April 21, 1970 A. GORDON ET AL 3,507,409

SECURITY APPARATUS

Filed April 24, 1968 2 Sheets-Sheet 1

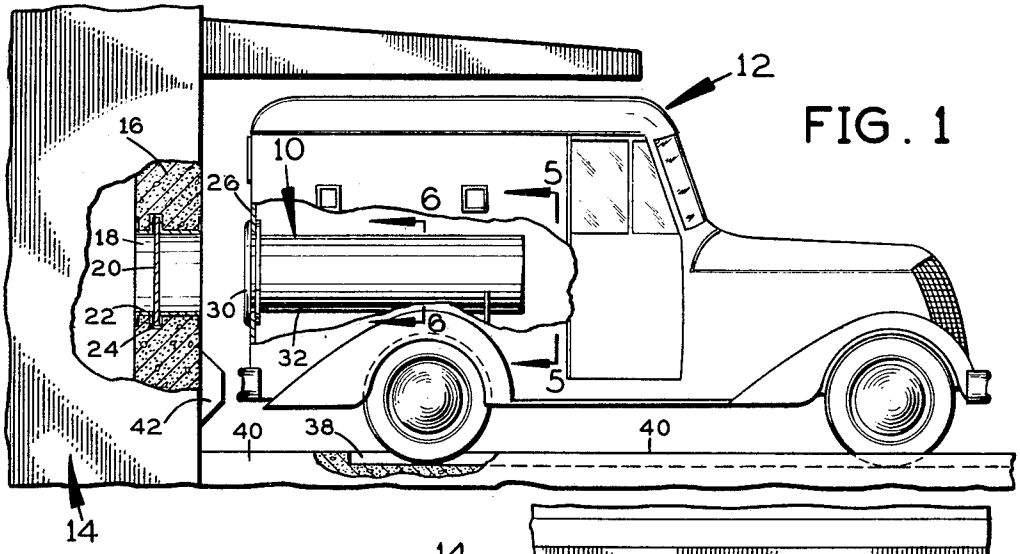


FIG. 1

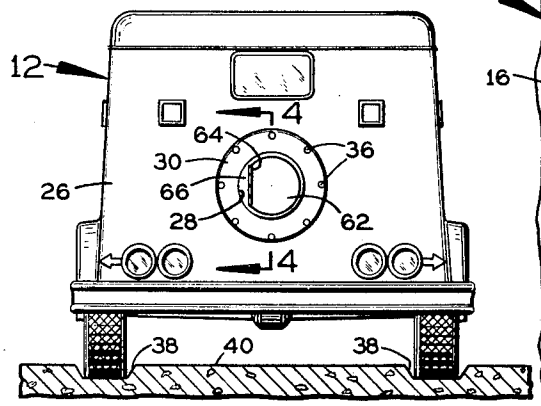


FIG. 2

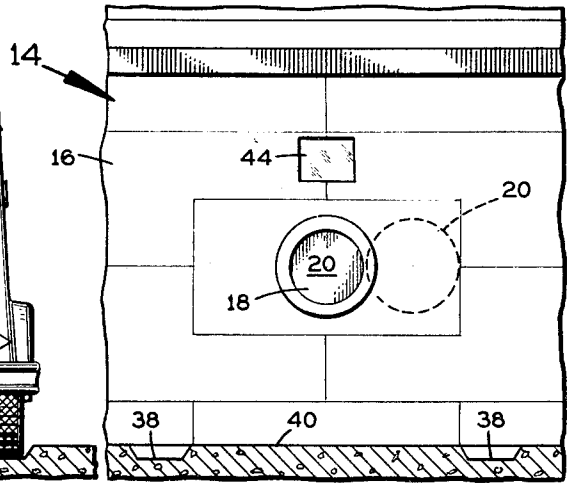


FIG. 3

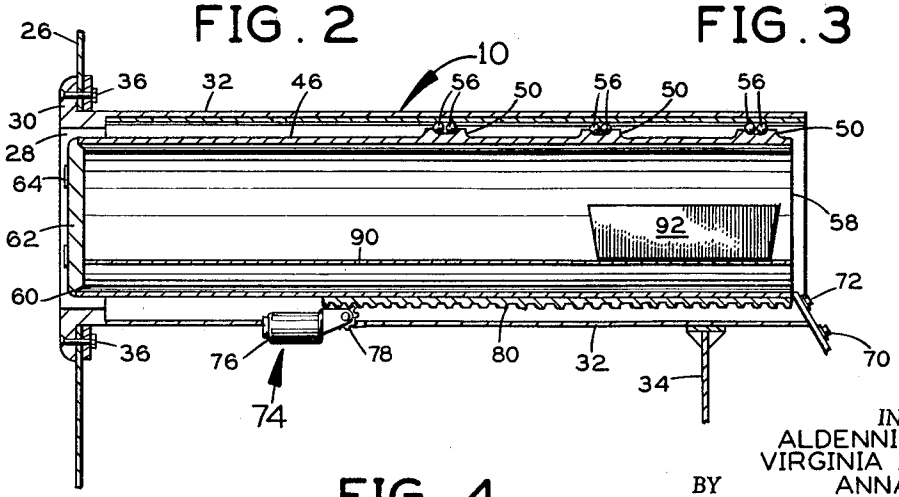


FIG. 4

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SECURITY APPARATUS

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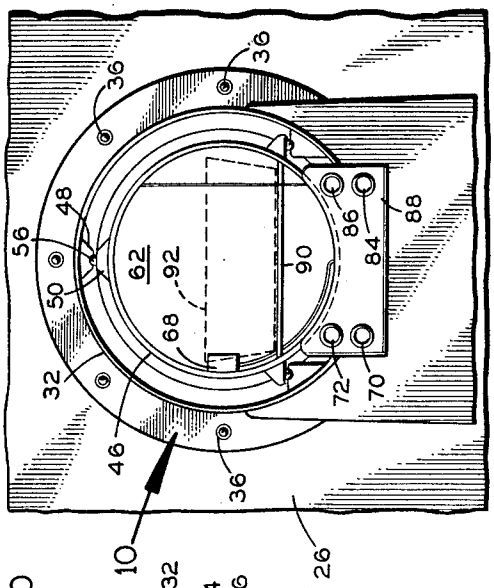


