Sept. 10, 1929. H. TOCKHORN 1,727,453

CARD INDEX

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Fig.1.

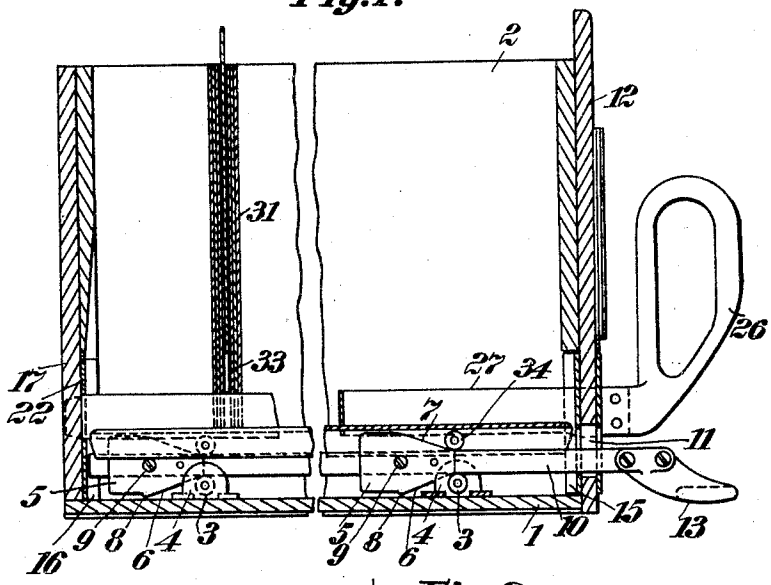
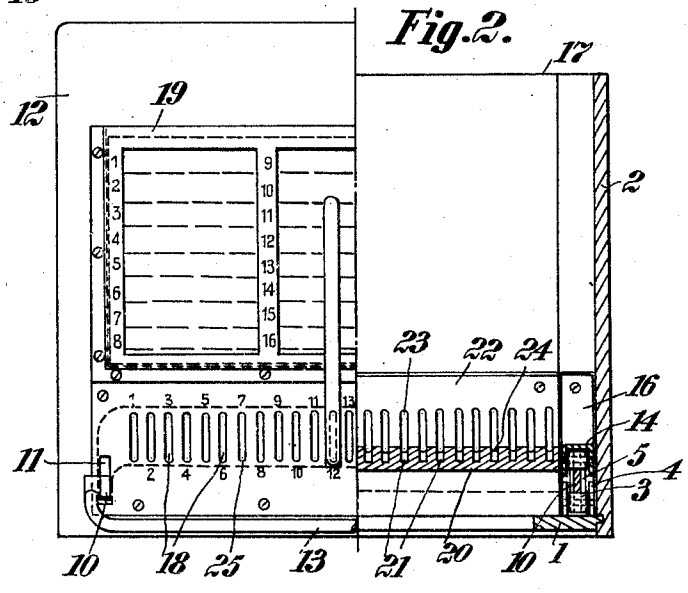


Fig.2.



