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Reilly et al.

[11] **3,842,956**

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[54] **CARD ENCODING MACHINE**

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[73] Assignee: **Cytec Development Inc.,** Ramsey, Minn.

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[52] **U.S. Cl.** **197/6.4,** 101/18, 234/100

[51] **Int. Cl.** **B41j 1/22**

[58] **Field of Search** 234/100; 101/56, 18, 19, 101/269, 100; 197/6.4, 6.5, 6.6, 6.7, 6.2

[56] **References Cited**

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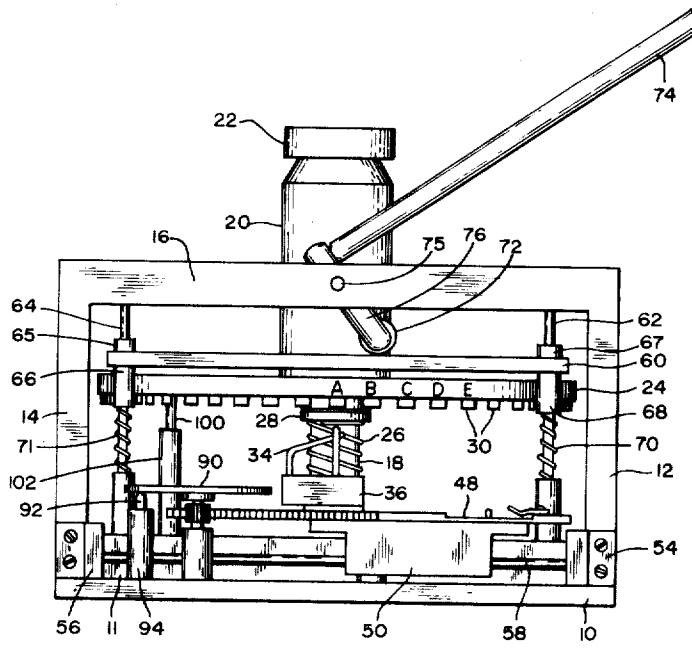
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Assistant Examiner—Paul J. Hirsch
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[57] **ABSTRACT**

A machine for impressing coded dot patterns on plastic cards in which a letter or numerical symbol is selected on a rotating wheel which is then slid down on to a series of dies by means of a cam so as to press certain selected dies by means of a pattern of bumps on the wheel corresponding to the code arrangement representing a selected letter or numeral at that location on the wheel. A card is movable underneath the dies by means of a carriage assembly which is movable to a series of incrementally fixed predetermined positions underneath the dies.

