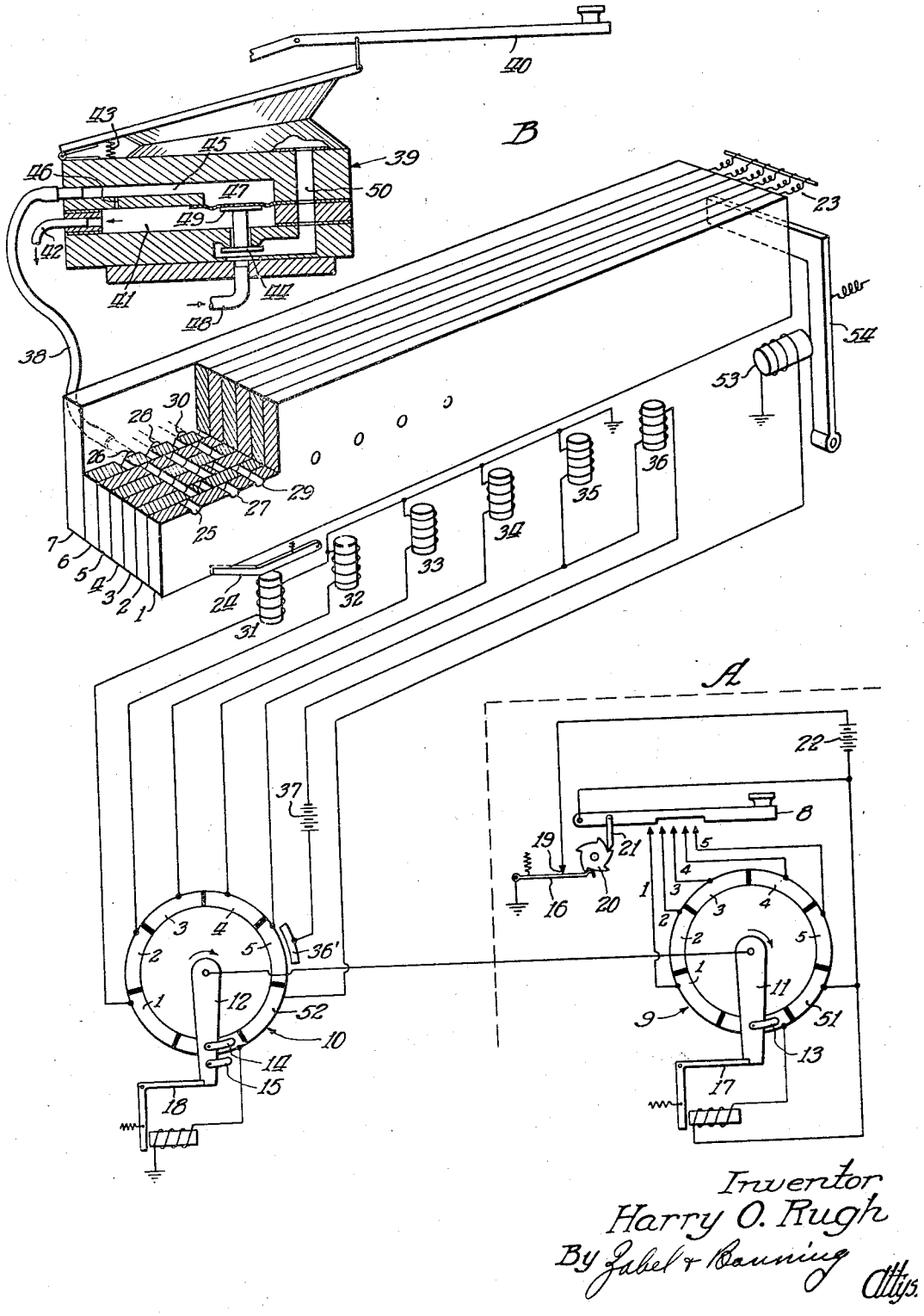
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TYPEWRITER OPERATION

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TYPEWRITER OPERATION

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My invention relates to telegraph typewriter systems and the like and has for its object the provision of a type or other character writer in which the operator may be controlled from a distance such for example as by operation of a remote typewriter.

