

Jan. 6, 1942.

R. STUART ET AL

2,269,293

CODING MACHINE

Filed Dec. 31, 1938

2 Sheets-Sheet 1

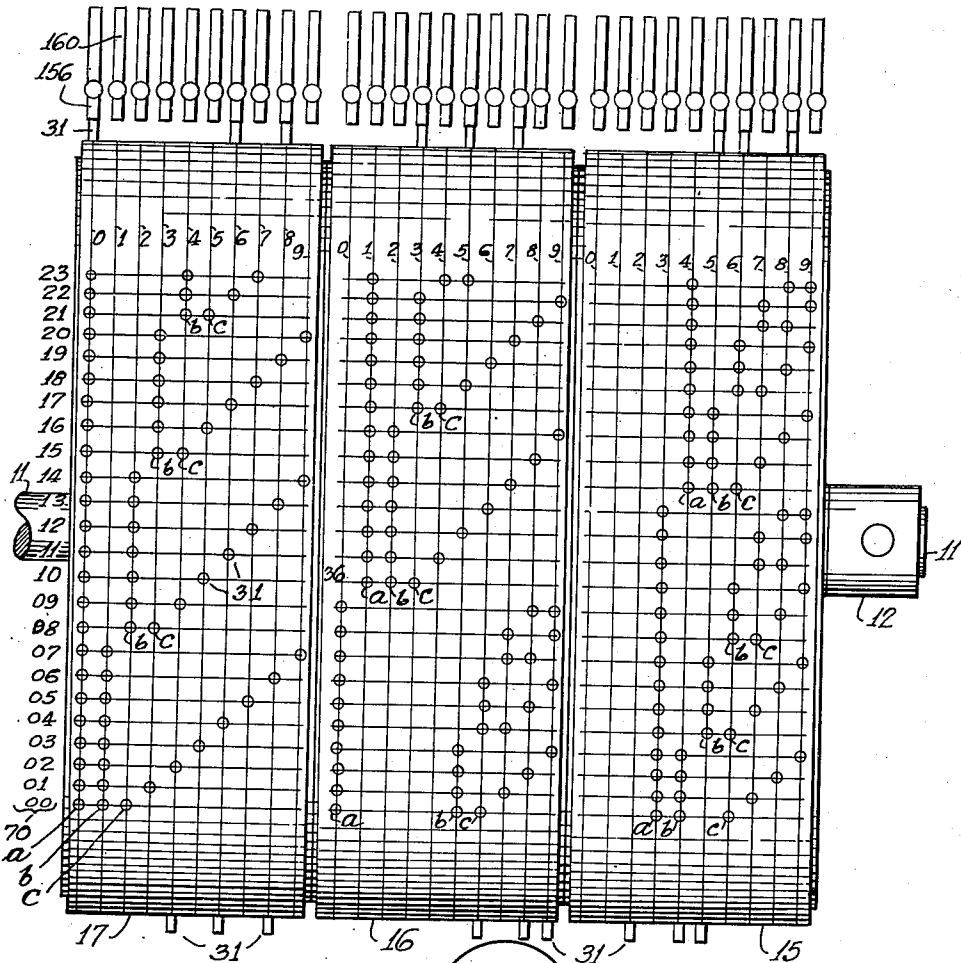


Fig. 1

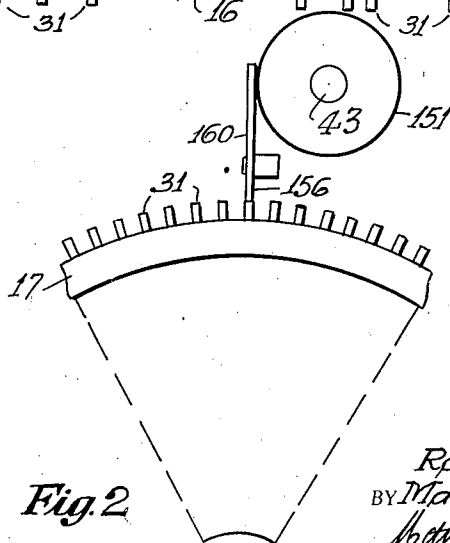


Fig. 2

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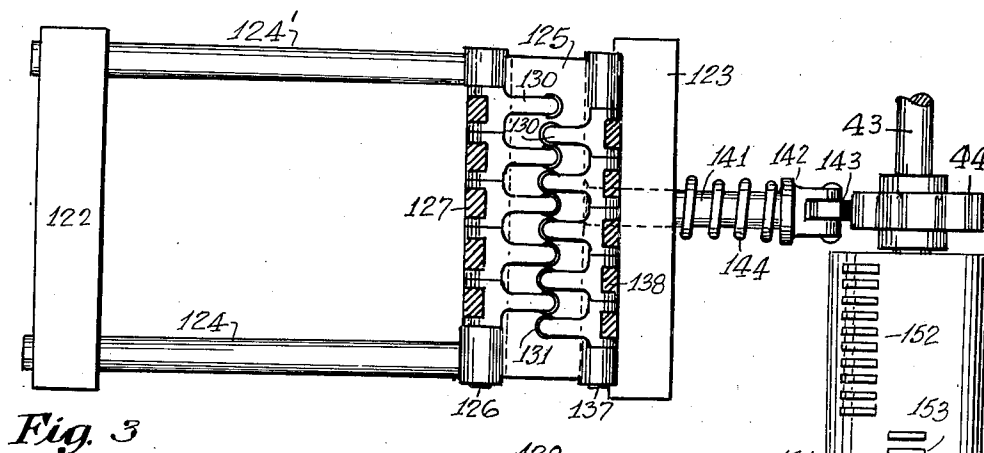