5 Claims, 5 Drawing Figures



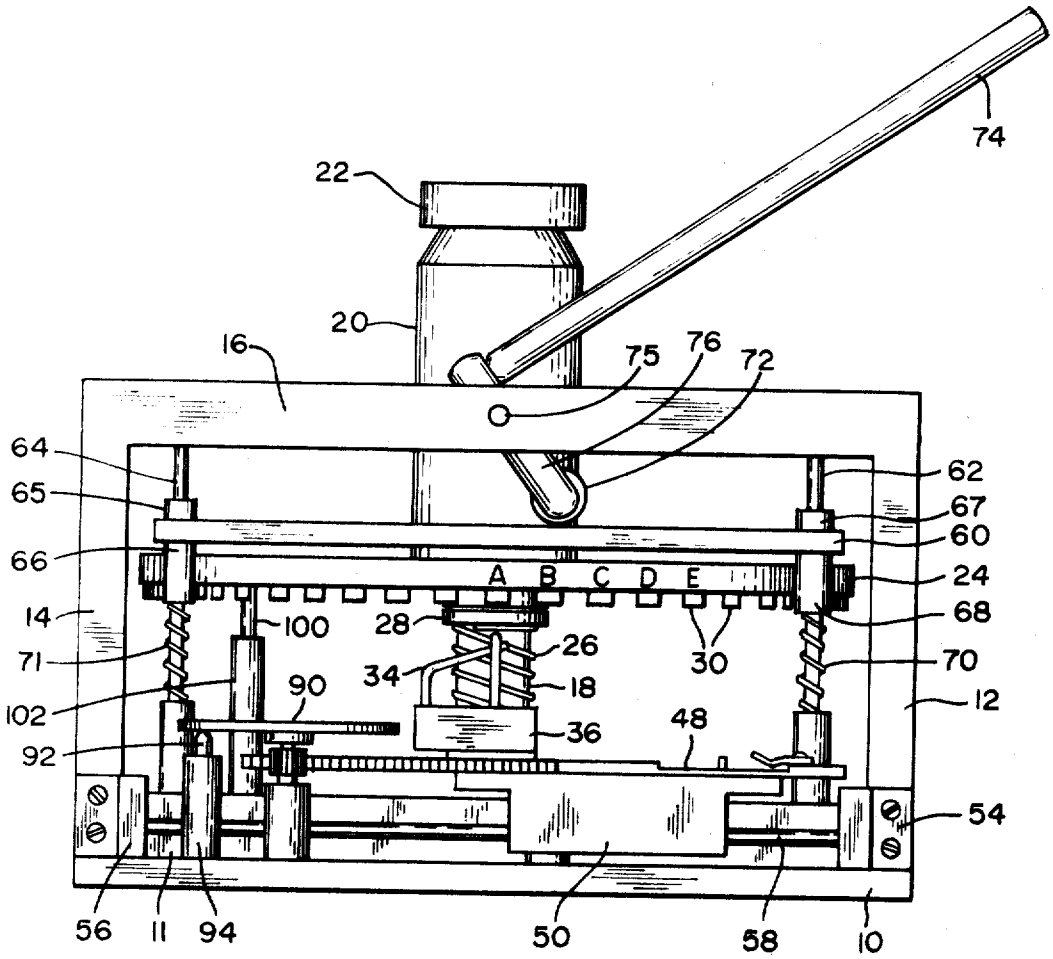

74
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56
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94
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10

