United States Patent

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[54] **SECURITY STORAGE APPARATUS**
18 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** **109/38**
[51] **Int. Cl.** **E05g 3/00**
[50] **Field of Search** 109/38, 39, 43, 64, 40; 312/128

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ABSTRACT: Disclosed herein is a storage enclosure cabinet of magnetic shielding material for storing magnetic tapes, magnetic disks and similar articles; sliding closure doors for sealing accesses in the storage enclosures; restrictors, such as plunger actuated solenoids for limiting operation of the closure doors; actuator means for operating the restrictor means to disengage same from the closures restrictor control apparatus operable to prevent the operation of the restrictor apparatus; magnetic field detector and alarm apparatus coupled with the restrictor and the restrictor control.

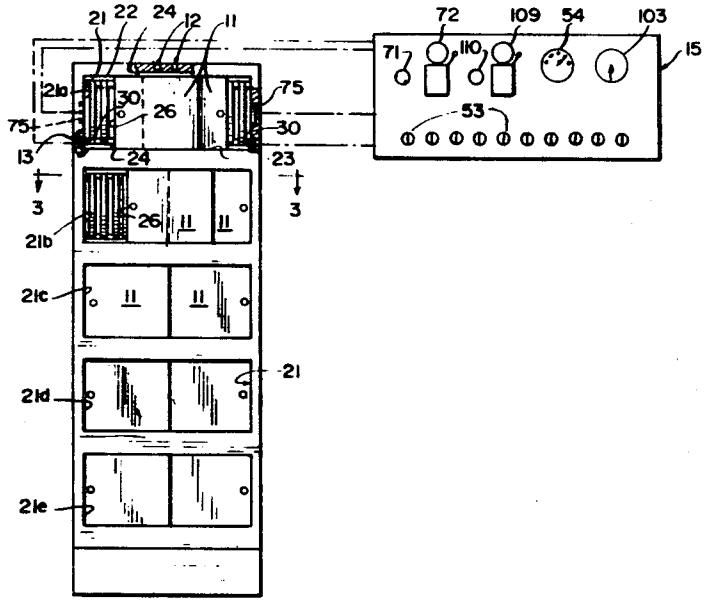
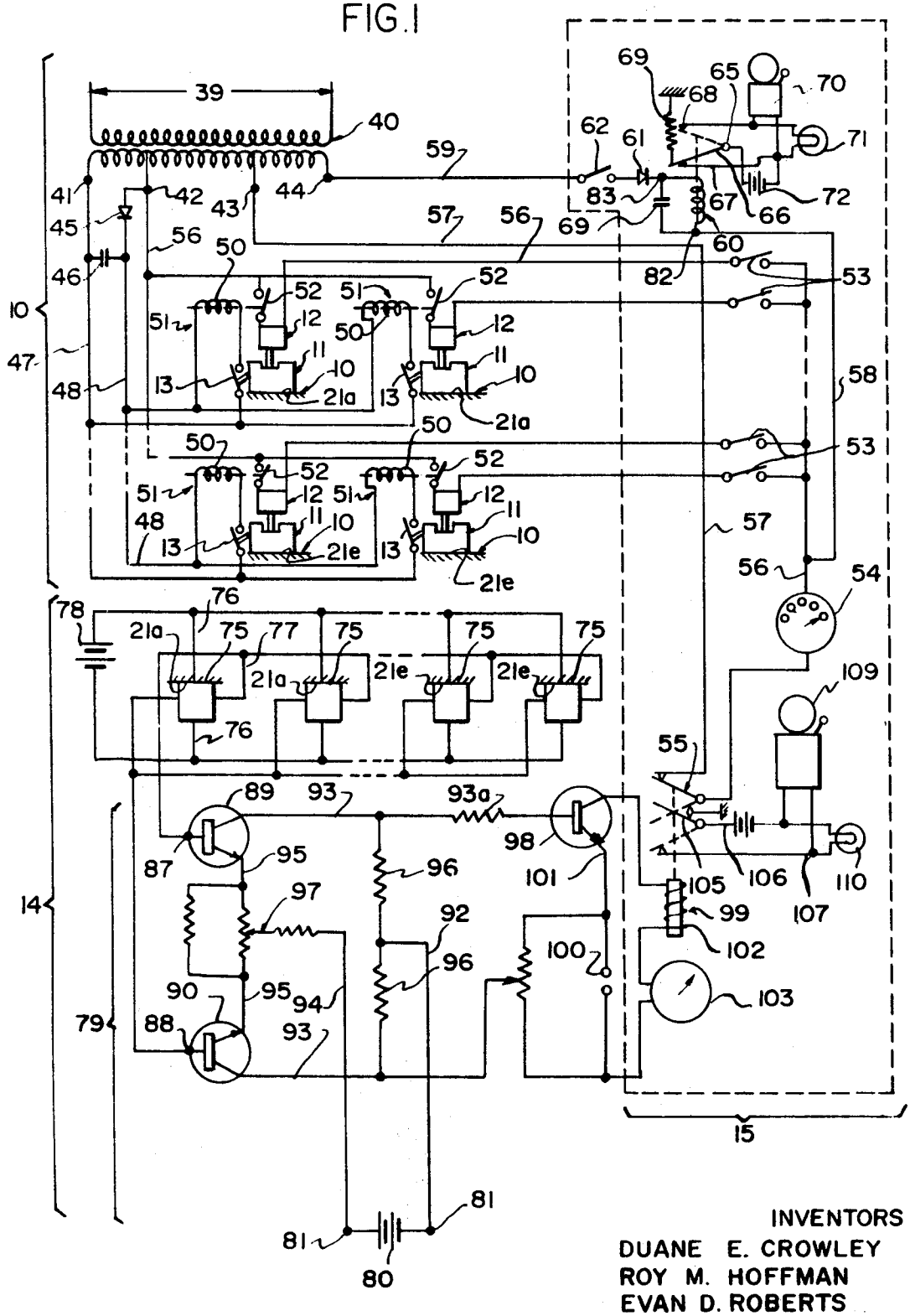


