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L. E. BROUGHAM

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SORTING MACHINE FOR STATISTICAL CARDS OR THE LIKE

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3 Sheets-Sheet 2

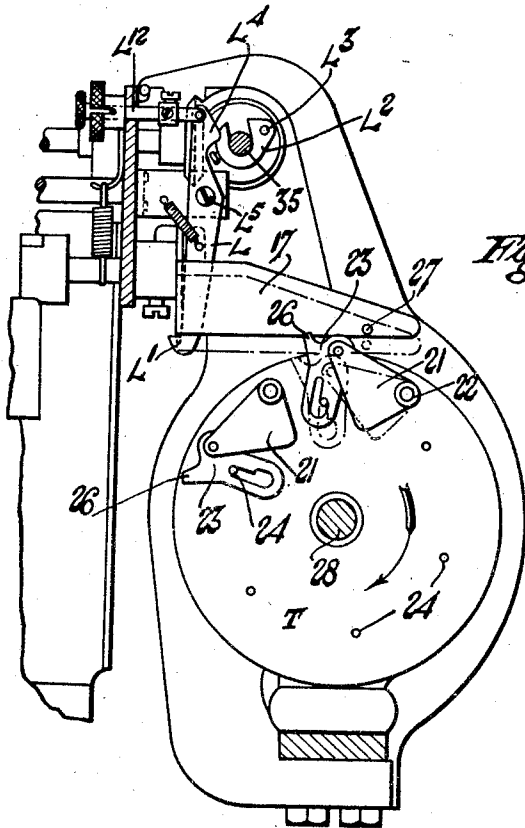
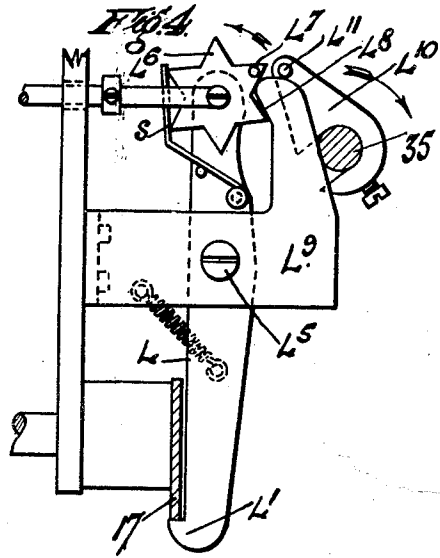
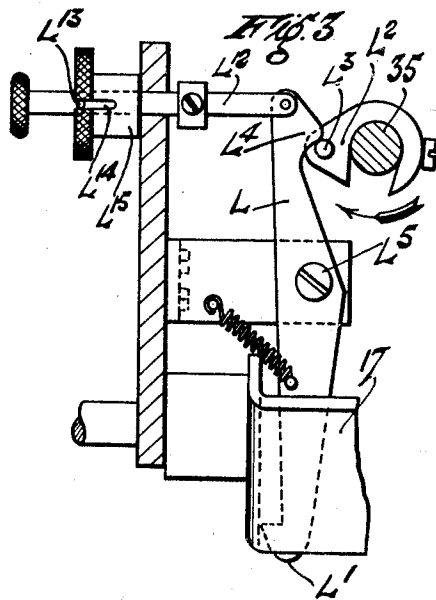
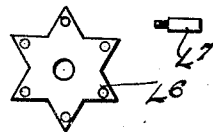


Fig. 2.

Fig. 7.



Inventor:
LESLIE ERNEST BROUGHAM.
Per: Sydney E. Page.
Attorney.

