Jan. 27, 1931. G. G. ANDERSON 1,790,453

ACCOUNT FINDING APPARATUS

Filed Nov. 8, 1920 3 Sheets-Sheet 1

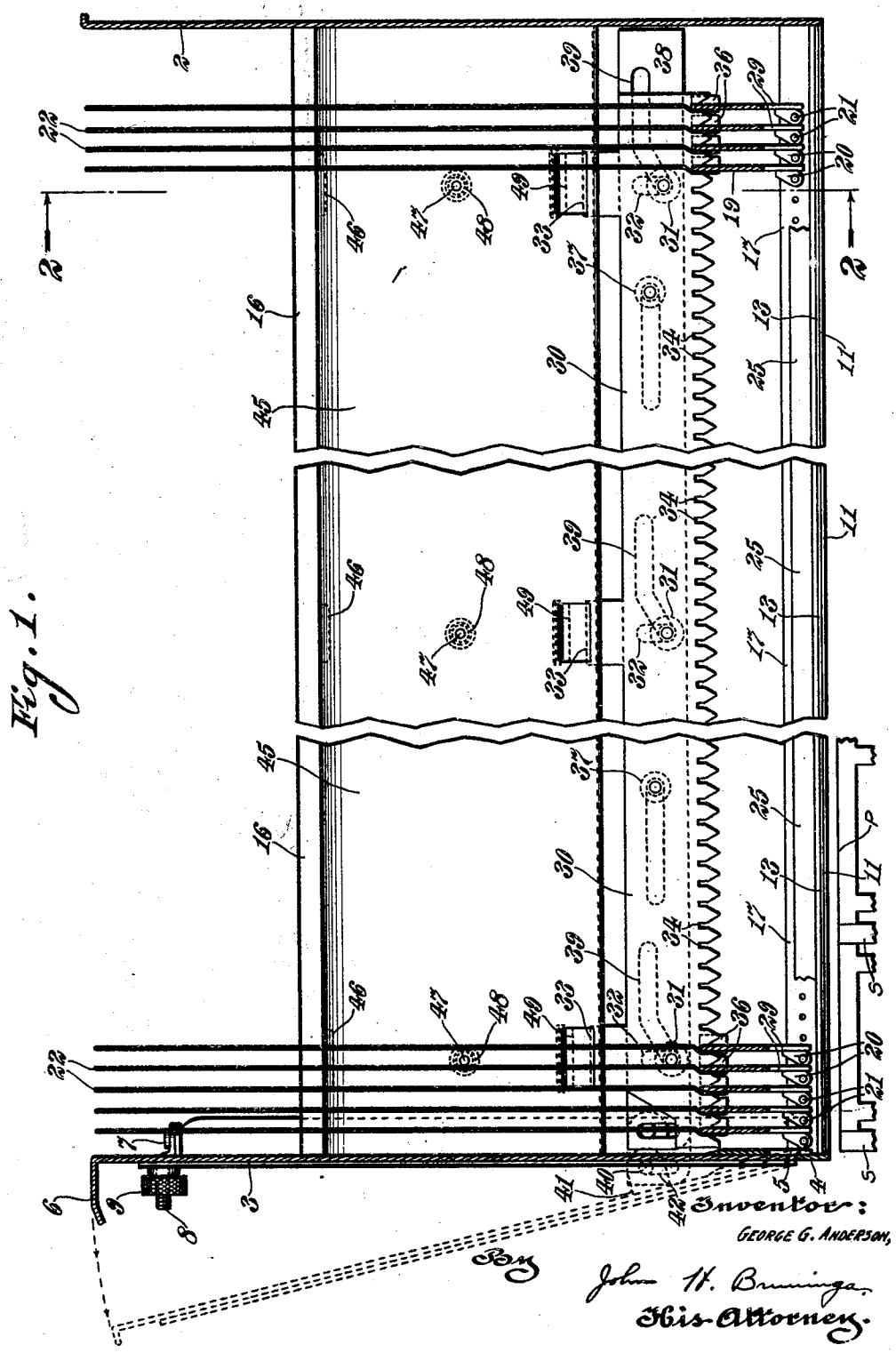


Fig. 1.

