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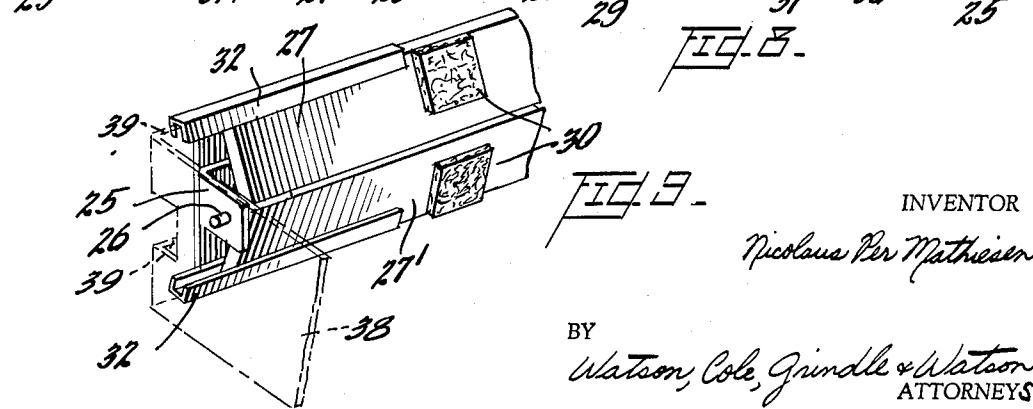
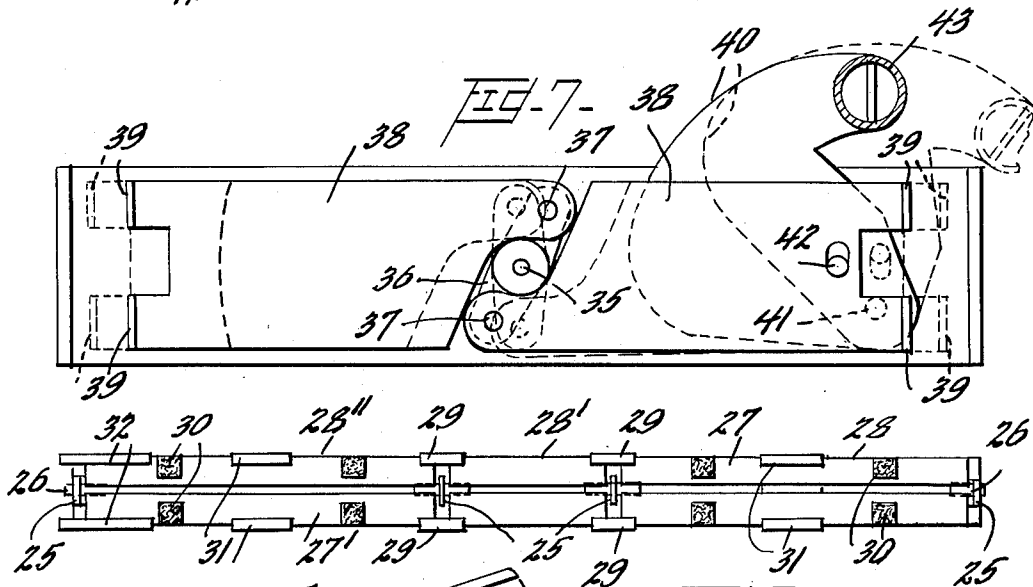
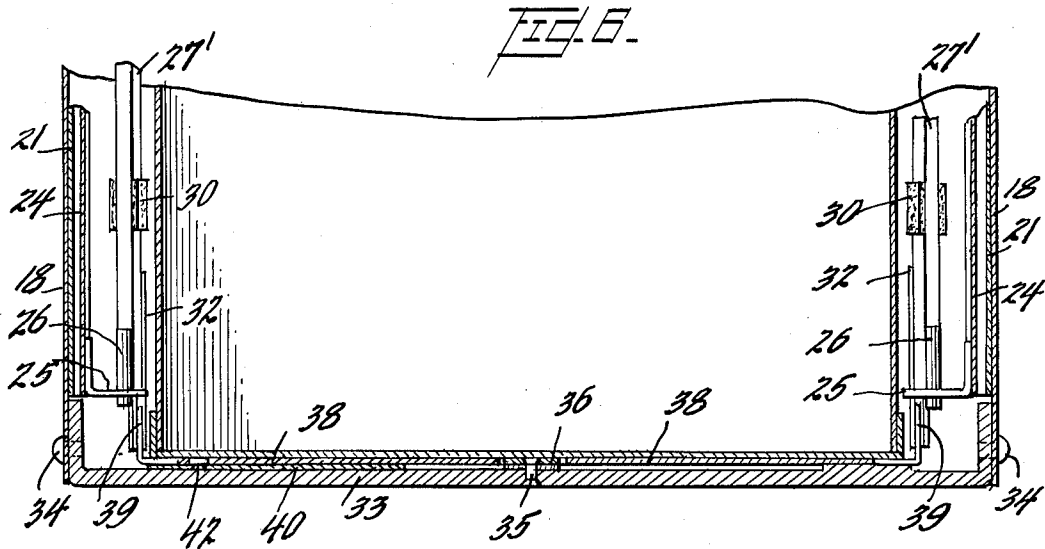
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2,722,936

