May 24, 1949. A. G. LUNDQVIST ET AL 2,470,824

CARD INDEX FILE

Filed Oct. 2, 1946 2 Sheets-Sheet 1

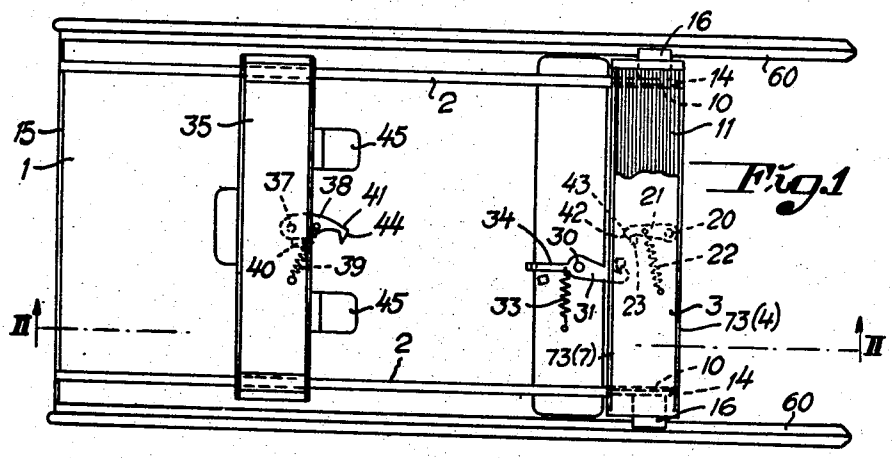


Fig. 1

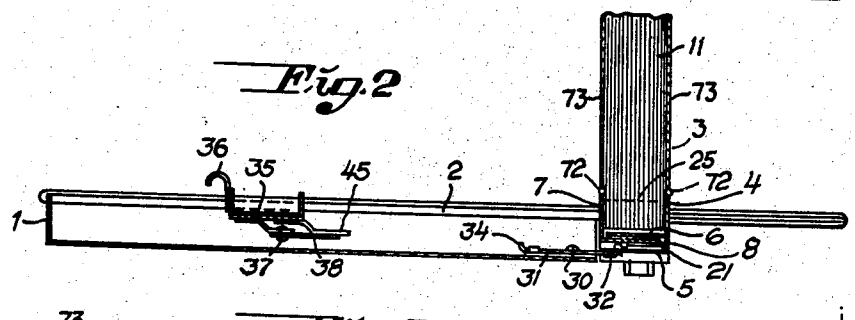


Fig. 2

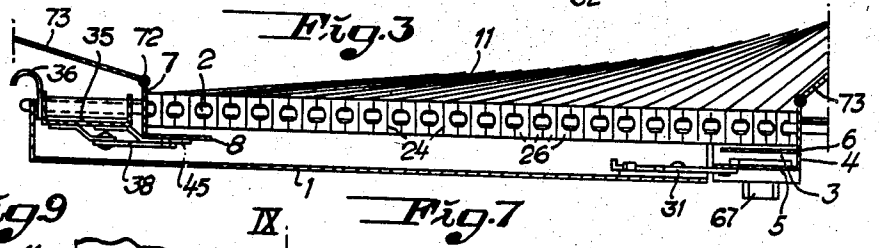


Fig. 3

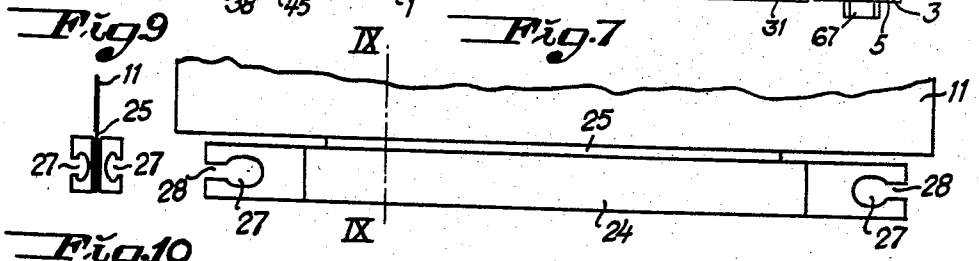


