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PATENT REQUEST: STANDARD PATENT

I, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification. Full application details follow.

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(54) Invention title: SECURITY SYSTEM

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ASSOCIATED PROVISIONAL APPLICATION(S) DETAILS

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Drawing number recommended to accompany abstract: Fig. 2

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BY MY PATENT ATTORNEY

.....
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23 JUNE 1995

.....
(Date)

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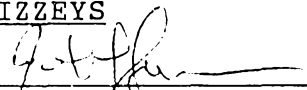
NOTICE OF ENTITLEMENT

I, PAUL PHILLIP STUART
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being the applicant in respect of Application No. 23210/95 state the following:-

The person nominated for the grant of the patent is the actual inventor.

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John R. G. Gardner

20 March 1996

(Date)



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- (56) Prior Art Documents
AU 15171/92 G08B 13/12 13/04
AU 63711/90 A01K 97/12 91/06 G08B 13/12
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- (57)

A security system (18) for use with a screen or window (10) in a window opening (11), the system (18) including a cable or wire (21) which is tensioned across the screen (10) and which carries an actuating element (19) for actuating a switch (32) in the external frame (12) of the window (11). The switch (32) is actuated when the element (19) is moved away therefrom, either when the wire (21) is deflected, when the wire (21) is cut or if the screen (10) is removed from the window opening (11).

Claim

The Claims defining the invention are as follows:-

1. A security system for use with a closure panel assembly normally supported in a position adjacent a door, window or other opening, said system including at least one elongated thin tensioned member supported by and extending across said closure panel assembly, and detecting means being adapted to detect movement of said member or portion thereof, consequent upon severing or deflection of said member and being further adapted to detect movement of said closure panel assembly from its supported position.

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Regulation 3.2

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C O M P L E T E S P E C I F I C A T I O N

FOR A STANDARD PATENT

ORIGINAL

TO BE COMPLETED BY APPLICANT

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Invention title: SECURITY SYSTEM

Details of Associated Provisional Applications Nos:
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The following statement is a full description of this invention, including the best method of performing it know to me:-

This invention relates to a security system for use in or adjacent window, door or similar openings to detect attempted intrusion through the opening, or tampering with a screen or window sash or door associated with the opening.

Many different security devices are available for detecting or indicating intrusion into a dwelling or other building. Some systems use sophisticated movement detection circuits to sense movement within or adjacent to a building. Such systems however are not suitable in all applications and in particular are only sensitive to movement in the range of the movement detector. Door, window or other openings into the building are particularly susceptible to unauthorised entry by for example intruders or burglars. For securing window, door and like openings, various different security devices are available, including security bars and security screens. Neither are aesthetically pleasing and in addition the security provided by security screens can usually be easily circumvented by simply removing the screen from the window or door opening in which it is located. Window or door openings may also be entered by removing or breaking the window sash or door.

The present invention aims to overcome or alleviate one or more of the above disadvantages by providing a security system in one aspect suitable for use with window, door or other openings provided with a screen such as a fly screen or a window sash or door. The present invention further aims in a preferred aspect to provide a system which is not easily detectable and therefore does not detract aesthetically from the appearance of a window, door or other opening incorporating the system. The present invention in a further preferred aspect aims to provide a system which is relatively inexpensive and of simple construction. Other objects and advantages of the invention will become apparent from the following description.

The present invention thus provides in a

preferred aspect a security system for use with a closure panel assembly normally supported in a position adjacent a door, window or other opening, said system including at least one elongated thin tensioned member supported by and
5 extending across said closure panel assembly, and detecting means being adapted to detect movement of said member or portion thereof consequent upon severing or deflection of said member and being further adapted to detect movement of said closure panel assembly from its supported position.

10 The term "closure panel assembly" as used herein includes fly screens or security screens associated with a window or door opening as well as window sashes and doors which close window or door openings and including fixed glass panels.

15 The detecting means may include a first element on the closure panel assembly and a second element spaced from the closure panel assembly, the first element being movable relative to said second element upon movement of the elongated member and/or the closure panel assembly.

