

[54] **HANGING FILING-CARD CABINETS**

[76] Inventors: **Eduardo Hegedus; George Hegedus,**
both of Avenida Thomas Edison,
406/448, Sao Paulo, Brazil

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[51] **Int. Cl.**..... **A47b 65/00, B07c 5/34**

[58] **Field of Search** 209/110.5, 111.8; 312/184

[56] **References Cited**

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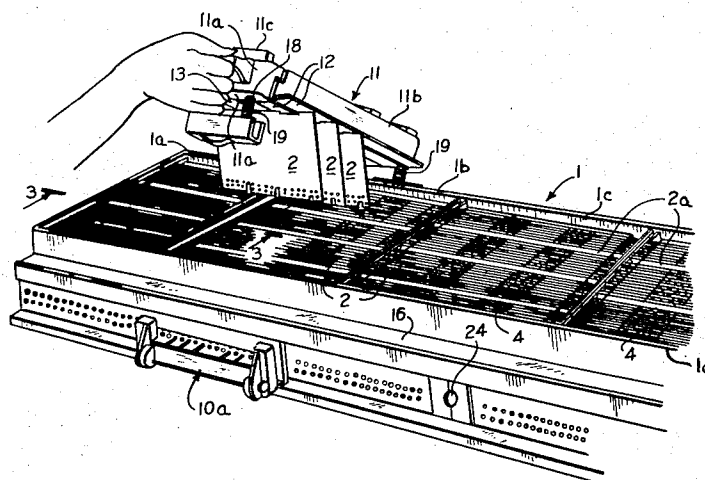
Primary Examiner—Paul R. Gilliam

Attorney, Agent, or Firm—Ernest G. Montague; Karl F. Ross; Herbert Dubno

[57] **ABSTRACT**

A hanging filing card system comprising a frame including spaced upper rails, a plurality of magnetic metal hangers having end portions removably supported on the upper rails, and a filing card having an upper end secured to each of the metal hangers between the end portions, thereby hanging freely on the hangers, and having at the bottom a plurality of a group of holes and a plurality of slots open at their lower end. Stiletto means are selectively inserted into the holes and the slots of the cards, respectively, and a magnetized extractor means is provided for engaging the metal hangers for withdrawing cards through which the stilettos pass only through slots, by mutual magnetic attraction of the magnetized means and the metal hangers and for being moved upwardly from the frame.