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Fig. 3

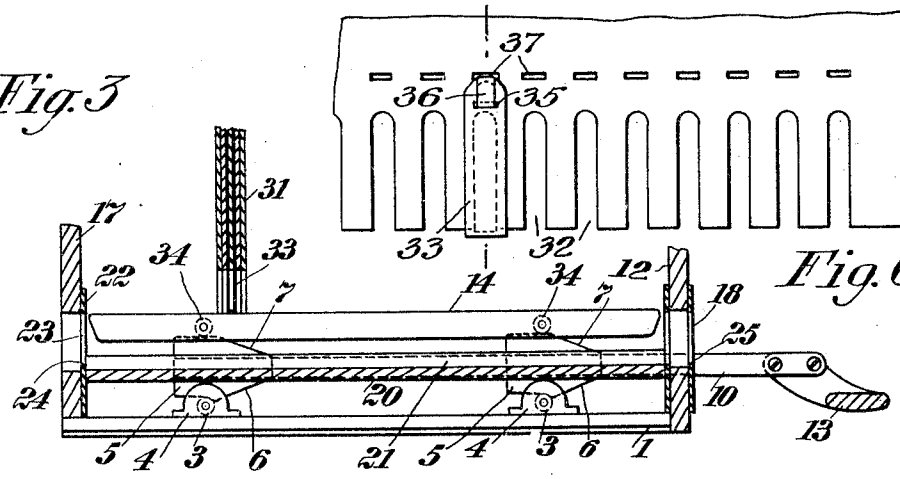


Fig. 6

Fig. 4.

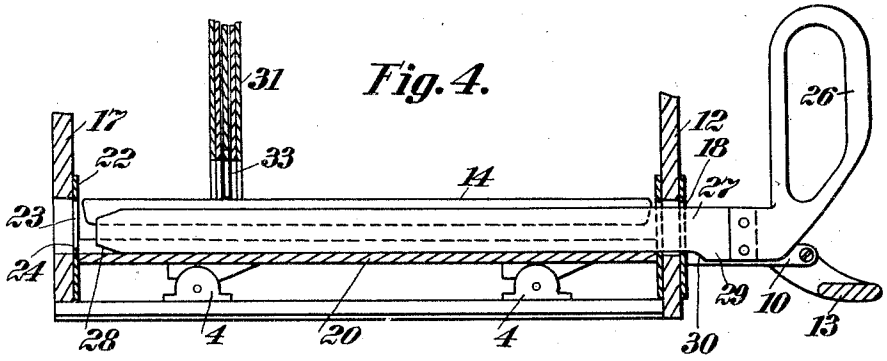


Fig. 5.

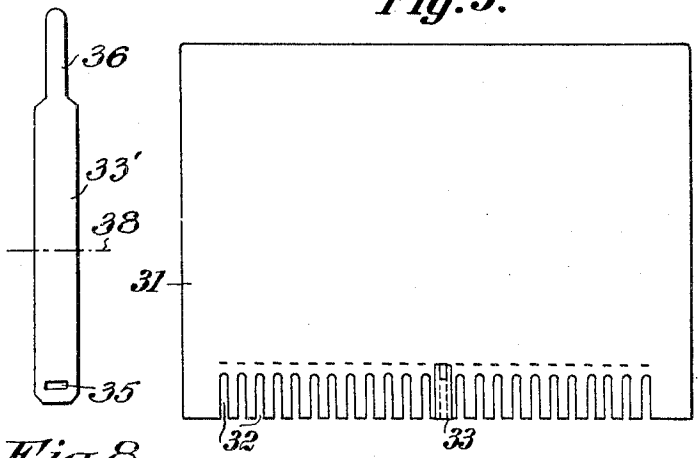


Fig. 8

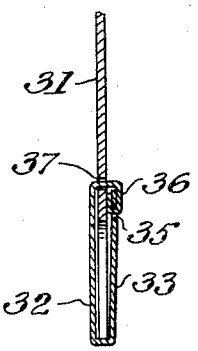


Fig. 7

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UNITED STATES PATENT OFFICE.

HUGO TOCKHORN, OF BERLIN-TEMPELHOF, GERMANY.

CARD INDEX.

Application filed December 27, 1927, Serial No. 242,906, and in Germany December 28, 1926.

This invention relates to card-indexes and especially to such apparatus of this kind which are provided with means for selecting index-cards with special classification characteristics, said means consisting of two supporting bars adjustable as regards their position and adapted to maintain a pile of cards resting upon them in a higher or a lower position so that under the lifted card pile, through slots in the front end wall of the index casing, bars can be inserted which, when the card pile is being lowered by means of the supporting bars, come into contact with the lower edge of those cards which have corresponding classification characteristics and are designed to remain lifted thereby.