Fig. 1

Fig. 2

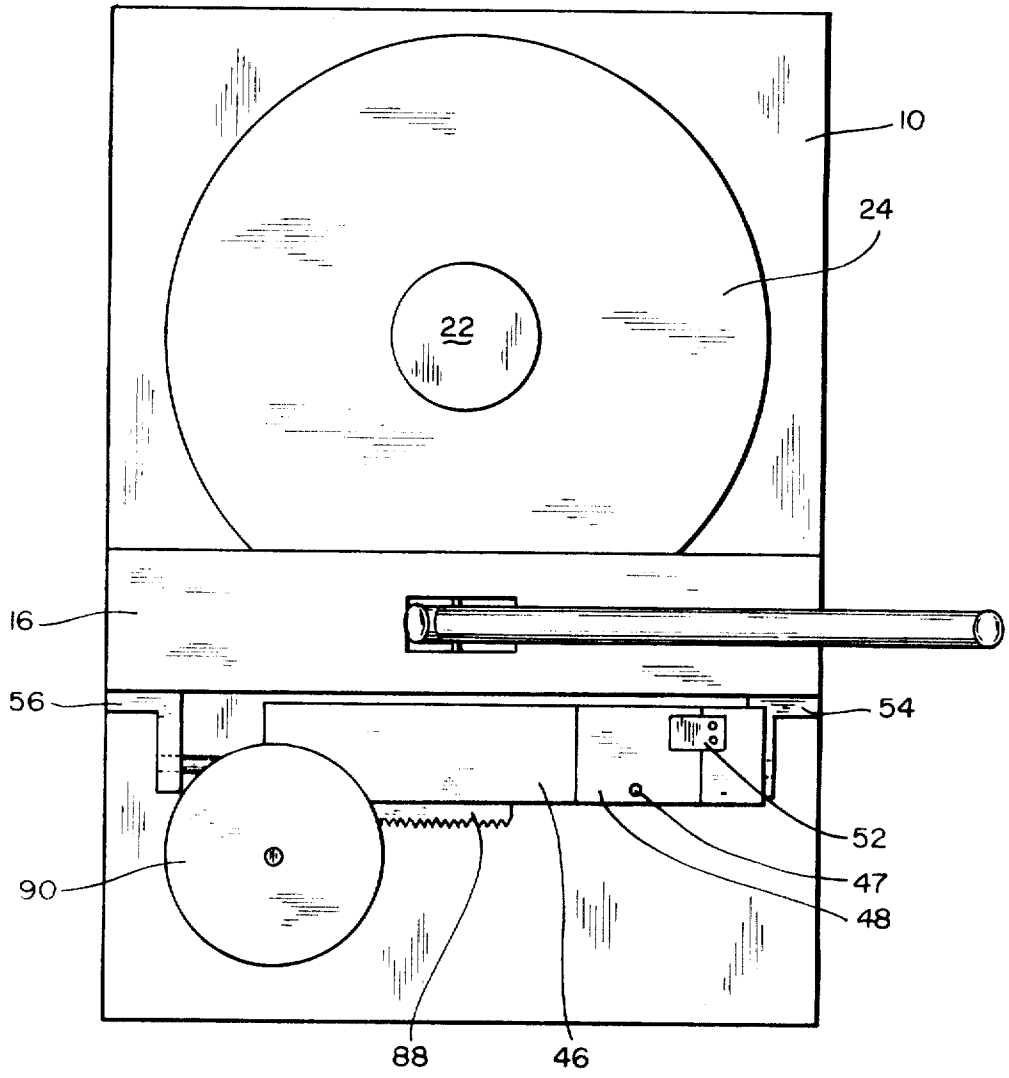


Fig. 5

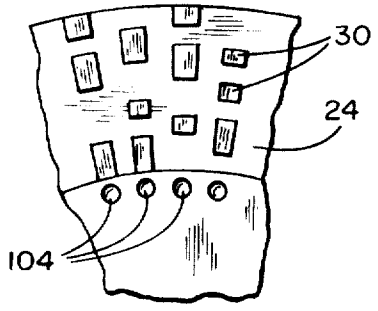


Fig. 3

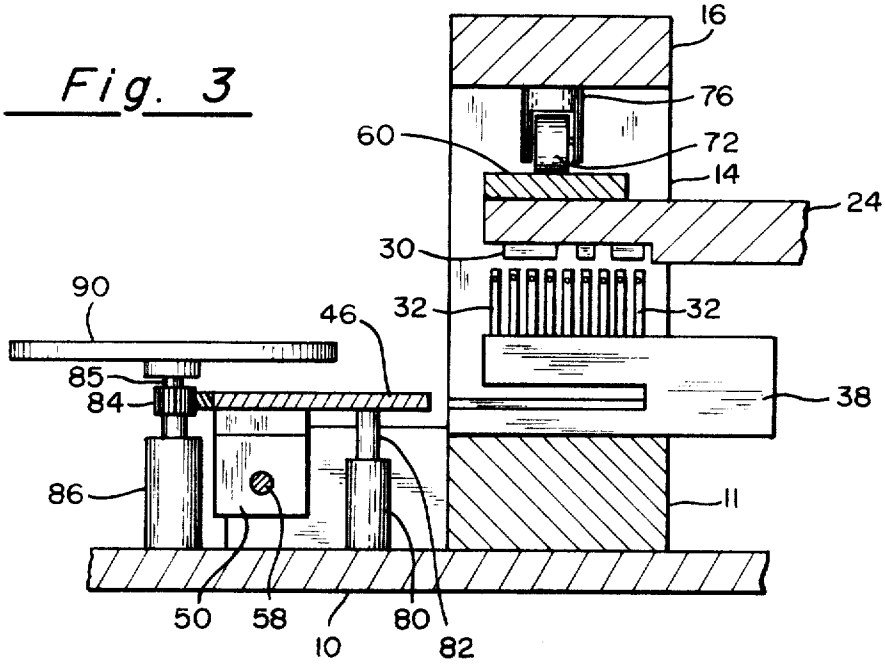
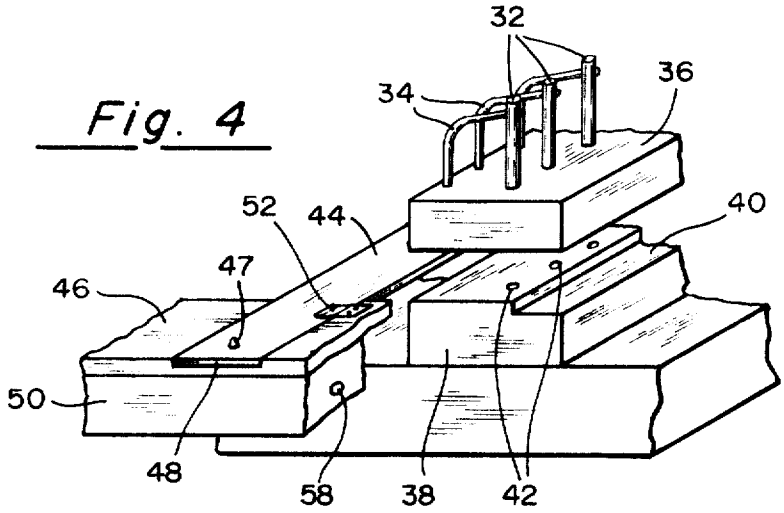