Fig. 9

Fig. 7

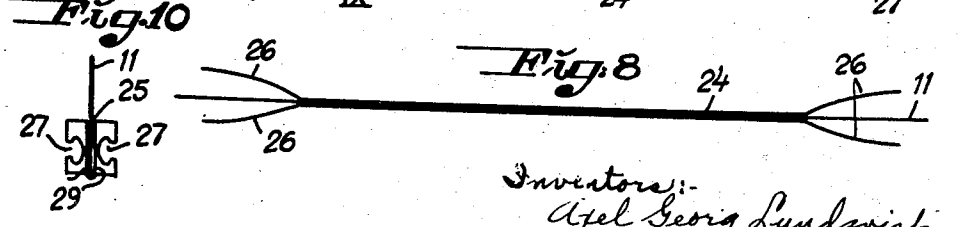


Fig. 10

Fig. 8

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Fig. 4

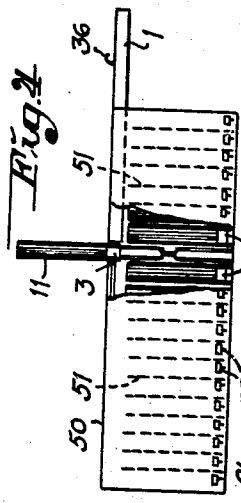


Fig. 6

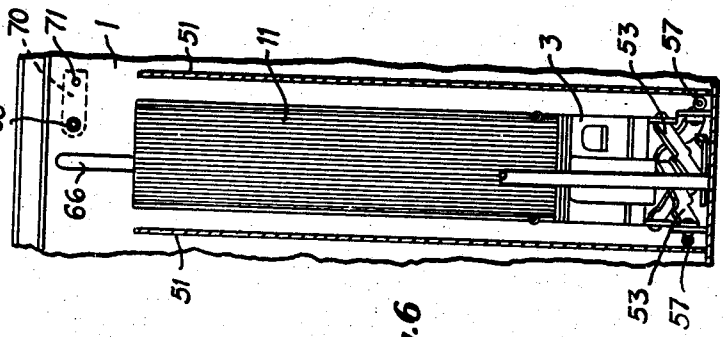
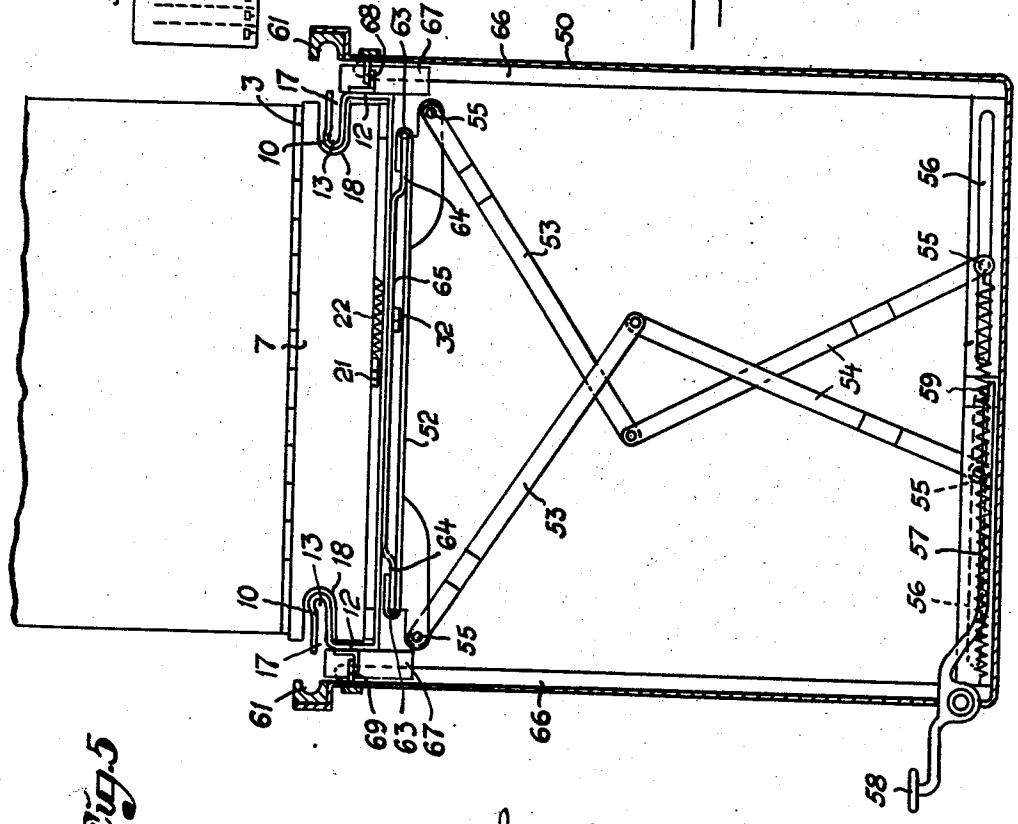