FIG. 1



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FIG.2

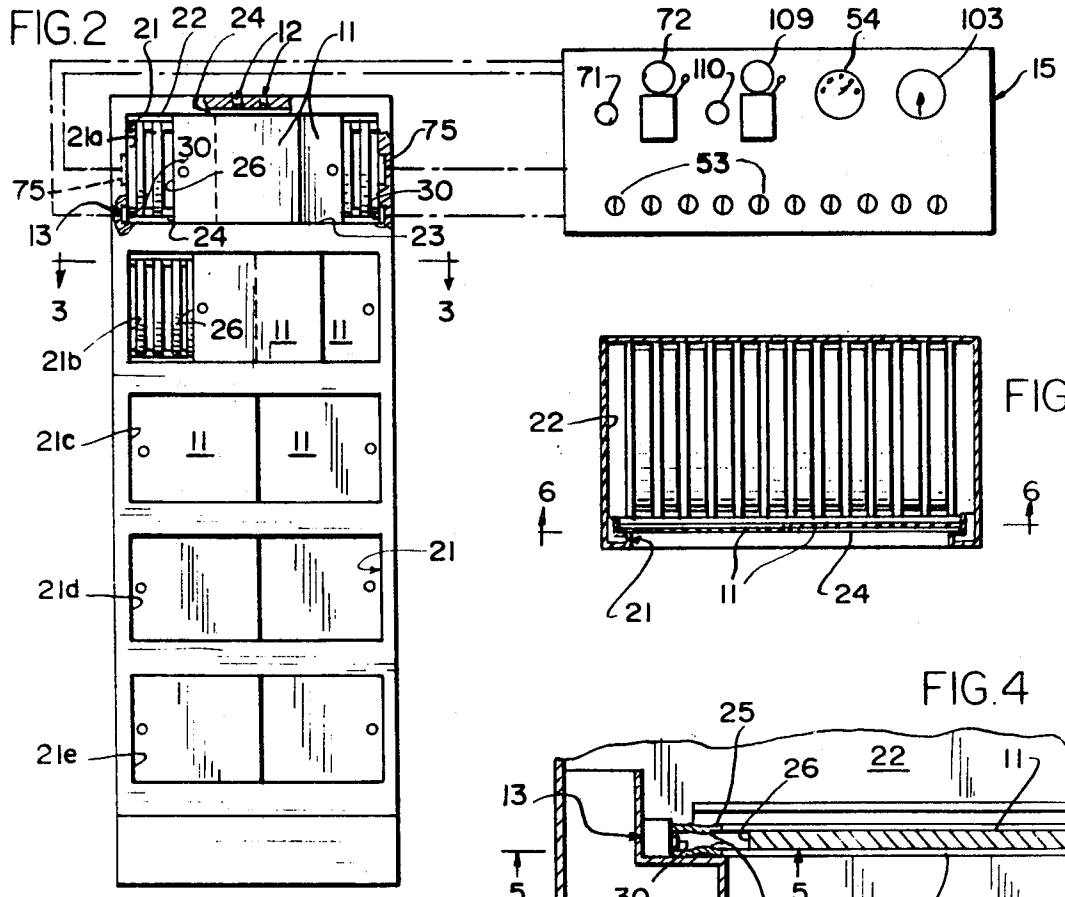
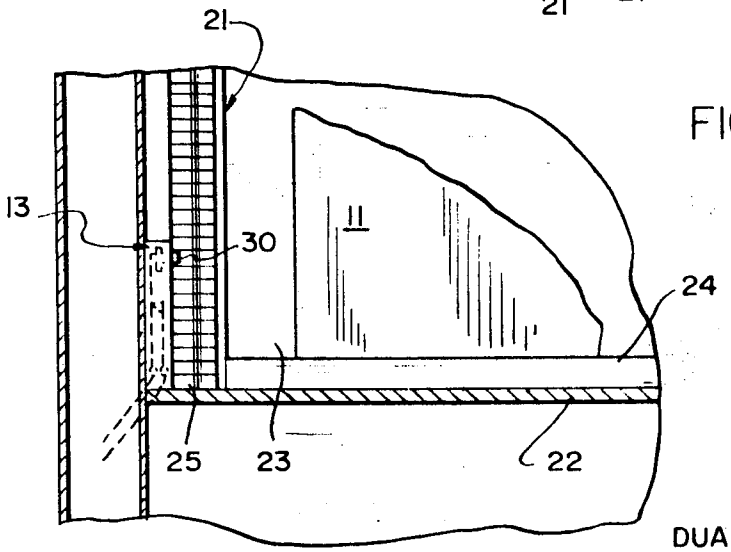


