PATENT SPECIFICATION (11) 1 585 379

1 585 379

(21) Application No. 22760/80 (22) Filed 13 Apr 1978

(62) Divided out of No. 1585378

(31) Convention Application No. 2741222 (32) Filed 13 Sep 1977 in

(33) Fed. Rep of Germany (DE)

(44) Complete Specification Published 4 Mar 1981

(51) INT. CL.[3] B42F 17/34

(52) Index at Acceptance B6E 13B 18 5 8B

(19)



(54) AN INDEX CARD SELECTION DEVICE

(71) We, CONFON AG., a Swiss Company of Langenhag 31, CH-9424 Rheineck, Switzerland do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly decribed in and by the following statement:—

The present invention relates to an index card device with an index card selection mechanism comprising a housing having a cover and a base with a plurality of selector keys which are arranged in rows and columns and a drawer which is under the action of a compression spring and which is closable by means of a locking mechanism, the drawer containing a stack of index cards having perforated selection tongues formed in their rear edge portions, the tongues increasing in size stepwise from one side to the other, starting from the index card having the first perforation and progressing to each card above, each increase being equal to one perforated selection tongue, each selector key being secured to one end of a swivel lever bearing a card retraining pin at its other end, the card restraining pins on the swivel levers lying in a row and co-operating with the index cards so that when a selector key is pressed all the index cards above the card associated with the key are retained when the drawer opens, since the card restraining pins engage the perforations in the selection tongues of the index cards, whereas the selected card and all the cards below it can be pulled out with the drawer, the device also comprising a drawer-unlocking mechanism adapted to be actuated by the swivel levers, the drawer having driving cams for engaging punched-out portions of the index cards.

The object of the invention is to construct an index-card device which is reliable and, without being technically complex, enables the selected index cards to be efficiently separated, even when carelessly handled.

According to the invention there is provided an index card device of the kind referred to hereinbefore wherein the card restraining pin on each swivel lever comprises a substantially U-shaped portion formed at the ends of the swivel levers having a horizontal leg extending towards the selection keys and formed at its end with a vertically extending rod which, when a swivel lever is actuated, penetrates from beneath into the index-card perforations, the vertically extending rod having a projection extending parallel to the horizontal leg of the U-shaped portion.

As a result of the horizontal projection on the card restraining pin the invention provides a card selection means which, even if carelessly handled, efficiently divides the stack of cards into a bottom part (depending on the selected card) which is reliably entrained with the drawer and a top part which is efficiently prevented from moving. As a result of the projection on the U-shaped card restraining pin cards which have not been selected and are to be retained will not be entrained when the drawer is opened, even if there is very strong adhesion between the cards to be pulled out and the cards to be kept back, and even if the index cards are dirty or slightly bent after prolonged use. Owing to the special construction of the card restraining pin, retained index cards cannot be prematurely raised, so that when the stacks of cards is pulled out even individual cards or parts of them are prevented from coming out with the selected card. Furthermore, this advantageous effect is obtained without additional, separate technical devices, so that the index-card device can be economically manufactured.

The invention is diagrammatically illustrated, by way of example, in the accompanying drawings in which:—

Figure 1 is a diagrammatic view of an index card device;

Figure 2 is a top plan view of the index card device of Figure 1;

Figure 3 is an underneath plan view of the data card device;

Figure 4 is a front elevation of the index card device;

Figure 5 is a side view of the index card device;

Figure 6 is a vertical section along the line VI-VI of Figure 2;

Figure 7 is a top plan view of the index card device of Figure 1 with the cover removed;

Figure 8 is a side view of the drawer of the index card device;

Figure 9 is a plan view of the drawer;

Figure 10 is an underneath plan view of the

housing cover of the index card device;

Figure 11 is a side view of the housing cover;

Figure 12 is a side view of a shackle which operates the drawer unlocking mechanism of the index card device;

Figure 13 is a plan view of the shackle;