4 Claims, 16 Drawing Figures



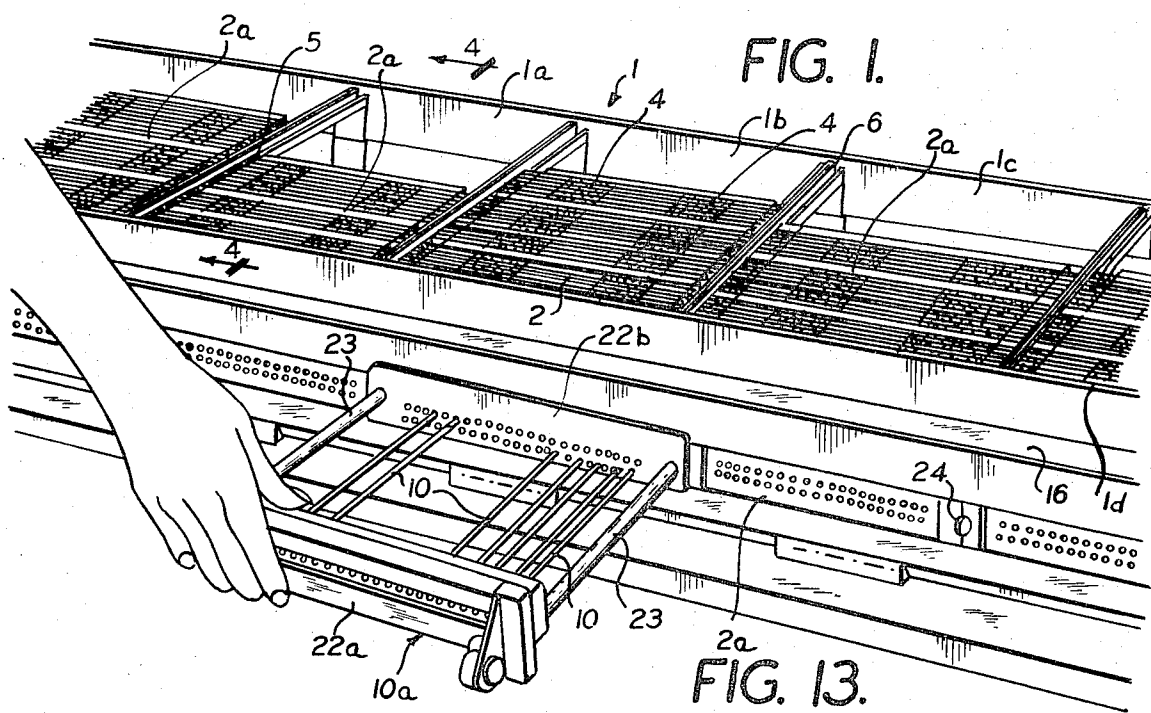


FIG. 2.

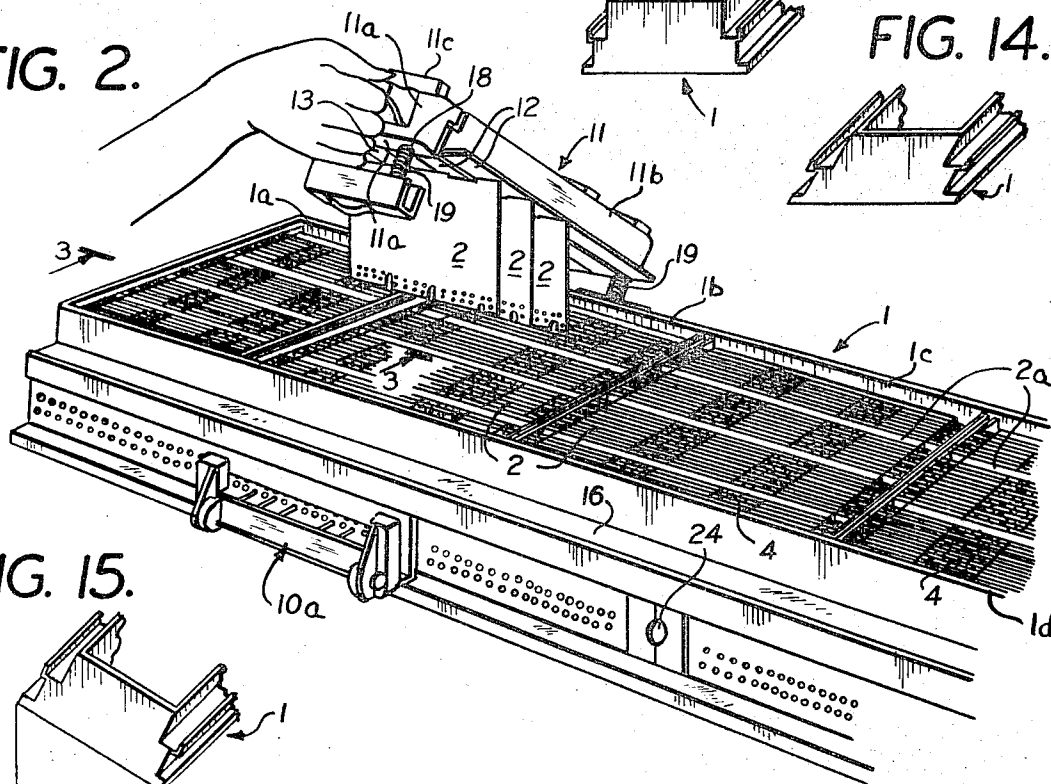


FIG. 15.

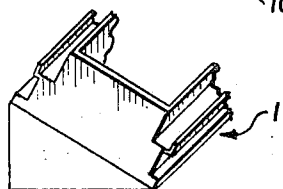


FIG. 16.



