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SELECTOR

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FIG. 1.

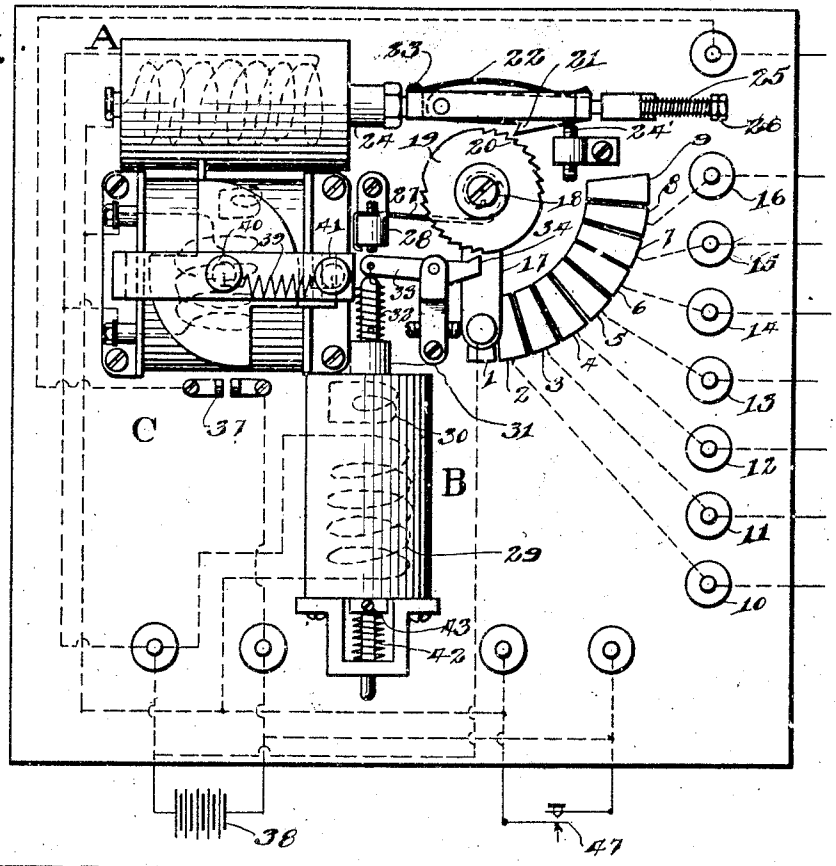
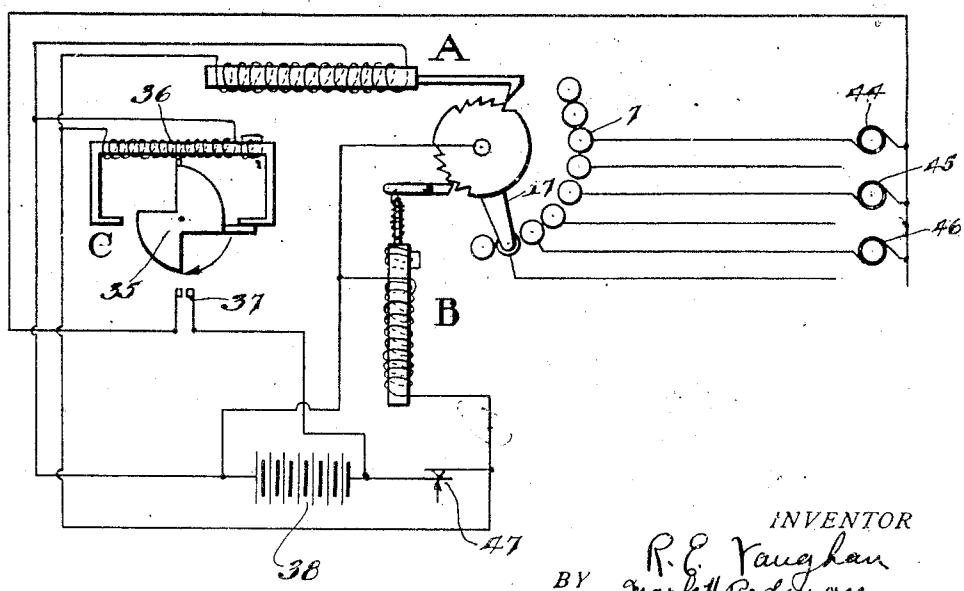


FIG. 2.



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SELECTOR.

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This invention relates to a selector or a selective receiver for closing any one of a number of circuits connected thereto as desired by the closing of a key or relay connected to the apparatus a given number of times. It is particularly applicable to operation from signals or impulses on a radio or wire telegraph signalling system for the remote control of any desired electrical device, and the main object of this invention is the provision of an apparatus as above set forth.

A further object of this invention is the provision of a selector which may be operable so that one may close the key or relay controlling the apparatus a definite number of times corresponding to the "dots" of a telegraph system to select the proper apparatus to be energized, and then, by holding the key closed for a longer time corresponding to a "dash" in the telegraph system, the circuit may then be made so as to operate the selected apparatus connected to the selector.

A further object is the provision of a selector having a plurality of solenoids or electrical relays, one of which steps up the contact arm to advance it to the proper contact dependent upon the number of dot impulses received by the selector and a second relay of the retarded type which may operate when the key is kept closed for a dash impulse so as to close a connection between the source of power and the selective contact only after the proper contact has been selected.

A further object is the provision of an additional solenoid which is operable instantly so as to hold the contact arm in the position to which it is moved by the quick acting solenoid or relay and which will have the characteristic of a delayed return after it has been de-energized so that it will prevent a return of the contact arm while the quick acting relay is being operated a number of times.