It is the principal purpose of this invention to provide a device of this character utilizing a series of code elements operating on the well known Baudot system of transmission in which no time is lost between the selection of the code elements and the initiation of the character forming or printing operation thus permitting an immediate release of the code elements for further operation and saving a considerable amount of time.

My invention also contemplates the provision of a system of this character which eliminates the necessity for a selecting device to cooperate with the code elements, the code bars themselves operating to not only form the desired combination but to complete the mechanical operation necessary to cause the printing operation.

In all previous systems of which I have knowledge, the code bars at the receiving station have been of such construction that, when a certain bar combination is effected, it is necessary for operating bars diagonal to the code bars to come in contact with the code bars which allow only the operating bar corresponding to the code selected on the code bars to drop into the slot prepared by the code bars and thereby engage the selected character and complete the printing operation.

By the use of the present invention, the necessity for the operating bars is eliminated and the selected character is printed as soon as the code elements are positioned thus effecting a saving both in time and in number of mechanical elements required.

My invention contemplates as a means for carrying out the above purpose the use of a plurality of code bars or plates which instead of being provided with the usual notches or slots are provided with apertures therethrough which apertures are so spaced that upon movement of certain of the bars or plates different series of holes therein register and admit air therethrough which air in turn causes the operation of the bellows to actuate the type bar. Using this system in connection with the Baudot scheme of transmission requires that another bar or plate in addition to the five normally employed be used this bar serving merely to prevent the functioning of the letters whose combinations might be formed in the process of a distributor releasing one bar at a time as is customary in the Baudot scheme.

I will described the preferred form of my invention by reference to the accompanying drawing wherein the details thereof are shown more or less diagrammatically. It is to be understood, of course, that this showing is illustrative only and is not to be taken as limiting the invention except in so far as it is limited by the claims.

Referring now in detail to the drawing, the sending or transmitting apparatus is shown at A and the receiving apparatus at B. The transmitting apparatus may be of the usual standard type wherein keys such as key 8 are actuated for the printing or typing of the original message to be transmitted. Such structures are usually in the form of a typewriter having the standard keyboard, and the depression of the proper keys causes the completion of certain circuits by means of which the code elements at the receiving end are set to correspond to the letter designated by the key depressed at the sending end. The impulse sending and receiving mechanism involves a pair of contact disks 9 and 10, one located at each end of the system.

Contactor elements 11 and 12 cooperate with the contact disks and are operated in synchronism so that they have the same position with respect to their associated contact disks at all times. The details of this transmitting mechanism are well known and will be described only briefly in order to make the understanding of it more clear and to show the modifications necessary for my invention.

The arms 11 and 12 carry contact elements 13 and 14 for engaging the segments of the disks 9 and 10, and arm 12 also carries an additional wiper 15 the purpose of which will presently appear. The arms are normally held stationary by the relay controlled stops 17 and 18, these relays stops being controlled in turn by the keys 8 through the medium of the trip arm 16, contact 19, ratchet wheel 20, and pawl 21; that is, upon depression of one of the keys 8, the ratchet wheel 20 is turned to momentarily break the contact at 19 thus opening the circuits for the relays controlling the stops 17 and 18 at 19 and causing the stops to be withdrawn; at the same time, the depression of key 8 will complete a circuit from battery 22 through the key 8 and one of the contacts 1, 2, 3, 4, or 5 leading to the correspondingly numbered segments of the disk 9. It is clear, of course, that one or more segments will be connected depending upon which key is depressed. In the example shown, the key de-

pressed connects only contact 1 and segment 1 to battery 22. The depression of the key having released the arms 11 and 12 they rotate in unison until they reach segment 1 of their corresponding disks. At this time, the circuit is completed from battery 22 through key 8, contact and segment 1 of disk 9, wiper 13, arm 11, arm 12, wiper 14, segment 1 of disk 10 to the winding of relay 31 associated with code bar 1 of the code bar assembly.

