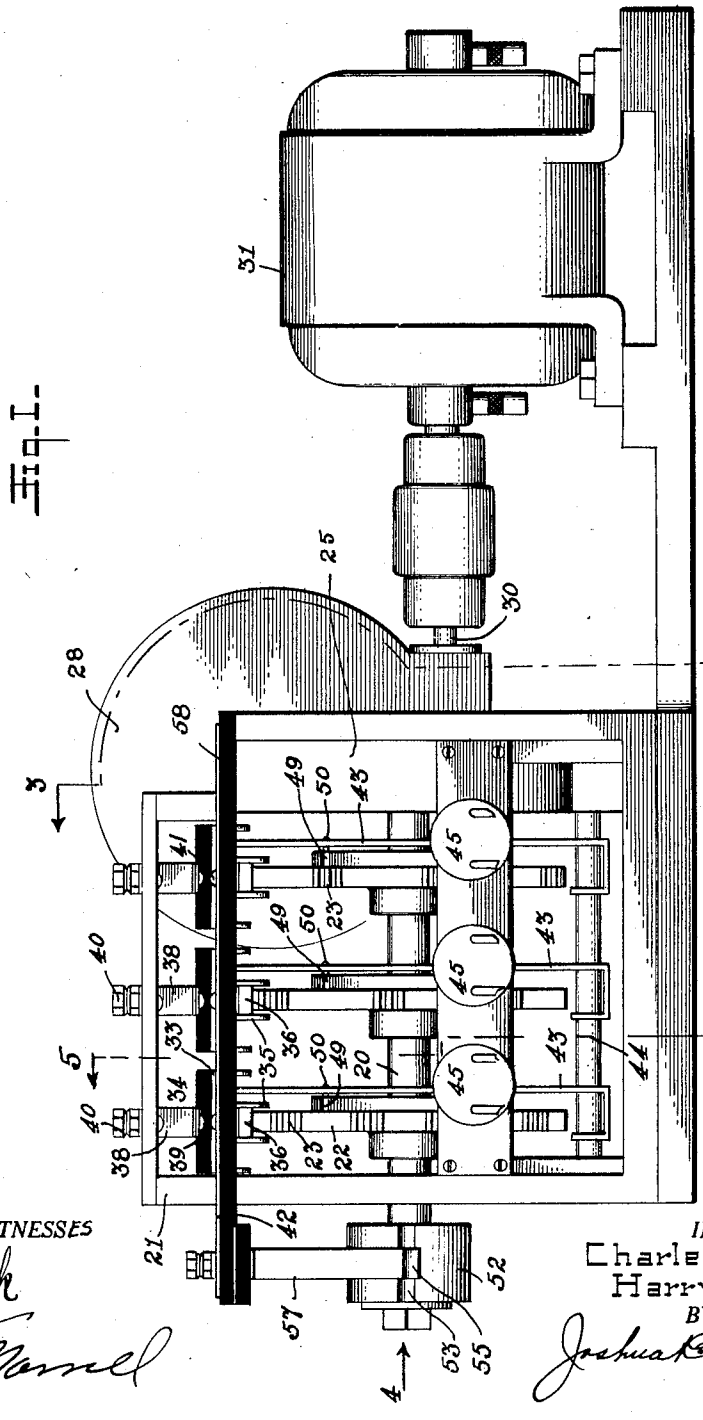
April 10, 1934. C. GIBBS ET AL 1,954,170

SELECTIVE ELECTRICAL IMPULSE CONTROL

Filed April 17, 1930 5 Sheets-Sheet 1

Fig. 1.