FIG. 5

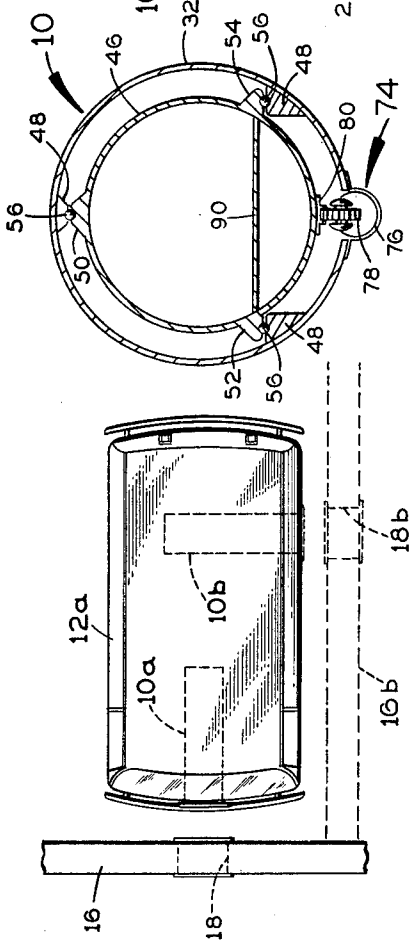


FIG. 6

FIG. 8

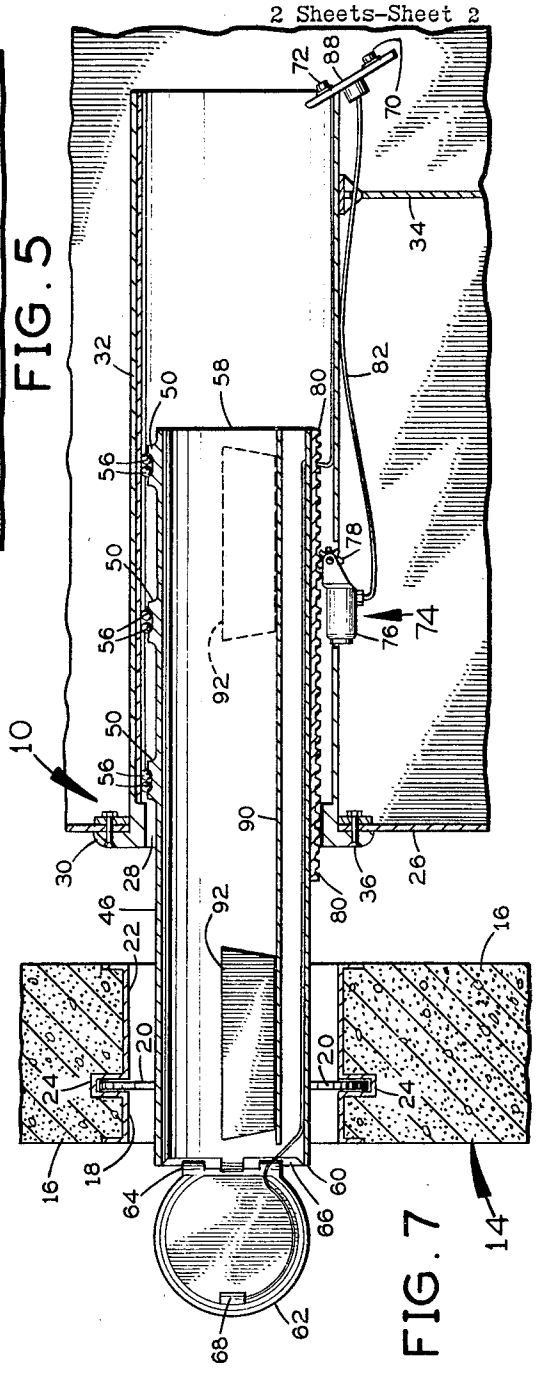


FIG. 7

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United States Patent Office 3,507,409 Patented Apr. 21, 1970

3,507,409

SECURITY APPARATUS

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Filed Apr. 24, 1968, Ser. No. 723,861
Int. Cl. B65g 67/02
U.S. Cl. 214—38 2 Claims

ABSTRACT OF THE DISCLOSURE

Security apparatus for transferring money and other valuables from an automotive vehicle to a building, the building having an opening with a removable closure, and the security apparatus including means defining an opening through the body of the vehicle, a tubular carrier mounted in the vehicle in alignment with the opening, and means mounting the tubular carrier for longitudinal movement in and out of the vehicle opening. The vehicle may be parked so that its opening is close to and in alignment with the building opening, and the tubular carrier is then extended through the vehicle opening into the building opening with the rear end of the carrier remaining in the vehicle. Money and other valuables are then transferred through the carrier between the vehicle and the building, after which the carrier is retracted into the vehicle.

BACKGROUND OF THE INVENTION

In the use of armored trucks for transporting and delivering money and other valuables, the valuables are ordinarily transferred between the truck and a bank or other building by armed personnel. Thus, while the valuables are being transferred, there is a risk that the personnel can be overcome and the valuables stolen. It would be desirable if such valuables could be transferred between the building and the truck without ever exposing the valuables.

SUMMARY OF THE INVENTION