20 The second element may be supported on a frame or other member located adjacent the closure panel assembly. Thus movement of the thin elongated member will result in movement of the first element relative to the second element. Similarly movement of the closure panel assembly
25 away from the frame or other member will result in relative movement between the first and second elements.

The closure panel assembly may include a perimeter frame which, for example may support flyscreen, a security screen, glass, transparent plastics, or any other
30 material. The wire or cable may be tensioned across the frame of the closure panel. The wire or cable may be anchored by anchoring means to the frame and connected to the first element. The wire or cable may be passed about guide means such as rollers or guides in the frame and the
35 first element may be adjustable in position relative to the second element. The perimeter frame may include a hollow frame member and the first element may be located in the frame for movement therein.



The first and second elements may comprise a switch and actuating means for the switch. The switch may be a magnetically actuatable switch and the actuating means may comprise a magnet for actuating the switch. The switch
5 may comprise a reed switch, Hall effect transistor or any other magnetically actuatable switch.

The thin elongated member may comprise a thin wire or cable which is tensioned across the frame of the closure panel assembly.

10 The elongated member is preferably tensioned by biasing means. The biasing means may comprise a spring. The spring may act against the anchored wire or cable to normally hold the actuating means adjacent the switch. Thus, if a force is applied to the anchored wire and cable
15 sufficient to deflect same, the actuating means will be moved against the bias of the spring and thereby cause switch actuation. If the wire or cable is severed, thereby removing the anchor applied to the wire or cable, the spring will act on the actuating means to move same
20 relative to the switch and cause switch actuation. The switch will also be actuated if the closure panel carrying the actuating means is removed from its normally supported position adjacent the window or door opening.

The switch may comprise a normally open switch or
25 normally closed switch which switches its mode upon movement of the actuating means. Switching of the switch may cause actuation of any suitable alarm, such as an audible and/or visible alarm. Alternatively, switching of the switch may cause transmission of an alarm signal to a
30 remote location for example a station where the alarm may be monitored for action.

The present invention also provides a window incorporating a security system of the type described above.

35 In a further aspect the present invention provides a window screening assembly comprising a window opening and a screening member normally located in said opening, said screening member having a perimeter frame

supporting a screening material, a thin elongated tensioned member supported on and extending across said perimeter frame and located adjacent to said screening member, and detecting means for detecting movement of said thin member consequent upon severing or deflection thereof and/or movement of said screening member away from its normal position.

In order that the invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings which illustrate a preferred embodiment of the invention and wherein:-

Fig. 1 illustrates a screen supported in a frame and provided with a security system according to an embodiment of the present invention;

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Fig. 2 illustrates schematically in sectional view the security system of Fig. 1;

Fig. 3 illustrates the operation of the system upon a force being applied to the cable or wire extending across the screen;

Fig. 4 illustrates the operation of the system in the event that the cable or wire extending across the screen is cut; and

Fig. 5 illustrates the operation of the system where the screen is moved from its normal supported position in a frame.

Referring to the drawings and firstly to Fig. 1 there is illustrated schematically a screen 10 in this case for a window opening 11 surrounded by a frame 12, the screen 10 having as is conventional, a perimeter frame 13 which supports a tensioned mesh material 14. The perimeter frame 13 is normally made up of upper and lower hollow frame members 15 and 16 and opposite side frame members 17. The screen 10 is normally positioned within the frame 12 and, in the case of aluminium framed windows, in a channel integrally formed in the frame 12 of such windows. The security system 18 according to the embodiment of present invention is incorporated into the screen 10 and the frame 12 and includes an actuating element 19 located within the upper frame member 15 so as to be slidably movable therein. The actuating element 19, in this embodiment is in the form of a permanent magnet. A spring 20 is connected to one side of the element 19 and the adjacent side frame member 17 to apply a biasing force to the element 19 to cause it to move along and within the frame member 15 towards the side frame member 17.