WITNESSES

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SELECTIVE ELECTRICAL IMPULSE CONTROL

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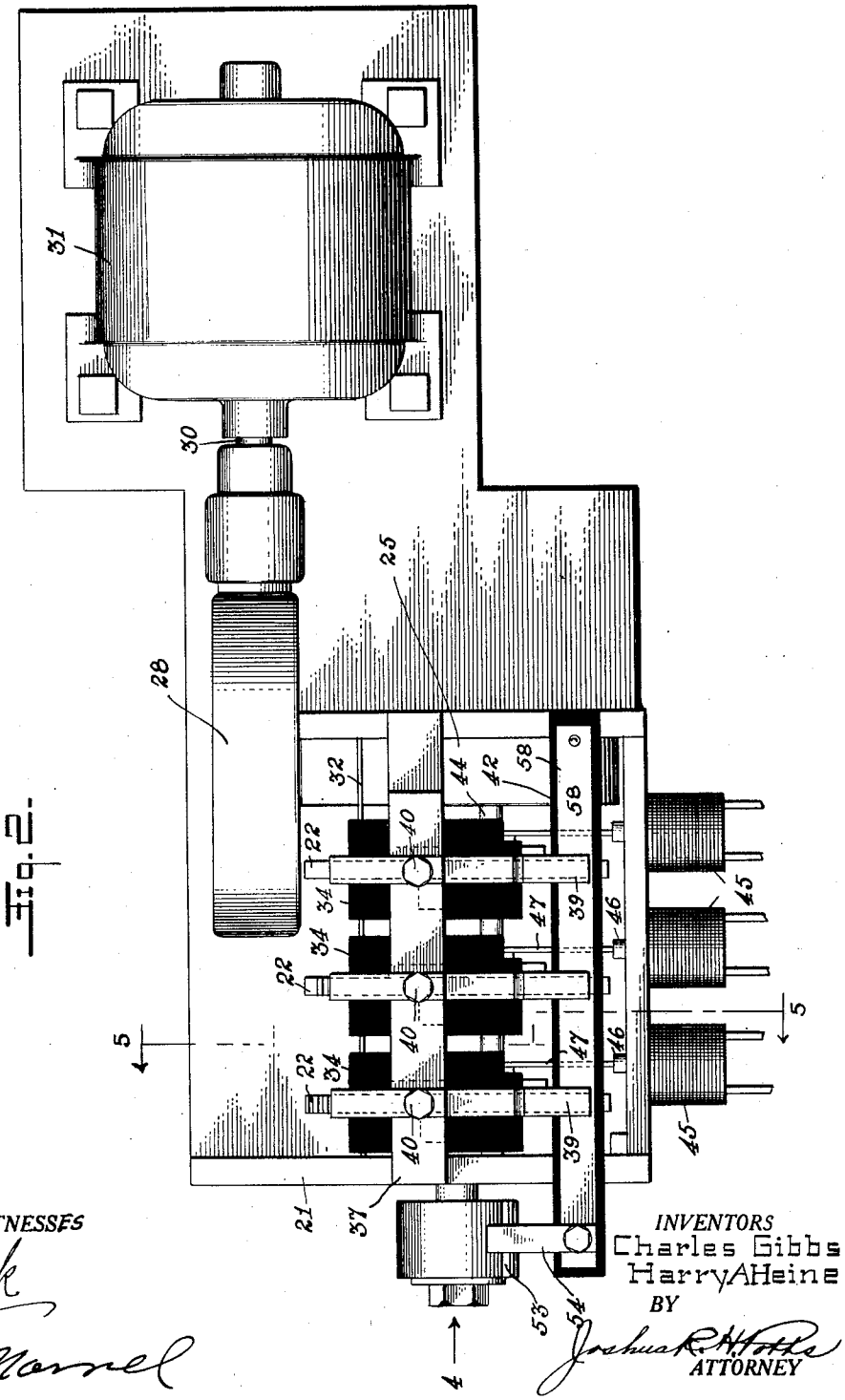


Fig. 2.

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SELECTIVE ELECTRICAL IMPULSE CONTROL

Filed April 17, 1930 5 Sheets-Sheet 3

Fig. 3.