Fig. 5



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UNITED STATES PATENT OFFICE

2,470,824

CARD INDEX FILE

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2 Claims. (Cl. 45—2)

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Our invention relates to improvements in index files, and a principal object of our improvement is to combine a vertical index file with a horizontal index file for cards which are foldably connected with a holder.

We attain this object by mechanism illustrated in the accompanying drawings, in which:

Fig. 1 shows in plan view of a magazine constructed according to the invention with the cards inserted, and a slide for the horizontal displacement of the cards arranged in connection with the magazine. Fig. 2 is a longitudinal section along the line II—II of Fig. 1. Fig. 3 is a side view of the cards drawn out on the guide of the slide so that they take up a horizontal position. Fig. 4 illustrates the arrangement shown in Figs. 1–3 mounted on a collecting box for a plurality of magazines. Fig. 5 is a cross-section through the box with a magazine in raised position. Fig. 6 shows to a larger scale than Fig. 4 a portion of the box in longitudinal section. Fig. 7 is a side view of the lower portion of a card provided with a holder part for mounting the same on the guide. Fig. 8 shows the card and holder viewed from above. Fig. 9 is a section along the line IX—IX in Fig. 7, and Fig. 10 is a sectional view similar to Fig. 9 of a modified form of card holder.

In Figs. 1–3, 1 is a frame support in the form of a box in which two longitudinal rods 2 are arranged which constitute a guide for the cards when they are to be placed in the horizontal position. 3 is a magazine which is shown in end view in Fig. 5. The magazine consists of a frame in the form of a plate bent at an angle in section, the vertical limb of which is shown at 4, the horizontal limb being indicated at 5. Parallel with the limb 5 a bottom 6 is suitably arranged in the magazine. The limb 4 forms the rear wall of the magazine whilst the front wall is formed by the vertical limb 7 of a similar angularly bent plate, the horizontal limb of which is indicated at 8. At the opposite ends of the magazine, guides 10 are arranged, Figs. 1 and 5, for the holders on the cards 11 which are inserted in the magazine. In the form of construction illustrated, the guides are formed by the bent-up end walls 12 of the magazine which are turned inwards to constitute the guide 10. The latter is provided with an opening 13 into which the outer narrowed portion 14 of the guides 2 can enter, so that the external shape of the guides 10 corresponds to the guides 2 in the part 1. The last-mentioned guides are fixed to the front portion 15 of the support 1 on the one hand, and are also supported by leaf-shaped stays 16 at the opposite end of the

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support, the said stays being guided in the slot 17 (Fig. 5) formed in the magazine.

The front wall of the magazine is provided on both sides with recesses 18 (Fig. 5) so that the front wall can be displaced on the slides 2. In the closed position of the magazine the front wall 7 is locked to the magazine frame inasmuch as a hook 21 mounted on a pin 20 is held by a spring 22 in engagement with a knob 23 on the front part of the lower limb 8. The cards 11 arranged in the magazine are thus constantly held fast in the magazine which with its card contents may be stored in a suitable manner as a single unit in itself with the cards securely locked and occupying a very small amount of space.