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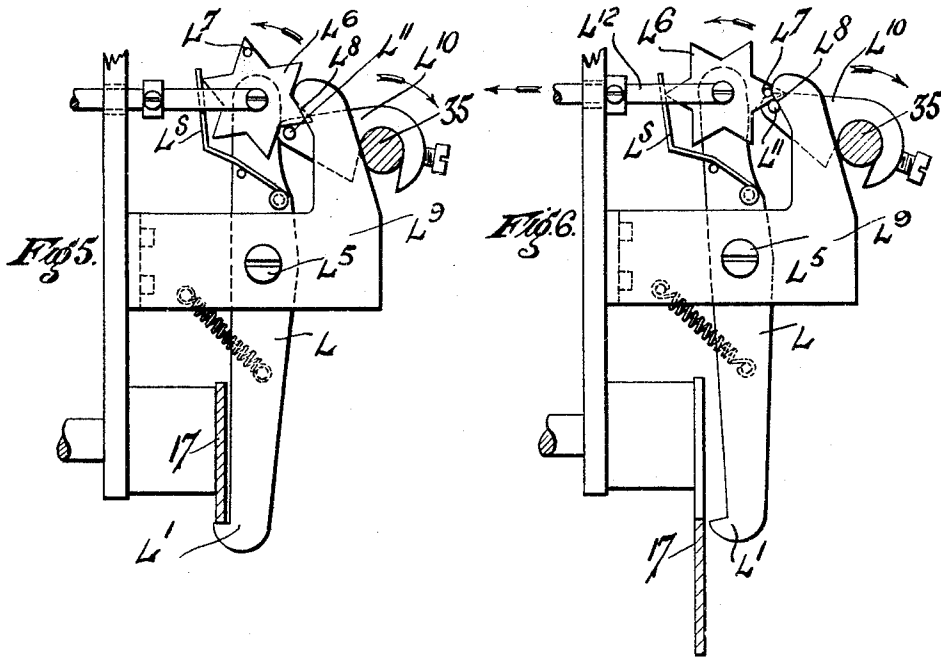
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Inventor:
LESLIE ERNEST BROUGHAM
Per: Sydney E. Page.
Attorney.

UNITED STATES PATENT OFFICE

LESLIE ERNEST BROUGHAM, OF THORNTON HEATH, ENGLAND, ASSIGNOR TO THE ACCOUNTING & TABULATING CORPORATION OF GREAT BRITAIN LIMITED, OF LONDON, ENGLAND

SORTING MACHINE FOR STATISTICAL CARDS OR THE LIKE

Application filed January 10, 1930, Serial No. 419,980, and in Great Britain April 5, 1929.

This invention relates to machines for sorting statistical cards.

Machines for sorting perforated cards of the kind used in automatic accounting and tabulating machines are well known and in such machines the cards are passed from a sensing box into one or another compartment according to the designation of the card.

It has been proposed to delay the opening of the mouth to a compartment according to the distance of the compartment from the sensing box, whereby a continuous stream of cards can pass from the sensing box to the different compartments and a high speed of sorting can be attained.

In some forms of statistical schemes such as for example in dealing with wages, the cards are handled in pairs. For example, each workman may be provided with a deduction card which is made out previously whether the man has worked or not, and bears identification particulars, insurance particulars and deductions which are fixed at a standard rate, and also a wages card is made out which shows the number of hours that have been worked during a week.

It will be seen, therefore that in such schemes there will be deduction cards for every workman and these cards will be associated with wage cards where the man has worked.

When tabulating the particulars on the cards it is desired to have the associated cards together so that the wages and deductions can be printed together one immediately under the other. Accordingly, for this purpose it is necessary to eliminate the deduction cards where no work is being done and yet at the same time to retain the association of deduction cards with wages cards where the workman has worked.

It should be noted that as regards the sorting out of the unpaired deduction cards the deductions cards are functionally non-perforated cards. The deduction cards may, however, be perforated in a particular zone so that they may be automatically brought together with their wages cards by passing them through a sorting machine, that is to say, each of the cards, both deduction and

wage cards, may be punched with the identification number of a particular workman and by this means brought together by passage through a sorting machine when they will be ready for tabulating purposes except for the inclusion of deduction cards where they are not associated with wage cards.