Figure 14 illustrates the cooperation between the shackle, a swivel lever and the drawer in a diagrammatic side view;

Figure 15 is a plan view of three selector keys and their associated swivel levers;

Figure 16 is a side view of the three selector keys and the swivel levers of Figure 15;

Figure 17 is an enlarged view of the central selector key of the three keys in Figure 15;

Figure 18 is an enlarged view of the rearmost selector key of the keys in Figure 15;

Figure 19 is an enlarged view of the front selector key of the three keys in Figure 15;

Figure 20 is a plan view of a stack of index cards; and

Figures 21 and 21A show the front portions of the index cards arranged one behind the other.

The index card device shown in the drawings comprises a housing 10 with a box-shaped cover 11 and a box-shaped base 21. Cover 11 and base 21 are interconnected by means of screw or adhesive connections and are preferably made from plastics. The cover 11 with side walls 13 and 15, front wall 12 and rear wall 14 has an upper cover plate 16 in which a square or rectangular opening 17 is formed in the vicinity of front wall 12. The portion of upper cover plate 16 carrying opening 17 slopes towards the front. The remaining area of cover plate 16 can be provided with a non-slip layer which serves as a bearing surface for a telephone or the like.

Base 21 with side walls 23 and 25, front wall 22 and rear wall 24 has a base plate 26 and a slot-shaped opening 20 in front wall 22 which serves to receive a drawer 30.

The base 21 of housing 10 receives the drawer 30 which comprises a plate-shaped drawer base 31 and a front terminal strip 32 which, when drawer 30 is inserted, seals the drawer removal opening 20 in the front wall 22 of base 21. Drawer base 31 has an upwardly extending projection 33 at its centre (Figures 8 and 9) which forms a card carrier element. The drawer 30 is bounded laterally by two limiting walls 19 and 19a on the inside of housing cover 11 (Figures 10 and 11).

The drawer 30 is spring urged into an open position by a steel spring rod, not shown in the drawings, which is arranged on base plate 26 of base 21 in such a way that its one free end is connected to the plate-shaped drawer base 31, whilst the other end thereof is rigidly connected with base plate 26 of base 21. The action of the steel spring corresponds so that of a thrust spring which is placed under tension on inserting drawer 30 into base 21 of housing 10 so that on unlocking drawer 30 it is forced open.

A plurality of square or rectangular selector keys is arranged in the area of opening 17 in upper cover plate 16 of cover 11 of housing 10, the arrangement being such that the total area formed by the selector keys fills the opening 17 in cover 11.

In the embodiment shown in Figures 1 and 2, twelve selector keys 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50 and 51 are provided which are correspondingly marked and in fact with the letters of the alphabet in such a way that selector key 40 carriers letters "A, B" key 41 letters "I, J, K", key 42 letters "S, T" key 43 letters "C, D", key 44 letters "L, M", key 45 letters "Sch", key 46 letters "E, F", key 47 letters "N, O", key 48 letters "U, V", key 49 letters "G, H", key 50 letters "P, Q, R", and key 51 letters "W. Z". The twelve selector keys 40 to 51 are juxtaposed in three rows and in four columns, so that keys 40, 41, 42 and 43, 44, 45 and keys 46, 47, 48 and 49, 50, 51 each form one column.

Keys 40 to 51 are connected to a number of swivel levers 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70 and 71 corresponding to the number of keys and on whose ends 60a, 61a, 62a, 63a, 64a, 65a, 66a, 67a, 68a, 69a, 70a and 71a are fixed selector keys 40 to 51, whilst the other ends of swivel levers 60 to 71 are designated by 60b, 61b, 62b, 63b, 64b, 65b, 66b, 67b, 68b, 70b and 71b (Figure 7). The swivel levers 60 to 71 are constructed as two-armed levers and are mounted in swivellable manner on an axle 80 carried by the side walls 13 and 15 of cover 11, the axle 80 passing through central openings in swivel levers 60 to 71 which are at right angles to the longitudinal axes of the swivel levers.

