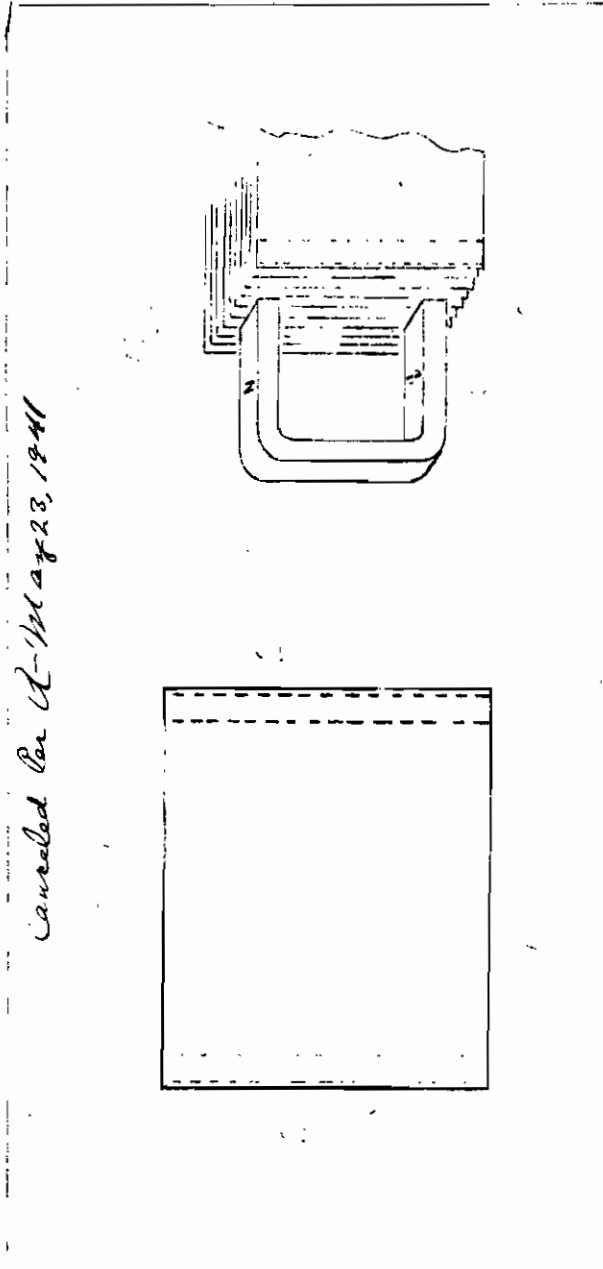


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BY A. P. C.

N. P. MATHIESEN
CARD FILING COMPARTMENTS
Filed Sept. 23, 1940

Serial No.
358,039
2 Sheets—Sheet 1



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Fig. 3

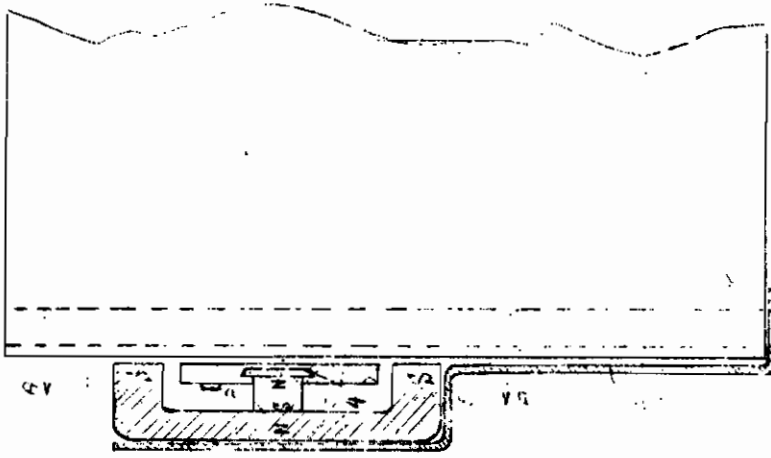


Fig. 4

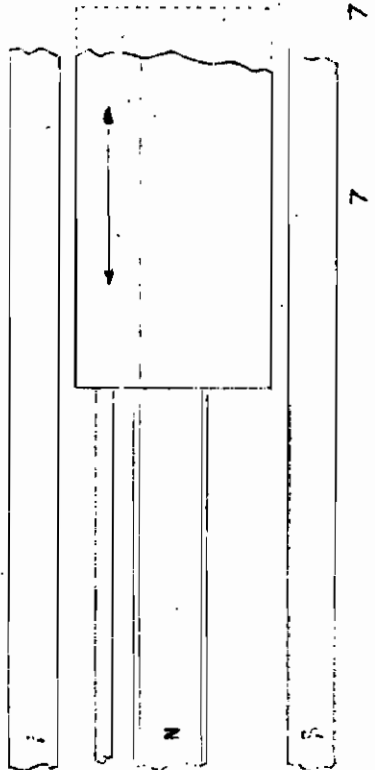
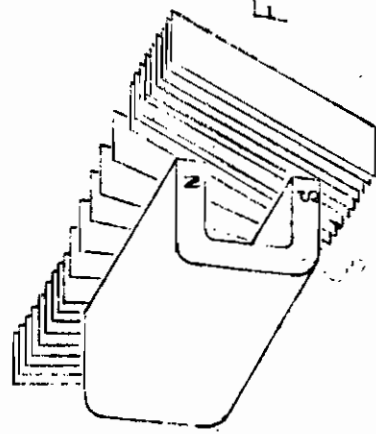