The code bar assembly consists of bars numbers 1, 2, 3, 4, 5, and 6 normally urged to the right as shown in the drawing by means of the individual springs shown at 23. These bars are normally held against this movement to the right by the locking armatures such as indicated at 24 for the relays 31 to 36, it being understood, of course, that each of the relays has a locking armature controlling one of the bars 1 to 6. These bars are apertured as indicated at 25, the apertures in bar 1 opening to the atmosphere and the apertures in bar 6 being normally out of registry with corresponding apertures 26 in the mounting or base bar 7. These apertures or holes are arranged in accordance to the code so that by the positioning of the five bars numbers 1 to 5 it is possible to obtain all of the necessary character combinations to be used. The holes in this case correspond to the notches employed in the ordinary Baudot system. The bars or plates have smooth even sides fitting evenly together so that little or no air can pass between them. Only a few of the holes have been shown in the bars as it is believed the combination will be readily understood from this showing.

Assuming now that contact has been made as previously described to complete a circuit for relay 31, this trips the holding armature 24 and permits bar 1 to move to the right to bring its aperture 25 into alignment with the corresponding apertures in bars 2, 3, 4, and 5 thus preparing the code partially for a certain character to be printed. Arms 11 and 12 continue to rotate in synchronism until arm 12 arrives at a position for contact wiper 15 to engage contact 36' at which instant relay 36 is energized over a closed circuit including battery 37 so as to trip the holding armature of relay 36 and allow bar 6 to move to the right, completing the alignment of the openings corresponding to aperture 25 from bar number 1 through to the base bar 7 where they register with opening 26. This allows air to rush in through the hole thus provided through the conduit 38 into the bellows mechanism generally indicated by the numeral 39 to operate and depress the key 40 and thus print in the well known manner the character corresponding to the character indicated by the key 8 originally depressed at the sending station.

The operation of the bellows mechanism is as follows: Suction is applied to the chamber by connecting the pump to the conduit 42 so as to maintain a substantial vacuum in the chamber 41 at all times. Spring means such as indicated at 43 normally holds the bellows extended, and the control valve 44 is normally in the position shown owing to the fact that chamber 45 to which the conduit 38 leads is normally sealed by the closing of opening 26 so that a substantial vacuum exists therein due to the fact that whatever air had been let in is drawn out through the opening 46 which is a comparatively minute opening when compared with the cross sectional area of conduit 38 or opening 26. The valve 44 is secured to a diaphragm 47 which diaphragm would in the case of substantially equal pressures in chambers 41 and 45 be in the position shown in the drawing. A certain amount of pressure would exist against the lower end of the valve to hold it seated in the uppermost position due to the fact that air can enter freely through conduit 48 and thus fill the bellows.

Now, however, when a passage is completed from the opening 26 through the code bars, this permits air to rush into the chamber 45, and the resulting pressure on the head 49 of the valve being greater than the suction applied on the stem thereof valve 44 would be depressed to temporarily close the air inlet 48 and apply the suction of the pump through the open passage around the stem of valve 44 and the passageway 50 to the bellows thus collapsing the bellows and operating key 40. A bellows such as the bellows 39 is provided for each key and each bellows is connected to a corresponding aperture such as 28 or 30 which are adapted to communicate by proper alignment with the openings 27 and 29 through the code bars.

Turning now to the further operation due to the arms 11 and 12 continuing their movement, they next reach the restoring segments 51 and 52 of the disks 9 and 10 which completes a circuit from battery 22 through the arms 11 and 12 and their associated connections to the winding relay 53 causing it to retract its restoring armature 54 to again push all of the bars into normal position. The stopping relays 17 and 18 then stop the arms 11 and 12 in the original starting position, and the system is restored to normal.

Thus it will be seen that by the mere selection on the keys of the sending typewriter of various code bars, these code bars may be moved to the proper position to provide openings or holes to allow the air to operate the particular bellows associated with the holes provided. The action upon the completion of the selection is instantaneous as each time the arm 12 reaches contact 5 of its associated disk it trips the bar 6 to complete the communication to the bellows. There are no delays or extra mechanical elements involved which require the holding of the code bars any longer than necessary for the selecting arms 11 and 12 to pass over their normal path. It is thus possible to maintain a very rapid rate of reception of impulses and to eliminate a considerable delay in the selection of the keys to be operated on the typewriter. Also, a considerable saving is made in the number of mechanical elements necessary to complete the receiving operation.