Fig. 3

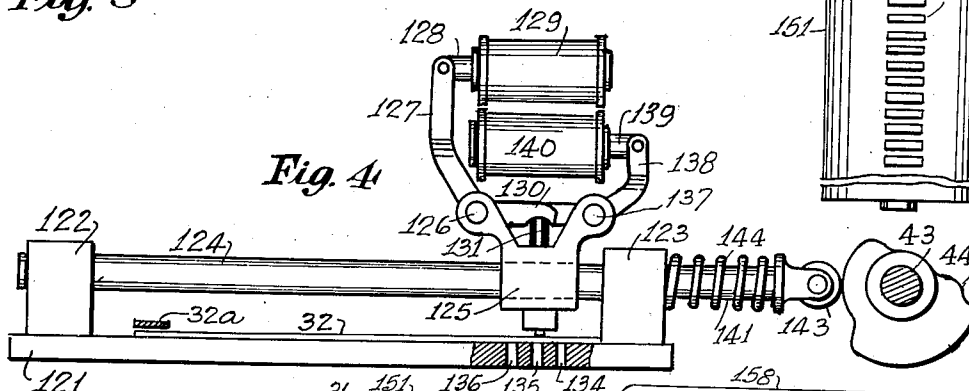


Fig. 4

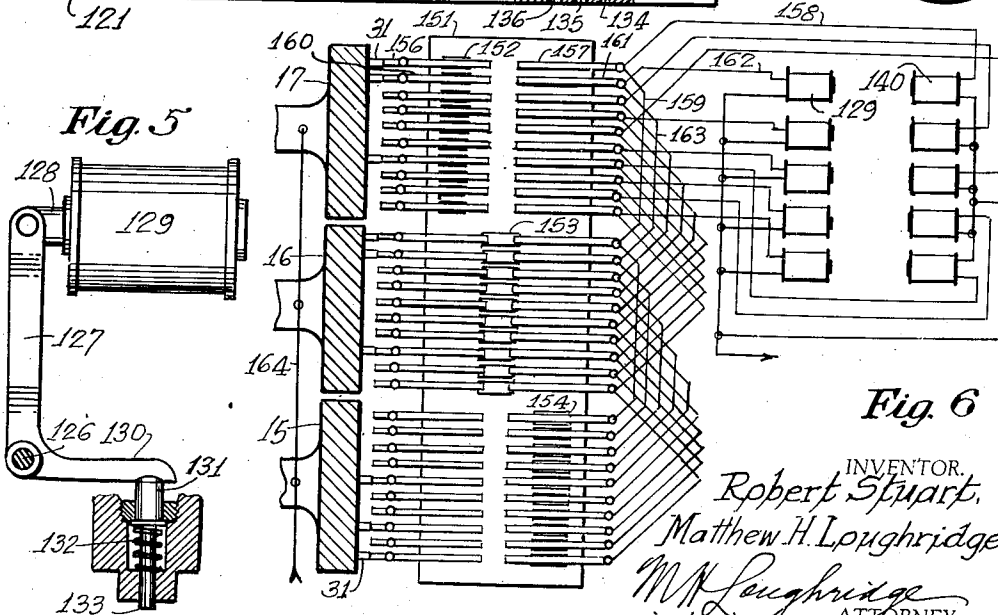


Fig. 5

Fig. 6

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CODING MACHINE

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Application December 31, 1938, Serial No. 248,894

18 Claims. (Cl. 164—115)

This invention relates to a mechanism for applying a code to documents. An object of the invention is to provide a progressively operated coding mechanism for coding documents in succession by a different code.

A further object of the invention is to provide a coding mechanism comprising a series of code wheels, each providing distinct code marks on the document in groups.

Another object of the invention is to provide an electrically operated coding mechanism for documents; another object of the invention is to provide an electrically operated document coding mechanism which is movable relative to the document.

This invention comprises a code applying mechanism in which a plurality of characters are movable relative to each other on a base which defines the limits of the selection. In the application, three characters are used in the code on a base of ten positions which makes possible 120 selections, but for convenience only 100 selections are used in the mechanism, operating from zero to 99. A simple way of applying the code is by means of a code wheel which, transversely, provides for the location of ten characters for the base of the code and circumferentially provides 100 rows of these characters. Three positions are occupied in each row and each row has at least one character in a different position from the previous row so that the code is changed for each step of the wheel. A wheel of this type will code 100 subjects and the number of these wheels may be increased to extend the code as desired. For instance, the wheel to the left may code any number from 0 to 99, the next wheel may be used to code the next group of numbers up to 99 and so on, the system being correspondingly expanded by the addition of code wheels.

