

Dec. 21, 1965

M. E. REMKE
CARD FILING DEVICES

3,224,824

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3 Sheets-Sheet 1

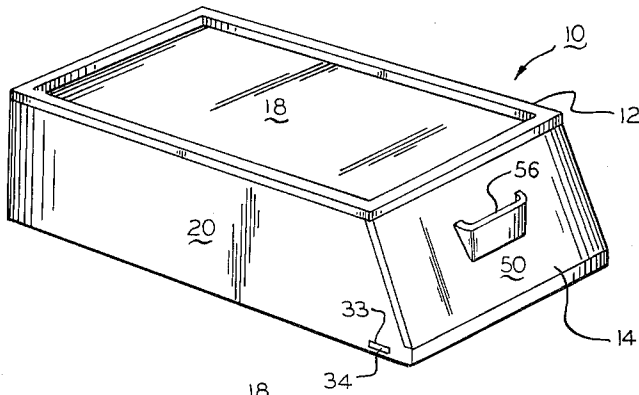


FIG. 1

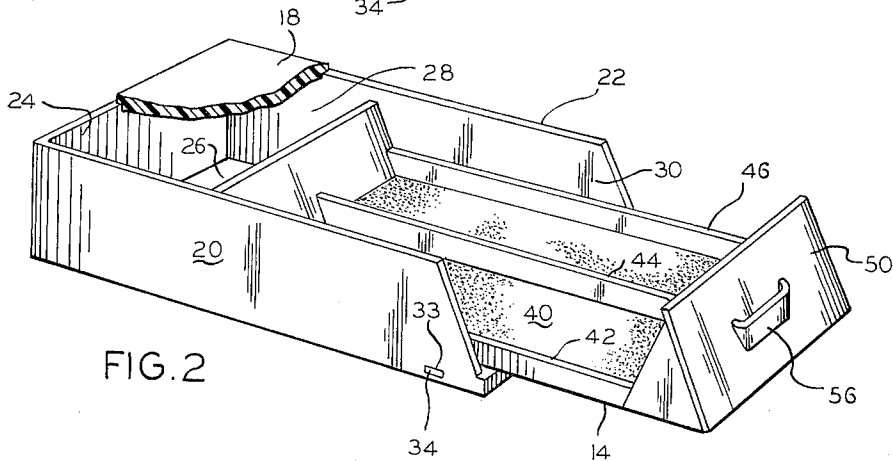


FIG. 2

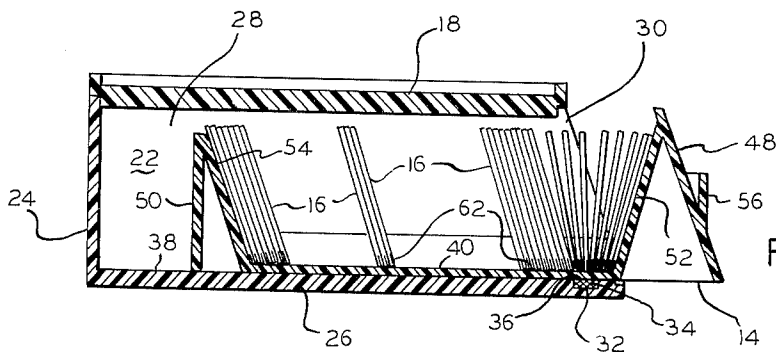


FIG. 3

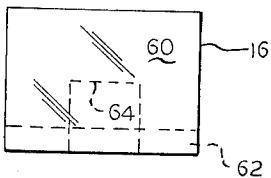


FIG. 4

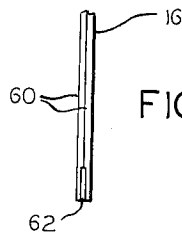


FIG. 5

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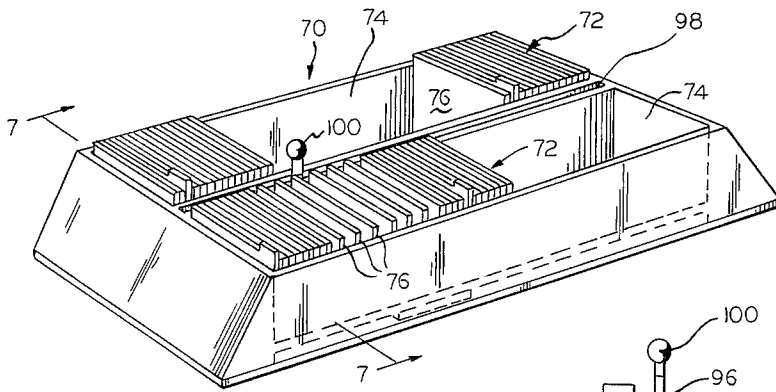