FIG.3

FIG.4

FIG.5



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FIG. 7

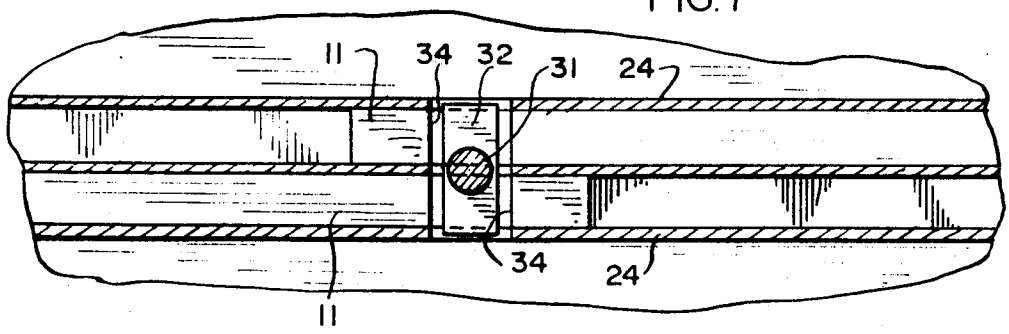


FIG. 6

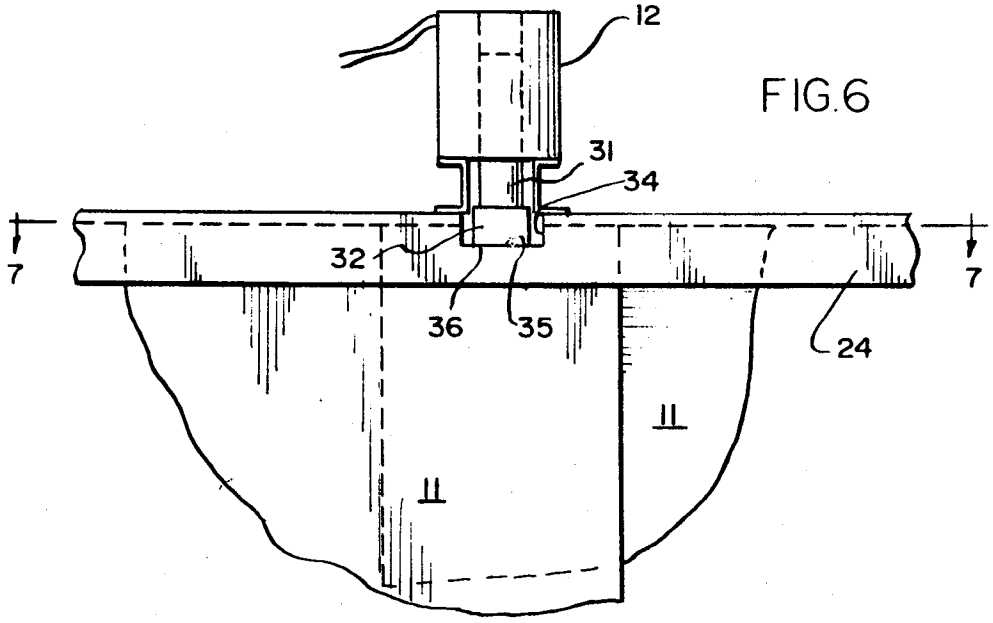
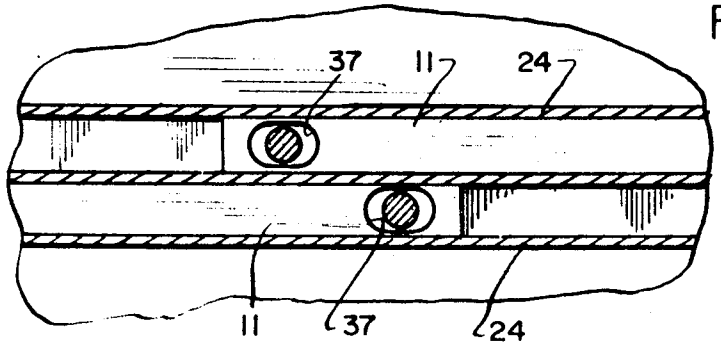


FIG. 8



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SECURITY STORAGE APPARATUS

SUMMARY OF THE INVENTION

Magnetic disks, tapes and the like are extremely vulnerable to damage by magnetic sabotage, inadvertent damage, or unauthorized use. It has been demonstrated that a damaging magnetic field can be easily provided and generated by a person with either a permanent magnet, electromagnet or other device capable of generating a magnetic field. Further, other destructive items could be readily provided by almost any person and the effectiveness, like that of magnetic devices, would be limited only by the extent of the person's immediate access to the tapes, disks, drums or the like.