FIG. 13.

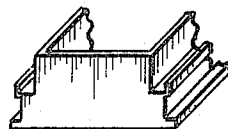
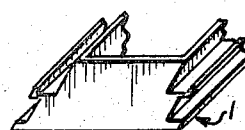


FIG. 14.



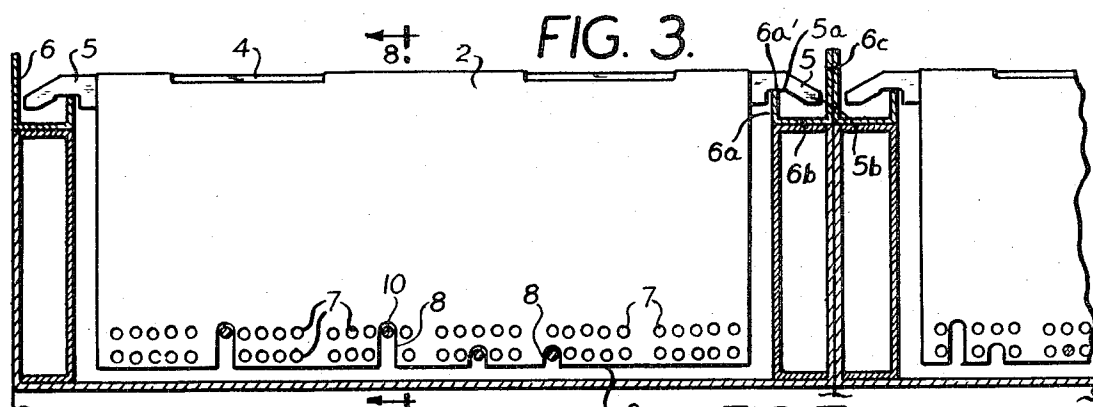


FIG. 3.

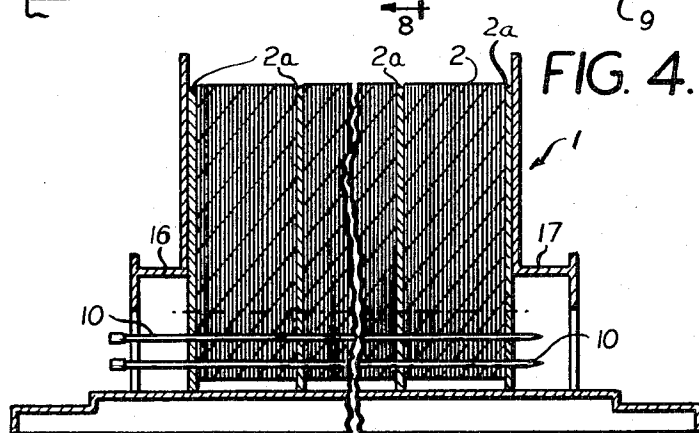


FIG. 4.

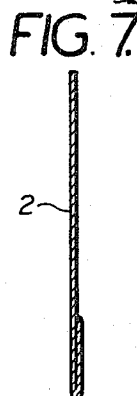


FIG. 7.

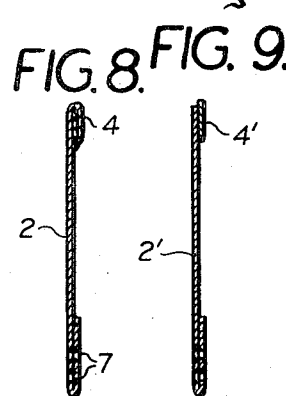


FIG. 8 FIG. 9.