From the above description, it is believed that the construction and operation of this device will be clear to those skilled in this art and the advantages thereof readily apparent.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described having a plurality of elements adapted to be selectively and individually actuated, a lesser plurality of control elements adapted when selectively actuated to select for individual actuation any desired one of said first aforesaid elements, an auxiliary control element adapted when actuated to initiate the actuation of said selected one of said first plurality of elements, and means for simultaneously actuating the auxiliary control element with the last one of the control elements, said control elements comprising a plurality of

smooth sided members provided with transverse holes therein.

2. A device of the character described having a plurality of elements adapted to be selectively and individually actuated, a lesser plurality of control elements adapted when selectively actuated to select for individual actuation any desired one of said first aforesaid elements, an auxiliary control element adapted when actuated to initiate the actuation of said selected one of said first plurality of elements, and means for restoring said control elements without influencing the completion of the prescribed actuation cycle of the said selected element, said control elements comprising a plurality of smooth sided members provided with transverse holes therein.

3. A device of the character described having a plurality of elements adapted to be selectively and individually actuated, a lesser plurality of control elements adapted when selectively actuated to select for individual actuation any desired one of said first aforesaid elements, an auxiliary control element adapted when actuated to initiate the actuation of said selected one of said first plurality of elements, and means for restoring said control elements without influencing the completion of the prescribed actuation cycle of the said selected element, said control elements including apertured members having smooth abutting sides and each member having a series of apertures therein adapted for registry with openings in adjacent members upon actuation of the elements.

4. In a device of the character described, a series of movable plates having holes adapted to form registering series according to the arrangement of plates, means normally retaining said plates in inoperative position, control means for moving said plates independently of each other in succession whereby to bring different series of holes into registration, means for actuating a different mechanism with each line of holes thus brought into registration, and an auxiliary control plate preventing operation of said last named means until the completion of the movements of said plates.

5. In a device of the character described, a series of movable plates having holes adapted to form registering series according to the arrangement of plates, means normally retaining said plates in inoperative position, control means for moving said plates independently of each other in succession whereby to bring different series of holes into registration, means for actuating a different mechanism with each line of holes thus brought into registration, and an auxiliary control plate capable of movement simultaneously with one of said first named plates preventing operation of said last named means until the completion of the movement of said plates.

6. In mechanism of the character described, a master typewriter, means operated by the actuation of the keys for transmitting combinations of timed impulses, a series of valve plates having holes adapted to form registering series according to the arrangement of said plates, means receiving said impulses and controlling the movement of said plates in response to said impulses, a receiving typewriter, and pneumatic means controlled by the arrangement of said plates for operating the receiving typewriter.

7. In mechanism of the character described, a master typewriter, means operated by the actuation of the keys for transmitting combinations of time impulses, a series of valve plates having holes adapted to form registering series according to the arrangement of said plates, means receiving said impulses and controlling the movement of said plates in response to said impulses, a receiving typewriter, and pneumatic means controlled by the arrangement of said plates for operating the receiving typewriter, said series of plates including a control plate normally held in position to prevent registration of the holes in all said plates to form a passage through said series but movable to complete the passage under control of the impulses transmitted.

8. In mechanism of the character described, a master typewriter, means operated by the actuation of the keys for transmitting combinations of timed impulses, a series of valve plates having holes adapted to form registering series according to the arrangement of said plates, means receiving said impulses and controlling the movement of said plates in response to said impulses, a receiving typewriter, and pneumatic means controlled by the arrangement of said plates for operating the receiving typewriter, said series of plates including a control plate normally held in position to prevent registration of the holes in all said plates to form a passage through said series, and means to move said plate, upon the completion of the reception of the impulses from a key of the master typewriter, into position to complete a passage prepared by the reception of said impulses.

9. The method of reproducing typewriter or similar messages which comprises translating them into a plurality of series of electrical impulses, transmitting said impulses, translating the transmitted series of electrical impulses into a pneumatic impulse for each series of electrical impulses, and utilizing said pneumatic impulses to operate a typewriter.

10. In a device of the character described, a series of selecting plates having holes adapted to form registering series according to the arrangement of the plates, control means associated with each plate for moving said plates to bring different series of holes into registration, means for actuating a different mechanism with each series of holes thus brought into registration, and an auxiliary control means initiating the operation of said last named means upon the completion of the movements of said plates.

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