This invention provides an apparatus for the secure storage of items against sabotage, inadvertent damage, or unauthorized use. To this end, this invention provides an apparatus for securely storing articles against mechanical, chemical or electrical damage by providing storage enclosure apparatus for shielding the articles to be stored.

Further, this invention provides an apparatus to overcome or control the danger of improper or inadvertent access to the articles to be securely stored by providing the storage enclosure with automatic limitations on the access to stored articles but with predetermined selectivity in regard to the access to stored articles.

In addition, this invention provides apparatus to secure the stored articles against undesirable magnetic radiation, by sabotage or otherwise, by an alarm system in response thereto and which will automatically and selectively limit possible magnetic exposure of the stored articles in response to a predetermined level of magnetism within a selected effective distance from the stored articles.

The present invention further provides monitors coupled with the door restrictors which will signal an excessive level of magnetism through audio and visual alarms placed at strategic remote points.

The present invention further provides apparatus whereby magnetic tapes or disks can be dispersed or collected at convenient points throughout a computer or similar operational area thus, making possible a versatile and timely usage of the stored units and avoiding an excessive concentration or otherwise undesirable storage of vital information.

It is a further object of the invention to provide storage space compartments within the storage apparatus to be remotely locked against access to provide selective security for certain articles containing sensitive information.

Other advantages and novel aspects of this invention will become apparent upon the examination of the following detailed description, in conjunction with the accompanying drawings wherein:

FIG. 1 is a schematic illustrative representation of the apparatus of this invention showing the elements and interrelationship thereof;

FIG. 2 is a front elevation view of an exemplary storage enclosure cabinet of this invention to illustrate the security storage and sealing of magnetic tape or the like, and generally showing one possible location of magnetic field detection devices;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2 showing the magnetic tapes or the like position in the storage enclosure behind closure therefor for sealing the tapes;

FIG. 4 is a partial enlarged view of the lower left-hand corner of the structure illustrated in FIG. 3 showing the sliding doors of the closures in relationship to switching and shielding portions of the apparatus located in the enclosure;

FIG. 5 is a partial sectional view taken along line 5—5 of FIG. 4 showing the physical interrelationship of a door opened for access and the switching and sealing apparatus of the enclosure associated therewith;

FIG. 6 is a partial enlarged view taken along line 6—6 of FIG. 3 showing the doors illustrated in FIGS. 2–5 in the closed position within an upper door track and with a solenoid restriction means positioned in lateral aligned slots of adjacent doors;

FIG. 7 is a partial sectional view taken along line 7—7 of FIG. 6 showing the plunger of the solenoid restrictor in the aligned slots in the upper edge of the doors with the doors in the closed position; and

FIG. 8 is a partial sectional view taken along a line equivalent to line 7—7 of FIG. 6 of another embodiment of the invention showing the slots in the doors as individual recesses receiving individual solenoid plunger means from separate solenoids instead of the solenoid plunger restrictor illustrated in FIGS. 5, 6 and 7.

The security storage apparatus of this invention for protecting magnetic tapes, disks and similar articles from inadvertent damage, sabotage or unauthorized use is illustratively shown in FIGS. 1–7, and comprises, generally, a storage enclosure 10, closure doors 11, restrictor solenoids 12, solenoid actuator switches 13, restrictor control and alarm 14, and remote instrument control panel 15.

Storage enclosure 10 is exemplarily illustrated (FIG. 2) as a cabinet 20 assembled from electronic shielding material such as heavy gauge steel. The cabinet 20 is generally provided with access openings 21 and particularly five respective access openings 21*a*–21*e* separated by shelves 22 (FIG. 5) composed of electronic shielding material to provide a storage space behind each access opening. Each access opening 21 is provided with a pair of the overlapping doors 11 which are slidably mounted within U-shaped electronic shielding tracks or channels 24 appropriately positioned in the bottom and top of each access opening 21.

Shielding elements 25 are also generally U-shaped channels and are provided in the vertical portions of the access openings 21 to receive a vertical edge 26 and immediate adjacent portions of respective doors 11 therein in frictional engagement with upset portions 27 of the elements 25 to shieldingly and frictionally receive and retain the vertical edge 26 when same are moved therein (FIGS. 4 and 5). Thus, each storage space 23 is electronically shielded by virtue of the cabinet 20, shelves 22 and the doors 11 mounted in the shielding tracks 24 and shielding elements 25. Racks, or similar structures, are provided within each storage space for supporting and retaining magnetic disks, tapes or the like.