CARD FILING DEVICES

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2,722,936

CARD FILING DEVICES

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8 Claims. (Cl. 129—16)

The present invention relates to card filing devices and particularly to those devices utilizing magnetic force for causing the separation or "fanning" of a plurality of cards disposed in a tray or drawer, for facilitating the visual survey of such cards. A device of the general type in question is described and claimed in U. S. Patent No. 2,341,639, granted February 15, 1944, and one improvement upon the said patented device is described and claimed in United States Patent No. 2,656,091, granted October 20, 1953. A general object of the present invention is the provision of a further improvement upon the aforesaid card filing devices.

The said patent and copending application relate to devices in which the individual cards are provided with magnetic portions, for example thin pieces of soft iron, laminated between the paper layers of the card, said cards being disposed edgewise within a tray or drawer having vertical sides, one or both ends of the receptacle being inclined outwardly to permit the cards to assume a fan-wise relation, caused by magnetic repulsion acting between the soft iron inserts, in response to magnetic energy emanating from permanent or electrically energized magnets disposed longitudinally of the receptacle and laterally behind the side walls thereof. In the device disclosed in said copending application, a pair of similar permanent magnets, of relatively long and thin shape, and magnetized in the direction of their width, are pivoted, respectively, at opposite sides of the receptacle for swinging movement toward and away from the receptacle so as to vary the intensity of the magnetic field affecting the said soft iron inserts, and thus control the fanning effect.

It is an object of the present invention to provide an improvement upon the described arrangement wherein permanent magnet means are disposed longitudinally of and outside each side wall of the receptacle, a magnetic shunt member extends longitudinally of the receptacle outwardly of and parallel to each said magnet means, and means are provided for simultaneously producing relative transverse movements of each said magnet means and its associated shunt whereby the magnetic fields of said respective magnet means are simultaneously shunted or removed from shunt, as the case may be. By virtue of this new arrangement, the device is rendered more compact, since it is not necessary to provide room for the magnets to swing bodily to an extent sufficient to remove the magnetic inserts from the respective magnet fields.

A further object is the provision of a card filing device of the character described, in which the aforesaid movement of the magnets is accomplished by the manipulation of handle means extending the full length of the receptacle, so that the magnetic repulsion effect may be applied or removed by a slight movement of one hand of the operator regardless of the position of the operator's hands, lengthwise of the receptacle.

More specifically, it is an object of the invention to provide a magnetic card filing device of the character de-

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scribed comprising a receptacle, a pair of magnets extending longitudinally along each side wall of the receptacle, said magnets being relatively long and thin, and rather narrow, and being magnetized in the direction of their width and arranged edgewise in magnetic series, the magnets of each pair being relatively movable angularly about an axis extending lengthwise between them, a magnetic shunt member extending along the outer sides of each pair of said magnets, and means for simultaneously causing each magnet of each pair to pivot through a small angle about the said associated axis whereby in one position the opposite poles of each said pair are disposed adjacent the associated shunt member and, in another position, said opposite poles are removed from said shunt member and are disposed adjacent the associated receptacle wall.

Further, it is an object of the invention to provide specific mechanism for producing the aforesaid relative angular movements of the magnets, and handle means extending the full length of the receptacle for actuating the said mechanism.

Other and further objects, features and advantages will be apparent from the description which follows, read in connection with the accompanying drawings in which

Figure 1 is a side elevation of a card filing device according to the invention, a portion of the near side wall being broken away to disclose the cards;

Figure 2 is a vertical section on line 2—2 of Figure 1;

Figure 3 is a section on line 3—3 of Figure 1;

Figure 4 is a section on line 4—4 of Figure 3;

Figure 5 is a section on line 5—5 of Figure 1;

Figure 6 is a horizontal section on line 6—6 of Figure 2;

Figure 7 is a detailed view, in end elevation, of the mechanical linkage for tilting the magnets;

Figure 8 is a detailed view illustrating one of the magnet pairs; and

Figure 9 is a fragmentary detailed perspective illustrating the connection between a magnet pair and the mechanism of Figure 7.

In order to facilitate an understanding of the invention, reference is made to the embodiment thereof shown in the accompanying drawings and detailed descriptive language is employed. It will nevertheless be understood that no limitation of the invention is thereby intended and that various changes and alterations are contemplated such as would ordinarily occur to one skilled in the art to which the invention relates.