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Fig. 2.

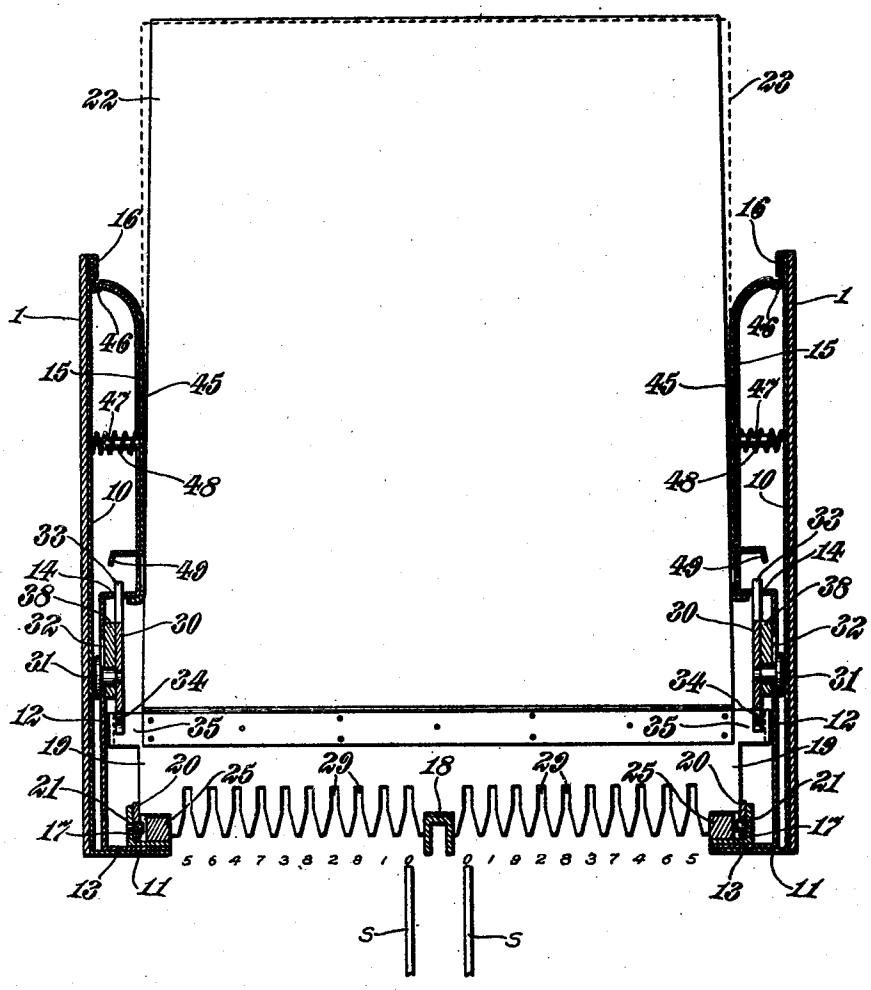
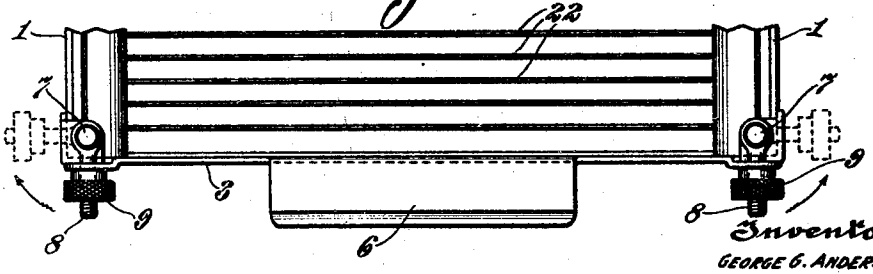


Fig. 3.