Further objects will be more fully set forth in the attached description and in the drawings, in which:

Fig. 1 is a plan view of the selector and

Fig. 2 is a diagrammatic illustration of the electrical connections of the selector as connected to external circuits.

Numerals 1 to 9 indicate contacts which are electrically connected to binding posts 10 to 17 inclusive. A contact arm 17 is mounted so as to rotate about a central pivot 18 and make contact with the various contacts. Arm 17 is mechanically connected to a hub member 19 which is provided with a plurality of teeth 20 which are adapted to be engaged by a pawl 21 suitably mounted by means of a spring 22 upon the rod 23 so that the spring 22 will normally maintain the pawl in engagement with the teeth when the plunger is being moved to the left from its position shown in Fig. 1.

A suitable stop screw 24' is provided to release the pawl 21 from the teeth 20 when the rod 23 is at its extreme right-hand position. Rod 23 is connected to an armature or solenoid 24 of a quick acting relay A. The spring 25, adjustable by means of nuts 26, operates to normally maintain the plunger in the position shown in Fig. 1, and to return the plunger to this position after the de-energization of the solenoid A. The hub member 19 of the contact arm is urged to its normal position as shown in Fig. 1 by means of a spring 27 connected to a fixed member 28 on the main base of the armature.

A second relay B is provided with an energizing winding 29 and a short circuit winding 30, the short circuited winding, together with an extra heavy plunger or armature 31, causing this relay to have a delayed return after it has been de-energized.

The plunger 31 however is instantaneously operated so as to move downwardly from the position shown in Fig. 1, when the solenoid B is energized. Plunger 31 is connected by means of a spring 32 to an arm 33 so as to urge the detent 34 into engagement with teeth in the hub member 19 of the contact arm. Such action permits counter-clockwise movement of the contact arm by the solenoid A, but prevents a clockwise movement of the contact arm.

A third solenoid C diagrammatically shown in Fig. 2 as having a rotating armature 35 of general Z-shape, is provided with an energizing coil 36. When this coil 36 is energized, the armature will be slowly rotated in the direction of the arrow shown in Fig. 2 due to the fact that the arcuate edges of the armature are not concentric with the center of rotation as clearly shown in this figure, and also due to the fact that a portion of the wirings are short circuited. After the coil 36 is energized for a sufficient time, the armature will have rotated through approximately eighty or ninety degrees and close a contact 37 so as to connect a battery or

other suitable source of power 38 in series with the contact arm and the contact upon which it rests. The armature 35 is maintained in its normal position as shown in Figs. 1 and 2, and also returned to this position by means of a spring 39 connected to a knob 40 which is attached rigidly to the armature. A suitable adjusting means for this spring is shown in the form of a knob 41. A spring 42 provided with adjusting means 43 is likewise provided to return the armature of solenoid B to its normal position.

To contacts 10 to 16, are adapted to be connected suitable motors or other desired electrical parts indicated by 44, 45, and 46 which may be used for the remote control of steering devices or any other desired function. Circuit closer 47 which may be a key, relay, or automatic transmitter, is connected as shown so as to energized the solenoids and windings simultaneously, these windings being connected in parallel or in series to the source of power 38, when the circuit closer 47 is closed.

The operation of the selector is as follows:—Assuming for example, that it is desired to operate the motor 44 which is connected to contact No. 7. The operator presses the key or contact closer 47 so as to produce a series of impulses or dots. In this case, there are seven in number which will cause the operation of the armature of solenoid A seven times, thereby rotating the contact arm 17 seven steps, so that the contact arm will then rest upon contact No. 7. During the time interval between each dot impulse the contact arm 17 will be prevented from resuming its original position on the insulated contact 1 by means of the relay B, since the armature of relay B will be withdrawn on the first dot impulse to cause detent 34 to engage with the teeth on the contact arm hub, and the characteristics of the solenoid B are such that the armature will not again resume its original position until after the time interval which is greater than the time between the dot impulses. It is not desired to have the various electrical devices connected to contacts 2, 3, 4, 5 and 6 energized while the contact arm is moving over these contacts. For that reason, the solenoid C is so designed that it will be only partially rotated by the energization of its coil 36 corresponding to a dot impulse and the contact 37 will therefore not be closed until the contact arm has reached its desired position on contact No. 7. The last impulse, in this case the seventh, will be held by maintaining the key 47 closed and such operation will allow then for the full operation of the armature 35 of solenoid C so as to close the contact and connect the source of power to the external apparatus 44. The key is maintained closed for a time dependent upon how long it is desired to operate the motor or apparatus 44. The key is then released which immediately de-energizes all three solenoids. The spring 39 immediately operates to return the armature 35 of solenoid C so as to break the contact and thereby open the circuit connected to the motor or apparatus 44. After a very short time interval, the armature of solenoid B assumes its normal position withdrawing the detent 34 and permitting the return of the contact arm to its normal position ready for a second operation.

We claim:—

An electrical apparatus of the class described comprising a single contact arm, a solenoid having an armature, a ratchet and pawl connection between the armature and the contact arm, solenoid means to prevent the return of said contact arm until after a predetermined time interval after the de-energization of said first solenoid, a retarded solenoid to close the circuit through said contact arm after said retarded solenoid has been energized for a predetermined time, said retarded solenoid including a pivotally mounted armature having a contact extension thereon, said solenoids being connected for simultaneous energization, and a plurality of contacts adapted to be contacted by said contact arm.

In testimony whereof we affix our signatures.

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