REF ID:A6[illegible] Confident

(May 22, 1936)

IN THE UNITED STATES PATENT OFFICE

In re application of
Wm. F. Friedman and
Frank B. Rowlett
Serial No. 36,868,
Filed Aug. 19, 1935,
System for Randomizing The Relations
Of Electrical Circuits

Div. 48, Room 5731

Hon. Commissioner of Patents,

Sir:

Responsive to Patent Office Action dated Nov. 23, 1935.

Change the title of the invention to read - - Electrical Switching Mechanism - -

The first two paragraphs on page 2 of the specification, comprising the first seven lines, are cancelled and restated as follows :

- - This invention relates to a switching mechanism and proposes a mechanism of this character for automatically establishing and/ or varying circuit connections in a random order.

As distinguished from the idea of performing switching operations in an orderly sequence, the present invention contemplates an opposite function and provides means to vary the circuit connections in an irregular, aperiodic or fortuitous manner. The invention contemplates an operation which affords opportunity for the laws of probability to function in establishing the variation in circuit connections, rather than an operation controlled by the usual laws of direct cause and effect. - - -

Declassified and approved for release by NSA on 09-05-2013 pursuant to E.O. 13526

The last paragraph of page 2 of the specification is cancelled and in lieu thereof it is desired to substitute the following :

- - A further object of the invention is to provide a device in the nature of a fortuitously-operated device for selecting from a large assortment of punched cards, a random sample.

A further object of the invention is to provide a device in the nature of a scrambling device for arranging in a purely random sequence, a large number of punched cards originally arranged according to a definite sequence, such as an alphabetical or numerical sequence. For example, in the well-known card-sorting machines employed in accounting or statistical work, the function of the machine is to arrange a large number of punched cards in a sequential order, such as alphabetical or numerical. In certain types of operations with punched cards it is often necessary to disarrange the cards so as to destroy the original sequential order and bring the cards into a purely random order. However, once a large number of cards has been sequentially arranged, any attempts to destroy the arrangement by shuffling the cards would be extremely tedious and many cards would be damaged. In the present invention, the device if operated in connection with an ordinary card-sorting machine, would permit, of placing a sequentially -ordered batch of cards in the machine and taking out of it a purely fortuitously-ordered batch of cards. - - -

Page 4, line 10, after " rotates." Insert the following :

-- The commutator assembly which essentially comprises commutator 18 and its associated parts, including contact wheel 19, may be regarded as one component of a switching device, while switch arm 30 carrying brush 31 may be regarded as the other component of said switching device. --

Page 4, line 11, change the numeral " 30" to -- 31 --
Same page, line 12 after " R_5 " insert -- to which conductors 27 lead. Since wheel 19 and brush arm 30 rotate in different directions and at constantly varying speeds, the circuits R_1, R_2, R_3, R_4 and R_5 --

Claims 1 to 5 inclusive are withdrawn for presentation in better form as follows :

13. A mechanism of the character described, comprising a set of switching devices provided with movable contacts for establishing a plurality of circuit connections ; and means for varying the relation between said contacts in a random order.

14. A mechanism of the character described, comprising switching components movable relative to each other and provided with contacts for establishing a plurality of circuit connections ; and means including cams of irregular contours operative with each component for varying the relation of the contacts in a random order.

15. A switching mechanism comprising rotatable components, each provided with operatively related contact elements, and one of said components including a plurality of commutator rings having its contact

elements electrically connected in random order; and means for rotating said components in opposing relation for varying the connection between contact elements of the respective components aperiodically.

16. A switching device comprising components provided with electrical contacts, said components being rotatable with respect to each other for establishing a plurality of circuit connections ; a friction drive mechanism for each of said components, and including means for independently and differentially operating said mechanisms to vary the circuit connections in a random order.

17. A switching mechanism, comprising relatively movable components provided with contacts for establishing a plurality of different circuit connections; means for varying the circuit connections, comprising frictional drive mechanisms operable independently with said components ; and means for changing the rate of movement of said mechanisms for randomising the circuit controlling operation of the contacts.

Claim 10, lines 1 and 2, cancel " In a mechanism for randomising the operation of an electrical system, in combination, " and substitute - - A switching mechanism comprising in combination, - - Same claim, last line, after " aperiodically " and before the period insert - - and in a random order - -

Claim 11, line 1 before " mechanism " insert - - switching - -

REMARKS

To overcome the objection on the ground of incompleteness of the disclosure, the specification has been amplified to restate the objects of the invention and to conform more nearly to the function of the invention considered as a switching mechanism.

As to the question of utility, it will be noted that the last paragraph on page 2 of the specification has been restated in amplified form to bring out more fully the utility of this device in connection with the idea of its function of selecting a random sample from a large assortment of punched cards. Other applications of this device considered as a randomising device are mentioned at this time ;

As is well known, bond issues for large amounts are resorted to by governments and for a certain specified term. Consider the case of a government having offered an issue of bonds wishing to retire a fraction of the entire issue before the expiration of its term. It is current practice to make the selection by drawing lots. The present invention would provide a means for selecting from the whole issue a random or fortuitous number of the total issue for purposes of redemption.

Citing another example of the utility of such a device, in statistical work more particularly in connection with enumerations of Census Bureaus, it is often impossible to use the total population involved and it is usual in such cases to take what is known as a representative sample of the population, assuming then that the data found for the sample

gives an accurate picture of what would be found if the entire population were studied in detail. Such a representative sample must be found by selecting at random individual cases or groups of the total population.

Referring to Dunlop cited, it is noted that the Examiner calls attention to the switch devices 8 and 18, controlled by cam 25 and governor 11, respectively. As shown in Fig. 1 of said patent, the structure comprising the parts in question has been considered in connection with the description found on pages 2 and 3 of the specification, beginning with line 19 of the second column on page 2 and ending with line 16 of the first column on page 3. Particular attention is called to the fact that in describing the operation of the element 8 in connection with the brush member 18, which may be regarded as components of a switching device, it is stated in the specification that the movement in each instance is in accordance with a predetermined rate or schedule. The specification refers to element 7, which is here used to designate an assembly of parts, and is understood to include the element 8 and cam 25, with associated structure. It is noted that brush member 18 is controlled by governor 11 which responds to changes of movement of an elevator car. The assembly 7 is described collectively as a regulating device and it is specified that said regulating device includes a member 20 which carries the resistor 8 and which is arranged to provide the same limits of movement for resistor 8 as are provided for the brush member 18, the position of the resistor 8 with respect to its limits of movement being varied in accordance with a pre-determined schedule . Attention is also called to page 3 of the specification, lines 10 to 16 inclusive.

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Thus, itappears that the theory of operation of this patented structure is in accordance with a predetermined schedule, that is the object is to maintain the speed of an elevator car within certain predetermined limits. In other words, the action is that of a regulating device to overcome variable factors and not a random operation. On the contrary, applicant's invention contemplates a random or fortuitous operation.

As to original claims 1 to 3, rejected on Dunlop, claim 1 has been rewritten as new claim 13 to recite the elements of a switching mechanism and the distinction of a random operation is thought to differentiate this claim from the disclosure of said patent. Claims 14 and 15, which take the place of original claims 2 and 3, respectively, now include structure not found in the citation and are believed to be patentably clear of the citation. It is understood that the remaining claims, admittedly define novel structure and the allowance of these claims is courteously requested.

An earnest effort has been made to overcome all objections and favorable reconsideration is courteously solicited in the light of the foregoing.

Respectfully submitted,

W. F. Friedman et al.,

By:

Attorneys