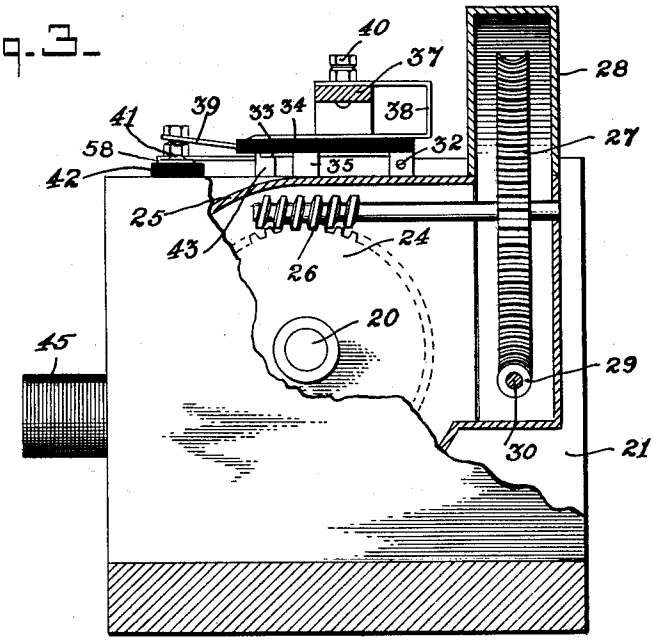
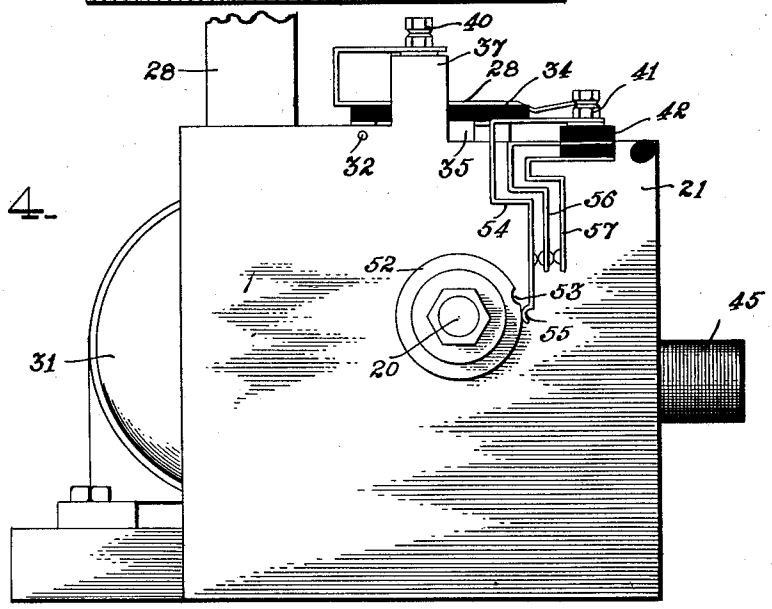


Fig. 4.



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SELECTIVE ELECTRICAL IMPULSE CONTROL