Solenoid actuator switches 13 are normally open switches and are respectively provided in the cabinet 20 for each door 11, with an actuating button 30 in alignment with respective edges 26 of adjacent doors 11, and beyond respective shielding elements 25. When each of the doors 11 is completely closed and otherwise positioned within the respective shielding element 25 therefor, the edge of the door 11 will move the corresponding solenoid switch button 30 of the respective solenoid switch 13 to open same (FIG. 1, 2, 4 and 5).

A preferred embodiment of the restrictor solenoids 12 per se of this invention is illustrated with particularity in FIGS. 6 and 7. In this embodiment, solenoids 12 are located respectively adjacent the center of each access opening 21 and immediately above and adjacent the overlapping portion of doors 11. The restrictor solenoids 12 (FIGS. 6 and 7) include a single solenoid 12, for each pair of doors 11, adapted to actuate a single plunger 31 having a lateral foot 32 formed as a part thereof.

In this embodiment of solenoids 12, the solenoid is secured to the upper track 24 by bracket 33, with plunger foot 32 normally positioned in grooves 34 in the top of doors 11 which are substantially aligned when the doors 11 are closed. Thus, a single plunger 31 of a solenoid 12 can enter grooves 34 of paired doors and limit the sliding movement thereof. The horizontal length 35 of grooves 34 is slightly larger than the corresponding engaging portion 36 of foot 32 a given amount, whereby foot 32 will allow a corresponding slight movement of doors 11 while preventing substantial movement thereof when foot 32 is in grooves 34. This slight movement of doors 11 is calculated so as to be sufficient to allow doors 11 to permit movement of corresponding actuator buttons 30 of

respective solenoid actuator switches **13** to close a corresponding switch **13**. Thus, slight movement of a door **11** as limited by foot **32** in normal gravity position in respective grooves **34** will normally cause respective solenoid switches **13** to close to actuate the corresponding respective solenoid **12**, and to release the particular door **11** through circuitry hereinafter described.

Although the solenoid embodiment **12** shown in FIGS. **6** and **7**, as above described, is the preferred embodiment of the solenoid apparatus per se, another embodiment is shown in FIGS **1**, **2** and **8** and described in detail herein to more fully explain the overall invention. In particular, the embodiment of the restrictor solenoids **12** which is utilized for illustrating the operation of the invention is illustrated in some detail (FIGS. **1–5** and **8**) and includes a pair of solenoids **12** for each access opening **21***a–21e*, however, only **21***a* and **21***e* are illustrated (FIG. **1**) for purposes of simplicity. The pairs of solenoids **12** are mounted on brackets **33** like that shown with respect to the single solenoid **12** (FIG. **6**) and have the plungers **31** thereof adapted and positioned to normally enter, by gravity, into respective individual slots **37** (FIG. **8**) provided in the top of each door **11**.

The storage enclosure **10** is provided with a source of alternating electrical current power **39** which is connected to a primary transformer winding **40** having reduced voltage terminals **41, 42, 43** and **44**. Terminals **41** and **42** are connected in series with a diode **45** and in parallel with a capacitor **46** to provide a direct current in conductors **47** and **48**. Conductors **47** and **48** provide this direct current through respective coils **50** of relays **51** and normally closed solenoid actuator switches **13** respectively provided for solenoids **12**.

Terminals **42** and **43** provide an alternating current through respectively grouped normally open relay switches **52**, solenoids **12** and master switches **53** on control panel **15** (FIG. **2**), as well as adjustable current overload circuit breaker **54** and relay switch **55**, through conductor **56** and **57**. Master switches **53** are preferably of the type which are operable by a key, however, these switches can be simple toggle or slide switches but are preferably located remotely from cabinet **20** on the instrument panel **15**.

The adjustable circuit breaker **54** is a current threshold which is adjustable to selectively tolerate a predetermined number of additive increments of current corresponding to the increments of current drawn by respective solenoids **12**, whereby only the current required for the predetermined number of solenoids will be tolerated before the circuit breaker **54** will be operable to break the circuit to the solenoids **12**.

In particular, and for example, if the adjustable circuit breaker **54** is adjusted for three solenoids, any three solenoids **12** could be actuated and the current drawn thereby would not cause the circuit breaker **54** to be operable to break the circuit **56–57**. However, in the event that more than three solenoids **12** are actuated in this example, the current drawn thereby would exceed the adjusted tolerable current threshold of the circuit breaker **54** and the circuit breaker **54** would open the circuit **56–57** to solenoids **12**. Thus, when any predetermined number of solenoids **12** are actuated in excess of the number adjusted for by the circuit breaker **54**, the current in circuit **56–57** will be broken.