16
76
60
72
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11
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58
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Fig. 4


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CARD ENCODING MACHINE

BACKGROUND OF THE INVENTION

It is common practice in the prior art today to imprint various information on credit slips and the like by means of plastic cards with letters embossed thereon. It is anticipated that in the future the information will be pressed on to these cards in a machine readable code. Such an arrangement is shown in our co-pending patent application Ser. No. 263,995 filed June 19, 1972, now Pat. No. 3,806,705, for a "Data-Logging and Organizing Machine" in the name of the present inventors. In this co-pending application a data organizing system is disclosed wherein information is first impressed on to paper cards by means of small plastic cards in which a series of raised dots form a code pattern. As explained in the above referenced co-pending application, the plastic card is impressed against a carbon layer of paper on the paper card by means of an ordinary credit card imprinting machine.

To produce a plastic card which reliably imprints a machine readable code on the paper cards it is necessary to locate the raised imprinting dots on the plastic card very accurately. At the same time, in order to avoid the confusion attendent to selecting the proper code for each letter it is desirable if the machine which forms the plastic card would, itself perform the conversion from the numeral or letter to the desired coded dot arrangement. The present invention provides such a machine.

SUMMARY OF THE INVENTION

Briefly, our invention contemplates a cam operated circular disc member which can be slipped down against a series of pins or dies to impress the necessary dots on a plastic card. Each of the different code patterns for the different letters and numerals is formed about the periphery of the disc by means of a series of surface irregularities or risers positioned to contact the correct pins. The disc is simply rotated to the desired letter or numeral and then slid axially downward against the dies by means of a cam operated lever. The plastic card is carried underneath the dies and over an anvil by means of a sliding carriage so that each character can be printed at a different location which is precisely controlled by the sliding mechanism. It may therefore be seen that it is an object of our invention to provide an encoding and plastic card impressing machine which is much simpler and less expensive than prior art encoding devices such as key punch machines and the like. Further objects and advantages will become apparent upon consideration of the following description and drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a front elevational view of the preferred embodiment of our invention.

FIG. **2** is a top plan view of the apparatus of the present invention.

FIG. **3** is a detail view of the card impressing portion of our invention shown partly in section to facilitate a clear understanding thereof.

FIG. **4** is a partially cut away detail view, in perspective, of the apparatus of FIG. **3** to provide a further understanding of our invention.

FIG. **5** is a cut away detail view of a portion of the underside of the wheel used in the present invention for impressing the cards demonstrating the arrangement of code patterned risers thereon.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring simultaneously to FIG. **1** and FIG. **2**, a generally rectangular base **10** is shown upon which rests a supporting block **11**. Extending up from supporting block **11** are a pair of upright members **12** and **14** connected together at their top ends by a cross member **16**. Behind cross member **16** and upright members **12** and **14** is a shaft **18** which extends up from base **10** inside a cylindrical hub **20**. Hub **20** is connected directly to a large circular disc **24** at its lower end and a turning knob **22** at its upper end. As can be seen in FIG. **2** disc **24** extends slightly underneath cross member **16**. The combination of disc **24**, hub **20** and knob **22** is movable up and down on shaft **18** but is normally urged upward by means of a spring **26** positioned about shaft **18** so as to bear up against a roller bearing **28** which in turn bears against the underside of disc **24**.