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Fig. 4.

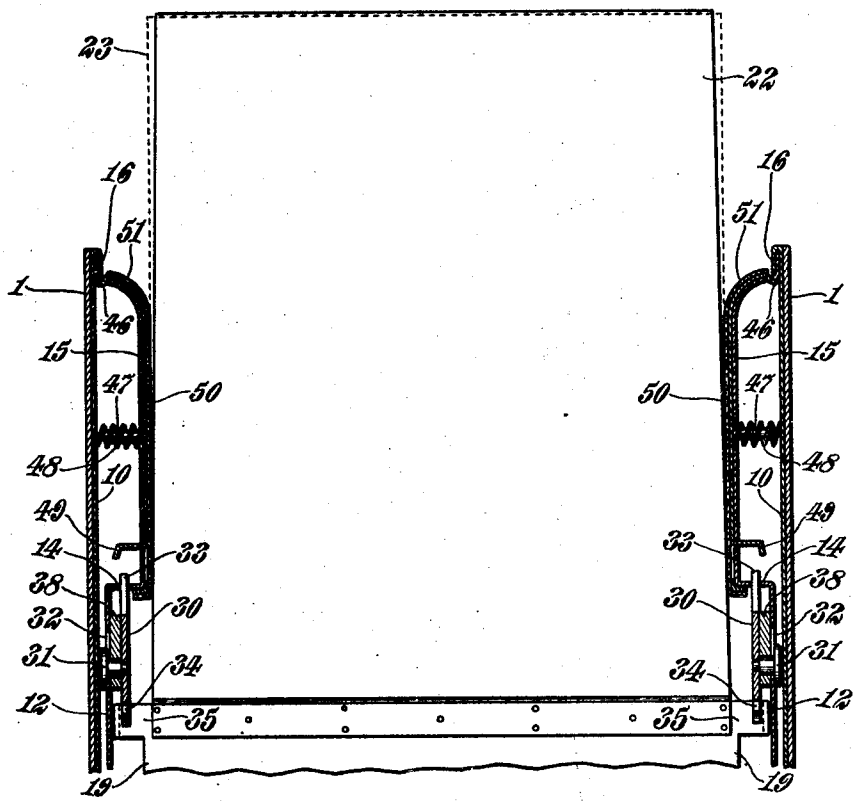
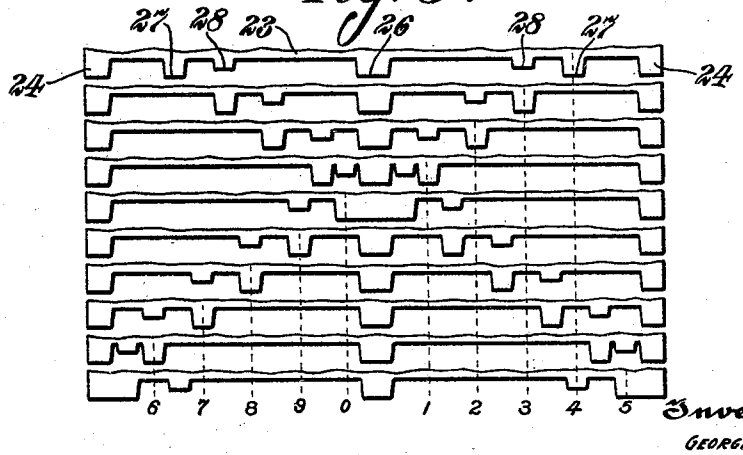


Fig. 5.



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UNITED STATES PATENT OFFICE

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ACCOUNT-FINDING APPARATUS

Application filed November 8, 1920. Serial No. 422,542.

This invention relates to an apparatus for finding accounts.