Filed April 17, 1930 5 Sheets-Sheet 4

Fig. 5

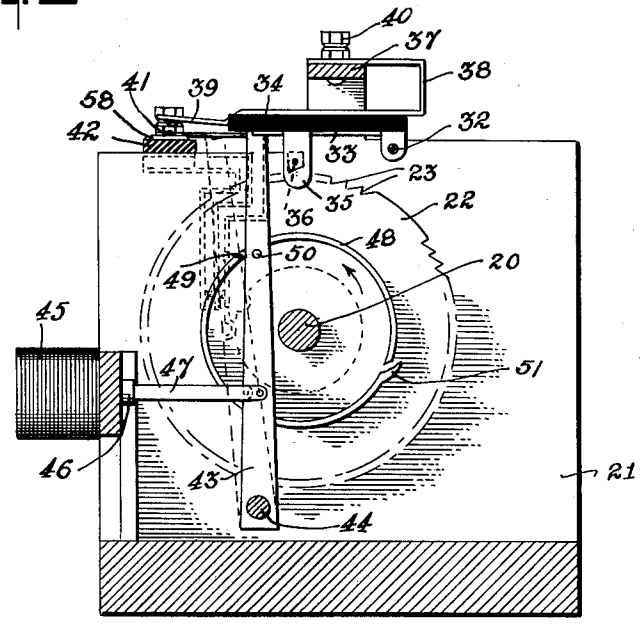


Fig. 6.

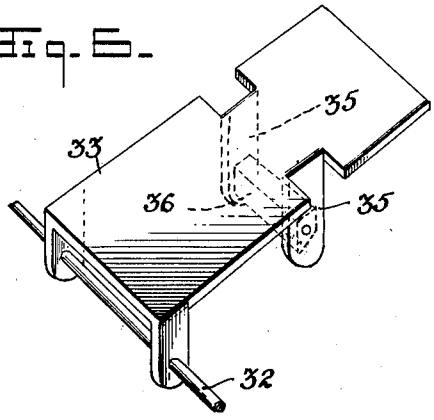
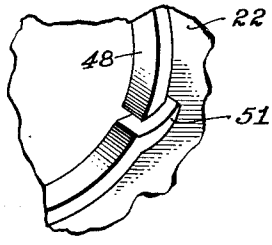


Fig. 7.



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SELECTIVE ELECTRICAL IMPULSE CONTROL