Referring to Figures 1 and 2 of the drawings it will be noted that the receptacle 10 comprises side walls 11, 12, end walls 13, 14, and a bottom 15, all of which may be formed from a single piece of non-magnetic material, for example aluminum, composition, or other suitable material. The end walls 13 and 14 are pitched, or inclined outwardly from bottom to top, so that the receptacle is longer at the top, permitting the cards to separate somewhat, or fan out, adjacent their upper edges. The cards are provided with magnetic inserts, for example thin pieces of soft iron, adjacent each side edge, as more fully described in the aforesaid U. S. Patent No. 2,341,639. Preferably, the cards 16 within the receptacle are divided into groups by means of spaced separators 17 which may be inscribed with suitable lettering as desired.

A hollow rectangular enclosure 18 extends longitudinally of each side of the receptacle adjacent its upper edge, the enclosure 18 being formed, for example, from a strip of aluminum or the like bent to the proper configuration and welded or otherwise secured to the outwardly extending flange 19 provided at the top of each side wall of the receptacle. A rail or slide 20 having a depressed central portion 21 spot welded or otherwise secured to the vertical wall of the enclosure 18 and lat-

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oral flanges 22 and 23 spaced from said wall 18, extends substantially throughout the length of the enclosure 18, and provides support for a magnetic shunt member 24 slidably mounted thereon. The shunt member 24 is formed of any suitable magnetic material, for example mild steel, and is provided at its ends and at spaced points between its ends with laterally projecting brackets 25, the latter serving to support pivot pins 26 which are disposed between the adjacent edges of the magnets 27, 27' of each pair. The pivots 26 may consist merely of short lengths of cylindrical steel rod, the edges of the magnets 27, 27' abutting the pivots 26 being slightly hollowed as seen in Figure 5, no further connection between the magnets and the pivots being necessary, by virtue of the magnetic force attracting the magnets to the pivots.

In the embodiment presently illustrated, the magnets 27, 27' of each pair actually comprise, each, three separate lengths of magnet material 28, 28' and 28'', primarily for the reason that it is difficult to obtain magnets of the desired length, and of a suitable cross-section. The separate lengths 28, 28' and 28'' may be joined by means of spring clips 29 and, of course, are maintained in the proper spaced relationship by their attraction for the pivots 26 and by the interposition, between their respective ends, of the brackets 25. The magnet segments may also be provided with felt pads 30 to cushion and deaden the sound of their impacts against the receptacle side or the shunt member as the case may be. Also, leaf springs 31 of bronze or other non-magnetic material may be clipped to the outer edges of the magnets, the free edges of the leaf springs acting against the shunt member 24 in order to assist the mechanical means, hereinafter described, in moving the magnets away from the shunt member against the force of magnetic attraction.

Each magnet 27 is provided at one end with a socket 32, conveniently formed by the projecting end of a U-section clip embracing the outer edge of the respective magnet. At the same end of the receptacle, a transverse frame member 33 extends between the ends of the respective enclosures 18, to which it is secured by any suitable means, for example by screws 34, the transverse frame member 33 serving to support the operating linkage now to be described.

Midway of its length the member 33 is provided with an inwardly extending pivot pin 35 on which is fulcrumed the double-ended lever 36. The latter carries a pin 37 at either end thereof, to which is pivoted one of the slides 38. Each of the latter is bifurcated at its outer end to provide a pair of arms 39 turned at right angles to the body of the slide, which arms 39 are received in the respective sockets 32 of each magnet pair. A curved lever 40 is pivoted to the frame member 33 at 41 and has a pin and slot connection with the adjacent slide 38, as at 42. It will be apparent that when the lever 40 is moved angularly about its pivot 41, the connected slide 38 is caused to move translationally, thus imparting movement to the lever 36 and thence to the opposite slide 38. The arms 39 are thus caused to move simultaneously, either inwardly or outwardly as the case may be, bringing about a corresponding angular movement of the associated magnets 27 between the dotted and full line positions of the magnets as seen in Figure 3. In the dotted line position, the opposite poles of each magnet pair are disposed adjacent the associated magnetic shunt member 24 and thus the magnetic field is shunted or "short-circuited," resulting in the removal of the magnetic repulsion effect from the cards in the receptacle. When the magnets are moved into the position shown in full lines in Figure 3, the magnetic field includes the magnetic inserts 42 of the cards, causing the latter to separate or fan out so that they may be visually inspected without manual handling.

Preferably, the lever 40 is provided with an elongated handle 43, for example a piece of tubing, which extends

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lengthwise of the receptacle and engages a member 44 pivoted at the opposite end thereof, the tubular handle 43 being retained by embracing, at one end, a right angled arm or flange 45 formed on the lever 40 and, at the other end, the arm or flange 46 formed on the member 44. In this way the lever 40 may conveniently be operated from any point of the receptacle at which the operator's hands may be engaged, for example in gripping a particular card preparatory to lifting it out of the receptacle.

