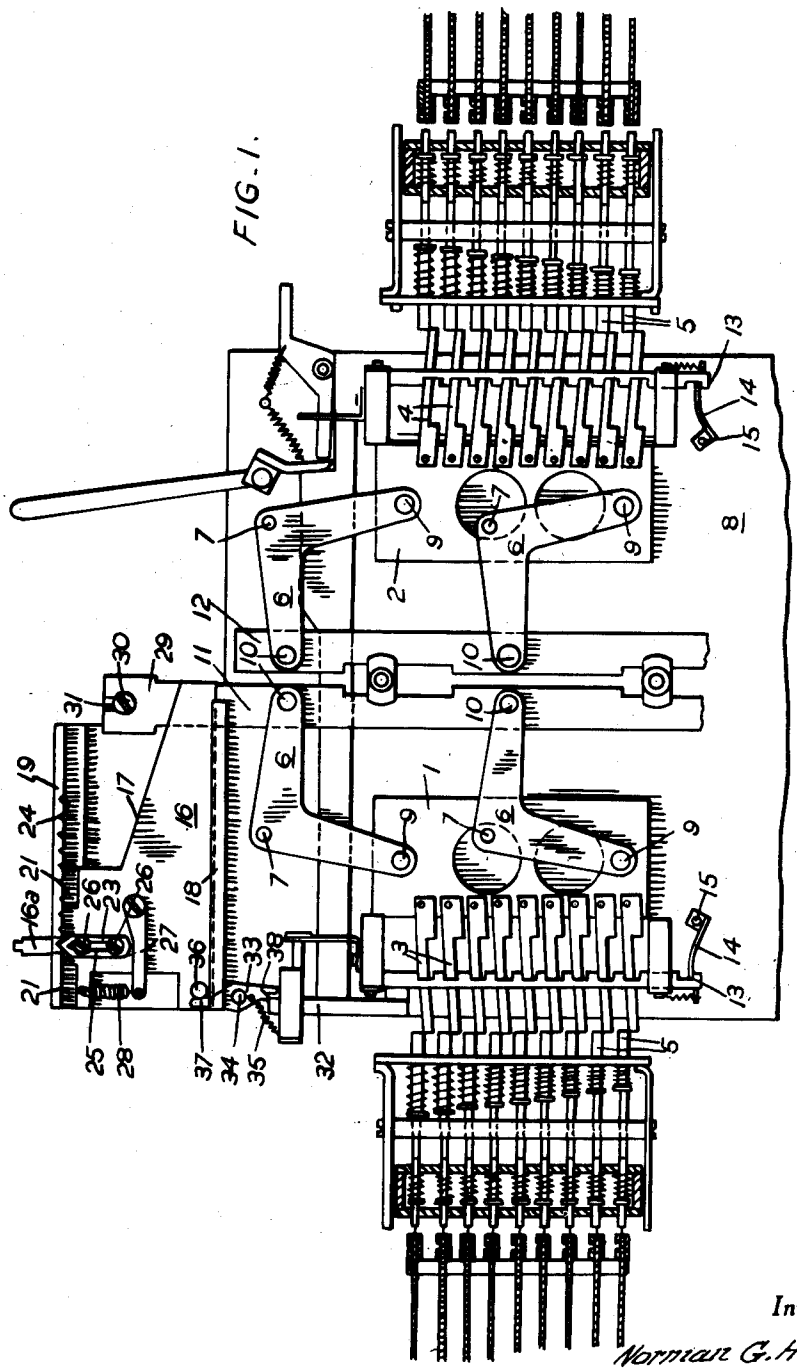
Dec. 30, 1952 N. G. HOLDEN 2,623,693

SENSING MEANS FOR RECORD CONTROLLED SORTING MACHINES

Filed Aug. 1, 1950 2 SHEETS—SHEET 1

FIG. 1.



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FIG. 2.