FIG. 6

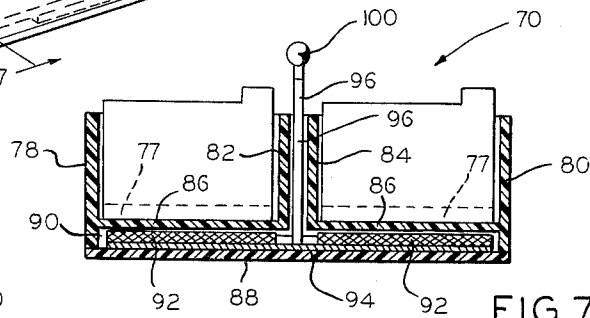


FIG. 7

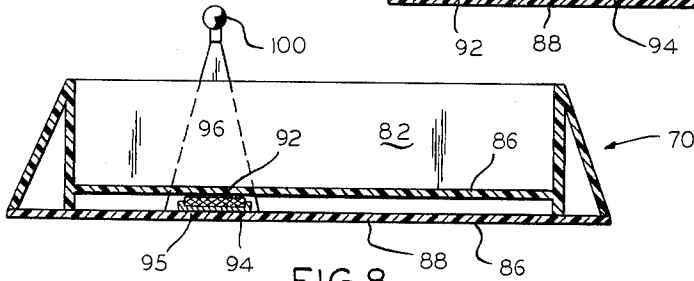


FIG. 8

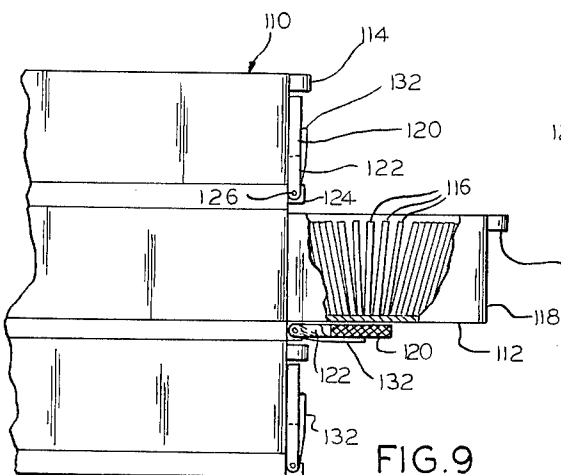


FIG. 9

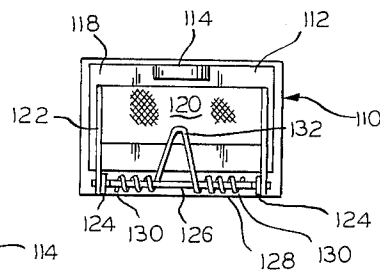


FIG. 10

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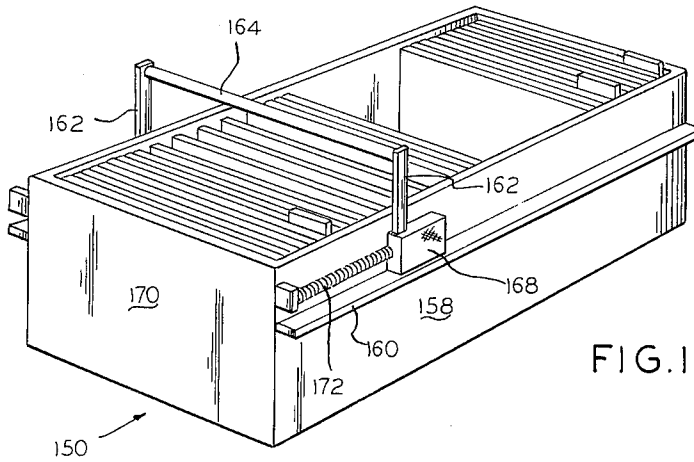