Attached to the opposite side of the element 19 is a thin wire or cable 21 which is preferably substantially non-stretchable and relatively thin so as not to be easily visible. The cable or wire 19 is supported about spaced apart rollers 22 and 25, and 23 and 24 which are rotatably mounted within the upper frame member 15 and lower frame member 26 respectively. The rollers 22 to 25

however may be in the form of fixed guides about which the cable or wire 19 may be supported. Such guides may be grooved to support the cable or wire 19 or may be in the form of pins, fixed spools or other members. Small holes 26, 27, 28 and 29 are formed in the upper and lower frame members 15 and 16 adjacent the respective rollers 22, 23, 24 and 25 respectively. The cable or wire 21, thus passes about the roller 22 through a hole 26 in the frame member 15, through the hole 27 in the lower frame member 16, about the rollers

23 and 24, through the holes 28 and 29 in the frame members 15 and 16 respectively and about the roller 25 to be connected to an adjustable anchor 30.

The anchor 30 is threadably engaged with an adjusting screw 31 having a head 32 which is accessible from the adjacent side frame member 17 of the screen 10. The anchor 30 is arranged for sliding movement along and within the upper frame member 15 and is non rotatable relative thereto. By this arrangement the spring 20 exerts through the element 19 a tensioning force on the wire or cable 21 to hold it substantially taut in two runs across the screen 10 and adjacent one side of the mesh material 14. The position of the actuating element 19 along the frame member 15 may be adjusted by means of the adjusting screw 31 which when rotated in opposite directions and in conjunction with the spring 20, moves the element 19 in opposite directions along the frame 15.

Arranged within the external frame 12 or adjacent to the external frame 12 is a sensing element 32 which is adapted to sense movement of the actuating element 19. Where the actuating element 19 comprises a magnet, the sensing element 32 may comprise a reed switch 33 which is actuated upon movement of the magnet. For example, the switch 31 may be closed when located adjacent the element 19 but is opened when the element 19 is moved away from the switch 33. The adjusting screws 31 allow for adjustment of the magnet 19 along the frame member 15 to a position in alignment with or adjacent to the switch 33 to cause the

contacts of the switch 33 to close.

For installation, the sensing element 32 is mounted in or adjacent to the frame 12 about the window opening 11. This may be achieved simply by drilling into the frame 12 and inserting the element 32. The screen 10 carrying the cable or wire 21 is supported in a normal manner within or adjacent to the frame 11. If the element 19 is not located adjacent to the switch 33, its position may be adjusted by the screw 31 until that position is achieved. The switch 33 may be connected through cables 34 to any alarm circuit known in the art which may comprise an alarm circuit associated with an audible or visible alarm or a transmitter for transmitting an alarm signal to a remote location.

In the event that any force is applied to the screen material 14 or if a force is applied directly to the cable 21, either deliberately or inadvertently, the cable 21 will, as shown in Fig. 3 be deflected as at 34 with this movement causing movement of the element 19 along the frame member 15 against the bias of the spring 20. The element 19 is thus moved away from the switch 33 which will therefor be no longer influenced by the magnetic field. The switch 33 will then change state and cause through the cables 34 immediate actuation of the alarm.

If, however, the cable or wire 21 is severed as for example shown at 35 in Fig. 4, the element 19 is no longer anchored in position by the cable or wire 21 and as a result, the spring 20 will move the element 19 away from the switch 33 towards the adjacent side frame member 17. This again will cause the switch 33 to open to effect alarm actuation.

If removal of the screen 10 from the frame 12 is attempted, as shown in Fig. 5, the wire or cable 21 will not be moved however movement of the screen 10 will move the element 19 away from the switch 33 to again cause the switch 33 to open and again cause alarm actuation.

The system of the invention, therefore provides simple and effective security against entry into a building

through a screened opening. The system is particularly suitable for use in window openings or door openings but may be applied to any other opening in a building which may be screened. The system may also be applied to a screened passageway.

