts the pin 20 into the extension 43 of the slot 21, since the cord cannot impart the necessary rotation to the weight 18 to cause the pin to travel up the inclined slot 21. The part 43 of the slot is only of such length that the pin 40 cannot be disengaged from the hole 41 to release the shaft 10. It is thereby rendered impossible to reset the indicator in the "all right" position by pulling on the cords to lift the weight 18, and at the same time directly moving the discs 12, for example through the aperture at which they are exposed, by breaking the glass or like cover of this aperture; the only method of resetting the device is to unload the wagon so as to obtain access to the handle 20 in the normal way from inside the wagon.

It will be seen that this invention provides a device which will indicate any attempted opening of the doors, the device itself being set through a special opening provided with a self-locking cover, the arrangement being such that after the device has been set and the cover closed, any attempt to open the cover, quite apart from an attempt to open the door, would also trip the indicator to indicate that the doors had been tampered with.

Obviously this invention could be applied to warehouses or any other buildings, and the parts of this apparatus may be variously modified without departing from the spirit of the invention, the detailed description given being only by way of example and not by way of limitation. The indicator, for instance, could take the form of a sound-alarm or it could assume various forms provided it is tripped by a line having such engagement with the doors that they must pull upon it when opened, and a setting-aperture is provided whose opening is closed by a cover-plate which again must pull upon the line if it is opened after setting.

I claim:—

1. Theft-preventing apparatus for a closed compartment comprising in combination an indicator, a line controlling the indicator and operatively connected with the means of entrance to the compartment in such manner that the line moves the indicator from the "all right" position should the means of entrance be opened but will not return it on the closing of such means of entrance, and a movable cover for a trip-setting-opening in the wall of the compartment, which cover carries a one-way engaging finger so situated relatively to the said line that it trails across it when the cover is moved in the closing direction, but interlocks with it when the cover is moved in the opening direction, for the purpose described.

2. A theft-preventing device for a closed compartment and according to claim No. 1 wherein the indicator is loaded to move into the "alarm" position and the controlling line is connected to a trip whereby it is locked in the "all right" position until the trip is operated by the said line.

3. In a theft-preventing device according to claim No. 1, the combination with a controlling line that is stretched across a door or doors, of a bar mounted on one part of the door and movable to engage said controlling line, said bar being so disposed that when thus moved it engages the second part of the door to provide a lock inside the compartment.

4. In theft-indicating apparatus for a closable compartment, the combination with an indicator, of a line controlling the indicator and so arranged in operative relation to the closed means of entrance to the compartment that the line will move the indicator from the "all right" position should the means of entrance be opened, but will not return it on the closing of such means of entrance, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across it when the cover is moved in the closing direction, but will engage with it when the cover is moved in the opening direction, substantially as set forth.

5. In theft-indicating apparatus for a closable compartment, the combination with an indicator loaded to move into the "alarm" position, and a catch arranged to hold the indicator in the "all right" position, of a line connected to said catch and so arranged in operative relation to the closed means of entrance of the compartment, that the line will trip said catch should the means of entrance be opened, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across it when the cover is moved in the closing direction, but will engage with it when the cover is moved in the opening direction and thereby trip said catch, substantially as set forth.

6. In theft-indicating apparatus for a closable compartment, the combination of an indicator comprising a rotatable member loaded to move into an "alarm" position, a pin arranged to enter a hole in said member and hold the indicator in an "all right" position against angular movement, a line connected to said pin and so arranged in operative relation to the closed means of entrance to the compartment that the line will trip said pin should the means of entrance be opened, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across it when the cover is moved in the closing direction, but will engage with it when the cover is moved in the opening direction and thereby trip said catch, substantially as set forth.

7. In theft-indicating apparatus for a closable compartment, the combination of an indicator comprising a rotatable member loaded to move into an "alarm" position, a weighted pin arranged to enter a hole in said member and hold the indicator in an "all right" position against angular movement, and a line connected to said pin and so arranged in operative relation to the closed means of entrance to the compartment that the line will trip said means should the means of entrance be opened, substantially as set forth.

8. In theft-indicating apparatus for a closable compartment, the combination of an indicator comprising a rotatable member loaded to move into an "alarm" position, a weighted pin arranged to enter a hole in said member and hold the indicator in an "all right" position against angular movement, a line connected to said pin and so arranged in operative relation to the closed means of entrance to the compartment that the line will trip said pin should the means of entrance be opened, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across it when the cover is moved in the closing direction, but will engage with it when the cover is moved in the opening direction and thereby trip said catch, substantially as set forth.

9. In theft-indicating apparatus for a closable compartment, the combination of an indicator having a load tending to move it from an "all right" position into an "alarm" position, a catch arranged to engage and hold the indicator in each said position, a line connected to said catch and so arranged in operative relation to the closed means of entrance to the compartment that the line will trip said catch from the indicator in the "all right" position should the means of entrance be opened, and thereby allow the indicator to move into the "alarm" position and be engaged therein by said catch, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across the line when the cover is moved in the closing direction, but will engage with the line when the cover is moved in the opening direction and thereby trip said catch

from the indicator in the "all right" position, substantially as set forth.

10. In theft-indicating apparatus for a closable compartment, the combination of an indicator having a load tending to move it from an "all right" position into an "alarm" position, a catch arranged to engage and hold the indicator in each said position, a line connected to said catch and so arranged in operative relation to the closed means of entrance to the compartment that the line will trip said catch from the indicator in the "all right" position should the means of entrance be opened, and thereby allow the indicator to move into the "alarm" position and be engaged therein by said catch, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across the line when the cover is moved in the closing direction, but will engage with the line when the cover is moved in the opening direction and thereby trip said catch from the indicator in the "all right" position, said catch and the part with which it engages in the "alarm" position of the indicator being such that the catch cannot be tripped solely by pulling the line, substantially as set forth.

11. In theft-indicating apparatus for a closable compartment, the combination of an indicator comprising a rotatable member loaded to move into an "alarm" position, said member having two holes arranged transversely one of the other and of the axis of rotation of the member, a vertical slotted guide arranged vertically above said holes, a weight slidable in said guide, said weight having a pin adapted to enter said holes, and an arm movable in the slot in said guide, which slot has one upwardly extending curved branch, and a vertical branch extending upwards from the lower end of the curved branch, and a line connected to said weight and so arranged in operative relation to the closed means of entrance to the compartment that the line will lift said weight and thereby remove the pin from one of said holes should the means of entrance be opened, and thereby allow the indicator to move into the "alarm" position and, on the closing of such means of entrance, allow the weight to descend and insert the pin into the other of said holes, substantially as set forth.

12. In theft-indicating and theft-preventing apparatus for a compartment having a door, the combination of an indicator, a bar pivoted on the wall of the compartment to swing into an unlocking and a locking position in relation to the door, a line having one end operatively connected with and controlling said indicator and its other end connected with said bar and arranged to hold the bar in its locking position, a movable cover for a trip-setting opening in the wall of the compartment, and a one-way engaging detent carried by said cover and so situated in relation to said line that it can trail across it when the cover is moved in the closing direction, but will engage with the line when the cover is moved in the opening direction, substantially as set forth.

In testimony whereof I affix my signature.

LEONARD EDWARD VINING.