

March 6, 1962

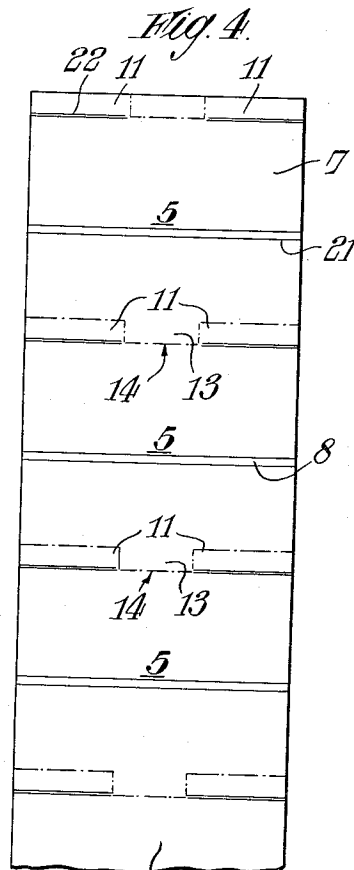
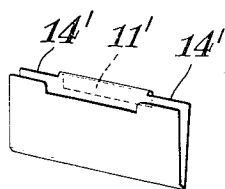
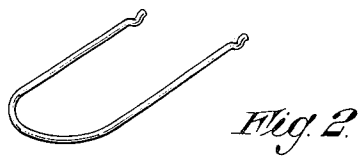
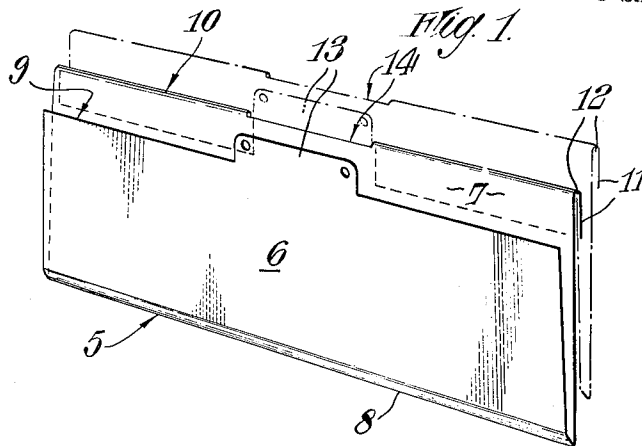
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CARD STORAGE RACKS AND COMPONENT DEVICES THEREFOR

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3 Sheets-Sheet 1



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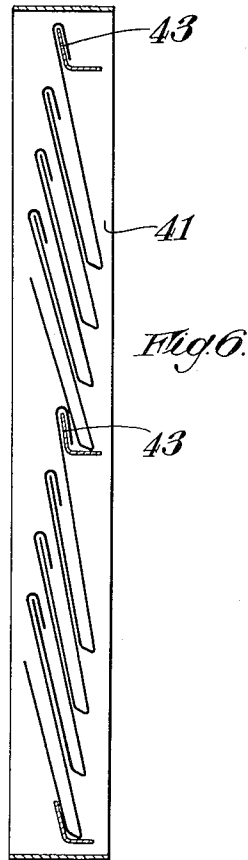
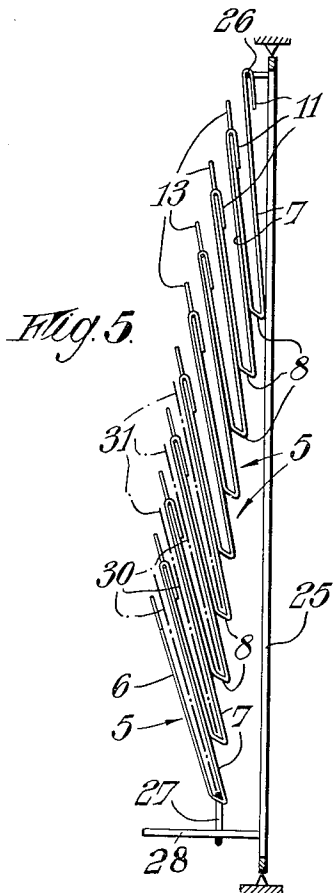
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CARD STORAGE RACKS AND COMPONENT DEVICES THEREFOR