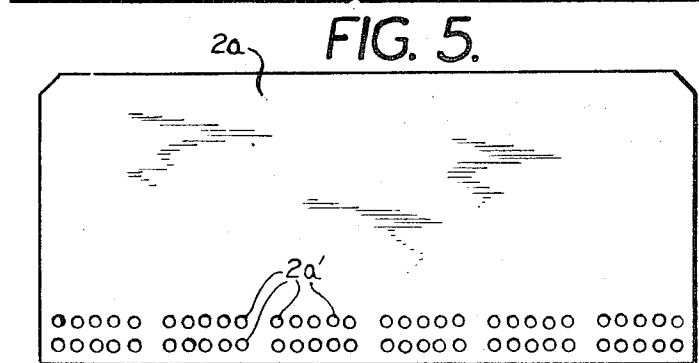


FIG. 5

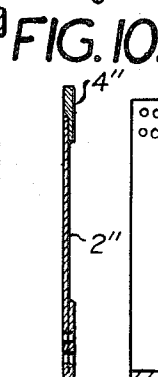


FIG 10

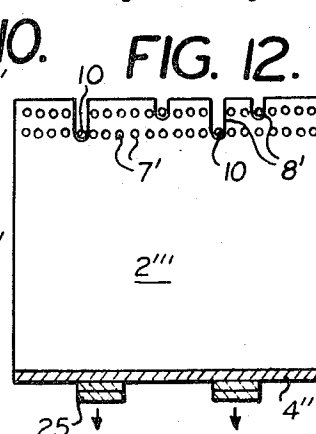


FIG. 12.

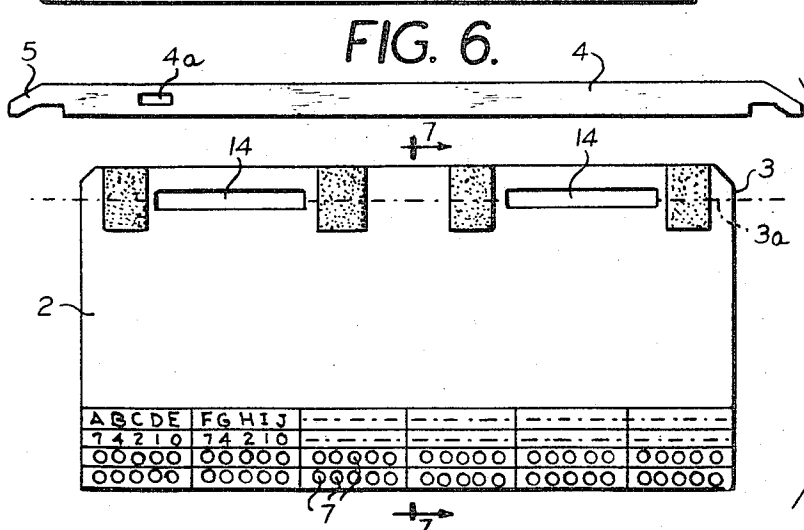


FIG. 6.

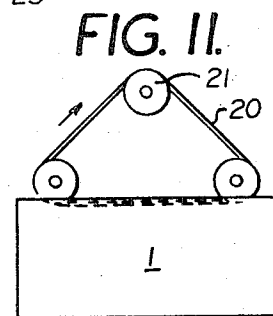


FIG. 11.

HANGING FILING-CARD CABINETS

The present invention relates to hanging filing card systems, in general, and to hanging filing card systems with magnetic removal means, in particular.

My U.S. Pat. No. 3,384,093, which issued on May 21, 1968, discloses a hanging card system comprising a drawer having spaced upper edges and a plurality of metal strips having ends removably engaging the upper edges and forming supporting elements, a filing card 10 having an upper end folded over and secured on each of the metal strips between the ends, the upper end defining at least one slot adjacent the metal strip exposing an adjacent area of the metal strip. Stiletto means cooperating with coded holes and slots in the filing cards are provided for preventing removal of a desired selection of filing cards, and magnetized means for being placed adjacent the exposed area of the metal strips for withdrawing the remaining freely hanging filing cards.

It is an object of the present invention to provide a hanging card system basically in accordance with said U.S. Pat. No. 3,384,093 but providing several and cooperative improvements thereto.

In particular, it is an object of the present invention to provide a hanging card system in accordance with said patent wherein a frame including a plurality of side by side disposed compartments is used instead a drawer.