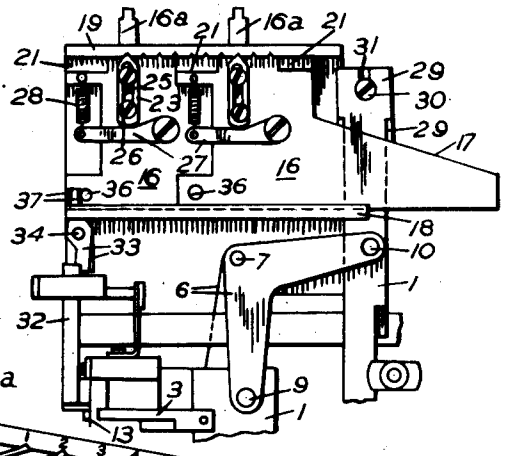
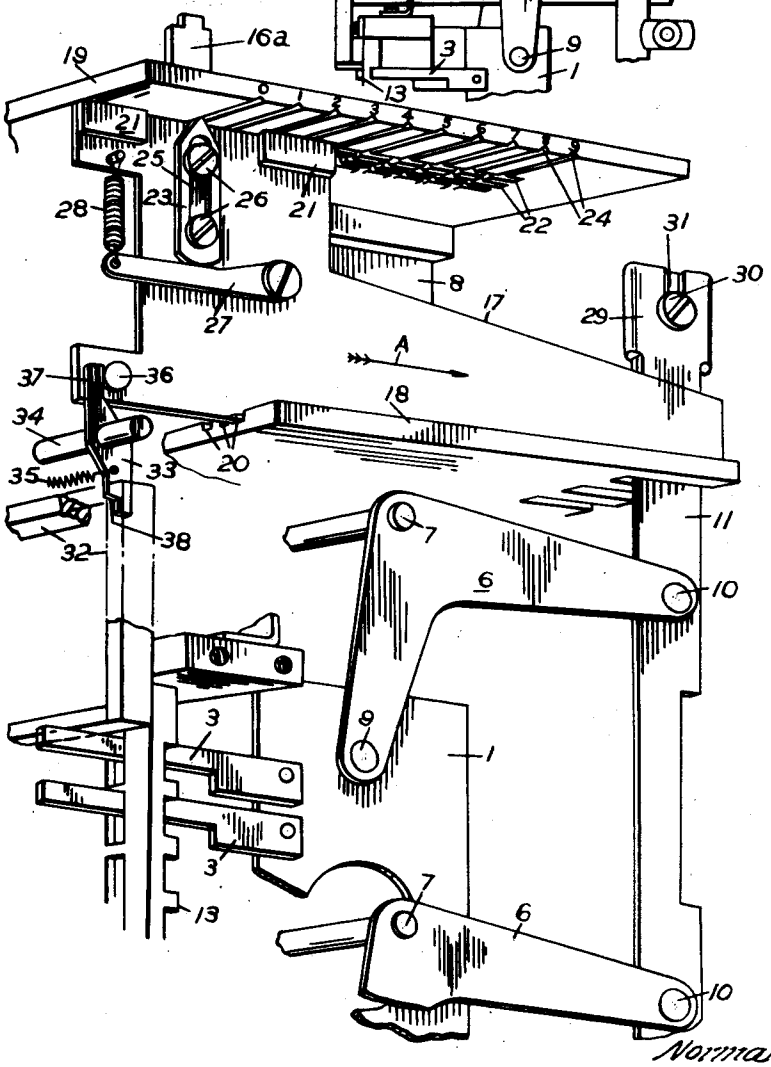


FIG. 3.



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SENSING MEANS FOR RECORD CONTROLLED SORTING MACHINES

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5 Claims. (Cl. 235—61.11)

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This invention relates to record controlled sorting machines and in particular to a sorting machine in which the records are sorted according to a comparison of data recorded on pairs of record cards.