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CARD STORAGE RACKS AND COMPONENT DEVICES THEREFOR

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3 Sheets-Sheet 3

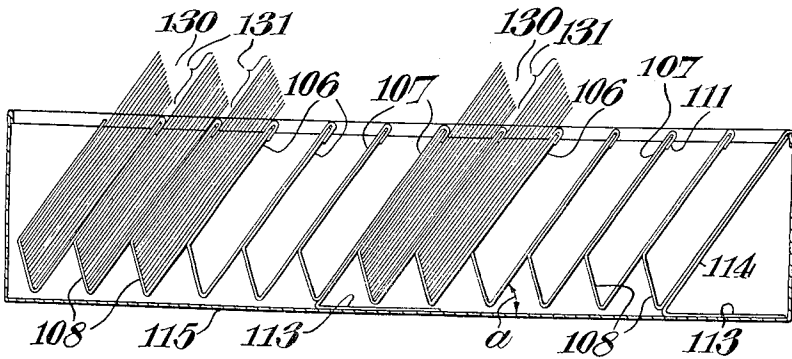
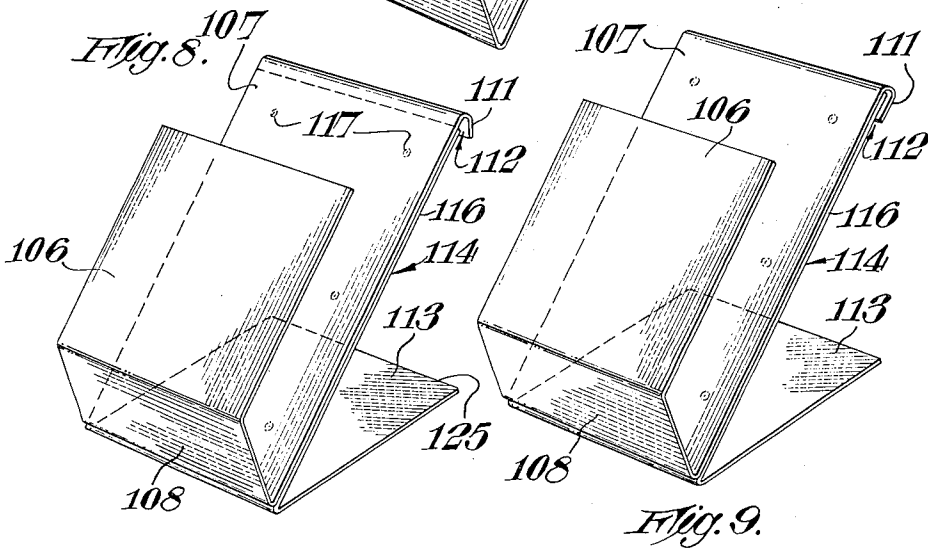
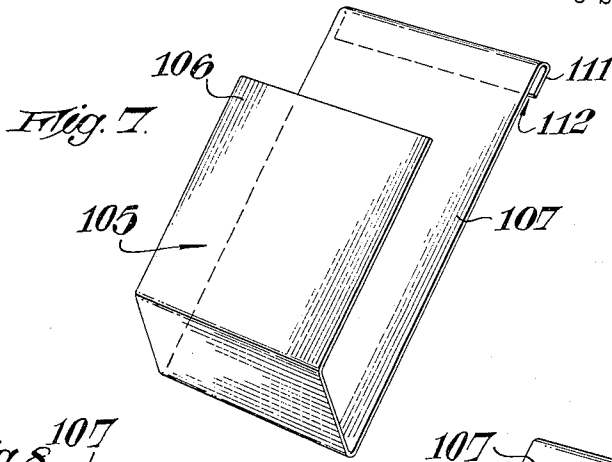


Fig. 10.

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3,023,907
**CARD STORAGE RACKS AND COMPONENT
DEVICES THEREFOR**
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1 Claim. (Cl. 211-55)

This invention concerns storage devices for files, cards (such as cards for use in a punch card system, or clock cards used in works or post cards) gramophone discs or similar sheet form objects.

An object of the invention is the provision of a device for this purpose which is of simple construction and which may be manufactured by mass production methods.

A further object is to provide a storage device for a stack or pack of sheet form objects in which, as stored, the first card for example of the pack is partially exposed to view, for ready identification of the pack, the remaining cards of the pack being slightly offset from one another to facilitate their sorting and selection.

A still further object is to provide a storage device which may be interlinked in a chain or row with further ones of the devices thereby to form a storage rack, the row of devices either being suspended on a frame so as to lie one below another, or in a tray or drawer so as to lie one behind another.