It should be noted that any adjusted tolerable current threshold of circuit breaker **54** is sufficient to provide a current to a conductor **58** but, of course, will disconnect the current to conductor **58** along with **56** and **57** when a predetermined overload condition is reached as described above. Thus, in lieu of an overload situation with respect to circuit breaker **54**, conductor **58** will provide current to a relay **60**.

Transformer terminal **44** is connected in series with a diode **61** through switch **62** and conductor **59** with a capacitor **63** connected in parallel with relay **60** to provide a direct current to relay **60**. Relay **60** is provided with a switch **65** having an arm **66** which is normally urged from stop contact **67** into engagement with contact **68** by tension spring **69** (FIG. **1**). Inasmuch as current is provided to relay **60** by conductors **58** and **59** whenever circuit breaker **54** is effective to pass current to conductor **58**, relay arm will remain open against stop arm **67**.

However, when an overload or a power failure occurs in transformer **40** and circuit breaker **54** opens conductor **58**, relay **60** will not be operable and switch **65** thereof will move from the lower stop arm position **67** to the upper position **68** to actuate a bell **70**, lamp **71** or other similar alarm from a supplemental power source **72** connected therewith through contact **68** and switch arm **66**. Thus, when an overload situation causes circuit breaker to disconnect and switch **62** is closed, relay **60** will be electrically inoperable, to close the circuit to alarms **70** and **71**.

Also, it should be noted that inasmuch as relay **60** is dependent upon transformer terminal **44** for completion of the power thereto, in the event of complete power failure in transformer **40**, relay **60** will be similarly operated to operate alarms such as **70** and **71**. When relay **60** is caused to actuate alarms **70** and **71**, switch **62** can be opened. If the alarms continue with switch **62** open, this will be an indication that the safety circuit breaker **54** has disconnected conductor **58** rather than a power failure disconnecting conductor **59**. The operator can thereby determine the source of the alarm actuation.

Restrictor control and alarm **14** includes, among other things, hall effect magnetic detection elements **75** (FIGS. **1** and **2**). These devices **75** are illustrated in pairs for the five respective storage spaces **23** and access openings **21***a–21e*. Only the pairs of devices for **21***a* and the **21***e* are illustrated (FIG. **1**) for purposes simplicity. Further, although a pair of hall detectors **75** is provided for each storage space **23**, there could very well be situations wherein one device for each storage space **23** would be sufficient, particularly where the storage spaces **23** are small and without vertical partitions or other electronically obstructing structures.

The hall effect devices **75** are the typical and well-known type fabricated from a thin semiconductor material. Each device **75** is provided with a pair of control current source conductors **76** and a pair of hall voltage conductors **77**. A direct current control current **78** is applied to the control current conductors **76**. The amount of hall voltage developed in t hall voltage conductors or terminals **77** is directly a function of the intensity of the magnetic field around the device **75** and the control current **78**.

The hall output voltage obtainable from the typical hall effect device is in the neighborhood of 100 millivolts with a magnetic field strength of 1,000 gauss. Therefore, it is usually necessary to amplify the hall output voltage in **76**. Accordingly, a differential transistor amplifier **79** is generally illustrated (FIG. **1**) as a part of the restrictor control **14**. Amplifier **79** is powered by a separate direct current source **80** through terminals **81**, or may be connected to conductors **58** and **59** at **82** and **83** to derive its direct current source. It should be noted that when connected to **58** and **59** at **82** and **83**, amplifier **79** will be responsive to the same power source failure alarm previously described with respect to storage enclosure **10**.

Hall effect voltage conductors **77** are respectively connected to the bases **87** and **88** of transistors **89** and **90** such as type 2N1302 and the amplifier power **80** is supplied to transistors **89** and **90** by conductors **92–93** and **94–95** through resistors **96** and a variable resistance bridge **97** respectively. The hall effect voltage in conductors **77** is thereby amplified and manifested in conductors **93**. The small control-signal requirements of solid-state devices and the power handling capabilities of electromechanical relays are combined by adding an additional stage of amplification across the hall output conductor **93** through resistor **93***a* of the differential amplifier by utilizing transistor **98** with a relay **99**.

A supplemental direct current source **100** is applied to terminal **101** of transistor **98** and a coil **102** of relay **99** through a current meter **103**. This circuit is completed from the relay

coil 102 to the transistor 98 by conductor 104. Relay 99 is provided with a relay switch 105 which is operable with switch 55, previously described, when relay 99 is actuated. Also, when the relay 99 is actuated, switches 99 and 55 will move from the upper position (FIG. 1) to the lower position thereby opening the circuit between conductors 56 and 57 and closing the circuit between conductors 106 and 107.