When it is desired to apply the marks transversely on the document, as for instance, on the end of a bank check, an electrically operated code recording mechanism may be used which applies the code mark first in one row, then changes its position relative to the document and applies the second row of code marks when it again will change its position relative to the document and apply a third row of code marks, thus providing the code marks in separate transverse rows at the end of the document.

The documents that are coded by this system may be photographed on a reduced scale on motion picture film for record purposes and it is necessary, by means of the code, to obtain from

the film the specific document to which the code applies, or to make a record for any purpose of the documents having specific code marks.

The apparatus is shown largely in diagrammatic form in the accompanying drawings which are illustrative of the principles of the invention and not necessarily of the actual apparatus used to apply the invention. The code system referred to herein is more fully described in co-pending applications Serial No. 166,720, filed October 1, 1937, and Serial No. 205,186, filed April 30, 1938.

The invention will be more particularly understood from the following specification and the accompanying drawings, in which:

Fig. 1 is a front elevation of three code wheels with code characters arranged on a portion of their circumference;

Fig. 2 is a side elevation of a portion of one of the code wheels with a contacting member arranged to engage the code characters;

Fig. 3 is a plan view, partly sectioned, of a mechanism for operating the coding mechanism by electric control and in different positions with relation to the document;

Fig. 4 is a side elevation, partly sectioned, of the mechanism shown in Fig. 3;

Fig. 5 is an enlarged elevation, partly sectioned, of the electric control of the marking members for registering the code, and

Fig. 6 is a diagram of the circuits controlling the marking members of the code for each of the code wheels.