Another object of the invention is to provide a storage rack comprising a frame and a plurality of the said devices suspended on the frame, one from and below another in a row, the devices having means whereby any number of the interlinked devices in the row may be lifted down using a special tool.

Another object of the invention is the provision of a storage device which is especially adapted for suspension at a predetermined angle on the rear wall of a tray or drawer and to support at the predetermined angle in a row one in front of the other in the tray or drawer, further ones of the devices which are not so adapted.

A still further object of the invention is the provision of a storage device especially adapted for an intermediate position in a row of the devices arranged in a tray or drawer and having supporting and positioning means to engage the floor of the tray or drawer.

Specific embodiments of storage devices and racks in accordance with the present invention will now be described in detail, merely by way of example, with reference to the accompanying drawings whereof:

FIG. 1 is a perspective view of a device according to this invention,

FIG. 2 is a perspective view of a tool for use with devices as shown in FIG. 1,

FIG. 3 is a perspective view of an alternative device according to this invention,

FIG. 4 is a plan view of a blank from which the device of FIG. 1 is made,

FIG. 5 is a somewhat diagrammatic side view, part in section, of a storage rack according to the invention and comprising a row of the devices of FIG. 1 suspended one from and below another,

FIG. 6 is a view corresponding to FIG. 5 and showing a further storage rack according to the invention,

FIG. 7 is a perspective view of a further device according to the invention intended for use in a tray or drawer,

FIGS. 8 and 9 are perspective views of a device as shown in FIG. 7 but having positioning means, and

FIG. 10 is a side view of a still further storage rack according to the invention and comprising a tray or drawer with part broken away to show the storage devices in the tray or drawer.

Referring to FIG. 1, the storage device 5 there shown comprises a shape maintaining U-section holder having a

pair of substantially parallel limbs 6 and 7 extending from a junction of the limbs composed of a flat strip 8. Limb 7 is longer than limb 6. By length is to be understood distances taken in the direction from junction 8 to the free or upper edges 9 and 10 thereof. The longer limb 7 is formed with a suspension member or flap 11 behind its upper part or margin adjacent the upper edge 10 which is spaced from the limb 7 to form with the outer face of said part a suspension pocket or hook 12 extending fully across the device 5. Member 11, in the particular arrangement illustrated, is produced by bending back an upward extension of the limb 7. Alternatively, however, member 11 could be a separate part secured to limb 7.

The edge 9 has a central, upstanding tab 13 and the flap 11 is slotted or in the present example cut out at 14, the arrangement being that flap 11 of one device is hooked over the edge 9 of another device (see FIG. 1) with tab 13 extending through cut out 14. Accordingly the pair of devices are prevented from relative sideways movement by the tab and the cut out portion which respectively constitute elements of an interlocking means, but one device may readily be lifted (unhooked) from another. All the devices suspended from one such device which is so unhooked will be lifted away with said one device.

The device 5 may be made of sheet metal by stamping or cutting from a blank 20 (FIG. 4) in the form of a band. This is preferably done in continuous manner (e.g. by feeding the band through a press) and thereafter bending at 21, 22. The tab 13 when cut out forms slot 14.

The bending at 21 to form the junction strip 8 is carried out so as to form the holder with the strip 8 acutely inclined to the longer limb 7 as shown more particularly in FIG. 1. The purpose of this will hereinafter appear.

The tab 13 is formed with a pair of holes one to each side so as to be spaced widthwise of the tab, to receive the pronged end of a forked tool as shown in FIG. 2. By inserting the tool in the holes of the tab the device may readily be lifted i.e. unhooked from another to carry away any further of the devices suspended from it as previously described.

A storage rack comprising a row of devices 5 is diagrammatically shown at FIG. 5. The apparatus comprises a frame 25 (e.g. of metal) having a cross wire 26 from the uppermost device 5 is hung, the wire entering the pocket 12 of the device. The other devices are hung one from another as described above and a spring means 27 draws the line of devices taut and against the frame. The means 27 may, for instance, be a rubber band passing around the inside of the device (at junction 8) and a peg 28 carried by frame 25. Other suitable tensioning means may be used instead.

For purposes of clarity the devices 5 are shown stepped away from frame 25. In practice the devices would lie flat against the frame and would be held in this position by the spring means 27.

FIG. 5 shows cards 30 inserted, one each, in a device 5, the card lying between the limbs 6, 7 and resting upon the junction strip 8 of the limbs. Each such card which may be the front card of a pack of cards in each device projects, at 31, above the front limb 6 and this part of all the front cards is readily scrutinised. The part 31 of each front card is exposed on each side of tab 13 and said part does not extend above the tab 13 of the device next above that which receives the card.