The paired and separate deduction cards are then passed through a sorter as hereinbefore described, the sensing box being arranged so that the passage of the wage cards controls the opening of the compartments whilst the deduction cards are inoperative and merely pass through the machine unless they are passing into a compartment held open by the previous passage of a wage card.

The sorting of cards of such nature in a sorting machine which only operates on the passage of wage cards assures the maintenance of the association of the deduction cards with wage cards where these have been paired.

A sorting machine in accordance with the present invention comprises in combination with sensing pins operating means for selectively rendering available receptacles for the sorted cards, means for prolonging for a predetermined time the period during which any of the said receptacles remain available, whereby a number of associated cards is directed into one and the same receptacle.

Thus the machine may comprise a plurality of compartments of which one or more are opened on the passage of a key card, such as a wage card, and retained open for the passage of the following card such as a deduction card associated with the wage card.

In order that the invention may be more clearly understood reference will now be made by way of example to the accompanying drawings which show by way of example an embodiment of the invention in a sorting machine employing a sensing box including a carriage adjustable on rails marked to correspond to columns on the cards, the carriage carrying as many pins as there are lines in a column and being mounted for reciprocation synchronously with the feeding of the card between two perforated plates, each in-

cluding as may perforations as it is possible to have on a card.

In the accompanying drawings:

Fig. 1 is a diagrammatic pictorial sketch showing only so much of a sorting machine as is necessary to explain the present invention;

Fig. 2 is a sectional elevation through the timing shaft of the machine illustrated in Fig. 1, showing the release means employed according to the invention, the release being shown in operative position.

Fig. 3 is a detail elevation showing the release means detached and to a larger scale, the release being shown in inoperative position.

Fig. 4 is a view similar to Fig. 3 showing a modified arrangement but with the release means operative; and

Figs. 5 and 6 are views similar to Fig. 4 showing the means of timing the retraction of the release means, and

Fig. 7 illustrates a detail.

Referring first to Fig. 1 of the drawings the carriage comprises transverse members 1, 1a, carrying the sensing pins P and the carriage is movable laterally on guides, not shown, so as to bring the pins over a particular column of perforations in the perforated plate 2.

A card C is introduced over the plate 2 by mechanism, not shown, and above the plate 2 is a stripper, also not shown, and which prevents the card being raised when the pins are retracted.

Usually there are twelve sensing pins such as P for sensing the perforations indicated at c on the card C.

On the descent of the carriage the sensing pins P either pass through or are held up by a card, the obstruction of some of the pins by the card causing relative movement between these obstructed pins and the pins which pass through a perforation or perforations in the card, and means, not shown, are provided for locking the pins which pass through the cards so that instead of being merely spring controlled pins they become plungers. Beneath each pin P and below the perforated plate 2 are a series of suitably mounted spring pressed plungers 3, there being one plunger for each sensing pin P on the carriage and beneath each plunger is the end 4 of a wire comprised in a Bowden cable system indicated at B.

Supposing, therefore, that on the descent of the carriage after a card has been passed over a plate 2 the sensing pin P passes through the card, the plunger 3 will be depressed and the corresponding wire of the Bowden system B displaced causing a transmission of the effort to the connected timing element hereafter referred to.

For each sensing pin P on the carriage there is a compartment into which cards sensed by the pin P are directed. One such

compartment is indicated as disposed between the dot and dash lines 5 the mouth of the compartment being covered by flaps conveniently in the form of fingers 6 so that while the finger 6 is in the position shown the mouth of the particular compartment is obstructed and the entry of a card prevented.

The bottom of each compartment is comprised by a plate 7 spring supported as indicated at 8, and comprising a lug 9 which, when a predetermined number of cards have entered the compartment and the latter is thereby filled, the plate 7 being depressed by their weight at the expense of compressing the spring 8, will have reached a lug 10 mounted on a spindle 11 carrying another lug 12 which, on the spindle being rocked by the members 9 and 10 coming together, rocks a lever 13 moving the contact at the end thereof away from a contact on the terminal 14 of an electrical circuit controlling the running of the machine, thereby when any compartment is filled the machine is stopped.