In the commonly used apparatus of this kind the lifting and lowering of the pile of cards is effected by two pivoted lifting bars which may be raised and turned down by separate handles projecting from the forward wall of the casing so that each bar has to be turned separately. This presents the inconvenience that, for simultaneously turning the two bars, both hands of the user are required, or that otherwise the bars must be turned successively. When the two bars are not raised both accurately at the same time, the card-pile resting on said bars adopts an inclined position wherefrom results jamming of the cards and disturbances unless the casing be specially constructed.

These inconveniences are absolutely avoided by the present invention according to which the two supporting bars are connected the one with the other by a handle on the outer side of the casing so that they can be lifted and lowered both at the same time and the one parallel to the other. Owing to convenient transmission of movement the simultaneous lifting and lowering of the two supporting bars is effected by pulling the handle out or pushing the same in.

The height of stroke of the supporting bars is chosen according to the present invention such that it is slightly greater than the height of the main part of the selecting bars to be inserted through the slots into the casing. In this manner it is provided that these selecting bars, when being inserted, do not come into contact with the edges of the lifted cards. These selecting bars, however, have near their rear end adjacent the handle each a preferably bevelled thickening or projection on the lower edge so that they will be slightly lifted a short time before or at the termination of their inserting movement and then will come into contact with the lower edges of those cards which have to remain in the lifted position when the other cards of the pile are lowered by means of the pair of horizontal supporting bars.

One embodiment of my invention is illustrated in the accompanying drawings in which:

Fig. 1 is a longitudinal section of the card casing partly broken away, the supporting bars being in the lowered position.

Fig. 2 shows on the left half in elevation the front end wall of the casing and on the right half a cross-section of the casing.

Fig. 3 is a longitudinal section showing the lower portion of the casing, the supporting bars being lifted and the selecting bar being omitted.

Fig. 4 is a similar view to that of Fig. 3, the selecting bar being partly inserted.

Fig. 5 shows in elevation one of the index-cards to be used in this apparatus.

Fig. 6 shows a part of the index-card of Fig. 5 on a larger scale; Fig. 7 a vertical section through this part of the card and one of the selectors in connection therewith; and Fig. 8 one of the metal strips used for forming said selectors.

On the bottom-plate 1 of the casing two guide-rollers 3, spaced some distance apart, are rotatably mounted adjacent to the side walls 2 in bearings 4. The side walls 2 are in perpendicular relation to the bottom-plate 1 so that the casing is of rectangular cross-section, the distance of the side walls 2 from one another corresponding to the breadth of the index cards. Elements 5, each having a lower bevel-face 6 and an upper bevel-face 7, rest one on each guide roller 3. Each element 5 has, behind the lower bevel-face 6, a nose 8 (Fig. 1). The elements 5 are fixed by means of screws 9 to sliding bars 10 which project through

vertical slots 11 of the front end wall 12 of the casing, the two bars 10 being connected the one with the other on the outside of wall 12 by means of a handle 13. A supporting bar 14 rests on the two elements 5 on each side of the casing, said supporting bar 14 consisting of a metal-rail of U-shaped cross-section the opening of which is turned downward. These supporting bars 14 are preferably guided in bearings 15 and 16 respectively, arranged in the inner surfaces of the front-end wall 12 and the rear-end wall 17, respectively, of the casing.

In the front-end wall 12 of the casing a number of vertical slots 18 are arranged in a transverse row, said slots being preferably marked with numerals, as shown in Fig. 2. Above the slots 18 a frame 19 is arranged into which a register can be inserted showing the designations of the numerals of the single slots 18. Above the bottom-plate 1 of the casing a horizontal partition 20 is fixed which carries parallel guide grooves 21 corresponding as regards situation and arrangement with the slots 18 in the front-end wall 12 of the casing, as shown in Fig. 2. A guide element 22 on the rear-end wall 17 of the casing has parallel slots 23 corresponding with the slots 18 in the front-end wall 12 of the casing, with this difference however that the lower edge 24 of the slots 23 is situated in a slightly higher horizontal plane than the lower edge 25 of the slots 18 (Figs. 3 and 4).