Conductors 106 and 107 are connected to a separate direct current power source 108 having the bell 109 and lamp 110 connected in parallel therewith, whereby actuation of the relay 99 to close switch 105 will operate the bell 109 and lamp 110 as a means of alarm. Thus, when any one of the hall detectors 75 is subjected to a detectable magnetism, the device 75 will impose an increase in current on the hall terminal conductors 77 which will in turn be amplified through amplifier 79 to actuate relay 99, opening switch 55, and closing switch 105 to respectively prevent current flow in any solenoid 12 and to sound alarms 70–71 and 109–110. In this situation, the solenoids 12 will prevent opening of any doors and the operator will be notified on the control panel (FIGS. 1 and 2) by the alarms 109–110, and the current meter 103, of the presence of magnetism in the storage space 23.

In operation, the security storage apparatus of this invention will normally have the doors 11 closed to protect the tapes, disks or the like. With doors 11 closed, solenoids 12 will have the plungers 31 thereof in respective grooves 37 of the corresponding doors 11 to restrict the movement of the doors 11 to the clearance provided between the plunger and the respective grooves 37. Circuit breaker 53 is adjusted to tolerate a threshold current equivalent to the total current which might be drawn by a predetermined number of solenoids 12, in the event this number of solenoids is operated, to remove the respective restraining plungers 31 from the grooves 37 of corresponding doors 11 to allow the corresponding number of doors to be slidably opened.

As indicated previously, the adjusted position of circuit breaker 54 will always accommodate the current which may be drawn by conductor 58 to operate relay 60 in addition to the threshold current for the predetermined number of solenoids. Switches 53 on the control panel are selectively closed to allow actuation of a number of solenoids 12 corresponding to doors 11 in a number which the operator may desire to make available for opening for general access by the user of the cabinet 20. In this regard, the number of switches 53 which are selectively closed to permit general access to corresponding doors 11 is entirely independent of the number of solenoids which the circuit breaker 54 is adjusted to tolerate.

An example of operation would be to close the top three switches 53 (FIG. 1) and adjust circuit breaker 54 to tolerate only two solenoids 12. Closing the top switches 53 facilitates the general access operation of the left and the right doors 111 and access openings 21*a*, and the respective closing and opening of the third and fourth switches 53 will facilitate the general access operation of the left door 11 in access opening 21*a*, but will respectively prevent opening of the lower right door 11 in access opening 21*e*. Further, under these circumstances, if the left door 11 in opening 21*a* is moved to the right in an effort to open same, this door 11 will move to the right until the side of groove 34 engage plunger 31 whereupon normally closed actuator switch 13 in engagement therewith will be closed.

The closing of this switch 13 will actuate corresponding relay 50 to close switch 52 and actuate the corresponding solenoid 12 associated with the left door 11 in opening 21*a*. Thus, the left door 11 in opening 21*a* will have the plunger 31 removed from the groove 37 thereof and that door 11 will be free to be moved to the right to permit access to the storage space 23 through access opening 21*a*. The right door 11 and access opening 21*a* and the left door in access opening 21*e* can be similarly operated simultaneously with the left door 11 in access opening 21*a* whereby all three of these doors 11 can be generally accessible for opening at any one time except as may be specifically otherwise controlled by circuit breaker 54.

However, inasmuch as circuit breaker 54 is adjusted to tolerate only two solenoids 12 and in the event that an attempt is made to simultaneously accommodate the opening of any more than two of the doors 11 generally allowed by switches 53, such as the pair of doors 11 in access opening 21*a* and the left door 11 in access opening 21*e*, the respective switches 13 will normally close to actuate the three corresponding solenoids 12 therefor in an effort to release these three doors 11. Also, inasmuch as the circuit breaker 54 has been adjusted to tolerate only two solenoids, circuit breaker 54 will open the circuits to all solenoids whereby all plungers 31 thereof will be urged by gravity to the restricting position within the respective slots 37 to prevent further opening of any doors and to cause the actuation of switch 65, inasmuch as the current will be cut off from conductor 58 operating relay 60. Under these conditions, alarms 70 and 71 will be effective to indicate, to a party observing the instrument panel 15, that an attempt has been made to open an unauthorized number of doors 11.

In conjunction with the storage enclosure operation 10 (FIG. 1), restrictor control and alarm 14 will detect the presence of magnetism through the hall effect devices 75 placed in the storage spaces 23. Any such magnetism detected by devices 75 will be simplified by amplifier 76, actuating relay 99 to open switch 55 and close switch 105, thus the presence of magnetism will open circuit 56–57 to prevent further operation of any restrictor solenoids 12 and thereby prevent further operation of doors 11. Also, the operation of circuit 56–57 in response to the detection of magnetism will cause relay 60 to close switch 65 to operate alarms 70 and 71 on the control panel 15. The switch 65 will also be closed upon detection of magnetism by any one of the elements 75, and accordingly, alarms 70 and 71 will be actuated from power source 72 to indicate the presence of magnetism at the storage enclosure 10. Thus, the presence of magnetism in the storage enclosure 12 will sound the alarms 70 and 71 to indicate the disconnection of current to all solenoids 12, and alarms 109 and 110 will be actuated to indicate magnetism as the source of the alarm.