The cards 11 (Fig. 7) are provided with a special holder portion 24. The latter is connected to the card through the medium of a thin flexible strip 25 glued to the card so that a flexible connection is obtained between the card 11 and the holder 24. The holder 24 may suitably consist of a very thin steel band having a thickness of about $\frac{1}{10}$ mm. for example. A steel band of this kind can be fitted on both sides of the part 25 and the two parts of the band can be attached to one another by spot welding or the like. An example of such a form of construction is shown in section in Fig. 9. In some cases only the short end of the steel band may be arranged on one side of the strip 25. The ends 26 of the holder 24 are bent outwards as shown in Fig. 8 so that they form thin resilient tongues. In these tongues openings 27 are provided by means of which the card holders run on the guide 10 in the magazine and the guide bars 2 in the box 1. To prevent the unintentional release of the cards from the guides the opening 28 for the recesses 27 may be narrower with respect to the latter. On account of the thinness of the steel rail the card holder can however, easily be brought onto the guide by bending the edges. In the form of construction shown in Fig. 10 the holder 24' is formed by bending the thin plate into a grooved shape whereby the limbs 29 surround the card on each side, the latter being securely retained in the holder owing to the fact that the limbs 29 are resilient with respect to one another. As the total thickness of the material in the resilient limbs 26 may be less than the thickness of the card, the spring constituted by the limbs 26 need not even occupy so much space in the magazine in its compressed position as that taken by the card itself which usually consists of thick paper.

The magazine 3 can now be pushed up from the end on the guide rods 2 and retained by means

of a locking hook 31 pivotally mounted on a pin 30 at the bottom of the part 1, the tooth of the said hook engaging a knob 32 through the action of a spring 33. The hook 31 snaps into position automatically when the parts are brought together. The locking engagement can be released by pivoting an arm 34 on the hook. The arm 34 may in some cases be operated from the end of the part 1 through suitable devices for transmitting the movement.

35 indicates a slide displaceable on the guide rods 2, which is provided with a hand- or finger grip 36. On the underside of the slide a locking hook 38, pivoted about a pin 37, is arranged which is actuated by a spring 39 to move up against a stop 40. The locking hook 38 is arranged on the same level as the hook 21 in the magazine, and when the slide 35 is brought up against the magazine, the sloping surface 41 of the hook 38 encounters the sloping surface of the hook 21. The latter is then pivoted out of engagement with the knob 23, with which the hook 38 now snaps into engagement instead. The slide 35 is thus connected with the front part 7, 8 which has been released from the magazine frame in the manner described. When the slide 35 is now withdrawn, it carries with it the front 7, 8 of the magazine whereby the latter rests on the projecting support 45 on the slide. The cards 11 may hereby be pushed out automatically from the magazine on the guide rods 2 under the action of the resilient limbs 26 for the holders 24, whereupon the said cards take up a substantially horizontal position as may be seen in Fig. 3, so that the text on the upper edge of the cards is clearly visible, and the position of the cards permits memoranda to be entered on them. After such entries have been made, or the cards exchanged where required, it is only necessary to push the slide 35 towards the magazine frame, whereupon the resilient limbs 26 of the card holders will be compressed and finally, all the cards will be pressed into the magazine. The sloping surface 43 of the hook 21 will hereby encounter the surface 44 of the hook 38 so that the hook 38 is disengaged from the knob 23 and in its place the hook 21 will engage the knob and therefore the front part 7, 8 of the magazine.

In order to combine the advantages of a space-economizing vertical index file with the advantages of clear visibility obtained with a horizontal index file, in a particularly favourable manner, according to the form of construction shown in Figs. 4–6 a number of magazines 3 may be arranged in a collecting box 50 which may have transverse walls 51 forming compartments for the different magazines. In the example illustrated the magazines are held up by a holder 52 which is supported by a parallel link system, the links of which are indicated at 53 and 54. The links 53 are connected by pins 55 to the holder 52, whilst the links 54 slide in horizontal slots 56 at the bottom of the box 50. The pins 55 are actuated by springs 57 which tend to draw the pins towards one another and thereby straighten out the parallel link system so that the magazine is raised. The magazine may be pressed down against the action of the springs 57 and since the length of the lever arm decreases the closer the limbs 54 approach the horizontal position, no great force will be exercised by the springs on the link system in the depressed position, but the said link system will be kept compressed by the weight of the magazine. If it is desired to raise a magazine, a key 58 is depressed, this key being mounted

