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(54) Pneumatic valve.

(57) There is disclosed a pneumatic security valve wherein a pneumatic connection is established between inlet means and outlet means by a pair of movable members each provided with passage means whereby the connection is only established when the movable means are in corresponding positions. A particular application of the valve is to secure the doors of a container for goods.

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PNEUMATIC VALVE

This invention concerns a pneumatic combination valve designed to be operable by authorised persons only and therefore suitable for use in security applications.

Most goods nowadays are conveyed in containers by sea, rail and road. Those on the road, especially when parked overnight, are vulnerable to the unwelcome attention of thieves.

It is amongst the objects of the present invention to provide more effective locking means for such containers utilising the pneumatic combination valve of the invention.

According to the invention there is provided a pneumatic security valve comprising a unit having a pneumatic inlet, a pneumatic outlet, two movable plates separating said inlet and outlet and each having passage means therein and being movable to one of a plurality of positions, the arrangement being such that a communication between the inlet and outlet is established by said passage means only when the two plates are in corresponding positions.

Each of the plates may be circular and movable to one of a plurality of equi-angularly spaced positions.

There may be ten such positions which may be identified by the numerals 0 - 9.

Indent means may be provided to locate the plates in the selected positions.

The valve may comprise a plurality of valve units as aforesaid connected in series.

The invention will be further apparent from the following description with reference to the figures of the accompanying, drawings, which show, by way of example only, one form of security valve embodying the invention and used to prevent unauthorised access to a transport container.

Of the drawings:-

Figure 1 shows a side elevation of a transport container;

Figure 2 shows a rear view of the transport container of Figure 1;

Figure 3 shows one side of the pneumatic security valve;

Figure 4 shows a cross-section through one of the units of the valve of Figure 3; and

Figure 5 shows a diagram of the parts controlled by the valve.

Referring now to the drawings, it will be seen that the transport container essentialy comprises a large steel box 10 whose rear wall is comprised by a pair of hinged doors 11 and 12.

The container is adapted to be conveyed by road on a suitable trailer in well known manner.

As shown in Figure 5 the doors 11 and 12 may be locked in a closed position by an actuator member 13 (which is urged by a spring 14) to a position engaging a catch 15 on the inside of the door 11 at its upper edge. In this position the member 13 also acts to depress a bolt member 16 into the floor of the container 10.

A pneumatic cylinder 17 is provided and may be actuated by pressure air through line 18 to retract the member 13 to release the doors 11 and 12.

All of the parts 13 to 17 inclusive are located within the container 10 and are inaccessible from the outside when the doors 11 and 12 are closed.

Pressure air may be applied to line 18 through a connector 19 mounted on the exterior of the container 10.

The line 18 includes a pneumatic security valve generally indicated at 20 and comprised by four units 21 connected in series.

Each unit 21 comprises an inlet 22 separated from an outlet 23 by a pair of discs 24 and 25 each having an aperture 26 therethrough. Each of the discs 24 and 25 can be rotated using a screw driver or similar tool to a selected one of ten equi-angularly spaced positions by rotatable control shafts 27 and 28. The control shafts 27 and 28 turn relative to mounting plates 29 and 30 marked with the numerals 0 - 9 inclusive to indicate in which position each of the discs 24 and 25 is located. Spring-loaded indent means is provided to prevent accidental displacement of the discs 24 and 25 from their selected positions.

The plates 29 of the four units 21 are grouped together to form a control panel 31 on an inside wall of the container 10 whilst those 30 form a similar panel 32 on the outside of the container 10.

In use, a security officer will set the shafts 27 on the inside of the container to a selection of random positions. A small door may be provided to cover the panel 31 and prevent other personnel from reading the selected positions. After the container is loaded the doors 11 and 12 are closed and are locked by the action of air cylinder 17. In order to unlock the doors pressure air is applied to connection 19 after the shafts 28 on the outside of the container have been rotated to positions corresponding with those on shafts 27 to align the apertures 26 in each unit 21 of the valve. The correct positions can be relayed to a security officer or other authorised person at the destination for the container by telephone or telex for example.