The compartments of the sorting machine are arranged in close succession and the fingers 6 obstructing their mouths about head on tail so that they constitute a substantially continuous path or platform along which a card leaving the sensing box passes.

In the construction shown there will be two lines of fingers 6 extending over the compartments and if they are all in a horizontal position the card leaving the sensing box is gripped by rollers such as 15 operating with counter rollers 16, usually spring pressed thereagainst so that the card is traversed to the end of the machine by the sets of rollers successively, there being at least one set for each compartment as well as a set carrying the card from the sensing box to the first compartment, and bearing in mind that a card is substantially of the length of a compartment it will be apparent that throughout the traverse of the card through the machine it is being continually pressed forward by sets of rollers such as 15 and 16.

Now, in order to direct a card into a compartment corresponding to a particular sensing pin P passing through the card, the cable B connected to the sensing pin is connected through timing gear including a disc T by the agency of which gear a cranked arm 17 is bodily lifted thereby rocking a shaft 18 to which is fixed by means of blocks 19 the fingers 6 so that the operation initiated by the passage of a sensing pin P through a card causes the respective arm 17 to be raised and consequently the fingers 6. Thereby a card leaving the fingers over the preceding compartment passes under such lifted fingers 6 and falls into the compartment.

There being a plurality of compartments each successively further away from the sensing box, it is necessary to introduce timing gear for each compartment in order to allow

for the time taken in travelling by the card to the respective compartment of which the fingers 6 are lifted for the reception of the sensed card.

The timing gear for each arm 17 includes a plunger, not shown, actuated through the bell crank 20 rocked by the Bowden mechanism B. This plunger stands in the path of plates such as 21 of which there may be six on the disc T (but one only is completely shown in each disc T illustrated) equally spaced in a circle therearound, each such cam plate 21 being pivoted as at 22 and carrying a link 23 movable over a pin 24 carried by the disc.

In the drawings two such discs T are shown and on the portion of the front disc T the cam plate and its links is shown in quiescent position and during the rotation of the disc of the timing gear passes under the respective arm 17 without lifting it, but when the Bowden mechanism has been operated by the passage of a pin P through a card and the cam plate 21 tripped, the link is raised and stands in position to abut against and raise the arm 17 as indicated by the illustration of the cam plate and link in operative condition on the rear disc T.

On the hinged connection between plate 21 and the link 23 is mounted a roller 25 which constitutes the contacting surface of the timing gear for the arm 17, accordingly, therefore, the link 23 is spaced in front of the arm 17. The reason for this being that it is required to retract the members 21 and 23 immediately after they have operated so that they can be again reset on the next passage of the pin P through a card. To this end each link 23 is provided with a trip finger 26 which as the disc T rotates strikes a pin 27 towards the extremity of the arm 17, thereby the link 23 is moved on its hinged connection with the plate 21 and is free to slide back on the pin 24 of the disc T to quiescent position.

As the discs T are required to operate synchronously with the carriage in the sensing box it is convenient to mount the discs T on a shaft 28 conveniently referred to as the timing shaft driven from the gearing reciprocating the carriage, and conveniently the shaft is carried in bearings 29 comprised in supports 30 suitably carried on longitudinal members 31 on the machine and which extend upwardly to form bearings indicated at 32 for the shaft 18 before referred to of the fingers 6.

Each bearing 29 is preferably disposed so as to be utilized for carrying a web member 33 from which depends a support 34 for the bell crank 20 operating the plunger which will pass through the web 33 and when projected stands in the path of the plates 21 of the timing gear.

The sets of rollers 15 are also driven synchronously with the feeding of the cards to

the machine and these rollers preferably are driven from a shaft 35, conveniently referred to as a carry roll driving shaft, carrying bevels 36 which drive bevels 37 on the axle 38 of the rollers 15.