In accordance with a feature of the present invention the supporting rails are closed and include a stop wall which cooperates with the terminal end of metal hangers. Also the frame has no fixed front plate.

In accordance with the present invention to prevent the stilettos to be fixed, a plurality of card separators are provided swinging within, for example, one-sixteenth of an inch limit to keep the stilettos down.

A magnetic extractor is provided which swings upwardly pulling the cards out of the frame and has formed thereon an ejector to throw the cards off from the magnetic rails. Further, the extractor is designed to slide from one card compartment to the next upon two frame rails at the front and the back of the frame.

Still further, in accordance with the present invention, multiple stiletto inserting is realized through a stiletto unit inserted into two guide tubes which provide accurate operation of insertion of many stilettos simultaneously through the openings in the card.

It is another object of the present invention to provide a turn-around or upside-down frame system with the magnetic removal plates at the bottom and the cards filed in hanging position.

In accordance with the present invention, the system works with magnetic-type cards that are selected, sorted, classified, grouped or arranged in any order, magnetically at a speed of up to 25,000 cards per minute and the cards are filed at random and retrieved from the magnetic files by the permanent magnetized simple extractors. The time saving is up to 90 percent in filing and finding cards, but almost in all the other operations like sorting, classifying, grouping, etc. time savings are never less than 50 percent as compared to any conventional system.

The cards may be thin, double, multiple or envelope type, the latter containing slips, excerpts, photos or micro-film documents, and they may be coupled with edge-punched cards for automatic typewriting machines.

The system, in accordance with the present invention, presents the most complex management information in minutes and with mechanical accuracy and with high speed and capacity. The cards may be used for various purposes and the unit system is simple, its installation does not require air conditioning, separate rooms or complicated machinery and electricity is not even required. The operation can be learned in a couple of hours and anybody can be a regular operator within a week's time of training. This exceptional simplicity of this card system of the present invention makes the system a unique, low-cost installation system with amazing low operating costs.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings in which:

FIG. 1 is a perspective view, partly broken away of a card sorting and random-retrieval system in accordance with the present invention showing the stiletto unit being inserted into a card compartment;

FIG. 2 is a perspective view similar to that of FIG. 1 but showing the extractor removing cards from the stiletto inserted compartment;

FIG. 3 is a section along the lines 3—3 of FIG. 2;

FIG. 4 is a section along the lines 4—4 of FIG. 1;

FIG. 5 is a front elevation of a metal partition for the card compartments;

FIG. 6 is an exploded view of a card and its magnetic-like hanger;

FIG. 7 is a side elevation of the card of FIG. 6;

FIG. 8 is a cross-section along the lines 8—8 of FIG. 3;

FIGS. 9 and 10 are cross-sections of cards secured in different manners to the hanger;

FIG. 11 is another embodiment of the magnetic head in the ejector;

FIG. 12 illustrates another embodiment of the present invention schematically showing in cross-section one compartment of an upside-down removal system; and

FIGS. 13—15 are partial broken away perspective views showing various orientations of the frame rails, and

FIG. 16 is a plan view of a stiletto.

Referring now to the drawings, and in particular to FIGS. 1—7, an improved card sorting and random-retrieval system, designed in accordance with the present invention comprises a frame unit 1 forming a plurality of tandem arranged cards 2 or the like are disposed. The cards 2 are adapted to contain various information thereon, such as, for example, accounts receivable, accounts payable, collection statistics, programming, home sales, salesmen control, payroll, fixed assets, inventory control, personnel information, purchasing, machine load, library, hospitals, chemical analysis, etc.

Each card 2 is secured at its upper edge portion 3 to a metal hanger 4. Preferably the upper edge portion 3 is folded over fold line 3a about a hanger 4. The hanger 4 is longer than the length of the card 2 and includes end portions 5 adapted to be carried by rails 6 of the frame 1, as illustrated in FIG. 3. The cards 2 freely hang by gravity on the hangers 4 which in turn are supported by the rails 6 of the frame.