Fig. 5



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ALIEN PROPERTY CUSTODIAN

CARD FILING COMPARTMENTS

Nicolaus Per Mathiesen, Drammen, Norway;
vested in the Alien Property Custodian

Application filed September 23, 1940

The present invention relates to arrangements for the display of the individual cards in the pack of cards filed in filing trays, containers and the like, and the main idea of the invention is the use of magnetic forces for the separation of the individual cards for the display. For this purpose the individual cards are controlled by elements of magnetically conducting material which under the influence of magnetic forces are caused to assume a spread position, thereby effecting the desired spreading of the cards. The arrangement preferably is such that the magnetic lines of force extend in the same direction through succeeding elements, and if an opening at the top of the pack of cards is provided at any desired point, for instance by a manual or mechanical separation, or by magnetic influence upon the elements, the magnetic repulsion between the elements will effect the spreading of the elements and thereby of the cards at this point, so as to make at least the top of the cards visible, whereby the desired card is easily found.

In order to avoid the complication and liability to errors always present in electrical connections, the magnetic field may be produced by means of permanent magnets, magnetical material being now obtainable, having sufficiently high permanent magnetism and stability for the present purpose.

The elements controlling the movement of the cards may consist of thin iron tapes or the like and may be used as separating elements between the individual cards, or be connected to the cards proper.

In view of the above, it is possible to use separating iron sheets of permanent magnetic material, which themselves provide for the required magnetic force. But as the alloys which could then be used, are too brittle to have the required mechanical strength when the sheets are made so thin as is desirable out of consideration to the space available, and an excessive quantity of permanent magnetic material would be required, it is desirable to have the elements influenced by an external magnetic field. In this case the field may in itself effect a control upon the elements in addition to the control effected by the repulsion of the elements between one another, a mechanical separation between the elements and the magnets being provided so as to prevent any contact or magnetic sticking between the elements and the magnets. The pole pieces of the magnets may for instance be mounted outside of the side wall of the card carrying tray which should then be made of a material which is magnetically

neutral, and the elements may then be arranged along the side edges of the cards and each magnet be arranged with its pole pieces one above the other. Thereby a symmetrical force is obtained, a pull of the cards in one direction thereby being avoided. Preferably the magnets are arranged on both sides of the pack of cards, pole pieces of the same polarity being arranged in the same level so as to avoid stray losses by lines of force running from one side of the tray to the other for instance through the floor of the same.

When an external magnetic field is used, it is desirable to arrange the elements on the cards themselves, it being thereby possible to make the elements very thin, below $\frac{1}{16}$ m/m and with a breadth of a few m/m, the mechanical strength of the elements then being of no importance. In this case the elements should be made of a magnetic material practically without any remanence, in order to avoid their sticking to casual iron parts or to one another when removed from the tray. Such a card may be handled in the usual manner, the thin elements being so flexible and so thin that the card for instance without difficulty may be placed in a typewriter.

Preferably the elements are connected to the card by being glued into the same for instance along the side edges in such a manner that the elements are covered by the paper, cardboard or the like on both sides, whereby the card will look like an ordinary card.

When an external field is used, it is very suitable to make the pole pieces of the magnets in the form of rods extending along practically the full length of the pack of cards. The magnet field will then tend to keep the cards in an upright position out of which they may be brought at any desired point by external influence. The simplest way of obtaining this is to use the hand only, by sliding one finger along the pack of cards, whereby the cards are spread successively, or the pack of cards may be gripped with two fingers at two points at a small distance from one another, and drawn apart whereby the intermediary cards will spread out like a fan. When this is to be performed by drawer trays, the pole pieces of the magnets must be mounted on the tray itself so as to influence the elements in the withdrawn position of the tray.

In order to facilitate the formation of the fan, one or both end walls of the tray are suitably arranged at an angle to the floor of the tray, as known per se.

Such an arrangement usually is preferable as it is simple and in most cases gives quite sufficient

facilitation in searching the cards. But it is also possible to effect the spreading at the desired point without manual influence upon the cards. In this case a device must be used which is arranged movably relatively to the tray in the direction of length of the same and which causes variations in the magnetic condition of the elements. This device may for instance be mechanical so as to bring the elements out of position in an existing field, or magnetic so as to reduce or strengthen the field, or the field may contingently be produced by the device itself, the magnet being carried by the device. In the latter case the cards may beforehand be placed in an oblique position from which they are lifted by the magnets. The simplest way is, however, to make the device reduce an existing field by erecting a magnetic shunt connection across an external field produced by means of pole pieces extending along the whole length of the magnet, it being possible by suitable forming of the shunt connection to obtain a spreading of the cards at the point at which the device is placed.