The code mechanism

In the drawings, the code wheels 15, 16 and 17 are rotatably mounted on the shaft 11 which is rigidly supported by the bracket 12. These wheels are moved or rotated by any convenient mechanism that may be used to establish the code desired, but which is not shown in the drawings.

Each code wheel is provided with code marking characters indicated at 31 in the form of pins. The face of each code wheel is laid out in squares for convenient reading. These squares include circumferential divisions marked from 0 to 9 inclusive, and it includes radial divisions marked from 00 to 23 at 70 shown adjacent wheel 17 which in the application shown includes 100 radial divisions. The first character of the code indicated at *a* is repeated in each location on line 0 up to 35 (wheel 16) and at 36 it is continued on line 1 (wheel 16), instead of line 0. The second character of the code appears in line 1 up to 07 (wheel 17) as indicated at

b, then it moves from line 1 to line 2 where it continues from 08 to 14, then it changes from line 2 to line 3 where it continues from 15 to 20 and so on. The third character of the code indicated at c moves forward for each step or radial division of the wheel, beginning at line 2 (wheel 17) and ending at line 9, opposite 07, then opposite 08 this character begins on line 3 and ends on line 9 opposite 14; at 15 it begins on line 4 and ends on line 9 opposite 20, and so on throughout the application of the code.

The code may be conveniently applied by considering the figures in the row opposite 70 as the coded subject. In this arrangement it will be noted that 00 represents the position before any of the code wheels have moved, 01 is represented by the first step of the wheel, 02 by the second step, 03 by the third step, and so on throughout the system. This code is applied to the document by providing three marks or pins corresponding to the location of the marks shown in Fig. 1 for each of the subjects indicated by the figures in column 70.

The electric marking coder

The application of the invention by an electrically operated marking system is shown in Figs. 3, 4, 5 and 6, respectively. In this arrangement the table 121 is provided with a stand 122 at one end and a second stand 123 at the opposite end and between these stands a pair of parallel rods 124 124' are located and upon which the operating head 125 of the mechanism is arranged to slide. This head connects by a stem 141 with the collar 142 which engages spring 144 to normally hold the head to the right. A roller 143 is mounted on the end of stem 141 and is engaged by cam 44 mounted on shaft 43 so that the movement of shaft 43 moves the head 125 so that the punches 131 carried by this head register with the row of apertures 134, 135 or 136 in the table 121 and below the document 32 which is held in place on this table by the guide 32a.

The operation of the punches for perforating the document 32 is illustrated in Fig. 5, in which magnet 129, when energized, attracts the plunger 128, pivoted to the arm 127 of the crank lever 130 which is pivoted at 126 and engages the head 131 of the punch 133 and projects it against the action of spring 132 to enter one of the apertures in the table 121. When magnet 129 is deenergized, spring 132 restores the punches to the inactive position. The punches 131 are mounted in a central row in the head 125, there being five punch levers on each side of the head and two sets of magnets are used to operate these punches which are located one above the other as indicated in Fig. 4. The magnet 140 attracts the plunger 139, moving the crank arm 138, pivoted at 137 in head 125, inwardly and thereby projecting the punch controlled by this magnet.

In this arrangement any three punches in the row of ten may be selectively operated to register the code desired and after the code has been thus registered in the first position the shaft 43 is rotated by means not shown in the drawings to bring the head 125 to a new position relative to the document, as for instance, opposite the row 135, and at the same time the circuit controller 151 is rotated by the shaft 43 to set up a new electric control for the operating magnets in the new position to register another code. After this, further movement of shaft 43 moves the head 125 to another position, as for instance, opposite the aperture 136, and correspondingly moves the cir-

cuit controller 151 to set up another system of control for registering another code in this position.