FIG. 11

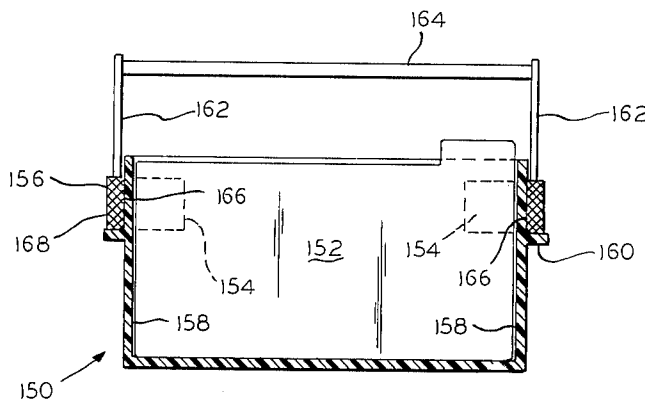


FIG. 12

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CARD FILING DEVICES

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2 Claims. (Cl. 312-183)

This invention relates in general to card filing devices and more particularly to a card filing arrangement in which a magnetic force is utilized for fanning desired portions of a stacked array of cards to permit inspection of the same.

In those card filing arrangements where the cards are stacked in drawers, facile visual inspection of the stacked cards in order to locate a desired card has been heretofore provided by means of a permanent magnet adapted to cooperate with a lamination of magnetic material on each of the cards. The magnet cooperates with the laminations to cause a group of such cards in proximity to the magnet to fan apart thereby permitting inspection. In the known devices, the magnets have been fixed in position, so it has been necessary to manipulate the edges of the cards to a slight degree to facilitate the magnetic operation, and to cause separation along the top edges of the cards.

In the case of open trays the magnets have been aligned parallel to the longitudinal axis of the stack and complicated linkages have been provided to shift the position of the magnets relative to the cards in order to effectuate the desired fanning operation. Likewise in the case of drawers the arrangement of elongate magnets parallel to the longitudinal axis of the stack does not permit a facile fanning operation to be carried out without complicating apparatus since the entire stack may be subject to the field of the magnet.

In order to simplify the apparatus for fanning or indexing the cards and render such filing arrangements more efficient, it is proposed to arrange the magnet for proper movement so as to cooperate with only one portion of the array at a time.

In the case of an open tray this may be accomplished by moving the magnet along the longitudinal axis of the stack so that only those cards lying in the relatively confined field of the magnet are fanned in sequence as the magnet is moved to and fro. Similarly, if the cards are carried in a drawer for reciprocation into and out of a cabinet or closure, the magnet may be positioned as a part of the cabinet closure so that when the door is rocked to an operative position, the card stack can be fanned as the drawer is moved relative to the cabinet.

It is therefore a primary object of the present invention to provide an improved card filing arrangement moving magnet structures for fanning filing cards arranged in a file drawer.

It is another object to provide an improved arrangement for moving the stacked cards in a filing arrangement relative to a permanent magnet for fanning the cards to permit facile visual inspection thereof.

It is another object to provide a simplified arrangement for positioning a permanent magnet with respect to an array of cards each carrying a magnetic element whereby adjacent card edges may be separated to permit facile inspection thereof.

It is still another object to provide a card filing arrangement in which a permanent magnet is positioned for movement to fan limited numbers of the cards along the longitudinal axis of the stack in response to relative move-

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ment between the magnet and the stack along the longitudinal axis of said stack.

Other objects and features of this invention will become apparent upon examination of the following specification, taken with the drawings, wherein;

FIG. 1 is a perspective view of a card filing structure having the improvements according to the present invention embodied therein;

FIG. 2 is a perspective view of the structure shown in FIG. 1 with portions broken away and with the drawer thereof in an extended position;

FIG. 3 is a sectional view of the card filing structure shown in FIG. 1, showing the fanning of the cards therein by magnetic field influence;

FIG. 4 is a front elevational view of one of the file cards utilized in the card filing structure of FIGS. 1 to 3;

FIG. 5 is a side elevational view of the card shown in FIG. 4;

FIG. 6 is a perspective view of another embodiment of a card filing structure having the improvements according to the present invention;

FIG. 7 is a sectional view taken along the line 7-7 of FIG. 6 looking in the direction of the arrows;

FIG. 8 is a longitudinal sectional view of the card filing structure shown in FIG. 6;

FIG. 9 is a partial elevational view of another embodiment of the present invention;

FIG. 10 is a front elevational view of a portion of the structure shown in FIG. 9;

FIG. 11 is a perspective view of still another embodiment according to the present invention; and

FIG. 12 is a view illustrating the relative position of the magnets shown in FIG. 11 and a card carried by the tray.