It will be noted that the driver of the trailer hauling the container will not be aware of the valve settings and cannot therefore be intimidated by

would-be thieves.

It will be appreciated that it is not intended to limit the invention to the above example only, many variations, such as might readily occur to one skilled in the art, being possible.

Claims

1. A pneumatic security valve comprising a unit having a pneumatic inlet, a pneumatic outlet, two movable plates separating said inlet and outlet and each having passage means therein and being movable to one of a plurality of positions, the arrangement being such that a communication between the inlet and outlet is established by said passage means only when the two plates are in corresponding positions.

2. A pneumatic security valve according to Claim 1, wherein each of said plates is in the form of a circular disc movable to one of a plurality of equi-angularly spaced positions.

3. A pneumatic security valve according to Claim 2, wherein there are ten such positions.

4. A pneumatic security valve according to Claim 3, wherein the positions are marked with indicia for the purposes of identification.

5. A pneumatic security valve according to any preceding claim including indent means to locate the plates in their selected positions.

6. A pneumatic security valve comprising a plurality of valve units each according to any preceding claim, connected in series.

7. A pneumatic security valve according to any preceding claim mounted in the wall of a container for the transport of goods, such that one of the plates of the or each valve unit is accessible from inside the container and the other accessible from outside the container.

8. A pneumatic security valve according to Claim 7, located in a line extending from means for applying pressure air thereto from a position outside the container to pneumatic cylinder means adapted to actuate locking means for the doors to the container.