The circuit controller 151 is provided with ten contact strips 152 in the first position, with ten contact strips 153 corresponding with the second position of cam 44 and with ten contact strips 154 corresponding with the third position of cam 44. These contact strips establish a circuit between the selective member of each code and the operating magnets as indicated in Fig. 14. The selective wheel 17 has ten contact fingers 160 arranged opposite the location of the code markers 31, and opposite these contact fingers is a second row of contact fingers 157 which, when the cam 44 is in the first position are each connected with the corresponding contact fingers in row 156 by the row of contact strips 152. In the same way the code members of selector 16 are connected by a row of contact fingers through the contact strips 153 with an opposite row of contact fingers, also the selector 15 is similarly arranged whereby the code characters 31 establish a circuit with an opposing row of contact fingers by the contact strips 154 when the cam 44 has reached the third position.

The selector members 15, 16 and 17 are connected on wire 164 with a source of electrical energy and each code character 31 establishes a circuit between these members and the contact finger 156 with which it engages; since, however, only one set of the contact strips 152, 153 or 154 are in circuit at a time, only one of the selective members can be operated at one time. The circuit established through the first set of contact fingers 156, 157 is continued on wire 158 to the top magnet 140 and the return circuit from this magnet, in multiple with the other magnets, is indicated by the wire terminating in the arrow point. The second set of contact fingers establish a circuit on wire 162 to the top magnet 129 in the left hand row. The third set of contact fingers establishes a circuit to the second magnet in row 140 and so on throughout the series, the ten magnets being connected to the ten contact fingers, and since only three code characters appear in the selector 17, only three of these magnets can be energized at one time.

The first set of contact fingers connected with the operating magnet is, by the jumpers 159, 163, connected in multiple circuit with the corresponding contact fingers in the second group and the corresponding contact fingers in the third group. When shaft 43 moves the circuit controller 151 from the first to the second position, the second set of contact fingers are then brought into circuit and the magnets are controlled by the second selective member 16 and the control of the first selective member is discontinued. In the same way when the circuit controller 151 is moved to the third position, the third set of contact fingers are brought into circuit controlled by the code selector 15, while the control by the other selectors is discontinued.

The cam 44 is made in three steps corresponding with the three positions of the head 125 and the three locations of the contact strips 152, 153 and 154, each of which bring into operation progressively one of the code selectors 15, 16 and 17. In operation, however, it will be noted that in the first position of the cam the head 125 is moved to the right and the code established on the code wheel 17 is registered in the document 32 by perforations on row 134. In the second position the

code established by the code selector wheel 16 is brought into operation at the time the head 125 registers with the row of apertures 135 and registers this code on the document, and in the same way, when the head 125 is moved to register with the row of apertures 136 the code set up on code selector wheel 15 is marked on the document. After the code has been registered the document may be moved from table 32 and a new document placed on this table for repeating the operation.

In the apparatus described, the marking of the document is secured by perforating the document and with the intention that these perforations will be available later for de-coding purposes. It should be understood that the marking of the document is used in a generic sense and other forms of marking is used, such as forms that will operate light responsive means, when a de-coding system of this type is to be used.

One immediate use for this particular apparatus is for coding bank checks which usually have a serial number, a date and an amount. The serial number can be coded by the progressively operated mechanism which changes the code for each document coded and the date code can be set up and operated repeatedly for each date. The amount of the check is usually coded manually.

The system described is directed to the coding system having three code characters movable with relation to each other into ten possible locations. It should be understood that the number of locations for these characters can be increased and the number of the characters can be increased or decreased in applying the code and such an application will readily be understood from the principles of the system herein described.

The coding system is shown applied to a document, either by perforating the document, or otherwise applying marks thereto that may be readable for any purpose. The system may be de-coded to operate translating devices for any purpose desired.