A selecting bar 27, having a handle 26 on the outer end, is designed to be inserted freely through one of the slots 18 in the front-end wall 12 of the casing and to be guided in the corresponding groove 21 of the horizontal partition 20. On the front or entering end of the selecting bar 27 a bevelled surface 28 is arranged on the lower edge, and near the rear or outer end the selecting bar 27 has a thickening projection or nose 29 on its lower edge, the front edge 30 of said nose being inclined in accordance with the bevelled edge 28 of the front-end and merging into the horizontal lower edge of said selecting bar.

When the surface 30 of the nose 29 of the selecting bar 27 strikes against the lower edge 25 of that slot 18 into which this selecting bar has been inserted, it will rise on this lower edge 25 of the slot, and the bevelled edge 28 at the front-end of said selecting bar will at the same time rise on the lower edge 24 of the corresponding slot 23, the selecting bar 27 thereby being lifted a distance corresponding to the height of the projection or nose 29.

The cards 31 to be used in this apparatus have each in the lower edge upwardly extending vertical slits or incisions 32, corresponding as regards number and spacing with the slots 18 and 23 in the front- and rear-end walls of the casing. One or several slots or incisions 32 of the card 31 are covered by sleeve-like selectors 33 fastened to the card, the arrangement of these selectors 33 corresponding to the classification of each single card in the system.

The selectors 33 are formed from metal strips 33′ (Fig. 8) having a slot 35 near one end and a reduced tongue 36 at the other end, said tongue 36 being of such a breadth that it may be passed as well through slot 35 as through one of the slots 37 arranged in the card 31 above the incisions 32. For fastening a selector 33 to the card 31 the metal-strip 33′ is folded on the line 38, and this folding line is laid against the edge of card 31 in such a manner that both parts of the folded strip will cover one of the incisions 32. Then the tongue 36 is bent and passed through the slot 37 of the card through the slot 35 of the strip 33′ from the outside and rebent against itself on its inside, as may be seen from Fig. 7.

The operation of the card-index apparatus is as follows:—

When cards containing information which refer to any common fact, for instance cards of clients of a certain industry or buyers of a certain branch, have to be selected from the pile of cards, the handle 13 has to be pulled away from the front wall 12 of the casing, so that the elements 5 of the sliding bars 10 will slide over the rollers 3 on the bottom-plate and along rollers 34, mounted in the U-shaped supporting bars or rails 14, whereby these supporting bars 14 are lifted vertically, the one parallel to the other and both at the same time, and will lift in vertical direction the pile of cards 31 resting on said supporting bars. The elements 5 with the supporting bars and the pile of cards are securely held in the lifted position when the noses 8 of the said elements 5 have cleared the rollers 3 and dropped in front of the same.

The selecting bar 27 is then inserted, in such a position that the nose 29 is situated on its lower edge, through that slot 18 in the front-wall 12 of the casing, the numeral of which corresponds with the numeral of the inscription on the register in the frame 19 to be selected, for instance slot No. 12 (Fig. 2).

As the height of stroke of the supporting or lifting members 14 and consequently of the pile of cards is slightly greater than the height of the main part of the selecting bar 27, the upper edge of said selecting bar does not come into contact with the lower edge of the cards 31 during the greater portion of the inserting movement. Only when the selecting bar 27 has been inserted into the casing almost completely, the bevelled surface 30 rises on the lower edge 25 of the slot 18 in the front wall 12 of the casing, the bevelled surface 28 on the front-end of the selecting bar 27 rising at the same time on the lower edge 24 of the rear slot 23, so that the selecting bar 27 is slightly lifted and its upper

edge comes into contact with the lower edge of the selectors 33 covering the twelfth slit in the cards 31 which are to be selected together in the given example. Owing to this arrangement the selectors 33 on the cards and also the lower edges of the cards themselves are better preserved as no friction is exerted upon the same during the larger portion of the inserting movement of the selecting bar. If the selecting bar were permanently in frictional contact with the selectors 33 during the inserting movement, these selectors would be worn very rapidly.