Filed April 17, 1930 5 Sheets-Sheet 5

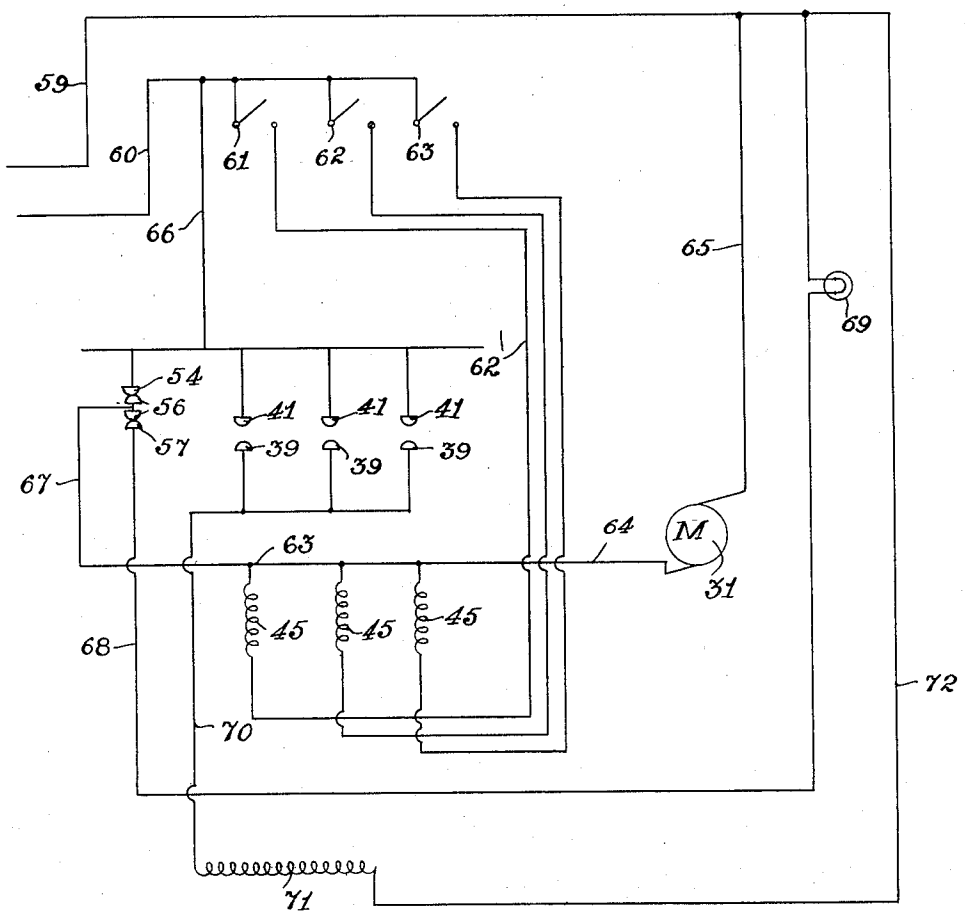


Fig. 5.

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UNITED STATES PATENT OFFICE

1,954,170

SELECTIVE ELECTRICAL IMPULSE CONTROL

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Application April 17, 1930, Serial No. 445,193

3 Claims. (Cl. 177—380)

This invention relates to selective electrical impulse controls and has for an object to provide an organization for controlling electrical impulses according to pre-determined code groupings.

A further object of the invention is to provide an organization especially adapted for work, such for instance as ringing bells or the like, and embodying new and improved features of construction and operation.

A further object of the invention is to provide an organization having a plurality of code wheels with a motor for rotating the code wheels with the necessary switches for co-acting with the code wheels for making and breaking electric circuits with improved means for controlling the starting and stopping of the organization in consonance with the code.

A further object of the invention is to provide an organization embodying a plurality of code wheels with electrical means for rotating the wheels in unison and with improved means for throwing into engagement with any selected wheel, the necessary mechanism for controlling the electric impulses in accordance with the code represented by that particular code wheel while all the other code wheels continue to rotate idly during the operation.

A further object of the invention is to provide improved starting means whereby the manual closing of a switch starts the motor for operating the various code organizations and the starting of the motor automatically closes a mechanical switch which remains closed during the continued operation of the code, breaking the circuit at the end of a complete rotation of a code wheel and returning the parts to normal for re-excitement of the organization by manual control.

A further object of the invention is to provide in a code impulse controlling organization, improved manual means for putting the organization into operation with a mechanical switch controlled by the starting of the organization for continuing the current during the cycle of the code with an interposed tell tale light notifying the manual operator when the mechanical switch has been closed so that personal attention may be discontinued.

A further object of the invention is to provide necessary mechanical equipment and electrical connections for carrying into effect the preceding objects.

With these and other objects in view, the invention comprises certain novel parts, elements, units, constructions, mechanical movement and functions as disclosed in the drawings, together with mechanical and functional equivalents thereof, as will be hereinafter more fully described and claimed.

In the drawings:—

Figure 1 is a view of the assembled organization in side elevation,

Figure 2 is a view of the assembled organization in top plan,

Figure 3 is a view of the device taken on line 3—3 of Figure 1, in the direction indicated by the arrows,

Figure 4 is an end view as seen along arrow 4 at Figures 1 and 2,

Figure 5 is a vertical transverse sectional view taken on line 5—5 of Figures 1 and 2,

Figure 6 is a detail perspective view of the code lever,

Figure 7 is a detail fragmentary perspective view of the means employed for discontinuing the operation of the code,

Figure 8 is a diagrammatic view of the electric connections for actuating the device.

Like characters of reference indicate corresponding parts throughout the several views.

The improved selective electric impulse control which forms the subject matter of this application comprises a shaft 20 journaled in a frame 21, which said frame 21 carries and supports the remaining elements of the organization. Mounted upon the shaft 20 are a plurality of code wheels 22. The code wheels are shown in the drawings as three in number but it is to be understood that the number may be increased or decreased as the requirements of use may make necessary. The code wheels 22 are all identical except for the particular code notches 23 formed about the perimeter as it will be understood that these code notches are variable to meet the requirements of particular uses.