Thus, the present invention provides a security storage apparatus for protecting magnetic tapes, disks and similar articles from inadvertent damage, sabotage, or other unauthorized use by proving an apparatus whereby only certain portions of certain access openings are selectively made available for access by switches 53 from a remote control panel 15. Further, the number of doors 11 which can be operated simultaneously is specifically controlled in conjunction with a general control on the overall number of doors that can be operated. Still further, in the even of the presence of any magnetism, all doors will be in the restricted condition by virtue of the unactuatable nature of solenoids 12, and in all events, alarms are provided to signal improper utilization of the apparatus, and moreover, the particular form of improper use thereof. Also, this invention provides a security storage apparatus which will allow dispersement of storage means to provide versatility of installation and use while avoiding the hazards of concentrated storage facilities.

It is to be understood that the invention is not to be limited to the specific constructions and arrangements shown and described, as it will be understood to those skilled in the art that certain changes may be made without departing from the principles of the invention.

What is claimed is:

1. A security storage apparatus for protecting magnetic tapes, disks and similar articles from inadvertent damage, sabotage or unauthorized use comprising a storage enclosure having an access formed therein and opening into a storage space therein for enclosing the articles, a closure for sealing said access and selectively operable for opening said access to expose said storage space, restrictor means normally in condition to engage said closure for limiting operation thereof and operable to a condition to prevent engagement thereof with said closure to allow full operation of said closure, actuator means associated with said restrictor means and normally

responsive to the limited operation of said closure under the normal conditions of said restrictor means to operate said restrictor means, and restrictor control means operable to prevent operation of said restrictor means.

2. A security storage apparatus as defined in claim 1 wherein said storage enclosure has multiple accesses therein, and said closure comprises multiple sliding doors for sealing said accesses and individually operable for selectively opening said accesses to selectively expose said storage space.

3. A security storage apparatus as defined in claim 2 wherein said storage enclosure space comprises multiple storage cells.

4. A security storage apparatus as defined in claim 1 wherein said restrictor means comprises solenoid means having plunger means normally urged by gravity into the condition for engaging said closure for limiting movement thereof and being electrically operable to the condition for preventing engagement thereof by said closure, and said actuator means comprises an electrical power circuit having an operating switch responsive to the limited movement of said closure to actuate said restrictor means.

5. A security storage apparatus as defined in claim 4 wherein said restrictor control comprises a control switch in said restrictor electrical power circuit and in series with said restrictor.

6. A security storage apparatus as defined in claim 1 wherein said restrictor control means comprises a master control means operable in response to a magnetic force field of predetermined intensity with respect to said storage space.

7. A security storage apparatus as defined in claim 3 wherein said storage enclosure comprises a cabinet with said multiple storage cells arranged as shelves therein, said restrictor means comprises solenoid means having plunger means normally urged by gravity into the condition for engaging said closure for limiting movement thereof and being electrically operable to the condition for preventing engagement thereof by said closure, and said actuator means comprises an electrical power circuit having an operating switch responsive to the limited movement of said closure to actuate said restrictor means.

8. A security storage apparatus as defined in claim 3 wherein said restrictor control means comprises a master control means operable in response to a magnetic force field of predetermined intensity with respect to said storage space.

9. A security storage apparatus as defined in claim 6 wherein said restrictor control means comprises a master control means operable in response to a magnetic force field of predetermined intensity with respect to said storage space to indicate the presence of said magnetic field.

10. A security storage apparatus as defined in claim 4 wherein said restrictor control means comprises a circuit breaker means in series with said solenoid means and operable in response to a predetermined current demand in said electrical power circuit to open said circuit.

11. A security storage apparatus as defined in claim 7 wherein said solenoid and plunger means comprises a solenoid and plunger associated with each of said sliding doors for engagement therewith.

12. A security storage apparatus as defined in claim 11 wherein a single solenoid and plunger means is respectively associated with pairs of said sliding doors in each of said accesses for engagement with said pair of doors thereof.

13. A security storage apparatus as defined in claim 11 wherein said sliding doors slide horizontally and have a recess formed in the top surface thereof respectively adapted to normally receive said plungers for engagement with said doors.

14. A security storage apparatus as defined in claim 13 wherein said restrictor control means comprises a master control means operable in response to a magnetic force field of predetermined intensity with respect to said storage space.

15. A security storage apparatus as defined in claim 13 wherein said restrictor control means comprises a circuit breaker means in series with said solenoid means and operable in response to a predetermined current demand in said electrical power circuit to open said circuit.

16. A security storage apparatus as defined in claim 6 wherein said restrictor control means further comprises a circuit breaker means in series with said solenoid means and operable in response to a predetermined current demand in said electrical power circuit to open said circuit.

17. A security storage apparatus as defined in claim 16 wherein said magnetic responsive means and said circuit breaker means are interconnected whereby operation of either one will prevent operation of said restrictor means.

18. A security storage apparatus as defined in claim 5 wherein control switches are respectively provided for said restrictor means whereby said restrictors may be selectively controlled thereby.