The operation of surveying a group of cards reposing in a receptacle of the character described is greatly facilitated. As each group of cards is to be surveyed, the divider separating that group from the next group is retracted to provide room for the particular group under inspection to assume a fan-wise relation, which immediately occurs when the magnets 27 are placed in their inner position as illustrated in full lines in Figure 3. When the operator desires to remove a particular card, and to leave a gap indicating where that card is to be replaced in the group, he grasps such card with one hand and, with the other hand, moves the handle member 43 outwardly causing the slides 38 to move apart or outwardly and, in turn, causing the magnets 27 to move to the dotted line position of Figure 3, in which the magnetic field is short-circuited through the shunt member 24. The cards of the group lying on either side of the selected card will immediately fall away from the latter, causing the formation of the aforesaid gap.

It will be understood that the separation of the respective magnets 27 into two or more segments is of no significance but is a mere incident of the size of the device and the capacity of the producers of suitable magnets. Similarly, while the present embodiment comprises the preferred mode of carrying into effect the present invention, it is not essential to the invention that each of the two opposite magnet means should consist of two magnets disposed in edgewise relation and having relative angular movements, since other dispositions in which a magnet means is movable between a shunt position and a position in which the magnetic field embraces the magnetic card portions, would suffice.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. Magnetic card filing device comprising a receptacle having side and end walls and a bottom, a pair of magnets extending longitudinally along each side wall near the upper edge thereof, said magnets being relatively long, thin and narrow and being magnetized vertically and arranged edgewise in magnetic series, said magnets of each pair being relatively movable angularly about an axis extending lengthwise between them, a shunt member of magnetic material extending along and narrowly spaced from the outer sides of each pair of said magnets, and means for simultaneously causing each magnet of each pair to pivot through a small angle about the said associated axis whereby in one position the opposite poles of each said pair are disposed closely adjacent said associated shunt member and in another position said opposite poles are removed from said shunt member and are disposed closely adjacent the associated receptacle wall.

2. Magnetic card filing device according to claim 1, said last means comprising a transverse link engaging each magnet of one said pair at a point spaced from said axis, a second transverse link engaging each magnet of said other pair at a similar point, and means for imparting opposite and equal simultaneous movements to said links.

3. Magnetic card filing device according to claim 1, said last means comprising a transverse link engaging each magnet of one said pair at a point spaced from said axis, a second transverse link engaging each magnet of said other pair at a similar point, a lever fulcrumed on said receptacle and pivoted to each of said

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links at points equally spaced from said fulcrum, and handle means for imparting movement to one of said links.

4. Magnetic card filing device according to claim 1, said last means comprising a transverse link engaging each magnet of one said pair at a point spaced from said axis, a second transverse link engaging each magnet of said other pair at a similar point, a lever fulcrumed on said receptacle and pivoted to each of said links at points equally spaced from said fulcrum, and a second lever fulcrumed on said receptacle and pivoted to one of said links.

5. Magnetic card filing device according to claim 1, said last means comprising a transverse link engaging each magnet of one said pair at a point spaced from said axis, a second transverse link engaging each magnet of said other pair at a similar point, a lever fulcrumed on said receptacle and pivoted to each of said links at points equally spaced from said fulcrum, a second lever fulcrumed on said receptacle and pivoted to one of said links, and a handle secured to said lever and extending longitudinally of said receptacle.

6. Magnetic card filing device according to claim 1, said last means comprising a transverse link engaging each magnet of one said pair at a point spaced from said axis, a second transverse link engaging each magnet of said other pair at a similar point, a lever fulcrumed on said receptacle and pivoted to each of said links at points equally spaced from said fulcrum, a second lever fulcrumed at one end of said receptacle and

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pivoted to one of said links, a member pivoted at the opposite end of said receptacle, and a handle extending between and secured to said second lever and said last-mentioned member.

7. Magnetic card filing device comprising a receptacle having side and end walls and a bottom, permanent magnet means extending longitudinally of and outside each side wall, each said magnet means being magnetized vertically whereby the magnetic poles thereof are spaced apart vertically and extend horizontally throughout substantially the entire length of said receptacle, shunt means of magnetic material extending longitudinally of said receptacle and supported outwardly of, narrowly spaced from, and parallel to each said magnet means, and means for simultaneously producing relative transverse movement between each said magnet means and its associated shunt means whereby the magnetic fields of said respective magnet means, throughout their length are simultaneously shunted or removed from shunt.

8. A device according to claim 7, said last means comprising a handle member extending substantially the full length of the receptacle.

References Cited in the file of this patent

UNITED STATES PATENTS

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2,656,901	Mathiesen	Oct. 20, 1953