In the area of its ends 60b to 71b, each swivel lever 60 and 71 has a vertical slot-shaped opening 90, 91, 92, 93, 94, 95, 96, 97, 98, 99 100 and 101 in which engage projections 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120 and 121 on the inner wall surface of the upper cover plate 16 of cover 11 (Figure 10). The length of the projections 110 to 121 is such that the free ends 60b to 71b of swivel lever 60 to 71 with their slot-shaped openings 90 to 101 are guided by means of said projections 110 to 121 so that a lateral displacement of the swivel lever ends 60b to 71b is prevented. The arrangement offers the further advantage that it is not necessary to fix the swivel levers 60 to 71 on pivot axle 80 to prevent lateral displacement.

The selector keys 40 to 51, which comprise plate-shaped square or rectangular blanks and which are advantageously fixed by means of vertical webs to the ends 60a to 71a of swivel levers 60 to 71 have a width which is such that the width formed by the sum of the selector keys 40, 43, 46, 49 and 41, 44, 47, 50 and 42, 45, 48, 51, which are juxtaposed in rows, is no wider than the total width formed by the

swivel levers 60 to 71. The arrangement of the selector keys 40 to 51 on swivel levers 60 to 72 is explained relative to Figures 15 to 19 by using the example of selector keys 40, 41 and 42. Selector keys 40 to 42 are arranged one behind the other in a column and fixed to the ends 60a, 61a and 62a of swivel levers 60, 61 and 62. Selector key 40 is fixed to the end 60a of swivel lever 60 in such a way that the plate-shaped blank of key 40 projects to right over the adjacent swivel levers 61, 62 whereby the width of key 40 corresponds to the width of the three swivel levers 60, 61, 62. Selectors keys 41, 42 also have widths which in each case correspond to the width of the three swivel levers 60, 61, 62. The central selector key 41 is fixed to the swivel lever end 61a in such a way that the plate-shaped selector key blank projects to both sides and the adjacent swivel levers 60 and 62 are overlapped by it. The front selector key 42 is fixed to swivel lever end 62a in such a way that its plate-shaped blank projects to the left and projects over the two swivel levers 60, 61 (Figures 17, 18 and 19). Selector keys 43, 44, 45 and 46, 47, 48 and 49, 50, 51 are fixed to their swivel levers 63 to 71 in the same way as selector keys 40, 41, 42.

The end 60b to 71b of each swivel lever 60 to 71 carries a card restraining pin 130 (Figure 6). Each of these card restraining pins 130 is formed by a U-shaped portion 140 with webs 140a and leg 140b which is parallel to the swivel lever end. The other leg of the U-shaped portion 140 is formed by the end portion 60b or 61b to 71b of the individual swivel levers 60 to 71.

The free end of the generally horizontal leg 140b of U-shaped portion 140 of card restraining pin 130 carries a vertical rod 130a which constitutes the actual card restraining pin. The arrangement and construction of the card restraining pins 130 on swivel lever ends 60b to 71b are such that on operating one swivel lever by depressing the corresponding selector key the rear end of the swivel lever is raised, whereby simultaneously rod 130a of U-shaped portion 140 of the relevant swivel lever is raised and as will be explained in greater detail hereinafter engages in the perforations or recesses on the rear edges of the index cards of the stack of index cards located in drawer 30, as intimated at 200 in Figure 6.