In the accounting apparatus described in application Serial No. 352,601, filed January 19, 1920, the desired account is found by a series of steps comprising primary, secondary and tertiary operations in accordance with a given system of classification, such as the numerical or decimal system. Accordingly, the account cards are arranged in a tray or trays and are divided into groups, the groups divided into divisons, and the divisions each comprise a plurality of cards. More specifically stated, the tray is divided by partitions into a series of compartments each of which is arranged to receive a unit of cards; for instance, in a tray of one thousand cards, there are one hundred compartments. Cooperating with the tray is a selector mechanism which is controlled by keys or selective manipulative elements. Accordingly, in order to effect selection of a given account by the successive operation of the keys, the selectors employed are primarily located to locate a group, secondarily located to locate a division of the located group, and tertiarily located to locate the desired card in the located division. The selectors are then operated to isolate or shift the finally-located card.

The cards of a unit or division have selective characteristics variantly arranged along the edges thereof, such as the bottom edges, so as to permit cooperation therewith of the selectors to effect location or selection of any individual desired card in the unit or division.

Where it is desired to audit an account, there are provided in addition to the normal selectors, auxiliary selectors which are arranged along the tray so as to simultaneously effect selection or isolation of all cards ending in a certain number.

It is frequently necessary to inspect the cards in a tray and in order to accomplish this, the tray must be so constructed as to permit such ready inspection while the tray is in position.

One of the objects of this invention, therefore, is to provide a tray which is so constructed as to readily permit inspection of the accounts.

Another object of this invention is to provide a tray in which the tray parts, such as the partitions, can be readily placed in contracted position for selection, and in expanded position for inspection.

In the apparatus described in the application referred to, when one or more cards are shifted during selection and isolation, other cards than the desired card are liable to be carried along with the desired card or cards, due to frictional or electrical cohesion between the cards.

Moreover, where the selectors are operated to shift a desired card or cards and then again returned to normal position, as is especially the case where a number of accounts are successively located and shifted, the desired card or cards, after selection and isolation, are liable to drop before they are withdrawn.

Other objects of this invention, therefore, are to provide means whereby cards other than the desired or shifted cards are retained against shifting, and to provide means whereby the shifted card or cards are retained in shifted position or positions, while the remaining cards are retained against shifting.

Further objects will appear from the detail description taken in connection with the accompanying drawings in which:

Figure 1 is a side elevation partly in section of an apparatus embodying this invention;

Figure 2 is a section on the line 2—2, Fig. 1;

Figure 3 is a detail plan of the tray at one end;

Figure 4 is a view similar to Figure 2, but showing another embodiment of this invention; and,

Figure 5 is a detail showing a unit of cards.

Referring to the accompanying drawings, and more particularly to Figures 1, 2 and 3, 1 designates the sides of the tray, and 2 and 3 the ends thereof. The end 2 connects the sides of the tray, while below the end 3 is a cross-piece 4 also connecting the sides. The end 3 has lugs 5 projecting therefrom, which are arranged to take over the cross-piece 4

while the top of this end 3 is provided with a grip 6 to permit shifting thereof. The end 3 is, therefore, hinged or pivoted at its lower end near the bottom of the tray. Pivoted on the sides of the tray at 7 are screws 8 which are arranged to take into open slots near the upper corners of the end 3, the screws 8, being provided with nuts 9 whereby the tray end 3 may be clamped in position. Upon loosening the nuts 9, however, and swinging them in the direction of the arrows, Figure 3, to dotted positions, the tray end 3 is freed and can then be moved outwardly to dotted position, Figure 1.

The tray has liners 10 extending along the sides thereof and then inwardly at their lower ends as shown at 11. Spaced from these liners 10 are liners 12 also bent inwardly at their lower edges, shown at 13, and inwardly at their upper edges, as shown at 14, the liners continuing upwardly at 15 and being secured at their upper edges to the liners 10 by seaming the latter thereover, as shown at 16.