Disc **24** can be pressed downward against the action of spring **26** by means of a camming arrangement involving a lever **74** fixed to a lever **76**. Lever **76** is pivoted about a pin **75** positioned through cross member **16**. A roller **72** at the lower end of lever **76** bears against an intermediate member **60**. Intermediate member **60** is supported by bushings **65**, **66**, **67** and **68** so as to slide vertically along a pair of shafts **62** and **64**. Shafts **62** and **64** are secured at their lower ends in block **11** and at their upper ends in cross member **16**. Like disc **24**, intermediate member **60** is also urged upward by means of a pair of springs **70** and **71** surrounding shafts **62** and **64** respectively. As can be seen in FIG. **1**, as lever **74** is moved downwards, rotation of lever **76** about pivot point **75** is effected causing member **60** to be cammed down against springs **70** and **71** and into selective contact with a series of pins **32** positioned in a guide block **36** underneath disc **24**. Since the motion of lever **76** might tend to rotate disc **24** about shaft **18**, roller **72** is used to reduce friction and intermediate member **60** is used to isolate disc **24** from any remaining sideways motion from roller **72**. A better understanding of the arrangement of the pins **32** in guide lock **36** may be had by reference to FIG. **3** and FIG. **4**.

In FIGS. **3** and **4** it may be seen that the guide block **36** is actually part of a U-shaped block **38**. The lower portion of block **38** comprises an anvil having small accepting holes **42** therein aligned with the guide holes in block **36**. Pins **32** are normally urged upwards and held in position by small springs **34** which extend through holes in pins **32** and downward into holes in block **36**. Nine pins are utilized in the embodiment shown for this is the correct number to produce plastic cards suitable for use in the invention described in the above referenced co-pending patent application. It is evident, however, that any number of pins could be used to produce any desired code pattern. Only three pins are shown in FIG. **4** the rest being cut away for the purpose of clarity and simplicity. As disc **24** is lowered onto pins **32** by means of lever **76**, roller **72** and intermediate member **60**, only selected combinations of the pins **32** are forced downward against the plastic card. The particular selection of pins is determined by the group of sur-

face irregularities 30 positioned at the location chosen corresponding to the particular letter or number on disc 24. Disc 24 has a continually changing code pattern about its periphery as shown in FIG. 5.

In FIG. 5 a small portion of the underside of disc 24 is shown in which it can be seen that each of the radial locations about the disc 24 corresponds to a different letter (A, B, C,...etc.; as shown in FIG. 1). Different arrangements of irregularities 30 are positioned at each radial location so that different combinations of pins corresponding to the correct code will be forced downward by the downward movement of disc 24.

To impress a plastic card 44 the card 44 is inserted into a slot 48 in a movable carriage 46 as shown in FIG. 4. Carriage 46 is mounted on top of a sliding block 50 which has a hole therethrough to accept a shaft 58. Shaft 58 is supported by a pair of brackets 54 and 56 extending out from the sides of upright members 12 and 14 and supported by base 10. Referring specifically to FIG. 3 it may be seen that block 50 and carriage 46 are prevented from tilting about shaft 58 by means of a positioning block 80 with a nylon bearing 82 therein. Rotation of block 50 about shaft 58 in the opposite direction is prevented by its engagement with a gear 84 mounted for rotation about a shaft 85 in a support 86. Gear 84 engages a series of gear teeth 88 (visible in FIG. 2) to permit carriage 46 to be slid back and forth along shaft 58 simply by the rotation of a hand wheel 90. Hand wheel 90 is held in a series of sequential positions by means of a spring loaded locking pin 92 (shown in FIG. 1) which is springably mounted in a hollow support 94 on base 11. Spring loaded pin 92 engages a series of indentations in the bottom side of hand wheel 90 so as to lock it in a series of predetermined locations and thereby lock carriage 46 in a series of predetermined locations.