The shaft 20 carries a worm gear 24 mounted within a housing 25 driven by a worm 26 (see Fig. 3), which in turn is driven from a worm gear 27 in the housing 28. The worm gear 27 is driven by a worm 29 on the shaft 30 connected with a prime mover represented by the motor 31.

As each of the several code units are identical in structure, describing a single unit will be sufficient for a complete understanding of the entire device, bearing in mind that these units may be multiplied at will.

Extending longitudinally of the frame 21, is a rod 32 upon which are fulcrumed all of the code levers, one being represented in perspective

at Figure 6 and designated by the numeral 33. Down turned fingers 35, depending from the lever 33 carry a cam block 36, proportioned for proper engagement with the code notches 23 of the code wheel 22.

Mounted above the bank of levers 33 is a bar 37 to which are secured spring contact members 38 corresponding in number to the code levers each bent in a return bend and bearing upon insulation block 34 secured to each code lever and terminating in a contact extremity 39 (see Fig. 5). Each of the spring contact members 38 is connected with a binding nut 40 which is connected to one side of the electric circuit. At the contact extremity 39, contact members 41 are mounted along a strip 42.

Each of the several code units is provided with a latch 43 fulcrumed in any approved manner as upon the rod 44 and proportioned to move under its associated code lever and hold the contact extremity 39, out of engagement with the contact 41 (see Fig. 5).

To withdraw this latch 43 from supporting position, a bank of solenoids 45 is provided, each having a core 46, connected by a link 47 with the latch 43.

Each of the code wheels 22 is provided with an annular rib 48. The rib 48 is provided with a slot 49, so positioned, normally, that the oscillation of the latch 43 moves a pin 50 carried by said latch through such slot, from its latching position within the rib 48 to an unlatching position upon the exterior of the rib 48. This unlatching motion precedes the rotation of the shaft 20 for driving the code wheels, and the mechanism is so related with the code wheels as at all times to come to rest with the slot 49 so positioned.

Somewhere about the rib 48, determined by the code upon the periphery of the wheel, the rib 48 is again broken by turning outwardly a finger 51, such finger 51 being arranged to engage the pin 50 and withdraw the pin 50 from the exterior to the interior of the rib 48 and thereby draw the latch 43 to position to support the code lever 33. It will be understood that the position of this finger 51 will vary with the amplitudes of the perimetrical code notches about the wheel. It will also be understood of course, and may be explained at this point, that the code wheel will continue to rotate until the notch 49 again reaches normal position whereupon the entire device is stopped as will be hereinafter more fully explained. This continued rotation provides for an interval between repetitions of the code.

For the purpose of stopping the code wheels at the exact point required, as above outlined, the shaft 20 carries an insulating drum 52, said drum being provided with a notch 53. Mounted upon the bar 42 is a spring finger 54, having a cam extremity 55, for entering the notch 53 of the drum 52.

Associated with the finger 54, are contact fingers 56 and 57 so arranged that when the cam 55 is entered in the notch 53, as shown at Figure 1, the several contacts carried by the fingers 54, 56 and 57 are separated and the circuits broken, but when the cam 55 is raised upon the perimeter of the drum 52, as shown at Figure 4, then the contacts carried by these several fingers close their respective circuits for the purposes hereinafter more fully described.

The several contacts 41 are electrically connected with a bus bar 58 to which is also electrically connected the spring finger 54 as disclosed more particularly at Figures 2 and 4.

The electrical installation for the code control device is shown diagrammatically at Figure 8 and comprises lead-in wires 59 and 60 from any source of electrical energy. One of these wires, as the wire 60, is provided with a plurality of manual switches 61, 62, and 63, the number corresponding to the number of code wheels and represented here in like number.