Angle bars 17 extend along the bottom of the tray and rest on the inwardly bent portions 13, these angle bars being provided with bars 25 extending along the tray, so as to form rests for the cards hereinafter to be described, while the channel bar 18 extends along and centrally of the tray, and is connected to the end 2 and the cross piece 4, thereby forming a central rest for the cards. A series of strips 19 are pivoted on the angle bars 17 by ears 20 on the strips, connected by pintles 21 to the angle bars 17, these strips being recessed to take over the channel bar 18. Each strip 19 has fixed thereto a plate 22 which extends upwardly between the sides 15. There are thus provided a series of partitions dividing the tray into a series of compartments.

Each compartment is arranged to receive a series of ten cards 23 provided with lugs 24 at their ends adapted to rest on the bars 25, while each card is also provided with a central lug 26 adapted to rest on the channel bar 18. The cards are provided with characteristics 27 in the form of lugs, these characteristics being variantly arranged along the edges of the cards to correspond with the positions of the cards in the unit as fully described in the application referred to. There may be also provided supplemental characteristics 28 of shorter depths than the main characteristics 27, and each supplemental characteristic corresponds in position to the position of the main characteristic on the next preceding card. It will, therefore, be seen that when a unit of ten cards is placed in a compartment, the characteristics on the different cards will be arranged in accordance with their numerical order in the unit whatever the order in which the cards are placed in the compartment.

The strips 19 are provided with a series of slots 29 expanded at their lower ends and corresponding to the positions of the characteristics on the cards. These slots 29 are arranged to guide the normal selectors S, which as described in the application referred to, are arranged to be shifted along and transversely of the tray, so that a given pair of selectors is arranged to cooperate with the desired card in a desired compartment, the slots 29 acting as guides to guide these selectors into cooperation with the characteristics. In addition to the normal selectors S, there are also provided pilot selectors P in the form of bars arranged to be connected with the normal selectors S so as to concurrently elevate all cards ending in the same number when it is desired to audit the accounts. It will be noted that there are pairs of selectors and corresponding pairs of guides 29 as well as corresponding pairs of characteristics, this being for the purpose of permitting engagement of the selectors with a card or cards at spaced points in order to prevent tipping and binding.

With this mechanism any desired card may be selected by positioning a selected pair of selectors for cooperation with the desired guides 29 in the desired compartment, and upon elevation of the selectors, a desired card will be raised, while all other cards will remain undisturbed.

As heretofore pointed out, it is desirable to permit expansion of the tray for the purpose of inspection of the accounts. Accordingly, as heretofore described, the front end 3, as well as the partitions 22, are pivotally mounted in the bottom of the tray through the connections heretofore described. Accordingly, after these partitions are free and after the end 3 is released and swung forwardly to dotted positions, Figure 1, all of the partitions may also swing back and forth to permit inspection of the cards. In order, however, to position the cards for selection, the partitions as well as the end 3, must be in vertical position so as to properly position the cards for cooperation with the selectors. Means must, therefore, be provided for retaining the partitions as well as the end 3 when so positioned.

Retaining bars 30 are mounted for vertical movement on the liners 12 by headed pins 31 engaging slots 32 in the liners, these retaining bars being further guided by shanks 33 engaging slots in the inwardly extending portions 14. The retaining bars 30 are each provided with a series of slots 34 adapted to take over lugs 35 on the strips 19 connected with the partitions, the slots 34 being flared at their open ends so as to position the partitions. It will be seen that there is a slot 34 for each partition, so that when the retaining bars 30 are dropped with the slots or notches 34 engaging the lugs 35, all of the partitions will be retained in vertical position and in proper spaced relation. The lugs 35 are also bent rearwardly as shown at 36

to initially space the partitions to a certain extent.

Mounted for sliding movement on headed pins 37 on the liners 12 are controlling bars 38, which are provided with cam slots 39 adapted to engage the pins 31 connected with the retaining bars 30. These controlling bars are interconnected with the front end 3 by pins 40 on lugs 41 on the front end 3 engaging slots 42 in the forward ends of the controlling bars. Accordingly, upon swinging of the front end 3, the controlling bars 38 will be reciprocated and this will in turn, raise and lower the retaining bars 30.