In machines for sorting perforated record cards sorting is sometimes effected by positioning and retaining a master card in a sensing position and feeding secondary cards to be compared therewith seriatim to a second sensing position. The master card and a card to be compared therewith are sensed simultaneously by sensing pins which pass through the perforations in the cards and the sensed data, usually a combination of figures is automatically set up in a comparing unit which determines the position to which the secondary card is delivered on being released from the position at which it is sensed. Usually a considerable number of secondary cards is compared with the master card and this entails the passage of the sensing pins through the perforations in the master card during each sensing operation in which a secondary card is compared therewith with the result that the perforations in the master card tend ultimately to become deformed.

It is an object of the invention to provide means whereby a master setting can be manually set in one part of a comparing unit and contained therein while the other part of a unit is settable automatically as a result of the sensing of secondary cards in the usual manner, thus avoiding the use of master cards.

According to the invention there is provided in a sorting machine including a device for comparing data automatically settable in two columns of differentially settable registering elements such as racks or slides, apparatus comprising manually operable means associated with one of the said columns to render ineffective the automatic setting of the respective registering elements and permit the manual setting of these elements.

In order that the invention may be more clearly understood an embodiment thereof will now be described, by way of example, with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a front elevation of apparatus according to the invention,

Figure 2 shows a part of the apparatus shown in Figure 1 with certain of the elements in different positions from that shown in Figure 1, and

Figure 3 is a perspective view to an enlarged scale of a part of the apparatus shown in Figure 1.

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Referring to the drawings, the registering unit shown therein comprises two plates 1 and 2 to which differential movements are to be imparted representing the digits to be registered as a result of automatic operation resulting from sensing of a master and a secondary card respectively.

The automatic movement of the plates 1 and 2 is effected by fingers 3 and 4 pivoted on the plates 1 and 2 the fingers 3 and 4 actuated by actuator pins 5 in the manner described in United Kingdom patent specification No. 597,492. Bell-crank levers 6 are pivoted at 7 to a frame 8 one arm of each bell-crank being pivotally connected at 9 to a plate 1 or 2. The other arm of each bell-crank is pivotally connected at 10 to registering elements 11 and 12, these elements being shown in the drawings as vertically reciprocable slides.

Although in the present description only one pair of slides 11 and 12 are described one being adapted to operate each side of the comparator unit, not shown, it is to be understood that the registering elements each comprise a unitary slide 11 and 12, in a column of slides disposed one behind the other. Each of the slides in a column is actuated by pins 5, fingers 3, plate 1 or 2 and bell-cranks 6 as described above. Thus if, for example, a column is to accommodate a six figure number, six slides will be provided therefor. For simplicity herein reference will be made only to one pair of slides as the operation of all of the pairs of slides associated with the comparator unit will be similar.

Each set of fingers 3 and 4 is controlled by a reciprocable shutter 13 operable at each cycle of the machine by a bar 14 mounted on a rock shaft 15. The shaft 15 is rocked by any suitable mechanism, not shown.

As shown in Figure 1 both sides of the registering mechanism are adapted for automatic operation under the control of the machine to which the apparatus is fitted but the registering elements 11 on the left-hand side of the unit have associated therewith a device whereby the automatic operation thereof may be rendered ineffective and the elements set up manually to retain a number in the comparator unit while the registering elements at the righthand side of the apparatus continue to be automatically operated as the result of sensing secondary cards. The means whereby the registering elements 11 are set manually and the automatic

operation of the device rendered ineffective will now be described.

The manual setting of a registering element 11 is effected by an adjusting element 16 having a sloping face 17. The adjusting element 16 is flat and is mounted between two plates 18 and 19, the lower edges of the cam sliding in grooves 20, Figure 3, formed in the plate 18. Projecting from the upper edge of the adjusting element 16 is a handle 16a by which the adjusting element is manually set. The handle 16a passes through a slot 22 in the plate 19, the slot being of a length such as to permit the required lengthwise movement of the adjusting element during setting thereof. To prevent the adjusting element 16 from tipping sideways or rising from its guide groove 20 in plate 18, two small plates 21 are secured to the adjusting element 16 and slide on the undersurface of the plate 19.