By such an arrangement the card is positively pushed through the machine at a predetermined rate and the fingers 6 are lifted at a predetermined moment corresponding to their distance from the sensing box, whilst the passage of the sensing pin through a card determines which of the sets of fingers is to be operated.

In order that the machine shall work as quickly as possible in sorting cards it will be evident that the timing gear must operate correctly for lifting the fingers 6 only at the right moment for the reception of a card, that is to say just before the card is reaching a compartment and also close them again so that the succeeding card can pass over the compartment.

In such manner a stack of cards each perforated and permitting the passage of one or other pin P causes successive movements of the fingers 6 and an opening and closing of the respective compartments for the reception of cards whereby a continuous train of cards may pass through the machine.

Now, as hereinbefore indicated, it occurs that it is sometimes necessary to sort cards which are associated with cards which are not perforated and in accordance with the present invention the sorting machine is modified so that there are means for delaying the fall of the flaps so that a compartment can receive one or more paired cards with a perforating controlling card, for example one or more deduction cards following a perforated wage card, the latter causing the opening of the flap to a particular compartment and each flap is retained open according to the invention so that the paired deduction cards can follow the operative or what may be termed key card.

In accordance with one form of the invention there is provided on the side of the machine a spring pressed latch L comprising a hook L' which, when the arm 17 is raised, passes under the arm and holds it in raised position; the period of lift may vary and is determined according to the number of following cards and conveniently the retraction of the latch to permit release of the arm after the passage of one follower card is effected by cams L² clearly shown in Fig. 3 mounted on the carry roll shaft 35, each cam L² being provided with a pin L³ which engages the head L⁴ of the latch L and pushes it back about its pivot L⁵ causing the retraction of the hook L' of the latch and consequently the release of the arm 17 which is then permitted to fall.

The cams L² are adjustably set on the carry roll shaft 35 so that they operate after

correct elapse of time from the lifting of the respective arm 17 through the agency of the timing gear.

Fig. 2 clearly shows the latch engaged under an arm 17 and holding it in raised position, and the timing gear travelling under the arm towards the trip pin 27 on the arm and the cam L^2 inoperative as regards the latch, but disposed to cause retraction of the hook L^1 after the completion of the next revolution of the shaft 35 during which the follower card will pass into the respective compartment.

Fig. 3 shows the cam L^2 after it has passed through an angle equivalent to the period of time permitted to elapse for the passage of a follower card and having engaged the head L^4 of the latch causing it to be retracted and the arm 17 fallen to normal position. It may here be mentioned that the tails of the fingers 6 are cranked and abut against the rear wall of the compartment and accordingly, therefore, limit the rocking movement of the shaft 18 and consequently hold the arm 17 in horizontal position just clear of the timing gear.

Instead of the latch engaging the arm 17 it may be arranged to engage a lug on the shaft 18. In mounting the cam on the carry roll shaft 35 it is easy to adjust the position of the cam for the release of the arm 17 because the carry roll shaft makes one revolution for each card passing through the sensing box.

The construction just described is in view of the gearing to shaft 35 operable only for keeping a compartment open for the passage of one follower card and if it is desired to make such construction operable for allowing two or more follower cards to pass into a compartment then it is necessary to vary the gearing in the drive to the shaft 35 so that its speed is reduced in inverse ratio to the number of cards required to follow.

The invention comprises a means which is more simple than changing the gearing of the shaft 35 to vary the operation of the latch and this is disclosed in the construction indicated in Figs. 4 to 6.

In this arrangement instead of providing the latch L with a head L^4 to be engaged by a cam L^2 the latch, preferably the head, is provided with a star wheel L^6 having preferably as many points as there are cards in a group considering the group of cards to be the wage card which is perforated to operate the Bowden mechanism B and the associated follower cards.

In the construction shown the star is shown in six points. It will, therefore, operate to permit of five follower cards after the flap has been raised and the compartment opened as a result of the associated wage card passing through the sensing box.