A recess 27 (Figure 6) is provided in base plate 26 of base 21 in the area of the bearing surface of U-shaped portions 140 of card restraining pins 130. The depth of recess 27 approximately corresponds to the height of legs 140b of the U-shaped portions 140 of card restraining pins 130. Recess 27 is arranged in association with the disposition of swivel axle 80 such that the swivel levers are slightly inclined in the inoperative position as shown in Figure 6. In this inoperative position, the legs 140b of U-shaped portions 140 of card restraining pins 130 are supported on the base surface of recess 27. This construction ensures correct engagement of rod 130a of card restraining pins 130 in the openings in the rear edge areas of the cards of the stack 200 of index cards. In addition, the individual rods 130a can be provided with a rearwardly extending portion 130b, but its surface area must be no larger than the openings provided in the edge areas of the cards. The portions 130b of rods 130 prevent, on opening the drawer 30, any lifting of those cards which are located below the selected card and are moved out with drawer 30. This construction of rod 130 is particularly advantageous in the case of index cards which following prolonged use are no longer flat.

In order to be able to open the drawer 30 after operating a selector key, an unlocking mechanism is provided which is actuated by means of a swivel shackle 150 (Figures 12, 13 and 14). This swivel shackle 150 is a U-shaped shackle with legs 151 and 152 and a web 153 which interlinks said legs. At the ends 151a and 152a of legs 151 and 152, the swivel shackle 150 is articulated to the outer wall surfaces of the vertical limiting walls 19 and 19a on the cover 11 (Figure 10). However, the possibility exists of articulating swivel shackle 150 with its leg ends 151a and 152a to the inner wall surfaces of side walls 23 and 25 of base 21. The swivel shackle 150 is fixed in such a way that it can be swivelled about the swivel axis indicated at 155 in Figure 10. In addition, swivel shackle 150 is arranged in such a way that when the data register is not in use, web 153 of shackle 150 rests on swivel levers 60 to 71 namely in the area of their ends 61b to 71b. However, the possibility also exists of forming the U-shaped portion 140 with an extended portion 140c which then serves as a bearing surface for web 153 of U-shaped swivel shackle 150 leading to the advantage that the housing 10 may be reduced in height.

As shown in Figure 14, the drawer unlocking mechanism comprises a locking cam 156 shaped onto the bottom of each leg 151 and 152 of swivel shackle 150. Locking cam 156 comprises a generally triangular body with a generally vertical stop face 156a facing the rear wall of housing 10. Counter-cams 157 on the drawer base 31 on either side thereof engage with stop face 156a. Each of the counter-cams 157 is constructed as a triangular body with a vertical edge 157a facing the front of housing 10.

According to Figure 14, the operation of the drawer unlocking mechanism is such that on operating a selector key in the direction of arrow X, the free end of the swivel lever carrying the card restraining pin 130 is swivelled upwards in the direction of arrow X1 and simultaneously swivel shackle 150 is swivelled upwards in the direction of arrow Y. During the swivelling of swivel shackle 150 in the direction of arrow Y, the two locking cams

156 on legs 151 and 152 of swivel shackle 150 are disengaged from the counter cams 157 of drawer 30 so that under spring tension drawer 30 is opened in the direction of arrow Y1. If after examining an index card, it is desired to close the drawer 30, it is inserted counter to the tension of the spring until the counter-cams 157 and drawer 30 engage behind the locking cams 156 on swivel shackle 150. By inserting drawer 30 into housing 10, counter-cams 157 are assisted in sliding past the locking cams 156 by the wedge-shaped guide surfaces 156b and 157b of cams 156 and counter-cams 157. When on inserting drawer 30, its counter-cams 157 have assumed their position behind the locking cams 156 of swivel shackle 150, the latter moves into its lowermost position due to its own weight or aided by a spring and thus locks drawer 30.

In order that in the closed position, drawer 30 offers a maximum bearing surface for the stack 200 of index cards, the plate-shaped drawer base 31 has a number of slot-shaped recesses 160 to 171 corresponding to the number of card restraining pins 130. The length of each slot-shaped recess 160 to 171 corresponds to the length of leg 140b of U-shaped portion 140 of each card restraining pin 130, so that in the inoperative position of swivel lever 60 to 71 the U-shaped portions 140 with their legs 140b extending in the direction of the front of housing 10 come to rest in the slot-shaped recesses 160 to 171. Due to this construction, swivel levers 60 to 71 are aligned in the inner area of housing 10, so that on actuating a selector key the corresponding card restraining pin can engage without any lateral displacement in the openings on the rear edge areas of the index cards.