The cards 2 preferably are secured longitudinally to its hanger 4 by means of a window 4a provided in the

hangers 4 such, that when the upper edge portion 3 of the card 2 is folded over the hanger 4 and glued down itself at its end portion 3b (FIG. 8), glue is additionally provided adjacent to and extending through the window 4a of the hanger, thereby securing together both facing folded sides of the upper edge portion 3 of the card through the window 4a and thereby preventing sliding movement of the card longitudinally relative to the hanger 4.

Referring now again to the drawings, and more particularly to FIG. 3, the rails 6 are formed with a supporting section 6a which supports at point 6a' the ends 5 of the hangers 4 at a recess 5a formed in the ends 5. The rails extend at the bottom 6b horizontally from the supporting section 6a and have an outer stop wall 6c on the outside thereof extending somewhat higher than the support point 6a'. The stop wall 6c is adapted to cooperate with the tip or terminal portion 5b of the end 5 of the hanger 4 in the event that the cards are tilted, whereupon the tip 5b would hit the limit wall 6b and would rock back into straight, i.e., horizontal, position. This avoids the cards from being twisted out of position as they are partially lifted.

Removing preselected filing cards magnetically can only work properly, exclusively with the hanging type cards as set forth in the present invention. To perform the selection of filing cards by the stilettos, it is an important condition that the cards be perfectly aligned so that no horizontal or vertical relative displacement can be permitted. This condition is aided by the stop wall 6c of the rails of the present invention.

As illustrated in FIGS. 9 and 10 the cards 2 may be secured to the hangers 4 in alternate ways.

FIG. 9 shows a card 2' pasted at its upper end portion directly against the hanger 4', the card 2' not being folded as in the previous embodiment.

FIG. 10 illustrates a hanger 4' which is recessed in step-like form, in which recess a card 2'' is pasted thereagainst, the recess being formed so that the card 2'' and the rail 4'' are coplanar at their rear surface.

In each card compartment 1a, 1b, 1c, etc., there are provided, between many cards, a plurality of metal separators 2a, as illustrated in FIGS. 4 and 5. The frame 1, in accordance with the present invention, preferably has no fixed front plate to prevent the stilettos, hereinafter described, from being fixed. The separators 2a swing within one-sixteenth of an inch limit and keep the stilettos down (i.e., preventing them from reaching the position indicated in dashed lines in FIG. 4).

Referring now again to the drawings, and more particularly to FIGS. 3 and 4, the lower portion of the cards 2 are initially provided with a plurality of holes 7, as illustrated. Subsequently the user, after providing the desired information on the card, codes the cards corresponding to the information placed thereon, by selectively forming slots 8 extending from the selected holes 7 down to the lower edge 9 of the card. The holes 7, thus converted into slots 8, selectively provide a coding for the retrieval of the cards desired.

For this purpose, a plurality of stilettos 10 (FIG. 10) selectively arranged (as to FIGS. 1 and 2), are inserted into a compartment into the holes 7 and slots 8 of the cards 2 in that compartment.

In FIG. 2 the stiletto unit or selector 10a which contains the stilettos 10 arranged as desired for removal of particular cards, is illustrated, already inserted into

compartment 1b, whereas FIG. 1 illustrates the stiletto unit 10a just as it is beginning to be inserted.

Only those cards of which all the inserted stilettos pass only through slots 8 of such cards are free for being removed upwardly and retrieved from the compartment. However, if any of the stilettos 10 pass through a hole 7 in a card, that card is held fixed by the stiletto and cannot be retrieved. Thus this arrangement forms a random retrieval system, where the cards can be filed in any order, yet retrieved merely by inserting the proper stiletto arrangement.

A magnetic extractor 11 is provided which can remove simultaneously all the cards which are ready for removal, i.e., those cards in which the inserted stilettos 10 all pass through slots 8. The extractor 11 is provided with preferably two magnetic rails 12 and two magnetic rails 13 which are adapted to be moved against the upper edge of the hanger 4 which is made of metal. For this purpose, as illustrated in FIGS. 3 and 6, preferably the cards 2 are formed at their upper portion 3 with longitudinal slots 14, which when the upper portion 3 of the card is folded over the hangers 4, leaves exposed, portions of the upper edge of the hanger 4, which exposed portions are aligned in position relative to the magnetic rails 12 and 13 of the extractor 11.