Having thus described our invention, we claim:

1. A coding machine for marking documents, comprising a table for receiving the document, a sliding head mounted above the document, a plurality of code members mounted in said head, a magnet for operating each member to mark the document, a plurality of adjustable code discs for selectively operating a plurality of said magnets according to the code desired and means for moving said sliding head relative to the document to locate said marks in a predetermined position.

2. A coding machine for marking documents, comprising a table for receiving the document, a sliding head mounted above the document, a plurality of code members mounted in said head, a magnet for operating each member to mark the document, means for selectively operating a plurality of said magnets according to the code desired, means for moving said head to register said marks of one code in one position on the document, means for moving said head to another position on the document and an adjustable code disc for changing the selective operation of the magnets in the new position according to another code.

3. A coding machine for marking documents, comprising a table for receiving the document, a sliding head mounted above the document, a plurality of code members mounted in said head, 75

a magnet for operating each code member to mark the document, a shaft with a cam for moving said sliding head relative to the document, a circuit controller mounted on said shaft, a plurality of adjustable code selections, said shaft operating said sliding head and circuit controller to connect said magnets with one set of code selections in one position, then to change the position of said head and connect said magnets to another set of code selections.

4. A coding machine for marking documents, comprising a table for receiving the document, a sliding head having a plurality of positions and a plurality of magnets each operating a marking device for marking the document in a predetermined position on the table according to the code to be established, a circuit controlling each magnet and a plurality of movable coding members selectively controlling said circuits to mark each document according to the code established by the movable member.

5. A coding machine for marking documents, comprising a table for receiving the document, a movable head having a plurality of magnets each operating a marking device for marking the document on the table, a circuit controlling each magnet, a plurality of movable coding members and means for controlling the circuit of said magnets by one of said coding members to mark the document according to the code established by this member, then moving said head relative to the document and then controlling the circuits of said magnets by the other coding member to mark the document according to the code established by this member.

6. A coding machine for marking documents, comprising a table for receiving the document, a head having a plurality of magnets each operating a marking device for marking the document on the table, means for moving said head relative to the document, a circuit controlling each magnet, a plurality of moving code members and means for controlling the circuits of said magnets by one of said code members according to the code established by this member, means for changing the position of said head relative to the document and for controlling the circuits of said magnets according to the code established by the other code member.

7. A coding machine for marking documents, comprising a table for receiving the document, a head having a plurality of magnets each operating a marking device for marking the document on the table, a circuit controlling each magnet, a rotary code member setting up different codes as it is rotated, means for establishing the circuit of a plurality of said magnets to register the code set up for each coding position as said rotary code member is rotated and means for changing the position of said head relative to the document for each coding position.

8. A coding machine for registering code marks comprising a receiver for the marks, a head having a plurality of magnets each operating a marking device engaging the receiver, a circuit controlling each magnet, a coding wheel having code characters arranged on its periphery to set up different codes as it is rotated, means controlling some of said circuits by each coding position of said wheel thereby setting up a different code and means for changing the position of said head relative to the receiver for each coding position.

9. A coding machine for registering code

marks, comprising a receiver for the marks, a head having a plurality of magnets, each operating a registering device engaging the receiver, a circuit controlling each magnet, means for moving said head relative to said receiver and a plurality of adjustable code discs for simultaneously controlling a plurality of circuits of said magnets to register the code desired.

10. A coding machine for registering code marks, comprising a receiver for the marks, a head having a plurality of magnets each operating a registering device engaging the receiver, a circuit controlling each magnet, means for moving said head relative to said receiver, a plurality of coding members, means for controlling the circuits of said magnets by one coding member according to the code on this member, means for changing the position of said head relative to the receiver and means for controlling the circuits of the magnets by the second coding member.