on a two-armed lever, one arm 59 of which will then lighten the depressed magazine holder 52 to such an extent that the parallel link system 53, 54, will be straightened out by the springs 57 and the magazine will be raised from the position shown in Fig. 6 to the position shown in Figs. 4 and 5. The slides 2 for the frame supporting the horizontal displacement of the cards, or the support 1 can then by means of the rails 60 shown in Figs. 1 and 2, be displaced in corresponding guides 61 on the upper side of the collecting box 50 until the hook 31 (Fig. 1) engages the knob 32 on the magazine in its position in front of the slides in the part 2. Hereafter the slide 35 is pushed forward in the manner described above, into engagement with the front 7, 8 of the magazine and backward, whereupon the cards are drawn out into the horizontal position on the guide rods 2.

The magazine 3 is detachably mounted on the holder 52 which for this purpose is provided with bent-up edges for the slides, for the reception of the edges 64 of a fixed plate 65 at the bottom of the magazine. It is thus possible to remove the magazine from the collecting box 50 but it is then locked so that cards cannot be directly removed from it.

In the collecting box 50 vertical slide rails 66 are fitted on which the magazine runs by means of the guides 67 attached to it. The magazine is retained in the raised position by stop pins 68, 69 on the box, one of which (or both) can be withdrawn to permit the removal of the magazine. For example, the pin 68, Fig. 6, may be supported by a flat spring 70 attached to the collecting box 50 by means of a rivet 71.

The magazines should be able to hold the cards securely in the vertical position. For this purpose suitable rear walls 3 and front walls 7 stretch up over the bending point 25 between the card 11 and the holder 24, which is shown by a dotted line in Fig. 2. To provide support for the outer card when making entries the magazine may suitably be fitted with end plates 73 connected with the parts 3 and 7 by hinges 72. These plates may be mutually locked by a suitable locking device if desired. Instead of connecting the plates 73 with the parts 3 and 7 by hinges, the walls may be extended downwards and provided with an opening corresponding to the guide 10.

It is possible to dispense with the slide 35. In this case the front wall 7 in the magazine should be provided with a guiding sleeve or the like by means of which its parallel guiding on the slide rods 2 or some other guiding member can be ensured. Furthermore, a locking device which connects the front part 7 with the magazine can then be adapted to be released by hand. It may consist, for example, of locking tongs which are held in engagement by a spring with corresponding openings in the magazine frame and are provided with a finger grip for release purposes and for the displacement of the front part on the slides 2.

What we claim is:

1. In combination with an index card file arranged to constitute a vertical index file and a horizontal index file for the cards, a frame support provided with spaced longitudinally extending fixed guide members and with spaced longitudinal rails, a box associated with the frame support, vertically movable magazines mounted in said box, a support connected to each magazine, pivoted link means connected to said magazine support and to the box, each of the maga-

zines having a separable interfitting front and rear section, index cards arranged in vertical packs in each of said magazines, individual card holders connected to the lower ends of the cards, guide means in each of said magazines for the holders, means when each magazine is moved to its raised position for connecting the rails on the supporting frame to guides on the sides of said box, means for releasably maintaining the sections of the magazines in their closed positions, and means for releasing the front section of each of the magazines from its rear section so that when a magazine is moved to its raised position, the front section thereof may be moved longitudinally to withdraw the cards from the magazine with the card holders sliding on said fixed guide members in order that the cards may assume a substantially horizontal position above the box.

2. In combination with an index card file as called for in claim 1 in which the means for releasing the front section of each of the magazines includes a member longitudinally slidable in said frame support, said member having means arranged to engage the front section of a magazine so as to move the front section away from the rear section.

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NILS HJALMAR LUNDQVIST.

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