Referring to FIGURES 1 to 3 of the drawings the card filing arrangement having the improvements according to the present invention is indicated generally by the reference numeral 10. It includes a cabinet 12 adapted to receive a drawer 14 in which are carried a standing array of cards 16. The cabinet 12 comprises a top wall 18, side walls 20 and 22, a back wall 24 and a bottom 26 to define an enclosure 28 having an open end 30. The walls of the cabinet may be integrally formed as shown, in which case they are composed of a non-magnetic material such as plastic. But the cabinet 12 may equally well be formed of magnetic or non-magnetic material.

A recess 32 is provided in the bottom 26 adjacent the open end 30, and the recess 32 is generally rectangular in cross section and extends transverse to the longitudinal axis of the bottom 26 and connects with a passageway 33 in the opposite side walls 20 and 22. The recess 32 has a permanent magnet 34 therein so that its elongated axis is transverse to the longitudinal axis of the standing array of cards.

The magnet 34 is preferably of ceramic or ferrite material and its upper surface 36 is flush with the upper surface 38 of the bottom wall 26. The magnet 34 is magnetized with sufficient retentive lines of force so as to cooperate with the cards 16 carried by the drawer 14 for fanning of the same, as will now be described.

The drawer 14 is made of non-ferrous material and is adapted to be moved to and fro longitudinally through the open end 30 of the cabinet 12, and it comprises a drawer bottom 40 on which the cards 16 are in a double row standing array between guide rails 42, 44 and 46 formed on the bottom 40. Opposite end wall structures 48 and 50 are provided on the drawer 14, and each is provided with inclined end abutments

52 and 54 to assist fanning of the cards 16. The front wall structure 48 is provided with a handle 56 for ease in removing and inserting the drawer 14 in the cabinet 12.

The cards 16 as seen in FIGS. 4 and 5, each comprise a pair of paper laminae 60 with an elongate magnetically susceptible lamination 62 such as soft iron or extremely mild steel sandwiched therebetween along the lower edge of the cards. The magnetic material is usually extremely thin shim stock and of low magnetic retentivity and while the elongate section 62 extending along the lower marginal portions of card 60 may be preferred, it may also be shaped in other manners, as for example illustrated by the broken lines 64 in FIG. 4.

The cards 16 are maintained in standing array in face to face relationship in the drawer 14 with the magnetic members 62 resting upon the bottom 40 of drawer 14. The drawer bottom 40 may have a rough coating as seen in FIG. 2; or be suitably striated to help maintain the cards against sliding in directions normal to the plane thereof. The laminations 62 carried by each card 16 may therefore be attracted to the magnet 34 located in the bottom wall 26 of cabinet 12, but each lamination 62 is of like polarity to an adjacent lamination member, and since like poles repel each card will tend to separate from its adjacent card, when drawer 14 is moved past the magnet. This repelling action becomes even more pronounced and causes the cards to be fanned in sequence as they pass the magnet 34 so that a given card may be easily inspected and selected if desired.

It might be noted that only those portions of the cards adjacent magnet 34 will be fanned at any one time since the field of the magnet has only limited intensity. This limited intensity is substantially confined to the area corresponding to the area of the magnet pole. It will be seen that no complicated mechanical linkages or structure need be provided to fan desired portions of the card array, since the relative movement between the magnet and the cards along the longitudinal axis of the stack serves to separate them as needed.

In FIGS. 6, 7 and 8 there is shown a card filing tray indicated generally by the reference numeral 70. It is adapted to carry a plurality of card arrays 72 in respective compartments 74. The card arrays are composed of cards 76 generally similar to cards 16 with each card having a magnetically susceptible lamination 77 along its bottom edge.

The compartments 74 are defined by opposite side walls 78 and 80 of the tray, a pair of spaced apart center walls 82 and 84 and a bottom 86. The side walls 78 and 80 extend below the bottom 86 and connect with a base 88 spaced from bottom 86 to define a chamber 90 extending along the longitudinal axis of the compartments 74.