11. A coding machine for registering code marks comprising a receiver for the marks, a head having a plurality of magnets, each operating a registering device engaging the receiver, a circuit controlling each magnet, means for moving said head relative to the receiver, a first movable code member, a second movable code member, means controlling the circuits of said magnets by said first code member and means for changing the position of said head relative to said receiver and controlling the circuits of said magnets by said second code member.

12. A coding machine for registering code marks comprising a receiver for the marks, a head having a plurality of magnets, each operating a registering device engaging the receiver, a circuit controlling each magnet, means for moving said head into different registering positions, a first movable code member, a second movable code member and a third movable code member, means controlling the circuits of said magnets by the first code member according to the code set up on this member, means for moving said head to a second position and controlling the circuits of said magnets according to the code set up on the second code member and means for moving said head into a third registering position and controlling the circuits of said magnets according to the code set up on third code member.

13. A coding machine for registering code marks comprising a receiver for the marks, a head having a plurality of magnets each operating a registering device engaging the receiver, a circuit controlling each magnet, means for moving said head into different registering positions to register the marks in successive rows, a plurality of coding wheels located on the same axis, means controlling the circuits of said magnets by the first coding wheel to register the code set up on this wheel, and means for changing the head to the second registering position and controlling the circuits of said magnets by the second code wheel to register the code set up on this wheel.

14. A coding machine for registering code marks comprising a receiver for the marks, a head, two rows of crank levers pivotally mounted on said head with their free ends pointing in-

wards and terminating one adjacent the other in a row, a row of marking devices located each to register with the end of one of said levers each device being operatively connected with one of said levers, a row of magnets operatively connected with the levers of one row and a second row of magnets located below the first row and operatively connected with the levers of the second row and means for controlling the circuits of said magnets to register the code.

15. A coding machine for registering code marks comprising a receiver for the marks, a sliding head, movable relative to the receiver, a plurality of marking devices located on said head and engaging said receiver, a magnet for operating each marking device, a circuit controlling each magnet, a shaft with a cam for locating said head in the registering position and a circuit controller operated by said shaft controlling said magnets.

16. A coding machine for registering code marks comprising a receiver for the marks, a sliding head, movable relative to the receiver, a plurality of marking devices located on said head and engaging said receiver, a magnet for operating each marking device, a circuit controlling each magnet, a shaft, a cam on said shaft, means connecting said cam with said head, a circuit controller operated by said shaft, a plurality of coding members, said circuit controller and said coding members controlling the circuits of said magnets and so arranged that in a cycle of operation said cam moves said head to register the marks in a different location for the operation by each of said coding members.

17. A coding machine for registering code marks comprising a sheet for receiving the marks, a table supporting said sheet and having rows of perforations corresponding to the location of all the marks of the code, a guide on said table, a head movable on said guide above said sheet, a row of marker punches on said head corresponding with the perforations in the table, a magnet on said head for each marker punch, a circuit for each magnet and means for moving said head to register with one of said rows of perforations and adjustable code discs for controlling the circuits of said magnets to perforate the sheet according to the desired code.

18. A coding machine for registering code marks comprising a sheet for receiving the marks, a table supporting said sheet and having rows of perforations corresponding to the location of all the marks of the code, a guide on said table, a head movable on said guide above said sheet, a row of marker punches on said head corresponding with the perforations in the table, a magnet on said head for each marker punch, a circuit for each magnet, a plurality of code members, means for moving said head to register with one row of the perforations and for establishing a circuit between one of said code members and said magnets for perforating the sheet according to the code set up on the member, means for moving said head to register with another row of perforations and for operating the circuits of said magnets by the second code member to perforate the sheet according to the code of this member.

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CERTIFICATE OF CORRECTION.

Patent No. 2,269,293.

January 6, 1942.

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It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the grant, line 2, residence of the second named inventor, for "Bergen, New Jersey" read --Bogota, New Jersey--; and in the heading to the printed specification, for "Bergen, N. J." read --Bogota, N. J.--; as shown by the records of this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of March, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.