The invention provides security apparatus in an automotive vehicle which makes it possible to transfer valuables between an automotive vehicle, such as an armored truck, and a bank or other building through an enclosed carrier which projects from the vehicle into an opening in the building. The security apparatus includes a carrier, preferably in the form of a tube, mounted in the vehicle in alignment with an opening in the body of the vehicle, and means mounting the tube for movement in and out of the vehicle's opening. In operation, the vehicle is parked next to the building so that the vehicle's opening is aligned with and close to the building's opening. The tube fills both the vehicle opening and the building openbuilding opening, and valuables are transferred through the tube. The tube is then retracted into the vehicle. The tube fills both the vehicle opening and the building opening when extended so that there is no undesired access to the inside of the tube, the vehicle or the building. The outer end of the tube has a door which can be unlatched from inside the vehicle, the door preferably having an electromagnetic latch controlled by an electric switch inside the vehicle. An electrical motor may be coupled to the tube by gearing, and the motor may be operated by a switch inside the vehicle to drive the tube out from and into the vehicle. The carrier tube is preferably mounted in a tubular shell on bearings which guide the movement of the carrier tube.

Accordingly, it is an object of the invention to provide apparatus for transferring valuables between a vehicle and a building without exposing the valuables.

Another object of the invention is to provide a carrier tube in a vehicle mounted for longitudinal movement into and out of the vehicle so that the tube can be inserted into an opening in a building to allow transfer of valuables through the tube between the building and the vehicle.