A permanent magnet 92 of ferrite or ceramic material is located in the chamber 90 beneath each compartment 74. Magnets 92 are supported on a non-magnetic slide 94 which is recessed as at 95 to receive the magnets 92 therein. Slide 94 and the magnets 92 carried thereby are moved along the long axis of tray 70 in the chamber 90 by a standard 96 having an engaging knob 100. Standard 96 projects upward through a slot 98 between the center walls 82 and 84.

The magnets 92 may thus be positioned adjacent any desired portion of the card arrays 72, and the magnetic repulsion previously described operates to fan the cards 76 adjacent the magnets. The magnets are moved by very simple apparatus relative to the longitudinal axis of the standing card arrays for permitting the cards to be easily scanned in sequence.

In FIGS. 9 and 10 a multiple drawer cabinet 110 is illustrated. The cabinet 110 defines a series of spaced

apart vertically arranged recesses in which respective drawers 112 are conventionally received. A handle 114 on each drawer 112 facilitates access to a standing array of cards 116 similar to that previously described.

The front face 118 of each drawer 112 as seen in FIGS. 9 and 10 is partially covered by a magnet 120 when the drawer 112 is closed. The magnet 120 is of the type previously described and is supported between a pair of arms 122 pivotally supported on the cabinet by means of a pair of spaced apart abutments 124 and a pin 126. A torsion spring 128 wrapped about the pin 126 and having its ends 130 located bottomed against the cabinet and a central tongue 132 bearing against the magnet 120 serves to bias the magnet 120 against the front face 118 of drawer 112.

Upon opening of the drawer 112 the magnet 110 is rotated to position against the bias of spring 128 into a generally horizontal position below the drawer. As the drawer 112 moves over the magnet 120 it cooperates with the magnetic laminations carried by the cards 116 to fan segments of the card stack in a manner similar to that previously explained.

In FIGS. 11 and 12 a tray 150 made preferably of non-magnetic material is shown somewhat schematically. It is adapted to carry a standing array of cards 152. The cards 152 in this case are provided with magnetically susceptible laminations 154 of the type described along opposite vertical edges thereof, and along only a portion of the edges.

The laminations 154 are adapted to cooperate with short magnets 156 movably carried along opposite side walls 158 of the tray. Guide flanges 160 projecting outwardly from the side walls 158 serve to guide and support the magnets 156. Each magnet has a standard 162 engaged therewith and projecting upwardly therefrom. The standards 162 are interconnected by a handle element 164 so that the magnets are laterally restrained but may be reciprocated along the longitudinal axis of the array of cards 152 for cooperation with selected portions thereof to fan the same.

The magnets 156 are moved against the bias of return springs 172 connected between the magnets 156 and an end wall 170 of tray 150. The magnets 156 may thus be moved along the longitudinal axis of tray 150 by simply grasping the handle 164 and pushing the magnets against bias of spring 172 away from wall 170 to a desired position. In doing so portions of the array of cards 152 corresponding to the width of the magnet poles are fanned conventionally in response to the relative movement of the magnets along the longitudinal axis of the array.

From the description foregoing it is believed evident that there has been provided some new and useful improvement in apparatus for facilitating the inspection of portions of a standing array of filed cards without the need of individually manipulating the cards along the upper marginal portions thereof.

While the invention has been described in terms of some preferred embodiments thereof, such embodiments are by way merely of illustrating the forms the invention may assume in practice. The scope of the invention is accordingly intended to be limited only by the terms of the claims here appended.

I claim:

1. In a card filing device of the type described, a cabinet, a drawer adapted to slide into and out of said cabinet and adapted to support a standing array of file cards arranged in face to face relationship with each of such cards having embedded therein along the bottom marginal portions thereof a thin lamination of magnetically susceptible material, said cabinet supporting a permanent magnet immediately below said drawer for

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cooperation with said lamination in each card whereby the sliding movement of said drawer into and out of said cabinet enables the selective fanning of segments of said array of file cards, said permanent magnet being located adjacent the opening in said cabinet for receiving said drawer.

2. In a card filing device according to claim 1 in which said permanent magnet is pivotally supported on said cabinet and is biased for rotation against the end of said drawer when the same is slid completely into said cabinet, the outward movement of said drawer from said cabinet being adapted to rock said permanent magnet to a position where further movement of said drawer causes said permanent magnet to selectively fan

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segments of said array in accordance with the position of said drawer.

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