In the arrangement shown in Fig. 5, alarm actuation is caused by detachment of a screen from a position adjacent to a window opening. Alarm actuation however, may also occur if the screen is moved parallel to the opening, for example in the case of a sliding screen door or sliding window screen where movement of the screen is to be detected. The system of the invention is particularly applicable to aluminium screens which incorporate hollow screen members which carry the actuation element or magnet. The system, however, may also be applied to screens having other forms of hollow perimeter frames or hollow passageways formed therein which may carry the actuating element.

The system may also be applied to screens employing steel frames to support the flyscreen mesh material. In this case, an opening is formed in the frame adjacent to the magnet and between the magnet 19 and switch 33 to enable movement of the magnet to be sensed by the switch.

Whilst the security system of the present invention is particularly suited to use with flyscreens, or security screen, it may be equally applied to window sashes which have a perimeter frame which supports a panel of glass. The system is arranged in the same configuration with a window sash and will respond to attempted removal or movement of the window sash which will cause movement of the magnet relative to the switch. In addition, if the glass panel is broken, the act of breaking may apply tension to the cable or wire 21 or attempted entry through the broken window may cause such movement. The system, as above, may similarly be applied to door panels, for example door panels having a perimeter frame which supports a glass panel.

In a further modification, further magnets may be connected to the wire or cable 21 within the frame, for example between the rollers or guides 23 and 24. A further switch may be located in or adjacent the frame surrounding the screen to also detect movement of this magnet. This provides an additional level of security.

Whilst the above has been given by way of illustrative embodiment of the invention, all such modifications and variations thereto as would be apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of the invention as defined in the appended claims.



The Claims defining the invention are as follows:-

1. A security system for use with a closure panel assembly normally supported in a position adjacent a door, window or other opening, said system including at least one
5 elongated thin tensioned member supported by and extending across said closure panel assembly, and detecting means being adapted to detect movement of said member or portion thereof, consequent upon severing or deflection of said member and being further adapted to detect movement of said
10 closure panel assembly from its supported position.
2. A security system according to Claim 1 wherein said detecting means includes a first element on said closure panel assembly and a second element spaced from
15 said closure panel assembly, said first element being movable relative to said second element upon movement of said elongated member and/or said movement of said closure panel assembly.
- 20 3. A security system according to Claim 2 wherein said second element is supported on a frame or other member located adjacent said closure panel assembly.
4. A security system according to Claim 3 wherein
25 said closure panel assembly includes a perimeter frame which supports flyscreen, glass or other material.
5. A security system according to Claim 4 wherein
30 said thin elongated member comprises a thin wire or cable, said wire or cable being tensioned across said frame of said closure panel assembly.
6. A security system according to Claim 5 wherein
35 said wire or cable is anchored by an anchoring means on one side of said frame and connected to said first element on the opposite side of said frame.
7. A security system according to Claim 6 wherein

said wire or cable passes about guide means in said frame and wherein said first element is adjustable in position relative to said second element.

5 8. A security device according to Claim 7 wherein said anchoring means is adjustable to adjust the position of said first element.

9. A security system according to Claim 8 wherein
10 said perimeter frame includes a hollow frame member and wherein said first element is located within said hollow frame member for movement therein.

10. A security system according to any one of claims
15 2 to 9 wherein said first and second elements comprise a switch and actuating means for said switch.

11. A security system according to Claim 10 wherein
20 said switch is a magnetically actuatable switch and wherein said actuating means comprises a magnet for actuating said switch.

12. A security system according to Claim 11 wherein
25 said switch comprises a reed switch or Hall effect transistor.

13. A security system according to any one of the
preceding claims wherein said elongated member is tensioned
by biasing means.
30

14. A security system according to Claim 12 wherein
said biasing means comprises a spring.

15. A security system according to any one of the
35 preceding claims wherein said detecting means is adapted to actuate an alarm.

16. A window incorporating a security system



according to any one of the preceding claims.

17. A window screening assembly comprising a window opening and a screening member normally located in said opening, said screening member having a perimeter frame supporting a screening material, a thin elongated tensioned member supported on and extending across said perimeter frame and located adjacent to said screening member, and detecting means for detecting movement of said thin member consequent upon severing or deflection thereof and/or movement of said screening member away from its normal position.