When the handle 13 is thereafter pushed against the front wall 12 of the casing, the elements 5 carry out the inverse of their original movement, so that the supporting members 14 and the unselected part of the pile of cards resting on the same are lowered. The selected cards 31, resting with the lower edge of their selectors 33 on the selecting bar 27, will remain in the lifted position so that their upper ends will project from the card pile and can be gripped and pulled out very easily.

When desired, more than one selecting bar may be used at the same time for selecting cards containing informations the common characteristics of which are indicated by two or more selectors of certain positions. It is evident that in this manner a very manifold selecting of cards can be carried out, the number of kinds of selection not being limited directly by the number of the inserting slots provided.

The construction of the apparatus may be altered in many respects without departing from the idea and scope of the invention. The transmission of movement from the handle to be pulled to the supporting bars which are to be lifted and lowered, may be different from that described and shown, although the manner described and shown allows an easier movement than would be the case for instance with a lever-system, this being specially important when the index contains a great number of cards. The inclined planes for lifting and lowering the supporting or lifting members may also be fixedly arranged at the bottom of the casing or at the lower sides of the supporting members 14 respectively, the bars 10 in this case being provided with the rolls 34 running on said inclined planes.

The arrangement for covering the card slits may be different from that shown, or the slits at the points of each card corresponding to the selectors arranged there might be omitted, this however having the inconvenience that a special kind of card would have to be selected before the inscriptions are written on the card and that further many sets of cards with different slit-arrangements will have to be kept in stock. There might also be arranged slits to be covered by selectors or the like in the other edges of the cards, the selecting possibilities and characteristics thereby being further increased.

Having now particularly described and ascertained the nature of my said invention, I declare that what I claim is:—

1. A selective card index device, comprising a casing, card-lifting members movably mounted in said casing, a movable selecting means adapted for insertion at different points in the width of the casing to engage certain cards at different points, a handle on the outside of said casing, and means arranged between said handle and said card-lifting members for lifting and lowering said card-lifting members parallel to one another and in the same degree when the handle is operated in such a manner that the pile of cards resting upon them will be lifted and lowered parallel to itself.

2. A selective card index device, comprising a rectangular casing, two card-lifting members movably mounted in said casing for lifting and lowering the pile of cards resting upon them, a movable selecting means adapted for insertion at different points in the width of the casing to engage certain of the cards of the pile at different points, a handle before the front wall of said casing, and means for lifting and lowering both said card-lifting members together and parallel to one another within the casing when said handle is moved away from or against the front wall of said casing.

3. A selective card index device, comprising a casing, card-lifting members movably mounted in said casing, a movable selecting means adapted for insertion at different points in the width of the casing to engage certain cards at different points, a handle on the outside of said casing arranged between said handle and said card-lifting members, and means for lifting and lowering said card-lifting members parallel to one another and in the same degree when the handle is operated, the stroke of said lifting members being somewhat greater than the height of said selecting means.

4. A selective card index device, comprising a casing, card-lifting members movably mounted in said casing, a movable selecting bar adapted for insertion at different points in the width of the casing to engage certain cards at different points, a handle on the outside of said casing arranged between said handle and said card-lifting members, and means for lifting and lowering said card-lifting members parallel to one another and in the same degree when the handle is operated, the stroke of the said lifting members being somewhat greater than the height of the main part of said selecting bar, guides for said selecting bar at the front end of said casing, a projection at the lower edge near the rearward end of said selecting bar serving for

raising said selecting bar at the end of its inserting movement by engagement with said guides.