The slots 14 extend a substantial length of the cards 2, thereby providing for stable and secure removal of the cards by the two magnetic rails 12 or 13, respectively, entering each slot 14, without the cards dropping down easily, as illustrated in FIG. 2.

The extractor 11 is pivotally mounted releasably and slidably at the rear portion of the frame 1. The pivotal movement aids the extracting of the cards 2 (FIG. 2). The extractor 11 is prior to the extracting process, disposed in the flat position (not illustrated) with the magnetic rails 12 and 13 against the hanger 4. As the extractor is pivoted upwardly as shown in FIG. 2, the cards which are not held by the inserted stilettos 10, i.e., the stilettos passing through only the slots 8 of those cards, are pulled out of the frame 1.

The extractor 11 is adapted to slide from one compartment to the next compartment upon front and rear rails 16 and 17 of the frame 1.

The extractor 11 sits on the frame 1 on bolts 18 of the extractor on which springs 19 are provided, to help lifting of the magnetic rails 12 and 13, without providing a lifting effect on the frame or cards. The spring biased bolts 18 space the magnetic rails 12 and 13 away from magnetic contact with the card hangers 4 when the extractor unit is slid from compartment to compartment, or merely rests on the rails of the frame above a compartment. When it is desired to remove the stiletto-selected cards, the extractor is pressed downwardly and the spring biased bolts 18 permit the body portion of the extractor and the magnetic rails 12 and 13 of the extractor to come into contact with the exposed portions of card hangers 4. Upon release of pressing of the extractor, the stiletto-selected cards 2 are partially lifted up on the magnetic rails 12 and 13 via their hangers 4.

The extractor 11 is preferably formed with an ejector or center card release portion 11a movable, for example, pivotally relative to a side magnetic rail supporting portion 11b of the extractor, the latter portion 11b containing the magnetic rails 12 and 13. An actuator 11c operatively releases a latch (not shown) when pressed, causing the center portion 11a to move downwardly,

preferably pivotally relative to the side portion 11b; in this manner any cards 2 which are held on the magnetic rails 12 and 13 via their hangers 4, are immediately ejected off the extractor by means of the center portion 11a.

The magnetic rails 12 and 13 can be adapted to change their polarity position during operation in a way such that lifted cards (as shown in FIG. 2), can fall off the extractor when they are intermittently demagnetized.

Magnetic ink can be used as a substitute for magnetic plates.

As illustrated in FIG. 11, the magnets in another embodiment may be provided on a tape 20, disposed on rollers 21 instead of rails that are pliable and lift the cards when moving.

The separators 2a are not liftable by or are not magnetically attracted to the magnetic extractor 11.

The code selector or stiletto unit 10a comprises front and rear plates 22a and 22b, respectively, having a plurality of holes corresponding to the holes 7 in all the cards 2, between which plates a selected arrangement of stilettos can be supported. The desired arrangement of stilettos 10 for the coding of the cards to be selected is made in the stiletto unit 10a, which is thereafter inserted into a compartment of the frame 1 (as indicated in FIGS. 1 and 2). The plunger-like stiletto unit 10a includes two tubes or rods 23 at the ends thereof which are adapted to be inserted into complementary openings 24 or tubes in the frame 1, and on which tubes the rear plate 22b of the stiletto unit is displaceable during insertion of the unit into a compartment of the frame, the tubes being responsible for the accuracy of the operation of inserting the plurality of predetermined arranged stilettos 10 simultaneously into the holes 7 and slots 8 of the cards 2 in the compartment.

Upon insertion of the unit 10a into the selected particular compartment, the stilettos 10 pass through the corresponding openings and slots in the cards 2, and as shown in FIG. 4 also pass through the metal separators 29 likewise provided with corresponding holes 2a', the separators 2a helping to keep the stilettos 10 down and in proper aligned position.