Another object of the invention is to provide the carrier tube with a door which can be locked and unlocked from inside the vehicle.

A further object of the invention is to provide effective structure for mounting the carrier tube for movement in and out of the vehicle.

A still further object of the invention is to provide a drive mechanism for automatically moving the carrier tube in and out of the vehicle.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

ON THE DRAWINGS

FIGURE 1 is an elevational view partly cut away, showing an armored truck provided with security apparatus in accordance with the invention;

FIGURE 2 is an elevational view of the rear end of the truck of FIGURE 1;

FIGURE 3 is a fragmentary elevational view of a wall of a building having an opening therein provided with a closure;

FIGURE 4 is a vertical sectional view of the security apparatus taken along line 4—4 of FIGURE 2;

FIGURE 5 is a fragmentary elevational view of the inner end of the security apparatus within the vehicle taken along line 5—5 of FIGURE 1;

FIGURE 6 is a cross sectional view of the security apparatus taken along line 6—6 of FIGURE 1;

FIGURE 7 is a sectional view similar to FIGURE 4 but showing a carrier tube of the apparatus in an extended position; and

FIGURE 8 is a schematic top view of a vehicle showing positions in which the security apparatus can be mounted.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

AS SHOWN ON THE DRAWINGS

The security appartus **10** of the invention is provided inside a vehicle such as the armored truck **12** shown in FIGURE 1 so that many and other valuables can be transferred between the truck and a building **14** such as a bank. Building **14** has a wall **16** provided with an opening **18** normally closed by a plate **20**. In the drawings, the opening **18** is defined by a sleeve **22** set into a wall **16**, and the plate **20** is movable in channels **24** so that it can be positioned to close opening **18** or move to the side to the position indicated by dashed lines in FIGURE 3 so as to uncover the opening **18**.

The rear wall **26** of the body of truck **12** has an opening **28** therein which is defined by the flanged end **30** of a tubular shell **32** mounted within truck **12** in a fixed position on a support **34**. The flange **30** at the outer end of shell **32** is attached to wall **26** by bolts **36**. The opening **28** is positioned in wall **26** so that the truck **12** can be backed up to the building **14** and parked with the truck opening **28** close to and aligned with the building opening **18** in the manner illustrated in FIGURE 1. To facilitate proper positioning of the truck, recessed tracks **38** may be formed in the pavement **40** outside the bulding to receive the guide the wheels of the truck. A bumper **42** may be provided on the outside of the building to assure that the truck will not be backed up too far. A window **44** may be provided in wall **16** of the building so that personnel within the building can see the truck, and a warning device (not shown) may be provided to notify personnel in the building that a truck is approaching.

Inside tubular shell **32** within the truck is a horizontally movable carrier tube **46**. The inside of shell **32** is provided with three tracks **48** spaced equally from each other and extending longitudinally of shell **32**. Carrier tube **46** has three sets of sockets **50**, **52** and **54** (FIGURE 6) which receive ball bearings **56** with the bearings riding in the tracks **48** to guide the longitudinal movement of carrier tube **46**.

The innermost end **58** of carrier tube **46** is open, but the outermost end **60** of the tube is normally closed by a door **62** connected by hinge **64** to a support **66** which is rigidly affixed to end **60** to tube **46**. In the illustrated embodiment, as viewed in FIGURE 7, it may be seen that an electromagnet **68** is attached to the inside of door **62**, and this electromagnet is controlled by a circuit (not shown) which includes a switch **70** for energizing the electromagnet to lock door **62** closed and another switch **72** for deenergizing electromagnet **68** to unlock the door so that it can be opened. The wiring connecting these switches to electromagnet **68** may pass through tube **46** and door **62**, and the circuit is connected to the battery of the vehicle.

In the illustrated embodiment, an automatic drive mechanism **74** is provided for moving the tube **46** in and out of the vehicle. The drive mechanism includes an electric motor **76** mounted in an opening of shell **32** on the bottom thereof, the shaft of the motor being coupled by a gear **78** to a rack **80** mounted on the underside of tube **46** (FIGURES 4 and 7). Motor **76** is connected by wiring **82** to a switch **84** for energizing the motor in one direction to drive tube **46** out of the vehicle and another switch **84** for energizing the motor in the reverse direction to drive tube **46** back into the vehicle, switches **84** and **86** being visible in FIGURE 5. The switches are connected to the battery of the vehicle which supplies power for operating motor **76**. Switches **70**, **72**, **84** and **86** are mounted on a panel **88** which is attached to the inner end of tubular shell **32**.