Mounted on the adjusting element 16 is a detent 23 having a V-shaped upper edge to register in V-shaped notches 24 formed in the undersurface of the plate 19. The detent 23 is provided with a slot 25 and the detent is slidable lengthwise on shanks formed on screws 26 screwed into the adjusting element 16 through the slot 25. The bottom of the detent 23 is engaged by a pivoted lever 27 urged by a spring 28 towards plate 19. Thus, as the adjusting element 16 is moved lengthwise beneath the plate 19 the detent 23 ratchets past the V-notches 24 until the desired position of the register is reached when the detent registers in the notch provided at this position.

A sleeve like member 29 fitted round the upper portion of the registering element 11 is secured thereto by a screw 30, and forms on the registering element an abutment which is engaged by the adjusting element 16. The member 29 is provided with a slot 31 to permit the member to be adjusted to compensate for wear or during initial setting of the apparatus. As can be seen from Figure 3, the plate 19 is provided with ten notches 24 representing positions of register for the digits 0 to 9 and the registering element 11 is adjusted vertically to differential positions corresponding to these digits. When the adjusting element 16 is inactive it occupies the position shown in Fig. 1, in which it is retained by the detent 23 in the "0" position. As shown in Fig. 1 the registering element 11 is also occupying its "0" position.

When the apparatus is being operated automatically the reciprocable shutter 13 is, as stated above, reciprocated at each cycle of the machine and it is, therefore necessary to render the shutter ineffective when the apparatus has been set manually to retain a number in the left-hand side of the unit. To this end a catch shown as a bar 32 is movable with the shutter 13 and a latch 33 to co-operate with the catch 32 is pivotally mounted on a spindle 34 secured in the frame 8. The latch 33 is urged by a spring 35 towards the catch 32 but when the adjusting element 16 is in the zero position as shown in Figures 1 and 3 a pin 36 extending laterally therefrom engages a tail 37 on the latch 33 and retains the latch out of latching engagement with the catch 32. The catch 32 moves up and down with the shutter 13 and when, the adjusting element 16 is moved from the zero position, in the direction of the arrow A, Figure 3, the pin 36 is moved away from the tail 37 so that on the next downward movement of the shutter 13 the spring 35 causes the latch 33 to rotate clockwise to move the latching face 38 thereof into the path of the catch 32 thereby preventing the shutter from again rising. The shutter is therefore rendered ineffective and although during subsequent cycles the shaft 15 is rocked the shutter is not operated. Accordingly the setting which has been manually effected to the registering elements 11 at the left-hand side of the unit remains effective until the adjusting elements are restored to their normal zero position, or inactive position. During movement of the adjusting element 16 to its inactive position the pin 36 acts as a trip member to release the latch 33 from the catch 32 thus causing the shutter again to be released and thereby rendered effective.

While the apparatus is set with a manual setting the master number which is set up in the left-hand side of the comparator unit by the manually set adjusting elements is compared with the successive numbers set up in the right-hand side of the comparator unit by the registering elements 12 as a result of sensing operations on secondary cards.

It will be seen, therefore, that a machine fitted with apparatus according to the invention can operate automatically in normal manner, or when secondary cards are to be compared against a single master number, the master number can be manually set up in one side of the comparator unit and retained therein thus obviating the necessity of employing a master card.

I claim:

1. In a sorting machine having a column of differentially settable registering elements, impulse transmitting means for automatically effecting setting of the registering elements in the column under control of statistical records, and cyclically operable means permitting impulses from said transmitting means to be transmitted to the registering elements, a manually operable adjusting element for each registering element of said column to effect setting of the registering elements, and interrupter means between said adjusting elements and cyclically operable means, said interrupter means on operation of an adjusting element to effect setting of a registering element being interposed thereby in the path of said cyclically operable means to prevent the cyclic operation thereof and so prevent automatic setting of the registering elements by the impulse transmitting means therefor.