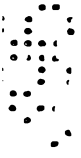
18. A security system substantially as hereinbefore described with reference to the accompanying drawings.

Dated this nineteenth day of March 1996

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By My Patent Attorneys
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RB

ABSTRACT

A security system (18) for use with a screen or window (10) in a window opening (11), the system (18) including a cable or wire (21) which is tensioned across the screen (10) and which carries an actuating element (19) for actuating a switch (32) in the external frame (12) of the window (11). The switch (32) is actuated when the element (19) is moved away therefrom, either when the wire (21) is deflected, when the wire (21) is cut or if the screen (10) is removed from the window opening (11).



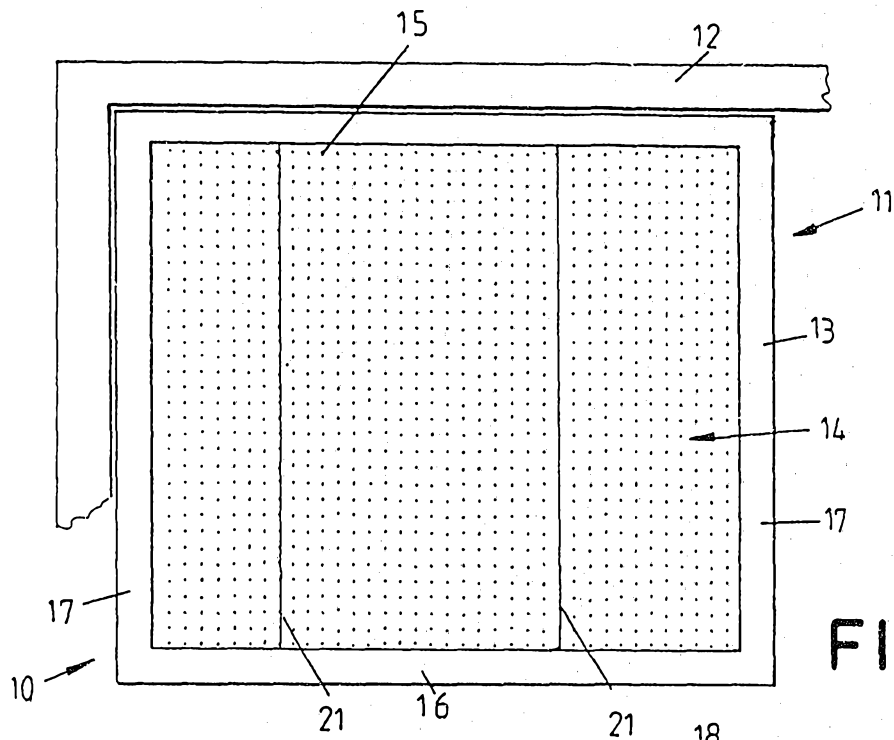


FIG. 1

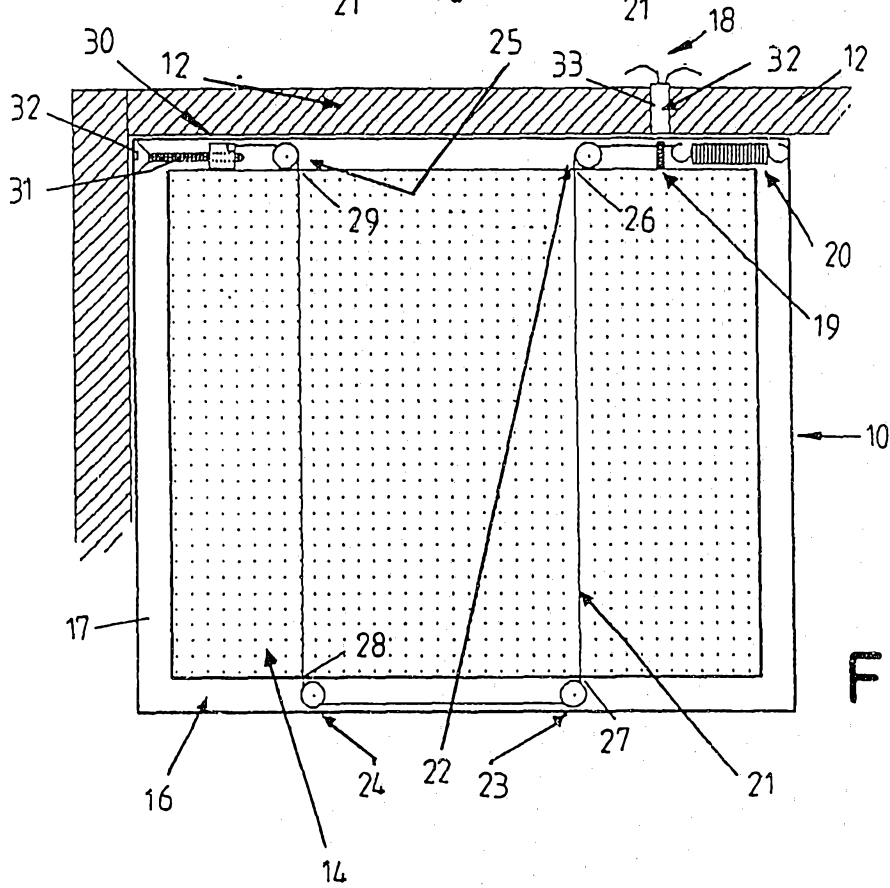


FIG. 2



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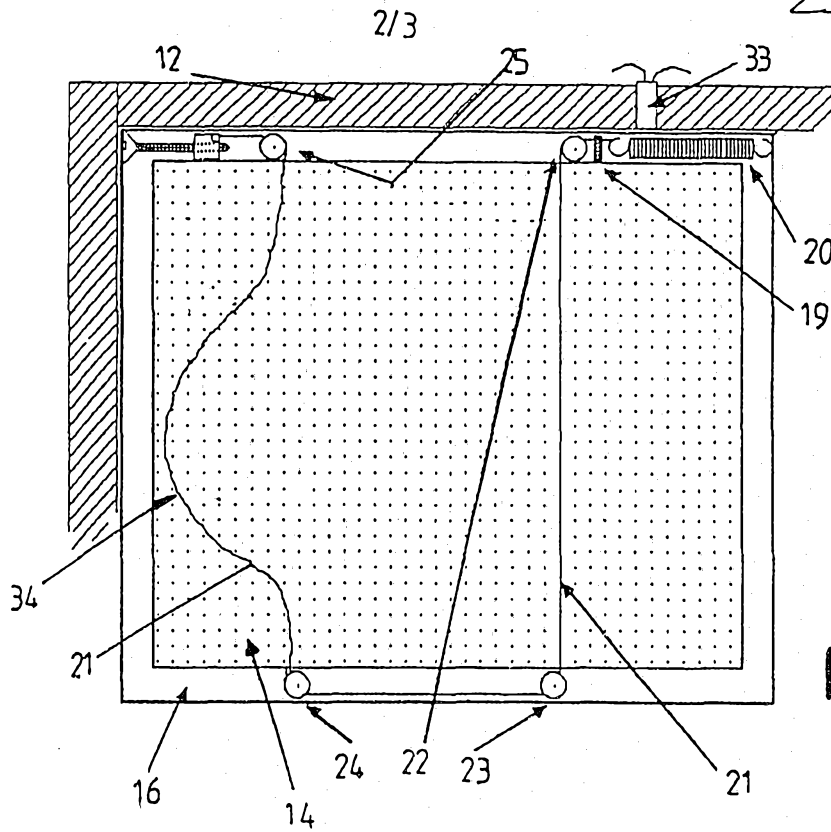