A horizontal platform **90** is mounted within and extends over substantially the full length of carrier tube **46**. A tray **92** is slidable along platform **90** to carry valuables between the inside of the truck and the inside of the building. The tray **90** may be provided with a long handle for moving it, or a separate pole for this purpose.

In operation, the truck **12** is backed along tracks **38** to a position wherein opening **28** is close to and aligned with opening **18** in the wall **16** of building **14**. Closure plate **20** is moved to the side to uncover opening **18**. At this time, carrier tube **46** is in its fully retracted position within shell **32**, it being evident that the outer end **60** of tube **46** is located within and substantially fills the opening **28** in wall **26** of the truck. A seal may be provided between shell **32** and tube **46** if desired.

Next, switch **84** is depressed to energize the reversible motor **76** so as to drive carrier tube **46** to the position shown in FIGURE 7. In this position, the rear end **58** and the carrier tube remains within the vehicle, but the outer end extends through opening **18** into the building **14**. It may be seen in FIGURE 7 that tube **46** substantially fills opening **18** when it is extended into the building and also substantially fills opening **28** in the vehicle so that there is no undesired access to the inside of the tube, the inside of the vehicle or the inside of the building.

Next, switch **72** is depressed to deenergize electromagnet **68** and thereby unlock door **62** so that it can be opened from the inside of the building. Valuables may be placed in a tray **92**, and the tray then pushed from the dashed line position shown in FIGURE 7 to the solid line position therein to transfer valuables into the building. It may be noted that sacks or pouches could be slid along platform **90** without using a tray if desired.

After the transfer operation is completed, door **62** is closed, and switch **70** is depressed to energize electromagnet **68** and lock the door. Switch **86** is then depressed to energize motor **76** which drives carrier tube **46** back to its fully retracted position as shown in FIGURE 4.

Referring to FIGURE 8, it may be seen that the security apparatus **10** may be mounted in different positions in a truck. For example, if a truck having a rear engine were used, the security apparatus **10***a* can be mounted at the front of the truck as illustrated in FIGURE 8 so that the truck may be driven in the forward direction up to the opening **18** in building wall **16**. This facilitates parking the truck. Similarly, security apparatus **10***b* may be mounted sidewise in a truck as shown in FIGURE 8 so that the truck can be pulled up along side an opening **18***b* in a wall **16***b* of a building.

It is apparent from the foregoing description that the invention provides security apparatus for armored trucks or the like for transferring valuables to a bank or other building without exposing the valuables. The provision of a carrier tube which can be extended out of the truck to project into a building is a simple and yet effective way to protect valuables while they are being transferred between the truck and the building. The automatic unlocking of the door of the carrier tube and the automatic drive mechanism for the carrier tube can be implemented without exorbitant expense.

Having thus described our invention, we claim:

1. In an automotive vehicle for transporting money and other valubles, security apparatus comprising a tubular shell mounted horizontally in the vehicle and opening at one end of said vehicle, tracks extenting longitudinally of said shell on the inside thereof, a tubular carrier mounted horizontally inside said shell in alignment with said opening and of a size to substantially fill said opening, bearings supporting said carrier and riding in said tracks to allow horizontal movement of said carrier in and out of said vehicle opening, a rack affixed to said carrier on the outside thereof, a reversible electric motor in said vehicle, gear means coupling said motor to said rack so that said motor may be energized to drive said gear means and thus move said carrier in and out of said opening, an electrical circuit coupling said motor to a power source in the vehicle for operating said motor, switch means for controlling said motor, a door normally closing the outer end of said carrier and swingably affixed to said outer end, and an electromagnetic latch operable from the interior of said vehicle to unlatch said door when said carrier is extended, whereby said vehicle may be parked with said opening thereof close to and in alignment with an opening in a building and said carrier may be extended by control operations performed entirely within said vehicle to project into said building opening where said door may be unlatched also from the interior of said vehicle, thus allowing transfer of valuables between the vehicle and the building through the carrier without exposing operating personnel.

2. The security apparatus as claimed in claim **1** in which said electromagnetic latch includes an electromagnet associated with said door for holding said door shut,

and means in the vehicle for operating said electromagnet to release said door.

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U.S. Cl. X.R.

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