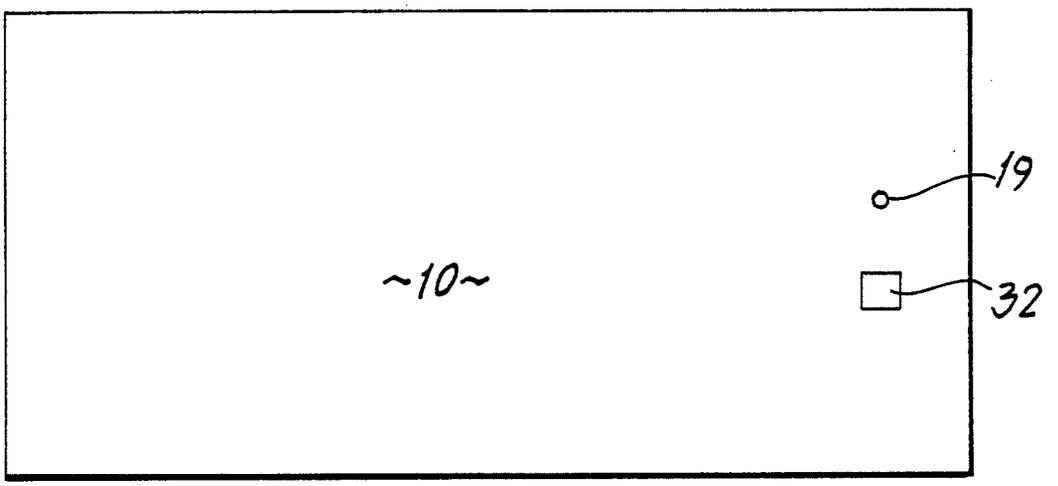

FIG.1

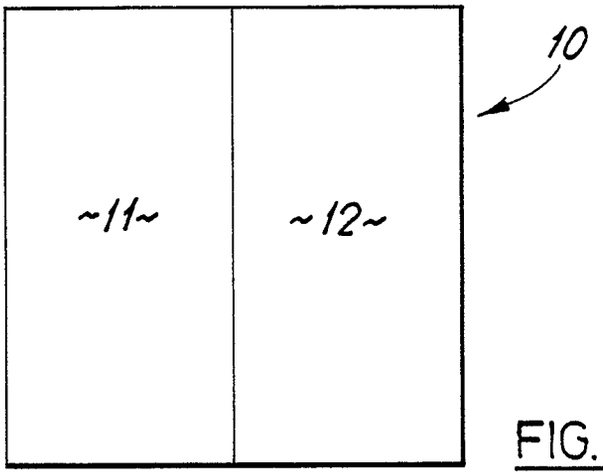

FIG. 2

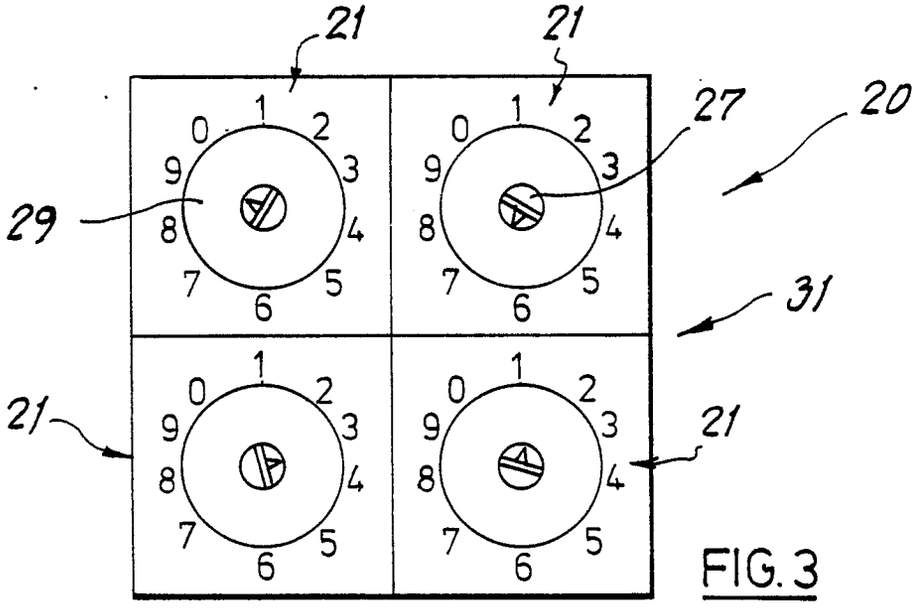