5. A selective card index device, comprising a casing, card-lifting members movably mounted in said casing, a movable selecting bar adapted for insertion at different points in the width of the casing to engage certain cards at different points, a handle on the outside of said casing and means arranged between said handle and said card-lifting members for lifting and lowering said card-lifting members parallel to one another and in the same degree when the handle is operated, the stroke of said lifting members being somewhat greater than the height of the main part of said selecting bar, guides for said selecting bar at the front end of said casing, a projection at the lower edge near the rearward end of said selecting bar, the total height of that part of said selecting bar which is provided with said projection corresponding to the stroke of said lifting members, the front wall of said projection being bevelled.

6. A selective card index device, comprising a casing, card-lifting members movably mounted in said casing, a movable selecting bar adapted for insertion at different points in the width of the casing to engage certain cards at different points, a handle on the outside of said casing, arranged between said handle and said card-lifting members, and means for lifting and lowering said card-lifting members parallel to one another and in the same degree when the handle is operated, the stroke of said lifting members being somewhat greater than the height of the main part of said selecting bar, guides for said selecting bar at the front end of said casing, a projection at the lower edge near the rearward end of said selecting bar, the total height of that part of said selecting bar which is provided with said projection corresponding to the stroke of said lifting members, the front wall of said projection and the lower edge of the front end of said selecting bar being bevelled, and a second guide at the rear end of said casing, the lower guiding edge of said second guide being somewhat higher than the lower guiding edge of said first-named guide.

7. A selective card index device, comprising a casing, two parallel bars movably mounted in said casing, a handle before the front wall of said casing, said handle connecting both said parallel bars, supporting bars loosely arranged above said parallel bars, elements having inclined plane surfaces and rolls adapted to run on said surfaces, both said elements and rolls being arranged in connection with said parallel bars and supporting bars in such a manner as to raise and lower said supporting bars when said parallel bars are drawn out or pushed in, respectively, by the corresponding movement of said handle, and a movable selecting member adapted for insertion at different points in the width of the casing to engage certain cards at different points.

8. A selective card index device, comprising a casing, two parallel bars movably mounted in said casing, a handle before the front wall of said casing, said handle connecting both said parallel bars, supporting bars loosely arranged above said parallel bars, elements having inclined planes arranged in connection with said parallel bars, rolls on said supporting bars arranged to run on said inclined plane surfaces in such a way that said supporting bars will be raised and lowered by the movement of said inclined plane surfaces with said movable parallel bars, and a movable selecting member adapted for insertion at different points in the width of the casing to engage certain cards at different points.

9. A selective card index device, comprising a casing, two parallel bars movably mounted in said casing, a handle before the front wall of said casing, said handle connecting both said parallel bars, supporting bars loosely arranged above said parallel bars, elements having inclined plane surfaces and rolls adapted to run on said surfaces, both said elements and rolls being arranged in connection with said parallel bars and supporting bars in such a manner as to raise and lower said supporting bars when said parallel bars are drawn out or pushed in, respectively, by the corresponding movement of said handle, noses arranged on said elements at the rearward end of said inclined plane surfaces for engagement with said rolls, and a movable selecting member adapted for insertion at different points in the width of the casing to engage certain cards at different points.

10. A selective card index device, comprising a casing, two parallel bars movably mounted in said casing, a handle before the front wall of said casing, said handle connecting both said parallel bars, supporting bars loosely arranged above said parallel bars, sliding elements fastened to said parallel bars, the front walls of said sliding elements being inclined to one another, an upper and a lower inclined face being formed thereby, pairs of rolls engaging said inclined faces, said rolls for said upper inclined faces being arranged on the lower side of said supporting bars, said rolls for said lower inclined faces being arranged at the bottom of said casing, and a movable selecting member adapted for insertion at different points in the width of the casing to engage certain cards at different points.

In testimony whereof I have hereunto set my hand.

HUGO TOCKHORN.