The stack 200 of index cards arranged in housing 10 has a number of index cards 201 to 212 corresponding to the number of selector keys 40 to 51, whereby card 201 is the uppermost card and card 212 is the lowermost card in stack 200 (Figures 20, 21, 21a).

Each card 201 to 212 is provided with a marginal recess and with a plurality of slot-shaped perforations of openings. As shown in Figures 21 and 21a, recesses 201a to 212a are provided in the rear marginal areas of cards 201 to 212. Each card 201 to 212 has one recess 201a to 212a. In addition, each card right down to the bottom card 212 is provided with a plurality of slot-shaped openings or perforations, the number of said openings decreasing successively by one opening from the top card 201 to the penultimate card 211, so that finally card 212 has no opening and instead only a single recess 212a which extends from recess 201a of card 201 to the opening in card 211.

In addition to marginal recess 201a, index card 201 has eleven openings 220, 220a, 220b, 220c, 220d, 220e, 220f, 220g, 220h, 220i, 220k, card 202 in addition to the double width recess 202a ten openings 221, 221a, 221b, 221c, 221d, 221e, 221f, 221g, 221h and 221i, card 203 in addition to recess 203a nine openings 222, 222a, 222b, 222c, 222d, 222e, 222f, 222g and 222h, card 204 in addition to recess 204a eight openings 223, 223a, 223b, 223c, 223d, 223e, 223f and 223g, card 205 in addition to marginal recess 205a seven openings 224, 224a, 224b, 224c, 224d, 224e and 224f, card 206 in addition to recess 206a six openings 225, 225a, 225b, 225c, 225d and 225e, card 207 in addition to marginal recess 207a five openings 226, 226a, 226b, 226c, 226d, card 208 in addition to recess 208a four openings 227, 227a, 227b, 227c, card 209 in addition to recess 209a three openings 228, 228a and 228b, card 210 in addition to recess 210a two openings 229 and 229a, register card 211 in addition to recess 211a one opening 230 and card 212 a single recess 212a extending over the entire width of the card.

The openings formed in the marginal areas of register card 201 to 211, as well as marginal recesses 201 to 212 are formed and arranged in such a way that the recesses and openings of the superimposed cards are aligned.

Therefore, the selection of an index card takes place in such a way that on operating a selector key by means of the swivel lever, the card restraining pin with its rod 130 engages from below into the recesses and the superimposed openings, so that, extending the drawer, all the register cards are held back which are located above the selected card, this being effected by the rod 130a which is passed through the opening, whilst the other card positioned below it can be moved out with the drawer, because rod 130 is passed through the recesses below the openings of the superimposed cards and is therefore unable to hold back these cards.

Cards 201 to 212 are made from cardboard, pasteboard, or the like and can be provided with corresponding line guides, fields and the like. In addition, each card 201 to 212 carries those letters corresponding to the letters of the alphabet which appear on the selector key associated with the corresponding card. Thus, card 201 is provided with letters "A, B", card 202 with letters "I. J. K" card 203 with letters "S. T". card 204 with letters "C, D", card 205 with letters "L, M" card 206 with letters "S. C. H" card 207 with letters "E, F", card 208 with letters "N. O" card 209 with letters "U. V" card 210 with letters "G, H", card 211 with letters "P. Q. R" and card 212 with letters "W. Z".

As shown in Figure 20, all the cards 201 to 202 have a slot-shaped opening 240 in the centre thereof in which engages the projection 33 on the plate-shaped draw bottom 31. Projection 33 is also triangular, so that the cards to be moved out with the drawer are seized by the projection 33 and can be carried along, whilst the cards held back by card restraining

pins 130 are not carried along by projection 33.