From the switch 61, a wire 62' leads to one of the solenoids 45, energizes such solenoid and at 63 continues through the wire 64 to the motor 31 and by the wire 65 to the lead-in 59. This energizes the motor 31, which upon starting rotates through the gears, the shaft 20 and therewith the drum 52. In normal or inoperative position, the cam 55 is seated in the notch 53 of the drum 52, but as soon as the drum 52 starts to rotate, the cam is lifted to the position shown at Figure 4, closing the circuit between the several fingers 54, 56 and 57. This mechanical closing having now taken place, current will flow from the line wire 60, through the wire 66 to the spring finger 54, dividing one part of the current passing through the spring finger 56 and wire 67, to the motor 31 and return to the line 59 through the wire 65.

The other part of the current is shunted through the spring finger 67 and wire 68, to the tell tale light 69, which notifies the manual operator that the mechanical switch has been closed, whereupon the manual switch may be released and the device will continue to operate through one entire cycle of operation. In this cycle of operation, the code wheels 22 are rotated to alternately raise and lower the code triggers 33, as the particular code may space such operations. The raising and lowering of the lever causes the contact extremity 39 to make and break contact with the contact 41. The making of the contact between the contact extremity 39 and the contact 41 causes the current to flow from the line 60, the wire 66, to the contact 41 and through the contact extremity to the wire 70 and the load coil 71, then through the wire 72, to the line 59. This causes an energizing of the load coil 71 intermittently in consonance with the code impressed upon the code wheels 22.

When a complete code has been run off from one of the code wheels, the finger 51 gathers in the pin 50, of the latch 43, moving such latch under the code trigger 33 and the code wheel continues to rotate during an entire cycle until the conductor cam 55 drops into the notch 53 which is the exact position of register between the pin 50 and the slot 49. The dropping of the cam 55 into the notch 53, opens the connection between the finger 54 and the fingers 56 and 57 thereby breaking all circuits and discontinuing further action of the mechanism.

The invention is hereby claimed as follows:

1. In a selective electric impulse control, a code wheel, means to actuate the wheel to run the code, a lever engaging and actuated by the code wheel, a latch adapted to hold the lever out of engagement with the code wheel, a band carried by the code wheel having passages therethrough, one circumferentially preceding and one following the code of the wheel, a pin carried by the latch and engaging the exterior of the band to hold the latch in unlatched position and the interior to hold the latch in latched position, electro-magnetic means to draw the pin through one passage at the initiation of actuation, and an

outwardly curved finger carried by the band tending to withdraw the pin within the band at the completion of the code.

2. A selective electric impulse control comprising a journaled shaft, a plurality of code wheels carried by the shaft having code indicia occupying a segment of the perimeter, a motor adapted to drive the shaft, means for causing said motor to drive the shaft to a single revolution at each operation of said means, circuits corresponding in number to the code wheels employed, a manual switch in each of said circuits, a code lever for each code wheel employed, a latch for each code lever, a cam band carried by each code wheel normally holding the latch to maintain the lever out of engagement with the code wheel, said band being provided with openings, one having an adjacent outwardly directed finger, electro-magnetic means included in each circuit to move the latch out of latching engagement through one of said openings, the finger tending to move the latch reversely through the other of said openings to latching position.

3. A selective electric impulse control comprising a journaled shaft, a plurality of code wheels carried by the shaft, a motor adapted to drive the shaft, means for causing said motor to drive the shaft to a single revolution at each operation of said means, circuits corresponding in number to the code wheels employed, each circuit including the motor in its circuit, a manual switch in each of said circuits, a code lever for each code wheel employed, a latch for each code lever normally maintaining the lever out of engagement with the code wheel, an electro-magnetic unit for releasing the latch, one of said electro-magnetic units being included in each of said circuits, a band carried by each code wheel, said band provided with passages therethrough, an outwardly extending cam finger carried by the band adjacent to one of said passages, and a pin carried by the latch engaging the exterior of the band to maintain the latch in unlatched position and the interior to maintain the latch in latched position, the action of the electro-magnetic means being to draw the pin through one of said passages and the finger to withdraw the pin through the other of said passages within the band.

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