Instead of sideways location by tab 13 and cut out 14 the row of devices 5 may lie between a pair of ribs or side frame members 41 as shown in FIG. 6.

To unhook a device (or part of a row of devices) the spring means 27 is released and thereafter disengagement is effected using the tool shown in FIG. 2 and as described above. The hook interconnection of the devices permits considerable flexibility—the row of devices form a chain.

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The tab 13 preferably has rounded corners for ready insertion into cut out 14. Preferably the tab 13 of each device is used as or to support an index tab for the card or cards or other material to be held in the device so that the tab and the part of the front card above the front limb are easily scrutinised.

The depth of the devices is selected to accord with the cards or the like to be stored. If cards of considerable height and small width are to be stored with their long edges vertical it may be arranged that two cards or two card packs are placed side by side in a single device. To provide a tab for each of the pair of front cards in the device flap 11 may be central with cut outs for a tab 13 on each side thereof as shown in FIG. 3.

In FIG. 3 the flap is shown at 11' and the cut outs at 14'.

The frame 25 may be mounted to swivel (e.g. about a vertical axis) or be secured vertically to a wall or other structure or it may be flat e.g. in a tray.

The device 5 may be made by mass production methods and the storage rack is relatively cheap since it comprises a plurality of standard parts (the devices) which are interconnected simply by hanging each one from the next one above. Thus, within limits, the apparatus may be as large as required or if of small capacity initially may be easily enlarged or if initially of large capacity may subsequently be sub-divided into other separate racks.

The inner i.e. front face of the upper part of the limb 7 is exposed beyond the top edge (i.e. the extremity) of limb 6 and tab 13 of the foremost of a pair of devices which are hooked together for suspension is opposite said exposed upper part and extends up to, but not above, the top edge (i.e. the extremity) of limb 7. The flap 11 is behind the exposed upper part of the limb 7 which carries the flap and is spaced from the back face of limb 7 to form the suspension pocket 12.

Flap 11 serves two main functions. Firstly, it forms with limb 7 the suspension pocket 12 having a downwardly-facing mouth to receive the upper part of limb 6 so that one device can be suspended from another. Secondly, the flap engages with the top edge of limb 6 in the suspension pocket 12 over a distance sideways of the device such that the suspended device will not inadvertently tilt in the plane of the device e.g. when inserting or removing a card. Both these functions are provided for without resort to fastening means requiring mechanical tightening or difficult manipulation e.g. when assembling the devices to form a storage rack. By the term suspension flap is to be understood a flap arranged to fulfill both said functions.

It may be found that the weight of the row of suspended devices is excessive for a single cross wire 26 and accordingly the row may be subdivided into lengths, each length comprising a number of suspended devices the topmost device of each length being secured to a frame 40 (see FIG. 6). Thus, each topmost device of the several lengths may be hung on one of a plurality of vertically-spaced, upwardly-directed, horizontal flanges 43 each of which supports the topmost device of each length of devices. Each flange also serves to receive the lowermost device of a length thereby to hold the length of devices against the frame as shown in FIG. 6. Of course, the flanges may be provided for a row of devices which is not sub-divided as just described—a flange 43 being provided for the uppermost and lowermost devices.

FIG. 7 shows a device according to the invention more particularly for use in a tray or drawer along with a number of similarly formed devices, the devices being arranged in a row one behind the other.

Referring to FIG. 7, the device like the device of FIG. 1 comprises a shape maintaining U-section holder 105 having limbs 106 and 107 of which the limb 107 is longer than the limb 106. The junction of the limbs 106 and 107 is again formed as a flat strip 108 which is acutely inclined (see FIG. 10) to the longer limb 107, the limbs 106 and 107 being substantially parallel.

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In the present example the strip 108 is substantially wider than the junction strip 8 in the device shown in FIG. 1 so as to allow for the accommodation of a much larger number of cards in the holder.

The longer limb 107 of the holder is formed with a suspension member of flap 111 behind its upper part or margin which is spaced therefrom to form a suspension pocket 112 extending fully across the holder 105. Member 111 may be produced by bending back an upward extension of the limb 7 as before. The holder is of sheet metal and may conveniently be made simply by bending a strip of metal sheet of the appropriate length and width into the required form as shown.