In the normal position of the parts with the front end 3 closed and latched, the retaining bars will be dropped over the lugs 35 so as to retain the partitions in proper spaced relation and in proper vertical positions. When, however, the front end 3 is released and swung forwardly to dotted position, Fig. 1, thereby carrying the controlling bars 38 with it, the retaining bars 30 will be raised so as to clear the lugs 35, thereby releasing all of the partitions. These partitions can then be swung back and forth to the extent allowed by the ends 36 to permit free inspection of the accounts. When the front end 3 is again moved back to normal position, the partitions will be moved back first by the intercontact of the bent lug ends 36 with the adjoining lugs, and then by the flared ends of the notches 34 forcing the partitions into proper spaced relation and into proper vertical positions as the retaining bars 30 drop. It will, therefore, be seen that the tray can be placed in condition for inspection by the release of the partitions and in condition for selection by the locking of these partitions in proper spaced relation and in proper positions.

As heretofore described, when a desired card or cards is raised, other cards are liable to be raised with it. Moreover, the desired card is liable to drop after the selectors have been dropped. In accordance with this invention, therefore, means are provided for retaining the cards against shifting, and this comprises yielding elements engaging the side edges of the cards.

Referring to Figures 1, 2, 3 and 4, the side positioning members 15 have, extending therealong, plates 45 which are attached at 46 at their upper ends so as to permit inward and outward movement, each plate 45 being provided with a series of pins 47 encircled by springs 48 passing through perforations in the elements 15, said springs bearing against the liners 10, the outward movement of these plates 45 being limited by lugs 49 engaging the elements 15. The plates 45 may be of metal, but they may be faced with felt, as shown at 50, Figure 4. In every case, the upper faces of the elements 15 and of the plates 45 and the facing 50 are rounded as shown at 51, to facilitate insertion of the cards. The plates 45 are slightly inclined and converge toward the lower edges as shown in Fig. 2 to assist in guiding the cards into the tray. The springs 48 act to place the plates 45 and their facing 50, if utilized, against the side edges of the cards, it being noted that the partitions 22 are somewhat narrower than the cards 23 to permit such engagement. If now a desired card is shifted by the selectors, the other cards will be retained against movement by the pressure of the retainers 45 and 50 thereon. Accordingly, it is insured that only the desired card or cards will be shifted while all other cards will be retained against shifting. Moreover, if a desired card has been thus shifted, it is retained by the retaining elements 45 and 50 against dropping, so that the selectors can move back to normal position for the selection of another card. Accordingly, any number of cards may be successively elevated and all of the desired cards in a single tray, for instance, may be removed after they have been all located and shifted.

It is obvious that various changes may be made in the details of construction of this invention without departing from the spirit of this invention; it is therefore, to be understood that this invention is not to be limited to the specific details shown and described.

Having thus described this invention, what is claimed is:

1. In an apparatus of the character described employing card selector mechanism, a card tray, members pivotally connected to the tray at the upper edges, and means resiliently projecting said members into engagement with the side edges of the cards and adapted to normally retain said cards against shifting relative to the tray.

2. In an apparatus of the character described employing card selector mechanism, a card tray separate from and adapted for cooperation with said mechanism, members hinged at their upper edges to said tray, and resilient means for operating said members to engage the edges of cards in the tray for normally retaining said cards against shifting.

3. In an apparatus of the character described employing card selector mechanism, a card tray having said mechanism operably associated therewith, members pivotally connected to the tray at the upper edges, and means resiliently projecting said members to engage the side edges of the cards and adapted to normally retain said cards against shifting relative to the tray, said members having rounded upper ends to facilitate insertion and positioning of the cards in the tray.