FIG. 3

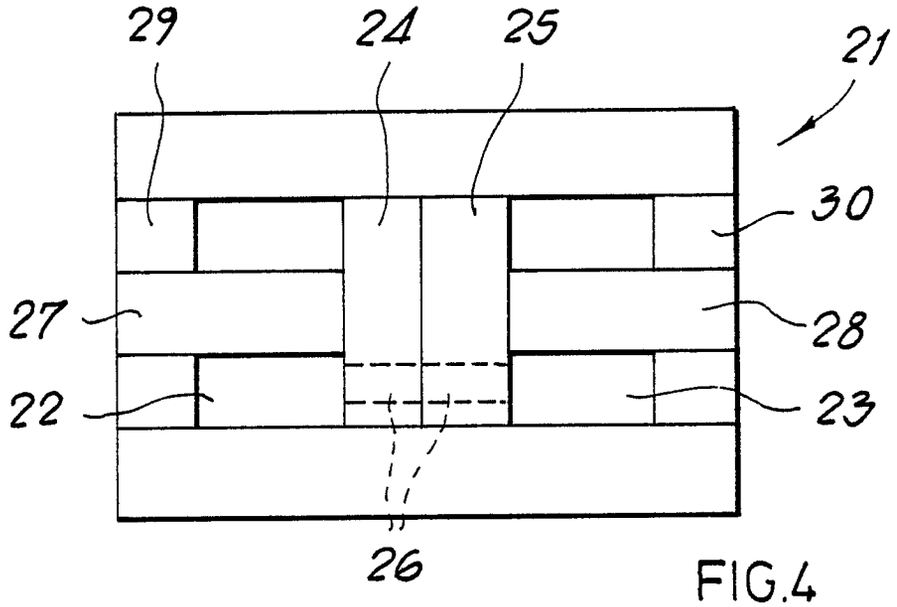

FIG.4

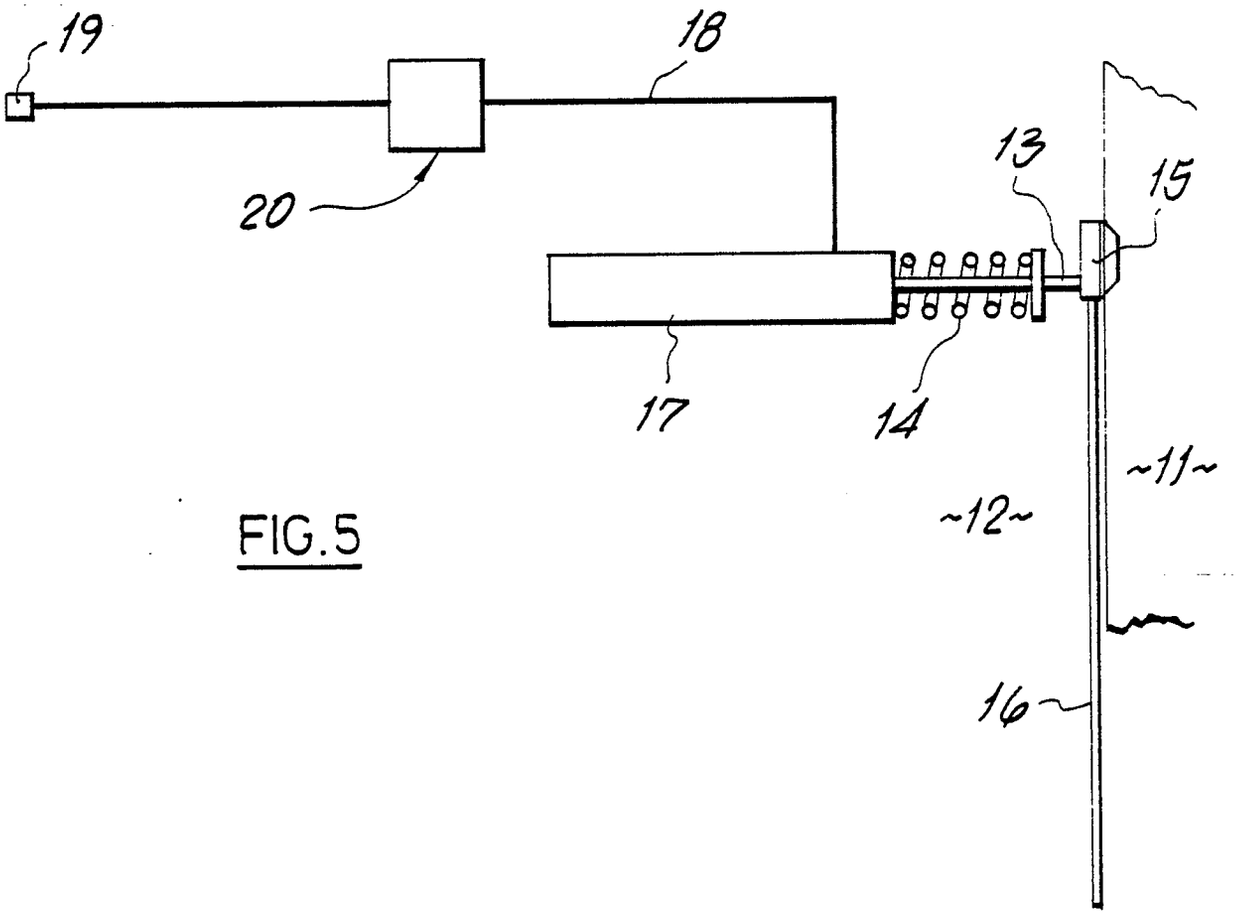

FIG.5