If the devices are to be suspended from one another as previously described the upper edge of the shorter limb 6 may have a central upstanding tab corresponding to the tab 13 shown in FIG. 1 and the flap 111 may be slotted or cut out as shown at 14 in FIG. 1, the tab and the slot being provided for the purpose described above.

In the present example however the devices are intended to be each similarly arranged in a row one behind the other in a drawer or tray as shown in FIG. 10 with the limbs 106 and 107 of the devices upwardly extending and rearwardly inclined all at substantially the same predetermined angle and with respect to the bottom 115 of the tray or drawer.

To ensure their proper arrangement in this way the rearmost device 105, (on the right-hand side of FIG. 10) is constructed as shown in FIG. 8 and further comprises positioning means formed by a plate piece 113 attached to the holder so as to project in the present example from or substantially from the lower edge of the longer limb 107 on the side remote from the limb 106 and make the required angle α with the limbs 106 and 107. In the present example the plate piece 113 is furthermore formed by one limb of an angle sectioned plate 114 the other limb 116 of which is spot welded as at 117 to the limb 107. It will be appreciated that the positioning means may take many other forms.

The flap 111 on the rearmost device forms a suspension pocket which is adapted to receive the upper edge portion of the rear wall 120 of the tray or drawer as shown in FIG. 10. Thus the flap 111 of the rearmost device makes an angle of $(90-\alpha)^\circ$ with the limb 107.

Further to ensure the proper arrangement of the devices in the tray or drawer one or more intermediate devices may comprise positioning means as just described. Such an intermediate device is shown in FIG. 9 and differs from that shown in FIG. 8 only in that the flap 111 forms a suspension pocket 112 corresponding with that of the device of FIG. 7.

That is to say the flap forms a pocket adapted to receive an upper edge portion of the shorter limb 106 of a further device (e.g. the next device in the row) the flap 111 being directed parallel with the limb 107 with which it defines the pocket.

To mount the devices in the drawer, a rearmost positioning device as shown in FIG. 8 is hooked over the rear wall and dropped into position in which the rear edge 125 of the plate piece 113 engages the rear wall and the plate piece lies flat against the bottom of the drawer. The rearmost device is then held at the required angular inclination. A series of further devices as shown in FIG. 7 are then successively dropped into position with the shorter limb 106 of the devices each hooked into the flap pocket 112 of the device next in front. If the drawer is to accommodate a long row of the devices one or more intermediate devices constructed as shown in FIG. 9 may be included in the row. One such device is shown midway along the row of FIG. 10. The positioning means 113 of these intermediate devices lie flat against the bottom of the drawer and provide intermediate "fixed slope" devices, which counteract any sag in the row of devices which are otherwise suspended each

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from the one immediately behind. To position an intermediate "fixed slope" device it is necessary to drop the fixed slope device into position together with the two devices which are to be immediately behind it.

It is conveniently arranged that the length of the limbs 106 and 107 and the rearward inclination of the devices is such as to bring the plane of the mouths of the holders into the plane of the open top of the tray or drawer as shown in FIG. 10.

The devices are located laterally either between the sides of the tray or drawer or between a side and a longitudinal spacer in the drawer, or again a pair of longitudinal spacers in the drawer.

By providing the inclined junction strips 108, finger holes 130 are formed between groups of cards housed in the holders as shown in FIG. 10. The cards of each group are offset from one another so as to have their upper edges forming a stepped slope also as shown in FIG. 10 so that the cards may be "flicked" over with the fingers for discovery of a required card. Furthermore the area 131 of the first card of each group is clearly exposed.

The cards may be stored in the holders either horizontally or on end.

The devices are supported within the drawer without mechanical fastening means so that the cost of production and assembly is reduced compared with conventional tray dividers.

The inclined junction strips 8 in the construction of rack described with reference to FIG. 5 also provide that where a plurality of cards are held in each device 5 the

cards will be likewise offset from one another so that their upper edges are stepped down to permit easier sorting and examination.

I claim:

- 5 A device for storing sheet form objects, comprising a shape maintaining U-section holder having a pair of substantially parallel sheet form limbs extending from a junction of the limbs, one of said limbs being longer than the other so that the inner face of a part of the longer limb is exposed beyond the extremity of said other limb, a suspension flap on the longer limb and forming a suspension pocket for the holder with the outer face of said part of the longer limb, and an upstanding tab on the shorter limb and disposed centrally of the holder, the flap having a cut out portion disposed centrally of the holder, and the tab having a width dimension equal to the cut out and also a pair of holes spaced widthwise of the tab to receive the prongs of a forked lifting tool.

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