4. In an apparatus of the character described employing card selector mechanism, a card tray separate from and adapted for cooperation with said mechanism, members pivotally connected to the tray at the upper

edges, and means for resiliently projecting said members into engagement with the side edges of the cards and adapted to normally retain said cards against shifting relative to the tray, said members being mounted in opposed relation and converging slightly toward the lower ends to assist in guiding cards during insertion into the tray.

5. In account finding apparatus employing card selector mechanism, a card tray, liner members at opposite sides of said tray formed with portions defining the card-receiving space of said tray and other portions offset outwardly relatively to the first-named portions, partitions movable longitudinally of the tray between the first-mentioned portions of said liner members, and means for controlling movement of said partitions mounted on the second-named portions of said liner members adjacent to the ends of cards in said card-receiving portion.

6. In an apparatus of the character described employing selector mechanism, a card tray for holding cards in adjacent relation on edge for cooperation with the selector mechanism, means carried by said tray interspersed within the cards and movable therewith longitudinally on the tray and means for moving and retaining said movable means in position to hold said cards in close adjacent relation for operation by said selector mechanism.

7. In an apparatus of the character described employing selector mechanism, a card tray adapted to support cards on edge therein for movement longitudinally of the tray, means forming part of said tray having parts engaging said cards and movable therewith in the tray, and other parts cooperating with the first-mentioned parts, operable to move said first-mentioned parts into position to retain said cards in adjacent relation.

8. In an apparatus of the character described employing selector mechanism, a card tray having cards arranged in units therein adapted to hold the cards on edge for cooperation with the selector mechanism, and means on the tray interspersed between said units of cards for free movement relative to each other with the cards of said units, and means for retaining said first-mentioned means in position for preventing relative movement of said cards longitudinally of said tray.

9. In an apparatus of the character described employing selector mechanism, a card tray having partitions mounted for movement longitudinally of the tray adapted to form compartments and adapted for cooperation with the selector mechanism to insure proper engagement thereof with the cards, and means on the tray normally preventing longitudinal movement of the partitions relative thereto, said means being movable out of said normal position to permit relative longitudinal movement of said cards and partitions in said tray.

10. In an apparatus of the character described employing selector mechanism, a card tray having partitions movable longitudinally thereof adapted to form compartments and adapted for cooperation with the selector mechanism to insure proper engagement thereof with the cards, and means on the tray movable vertically thereof into one position for engaging and holding said partitions against relative longitudinal movement in the tray, said means being movable into another position out of engagement with said partitions whereby said partitions may be moved longitudinally of the tray.

11. In an apparatus of the character described, a card tray having partitions mounted for movement longitudinally of the tray, and means engaging each of said partitions for retaining said partitions in spaced relation, said means being movable into position to release said partitions for relative movement longitudinally in said tray.

12. In an apparatus of the character described, a card tray having partitions mounted for movement longitudinally of the tray, means operable for moving and positioning said partitions in one position and adapted to retain them in said position against longitudinal movement, and means for operating said positioning and retaining means.

13. In an apparatus of the character described, a card tray having a movable end and having partitions mounted for movement longitudinally thereof, and operating elements associated with said tray and connected to said end operable into one position by said end to engage each of said partitions for moving and retaining said partitions in spaced relation in one position against longitudinal movement, said elements being adapted to be moved relative to said tray by said end from said position to release said partitions for longitudinal movement.

14. In an apparatus of the character described, a card tray having partitions pivoted at their lower ends in the bottom of said tray and provided with selector guides.

15. In an apparatus of the character described employing card-selector mechanism, a card tray independent of said mechanism adapted for cooperation with said mechanism, and spring-pressed plates having parts interlocking with said tray for retaining cards other than the selected card against shifting.

In testimony whereof I affix my signature this 6th day of Aug., 1920.

GEORGE G. ANDERSON.

CERTIFICATE OF CORRECTION.

Patent No. 1,790,453. Granted January 27, 1931, to

GEORGE G. ANDERSON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 27, before the word "ends" insert the word lug; page 4, line 94, claim 12, after the word "positioning" insert the words each of; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of March, A. D. 1931.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)