The star wheel is operated conveniently from the carry roll shaft 35 so that the star

wheel is moved one step as each card passes through the sensing box, hence the star wheel will make a complete revolution when a group of cards has passed through the sensing box.

The star wheel is provided with a pin L^7 extending laterally and adapted to pass up a cam face L^8 on a bracket L^9 fixed to the side frame of the machine, and arranged so that when the pin L^7 is forced against the cam face L^8 the latch member is forced away from the bracket member causing a retraction of the hooked end L^1 of the latch.

A spring L^5 maintains a precise movement of the star wheel in accordance with the actuation effected from the arm L^{10} which is mounted on the shaft 35 and carries a pin L^{11} which engages successively the points of the star as it revolves.

In Fig. 4 the parts are shown in the position they attain as a result of the first card of a group passing through the sensing box and causing the arm 17 to be raised and the compartment opened.

The arm 17 being raised the latch L^1 jumps under as heretofore explained and thereby the compartment is retained open.

During the next four revolutions of the shaft 35 the star wheel is rotated but is only an idle member because the pin L^7 is out of engagement with the cam face L^8 and such intermediary position is shown in Fig. 5.

As, however, the last follower card passes from the compartment the arm L^{10} on the shaft 35 moves the star wheel so that its pin moves up against the cam face L^8 causing a retraction of the pin of the star wheel from the cam face and a corresponding movement of the hooked end of the latch so that the arm 17 is free and the compartment closed.

As shown the arm L^{10} on the shaft 35 is adjustably carried to facilitate the setting of the arm L^{10} with regard to the star wheel L^6 .

In a further modification permitting variation in the operation of the device, in other words, a variation of the period during which a compartment is held open, the star wheel L^6 may be tapped on each point for the reception of a screwed pin as indicated in Fig. 7.

In such arrangement the star wheel may be provided with a plurality of pins, for example, three, in which case a corresponding reduction will take place in the number of following cards which will pass into a compartment before the compartment is closed.

It may be required to use the sorting machine in normal manner and to this end means are provided for withdrawing the latch from operative position.

To this end the head of the latch is connected to a rod L^{12} which is provided with a pin L^{13} sliding in a slot L^{14} of a ring-like distance piece L^{15} . To withdraw the latch the rod L^{12} is drawn backwards until the pin L^{13} is clear of the slot and the ring-like dis-

tance piece is then rotated so that the pin overlies the head thereof and it is prevented from returning under the influence of the spring on the latch.

Although the application of the invention involving the delay means for the sorting compartments has been described in relation to the treatment of wages and deduction cards the delay mechanism may be employed for the sorting out of any form of key card associated with following cards and it is only necessary to alter the operation of the latch mechanism to assure that the following cards all enter the compartment opened by the passage of the key card, that is to say, that mechanism according to the invention provides a means of dealing with any form of statistical cards where in fact it is desirable to sort out small packs out of a stack although generally speaking a pack will only consist of two or three cards.

The delay means herein described for return of the movements of flaps of sorting machines comprising a plurality of compartments has one embodiment only of the invention involving means for delaying the closure of the compartment and the invention is applicable broadly to any type of sorting machine where the fingers covering the compartments extend over the respective compartments or extend in overlapped relation to the sensing box.

In the latter case latch means may be provided in accordance with the invention for retarding the fall of the flaps after they have been operated so as to form the mouth or opening to the compartment thereby retaining the mouth open for the passage of the non-perforated cards.

Further, it will be noted that a sorting machine according to the invention need comprise but one compartment only, viz. that provided with the delay means preventing closing the mouth of the compartment so that the deduction cards can follow the paired wages cards when the flap of a compartment has been opened by the passage of a perforated wages card through the sensing box, whereas the deduction cards passing through and not paired simply pass over the compartment into a receptacle of any suitable form.

In such form of construction a disc such as T is employed with only one cam plate 21 and link 23 and the shaft on which the disc is mounted has to be geared to the carriage reciprocating mechanism so that the disc makes one revolution for each carriage reciprocation. In such arrangement the trip gear so formed will be available for the passage of every card whilst the delay mechanism employed will permit it to remain open for the passage of a predetermined number of cards.