FIG. 3

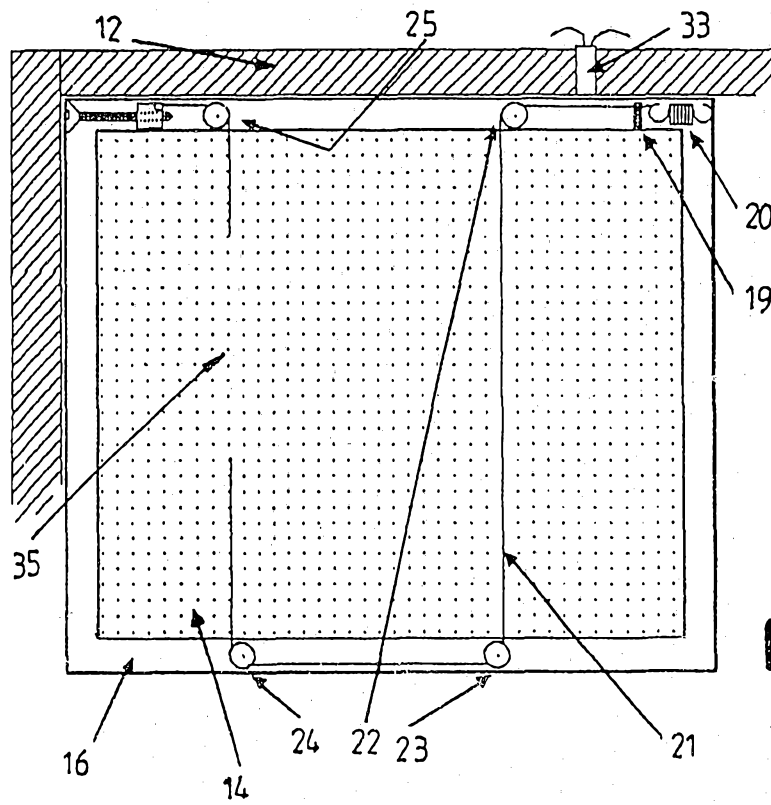
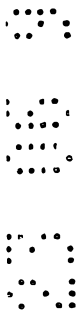


FIG. 4



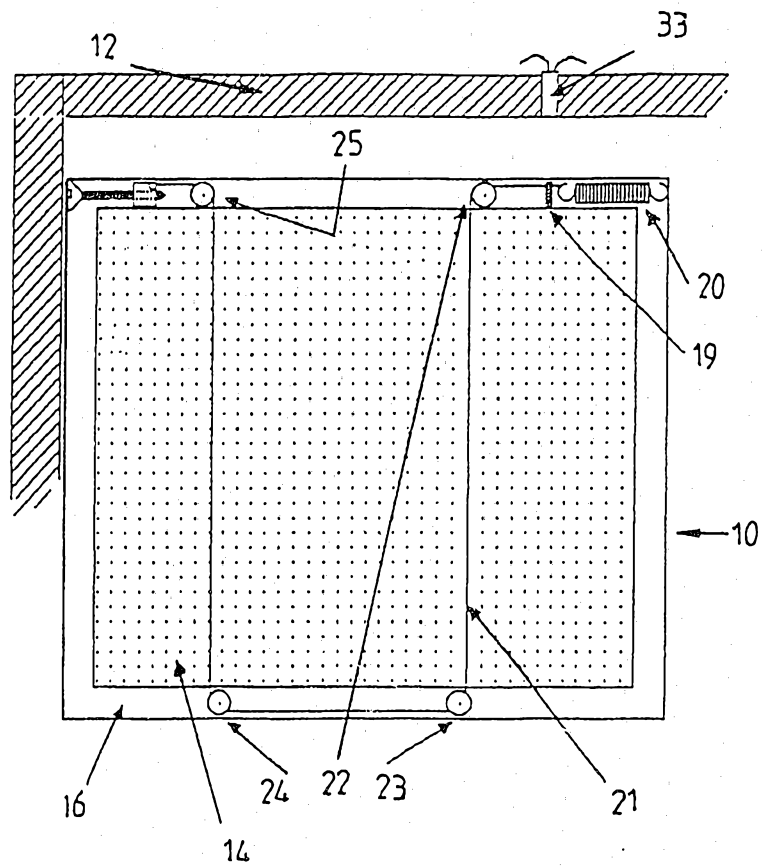


FIG.5