Returning to FIG. 4 it may be seen that plastic card 44 carried by slot 48, and located by a pin 47 in slot 48, is movable over anvil 38 and underneath pins 32 and guide block 36 to a series of sequential predetermined locations. After each movement the card is impressed with a series of coded dots corresponding to a letter or number simply by lowering lever 74 and causing disc 24 with the chosen pattern of unique irregularities to be lowered onto pins 32. Pins 32 move downward against the action springs 34 through the holes in guide block 36 to impress the coded dot patterns in card 44. Since small raised dots are produced on the bottom of card 44 a small step 40 is provided on anvil 38 so that as the dots are formed they can drop down into step 40 preventing any interference with the impression of the next row of dots. A spring clip 52 on top of carriage 46 extends over slot 48 and helps hold card 44 in position in slot 48.

Returning to FIG. 1 another spring loaded pin 100 may be seen mounted in a support 102 which serves to engage a series of depressions 104 positioned on the bottom side of disc 24 at a lesser radius than the coded riser area. These indentations 104 are shown in FIG. 5. Spring loaded pin 100 helps to lock disc 24 into position so that the risers 30 are correctly positioned above pins 32 as the disc 24 is lowered.

It will of course be evident that many variations in structure are possible to our invention. For example, hand wheel 90 is only one of a number of ways which could be used to move the plastic card incrementally sideways between the anvil and the guide block 36. Likewise the risers or irregularities 30 are formed on a disc in the preferred embodiment although other shapes of members could be used as well. The particular camming arrangement used to lower the disc 24 is not the only possible approach that would work as well. Thus, it is obvious that a number of variations could be made to the instant invention without departing from the spirit and scope of the invention. Consequently, the following claims are not intended to be limited to the particular structure shown but rather to cover the fundamentally new and novel aspects of the invention.

I claim:

1. Apparatus to impress on a card a code pattern of dots corresponding to selected letters and numerals comprising:

a base;

an anvil on said base;

a guide block above said anvil having a series of holes therein with a plurality of spring biased pins in the holes so as to be guided toward said anvil;

card carrying means on said base adapted to carry the card onto a first plurality of successive positions between said anvil and said guide means;

a code member having a plurality of groups of irregularities thereon, each group corresponding to a selected character, said code member comprising a generally disc shaped member disposed at least partly above said guide means, and slideably movable along and rotatable about a shaft positioned generally perpendicular to said base, said groups of irregularities spaced about the rim of said disc shaped member; and

a moving means supported by said base on the opposite side of said code member from said anvil and adapted to move the code member against said plurality of pins to selectively move some of the pins against the card, the selected pins depending on the pattern of the irregularities in the group positioned proximate the pins said moving means including a cam means which comprises a lever pivoted in a frame extending up from said base, said lever having a roller at one end, said roller bearing against an intermediate member, said intermediate member mounted for vertical movement along a pair of guide shafts, movement of said lever operable to depress the intermediate member against spring means so as to move the code member an exact predetermined distance down against said spring biased pins.

2. The apparatus of claim 1 in which said card carrying means comprises a generally horizontal member slideably mounted on a guide member positioned alongside said anvil, said horizontal member having a groove in the surface thereof sized to snugly contain one end of the card, the other end of the card extending out to be movable between the anvil and the guide means.

3. The apparatus of claim 2 in which said disc shaped code member includes holding means so as to be held firmly in each of the second plurality of positions about the shaft including indentations in said code member and a spring loaded member positioned on said base so as to bear under the spring force into the indentations in the face of the code member.

4. The apparatus of claim 3 in which said horizontal member is incrementally movable along said guide

member by means of a hand wheel mounted on the base and engaging the horizontal member.

5. The apparatus of claim 4 in which said hand wheel is held firmly in successive positions corresponding to each of the first plurality of positions by a second holding means including indentations in the code member and a second spring loaded member positioned on said base so as to bear into the depressions in said hand wheel.

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