What I claim is:

1. In a machine for sorting statistical cards the combination of a plurality of sensing pins sensing perforations on a card, a plurality of compartments corresponding to the flaps disposed at the mouths of said compartments, means whereby said flaps are controlled in synchronism with the passage of cards under the pins, a latch for each flap adapted to hold said flap in a position to deflect the cards into the corresponding compartment, and release means adapted to remove the latch after a predetermined interval.

2. In a machine for sorting statistical cards the combination of a plurality of sensing pins sensing perforations on a card, a plurality of compartments corresponding to the pins for the reception of the sorted cards, flaps disposed at the mouths of said compartments, operating arms for said flaps adapted to be moved in synchronism with the passage of the cards under the pins, a latch for each flap adapted to engage the respective operating arm and hold the flap in a position to deflect the cards into the corresponding compartment, cam gear for releasing the latches after a predetermined interval, actuating means for the sensing pins and an operative connection between the cam gear and said actuating means.

3. In a machine for sorting statistical cards the combination of a plurality of sensing pins sensing perforations on a card, a plurality of compartments corresponding to the pins for the reception of the sorted cards, flaps disposed at the mouths of said compartments, means whereby said flaps are controlled in synchronism with the passage of cards under the pins, a latch for each flap adapted to hold said flap in a position to deflect the cards into the corresponding compartment, a cam member on each latch, a star wheel, and at least one lateral projection on said star wheel adapted to engage with said cam member and retract the latch, the projections being spaced according to the time interval required before the latch is released.

4. In a machine for sorting statistical cards having a plurality of reciprocating sensing pins sensing perforations in a card and a plurality of compartments corresponding to the pins for the reception of the sorted cards, the combination of a flap individual to each compartment and controlling the mouth thereof, a disc individual to each flap adapted to rotate in synchronism with the reciprocations of the pins, an operating arm for each flap, trip gear carried on each disc and adapted to engage said arm whereby the flap is opened, a plunger adjacent each disc, an operative connection between said plunger and the pin associated with said disc, whereby when said pin passes through a hole in

a card the plunger is protruded into the path of the trip gear whereby said trip is set to actuate the flap operating arm, said plunger being spaced relatively to the flap operating arm so that the opening of the flap is delayed in accordance with the position of the compartment in the machine, and retaining means adapted to delay the closing of the flap during the passage of predetermined numbers of cards under the pins.

5. In a machine for sorting statistical cards having a plurality of reciprocating sensing pins sensing perforations in a card and a plurality of compartments corresponding to the pins for the reception of the sorted cards, the combination of a flap individual to each compartment and controlling the mouth thereof, a disc individual to each flap adapted to rotate in synchronism with the reciprocations of the pins, an operating arm for each flap, trip gear carried on each disc and adapted to engage said arm whereby the flap is opened, a plunger adjacent each disc, an operative connection between said plunger and the pin associated with said disc, whereby when said pin passes through a hole in a card the plunger is protruded into the path of the trip gear whereby said trip is set to actuate the flap operating arm, said plunger being spaced relatively to the flap operating arm so that the opening of the flap is delayed in accordance with the position of the compartment in the machine, a latch for each flap adapted to engage the respective operating arm and hold the flap in the open position, a fixed cam member for each latch, a star wheel mounted on each latch, means for moving the star wheel one step for each card that passes through the machine, at least one lateral projection on said star wheel adapted to engage with said cam member and retract the latch, the projections being spaced according to the time interval required before the latch is released.

6. In a machine for sorting statistical cards the combination of a plurality of sensing pins sensing perforations on a card, a plurality of compartments corresponding to the pins for the reception of the sorted cards, means for controlling the mouths of said compartments, means for operating said controlling means synchronously with the passage of cards under the pins, retaining means adapted to delay the closing of the mouth during the passage of predetermined numbers of cards under the pins, a slidable rod, a distance piece associated with said rod, a pin on said rod adapted to engage with said distance piece and hold the rod in retracted position, and an operative connection between said rod and the retaining means whereby when the rod is in retracted position the retaining means is rendered inoperative.