2. In a sorting machine having a column of differentially settable registering elements, impulse transmitting means for automatically effecting setting of the registering elements in the column under control of statistical records, and cyclically operable means permitting impulses from said transmitting means to be transmitted to the registering elements, a manually operable adjusting element for each registering element of said column, guides between which the adjusting elements are independently movable from a datum position to any one of a number of selected positions of register to effect setting of the registering elements, interrupter means between said adjusting elements and cyclically operable means, trip means movable with each said adjusting element to move the interrupter means out of the path of said cyclically operable means and to retain them out of said path when the adjusting elements are in their datum positions, and means to move said interrupter means into the path of the cyclically operable means on movement of the adjusting

elements from datum position to prevent the cyclic operation of the cyclically operable means and so prevent automatic setting of the registering elements by the impulse transmitting means therefor.

3. In a sorting machine having a column of differentially settable registering elements, impulse transmitting means for automatically effecting setting of the registering elements in the column under control of statistical records, and cyclically operable means permitting impulses from said transmitting means to be transmitted to the registering elements, a manually operable adjusting element for each registering element of said column, guides between which the adjusting elements are independently movable from a datum position to any one of a number of selected positions of register to effect setting of the registering elements, a catch movable with said cyclically operable means, latches pivoted between said adjusting elements and catch and spring-urged towards said catch for latching engagement therewith to prevent cyclic operation of the cyclically operable means and so prevent automatic setting of the registering elements by the impulse transmitting means therefor, and trip means movable with each said adjusting element to move the latches out of the path of said catch and to retain them out of said path when the adjusting elements are in their datum positions.

4. In a sorting machine having a column of differentially settable registering elements, impulse transmitting means for automatically effecting setting of the registering elements in the column under control of statistical records, and cyclically operable means permitting impulses from said transmitting means to be transmitted to the registering elements, an abutment on each registering element of said column, a manually operable adjusting element for engagement by each said abutment to effect manual setting of its registering element, guides between which the adjusting elements are independently movable from a datum position to any one of a number of selected positions of register to effect setting of the registering elements, interrupter means between said adjusting elements and cyclically operable means, trip means movable with each said adjusting element to move the interrupter means out of the path of said cyclically operable means and to retain them out of said path when the adjusting elements are in their datum positions, and means to move said interrupter means into the path of the cyclically operable means on movement of the adjusting elements from datum position to prevent the cyclic operation of the cyclically operable means and so prevent automatic setting of the registering elements by the impulse transmitting means therefor.

5. In a sorting machine having a column of differentially settable registering elements, impulse transmitting means for automatically effecting setting of the registering elements in the column under control of statistical records, and cyclically operable means permitting impulses from said transmitting means to be transmitted to the registering elements, a manually operable adjusting element for each registering element of said column, guides between which the adjusting elements are independently movable from a datum position to any one of a number of selected positions of register to effect setting of the registering elements, notches formed in one of said guides to determine positions of register for said adjusting elements, a detent movable with and relative to each said adjusting element in directions towards and away from said notches, a spring-controlled lever pivoted on each said adjusting element to engage and urge the detents into said notches while permitting the detents to ratchet past the notches during movement of the adjusting elements, interrupter means between said adjusting elements and cyclically operable means, trip means movable with each said adjusting element to move the interrupter means out of the path of said cyclically operable means and to retain them out of said path when the adjusting elements are in their datum positions, and means to move said interrupter means into the path of the cyclically operable means on movement of the adjusting elements from datum position to prevent the cyclic operation of the cyclically operable means and so prevent automatic setting of the registering elements by the impulse transmitting means therefor.

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