The cards 2 may be filed in any haphazard fashion, in accordance with the present invention, since the slot coding provides the means for selecting any desired card, immediately, by the proper arrangement of the stilettos.

The frame is not a drawer, and the rails thereof are now closed by a stop wall 6c, in accordance with the present invention.

The compartments 1a, 1b, 1c, etc. of the frame 1 can be coupled in a row of up to 50 or more of them, although only 4 compartments, 1a, 1b, 1c and 1d are illustrated in the drawings for convenience of illustration, the extractor 11 sliding along from compartment to compartment on the rails 16 and 17.

As illustrated in FIGS. 13-15, the frame could be positioned in horizontal position (FIG. 13) or various inclined positions, namely, inclining up or down (FIG. 14), or inclining right or left (FIG. 15).

Referring now to the drawings, and more particularly to FIG. 12, another embodiment of the present invention is disclosed wherein the hanging card system may be arranged such that the coding holes 7' and slots 8' in the cards 2''' are provided at the top edge of the cards, through which stilettos 10 pass at the top of the

frame. Magnets 25 are provided adjacent the bottom edge for cooperation with a metal supporting element 4'' of the cards at the bottom of the cards for removing pre-selected cards selected by the stiletto arrangement.

The cards 2''' here are filed now in hanging on stiletto position. The cards are slotted according to the retrieval programming and are pulled down by the magnetic force of the magnets 25, when the latter are lowered, subsequent to a selected removal of certain needles to insure releasability, i.e., those only passing through slots 8' of the predetermined cards which were desired to be removed.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense.

We claim:

1. A hanging filing card system comprising
 - a frame including spaced upper rails,
 - a plurality of magnetic metal hangers having end portions removably supported on said upper rails, each of said end portions including an extreme tip,
 - a filing card having an upper end secured to each of said metal hangers between said end portions leaving portions of said hangers exposed, thereby hanging freely on said hangers, and having at the bottom a plurality of a group of holes and a plurality of slots open at their lower end,
 - stiletto means inserted selectively into said holes and said slots of said cards, respectively, and
 - magnetized extractor means including spaced parallel magnetic rails for engaging said metal hangers at said exposed portions for withdrawing cards through which said stilettos pass only through slots, by mutual magnetic attraction of said magnetic rails of said magnetized means and said metal hangers, and for being moved upwardly from said frame,
 - said upper rails being substantially of U-shaped cross-section having an innermost supporting section on which said end portions are supported and outermost stop wall slightly spaced from an extreme tip of a corresponding of said end portions when said metal hanger is aligned horizontally, and abutting with said tip in the event a corresponding filing card is tilted, whereby said hangers return to said horizontal alignment,
 - said innermost supporting sections which support the end portions of each of said hangers, respectively, being lower in height than said stop walls of said upper rails, and
 - a plurality of rigid separators, disposed between groupings of said cards and including holes at the bottoms corresponding in alignment to the holes in said cards.
2. The hanging card system, as set forth in claim 1, wherein
 - said extractor means includes a means for releasing the cards which magnetically engage said magnetic rails, and
 - said extractor means is upwardly-pivotal relative to said frame for removing said withdrawable cards.
3. The hanging card system, as set forth in claim 1, wherein

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said frame defines a plurality of laterally arranged
card compartments each having on opposite sides
said upper rails for supporting said hangers,
said frame includes front and rear rails along which
said extractor means is slidably mounted for being
moved from compartment to compartment, and
said extractor means includes magnetic rails, and
spring-biased bolts which sit on said front and rear
rails of said frame to aid lifting of said magnetic
rails without having a lifting effect on said frame. 10

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4. The hanging card system, as set forth in claim 1,
wherein
said frame includes two guides, and
said stiletto means comprises,
a plunger-type unit,
a plurality of stilettos selectively and releasably ar-
ranged in said plunger-type unit, the latter insert-
able into said two guides such that said plurality of
stilettos enter selectively said holes and slots on
said cards.

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