Attention is drawn to our co-pending applications Nos. 8022761 (Serial no. 1585 380) and No. 42729/77 (Serial no. 1585378) which also relate to index card selection devices.

WHAT WE CLAIM IS:—

1. An index card device with an index card selection mechanism comprising a housing having a cover and a base with a plurality of selector keys which are arranged in rows and columns and a drawer which is under the action of a compression spring and which is closable by means of a locking mechanism, the drawer containing a stack of index cards having perforated selection tongues formed in their rear edge portions, the tongues increasing in size stepwise from one side to the other, starting from the index card having the first perforation and progressing to each card above, each increase being equal to one perforated selection tongue, each selector key being secured to one end of a swivel lever bearing a card restraining pin at its other end, the card restraining pins on the swivel levers lying in a row and co-operating with the index cards so that when a selector key is pressed all the index cards above the card associated with the key are retained when the drawer opens, since the card restraining pins engage the perforations in the selection tongues of the index cards, whereas the selected card and all the cards below it can be pulled out with the drawer, the device also comprising a drawer-unlocking mechanism adapted to be actuated by the swivel levers, the drawer having driving cams for engaging punched-out portions of the index cards, wherein the card restraining pin on each swivel lever comprises a substantially U-shaped portion formed at the ends of the swivel levers having a horizontal leg extending towards the selection keys and formed at its end with a vertically extending rod which, when a swivel lever is actuated, penetrates from beneath into the index-card perforations, the vertically extending rod having a projection extending parallel to the horizontal leg of the U-shaped portion.

FITZPATRICKS
Chartered Patent Agents
Warwick House
Warwick Court
London, WC1R 5DJ

-and-

48 St. Vincent Street
Glasgow G2 5TT

Printed for Her Majesty's Stationery Office by MULTIPLEX medway ltd., Maidstone, Kent, ME14 1JS. 1981. Published at the Patent Office, 25 Southampton Buildings, London WC2 1AY, from which copies may be obtained.

pins 130 are not carried along by projection 33.

Attention is drawn to our co-pending applications Nos. 8022761 (Serial no. 1585 380) and No. 42729/77 (Serial no. 1585378) which also relate to index card selection devices.

WHAT WE CLAIM IS:–

1. An index card device with an index card selection mechanism comprising a housing having a cover and a base with a plurality of selector keys which are arranged in rows and columns and a drawer which is under the action of a compression spring and which is closable by means of a locking mechanism, the drawer containing a stack of index cards having perforated selection tongues formed in their rear edge portions, the tongues increasing in size stepwise from one side to the other, starting from the index card having the first perforation and progressing to each card above, each increase being equal to one perforated selection tongue, each selector key being secured to one end of a swivel lever bearing a card restraining pin at its other end, the card restraining pins on the swivel levers lying in a row and co-operating with the index cards so that when a selector key is pressed all the index cards above the card associated with the key are retained when the drawer opens, since the card restraining pins engage the perforations in the selection tongues of the index cards, whereas the selected card and all the cards below it can be pulled out with the drawer, the device also comprising a drawer-unlocking mechanism adapted to be actuated by the swivel levers, the drawer having driving cams for engaging punched-out portions of the index cards, wherein the card restraining pin on each swivel lever comprises a substantially U-shaped portion formed at the ends of the swivel levers having a horizontal leg extending towards the selection keys and formed at its end with a vertically extending rod which, when a swivel lever is actuated, penetrates from beneath into the index-card perforations, the vertically extending rod having a projection extending parallel to the horizontal leg of the U-shaped portion.

FITZPATRICKS
Chartered Patent Agents
Warwick House
Warwick Court
London, WC1R 5DJ

-and-

48 St. Vincent Street
Glasgow G2 5TT

Printed for Her Majesty's Stationery Office by MULTIPLEX medway ltd., Maidstone, Kent, ME14 1JS. 1981. Published at the Patent Office, 25 Southampton Buildings, London WC2 1AY, from which copies may be obtained.

* C L M S *