7. In a machine for sorting statistical cards having a plurality of reciprocating

sensing pins sensing perforations in a card and a plurality of compartments corresponding to the pins for the reception of the sorted cards, the combination of a flap individual to each compartment and controlling the mouth thereof, a disc individual to each flap adapted to rotate in synchronism with the reciprocations of the pins, an operating arm for each flap, trip gear carried on each disc and adapted to engage said arm whereby the flap is opened, a plunger adjacent each disc, an operative connection between said plunger and the pin associated with said disc, whereby when said pin passes through a hole in a card the plunger is protruded into the path of the trip gear whereby said trip is set to actuate the flap operating arm, said plunger being spaced relatively to the flap operating arm so that the opening of the flap is delayed in accordance with the position of the compartment in the machine, a latch for each flap adapted to engage the respective operating arm and hold the flap in the open position, a fixed cam member for each latch, a star wheel mounted on each latch, means for moving the star wheel one step for each card that passes through the machine, at least one lateral projection on said star wheel adapted to engage with said cam member and retract the latch, the projections being spaced according to the time interval required before the latch is released, and means for rendering said latches inoperative at will.

8. In a machine for sorting statistical cards having a plurality of reciprocating sensing pins sensing perforations in a card and a plurality of compartments corresponding to the pins for the reception of the sorted cards, the combination of a flap individual to each compartment and controlling the mouth thereof, a disc individual to each flap adapted to rotate in synchronism with the reciprocations of the pins, an operating arm for each flap, trip gear carried on each disc and adapted to engage said arm whereby the flap is opened, a plunger adjacent each disc, an operative connection between said plunger and the pin associated with said disc, whereby when said pin passes through a hole in a card the plunger is protruded into the path of the trip gear whereby said trip is set to actuate the flap operating arm, said plunger being spaced relatively to the flap operating arm so that the opening of the flap is delayed in accordance with the position of the compartment in the machine, a latch for each flap adapted to engage the respective operating arm and hold the flap in the open position, a fixed member for each latch, a star wheel mounted on each latch, means for moving the star wheel one step for each card that passes through the machine, at least one lateral projection on said star wheel adapted to engage with said

cam member and retract the latch, the projections being spaced according to the time interval required before the latch is released, a slidable rod, a distance piece associated with said rod, a pin on said rod adapted to engage with said distance piece and hold the rod in retracted position, and an operative connection between said rod and the latch whereby when the rod is in retracted position the latch is rendered inoperative.

9. In a machine for sorting statistical cards the combination of a plurality of sensing pins sensing perforations on a card, a plurality of compartments corresponding to the pins for the reception of the sorted cards, flaps disposed at the mouths of said compartments, operating arms for said flaps adapted to be moved in synchronism with the passage of the cards under the pins, a latch for each flap adapted to engage the respective operating arm and hold the flap in a position to deflect the cards into the corresponding compartment, cam gear for releasing the latches after a predetermined interval, actuating means for the sensing pins, an operative connection between the cam gear and said actuating means, and means for rendering said latches inoperative at will.

10. In a machine for sorting statistical cards the combination of a plurality of sensing pins sensing perforations on a card, a plurality of compartments corresponding to the pins for the reception of the sorted cards, flaps disposed at the mouths of said compartments, means whereby said flaps are controlled in synchronism with the passage of cards under the pins, a latch for each flap adapted to hold said flap in a position so that the cards are deflected into the corresponding compartment, release means adapted to remove the latch after a predetermined interval and means for selectively controlling said releasing means so as to permit of variation of the interval of removal of the latch whereby the number of cards delivered into one and the same receptacle may be varied as desired.

In testimony whereof I affix my signature.
LESLIE ERNEST BROUGHAM.

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