In order to effect the desired relative movement between the device and the tray, the device may, when used in connection with drawer trays, be stationary relatively to the container or cabinet surrounding the tray, the movement being effected by the withdrawal or pushing in of the tray.

Preferably the device is so arranged that it works during the movement of the tray so as to make the cards spread successively. Thus, the magnets may be mounted in the compartment surrounding the tray so as to make the cards fall forward to an oblique position when the tray is withdrawn and rise when the tray is pushed in, or, if the magnets are mounted on the tray, the compartment may constitute a magnetic shunt so as to make the cards rise from an oblique position when the tray is withdrawn and fall down when the tray is pushed in. In the latter cases, where the elements normally are under the influence of the magnetic field when the cards are accessible, any method of searching may of course be used, i. e. the cards may be spread either by gripping the cards directly or by effecting the relative movement between the effecting device and the tray.

It is, however, possible to make the cards turn over automatically in the form of a fan without using any special device for the variation of the magnetic condition of the elements.

If, in an embodiment in which all elements are simultaneously subjected to the magnetic field, the field is not stronger than that the pack of cards may assume an oblique position, and if, by providing for a sufficient space or preferably by arranging one end wall at an angle to the floor of the tray, the pack of cards is caused to assume such oblique position, a fan will normally be formed at one end where the end wall may be vertical or be inclined at a greater angle than that of the other end wall.

If the pack of cards in this case is gripped at the end opposite to that where the fan is formed, or at any point along the length of the same, and the cards are raised, the fan, which is now formed at the point where the pack is gripped, will, when the grip is released, move along the pack of cards in a wave to the end where it was initially formed until all cards are in their initial position.

In the accompanying drawing illustrating the invention, Fig. 1 is a front view of a card with the elements according to the invention incorporated

in the card. Fig. 2 is a perspective view of one side of a pack of cards, showing an embodiment wherein a source of the magnetic field is in the form of a horse shoe magnet. Fig. 3 is a vertical section through a card tray with a pack of cards inserted and with a special form of the magnet system arranged in a recess in the wall of the tray. Fig. 4 is a view of the magnet system along the line A—A in Fig. 3. Fig. 5 corresponds to Fig. 2, but shows separate elements and how the elements are spread in the form of a fan under the influence of the magnetic forces.

Similar references are used for similar parts in all figures.

In Fig. 1, 1 is the card which may be of paper, card board or the like, for instance glued to the card or inserted in the card so that the elements are covered on both sides. As will be seen, the elements are arranged at a small distance from the edge of the card in order to avoid a magnetic sticking between the elements and the pole pieces of the magnet system.

In Fig. 2 a pack of cards 1 each having elements 2 at each edge of the same are shown, a horse shoe magnet 3 being arranged at the sides of the pack of cards in order to obtain the desired spreading of the cards. The magnet 3 is so formed that the north and south poles of the same extend essentially along the pack of cards at a certain distance from each other. Consequently the magnetic lines of force will extend from the south pole of the magnet through the air gap provided between the said poles of the magnet and the said side edges of the card longitudinally of the elements to the north pole of the magnet. In this manner all elements are similarly magnetized so that portions of the same lying adjacent to each other, will be subjected to repellent forces due to known magnetic laws.

In the Figures 3 and 4 the arrangement corresponds to that shown in Fig. 3 with the modification that the magnet 3 is provided with pole pieces 4, 5, the former being in the form of a rod extending longitudinally of the pack of cards, and the latter being in the form of a channel having the limbs of the same directed towards the pack of cards and also extending longitudinally of the pack of cards. As shown the magnet system is arranged on each side of the pack of cards in a recess in the side wall 6 of the card carrying tray.

In order to obtain a spreading of the cards at any desired point along the length of the pack of cards, a magnetic shunt piece 7 is slidably mounted on the pole piece 4 first mentioned, a longitudinally extending handle or the like 8 being secured to the said shunt piece so as to enable a manually operated movement of the said shunt piece 7. Where the distances between the pole pieces 4 and 5 are bridged by means of the shunt piece 7, no or essentially no magnetic lines of force will extend through the elements 2, whereby the spreading of the cards is limited to the distance along the length of the pack of cards not covered by the said piece 7. By suitably adjusting the position of the said piece 7, the spreading movement of the cards may be concentrated at any desired point along the pack of cards.

The embodiment shown in Fig. 5 corresponds in all essentials to that shown in Fig. 2 with the difference only that the elements 2 instead of being incorporated in the cards 1 are formed as separating sheets to be inserted between the individual cards (not shown).