

March 30, 1937.

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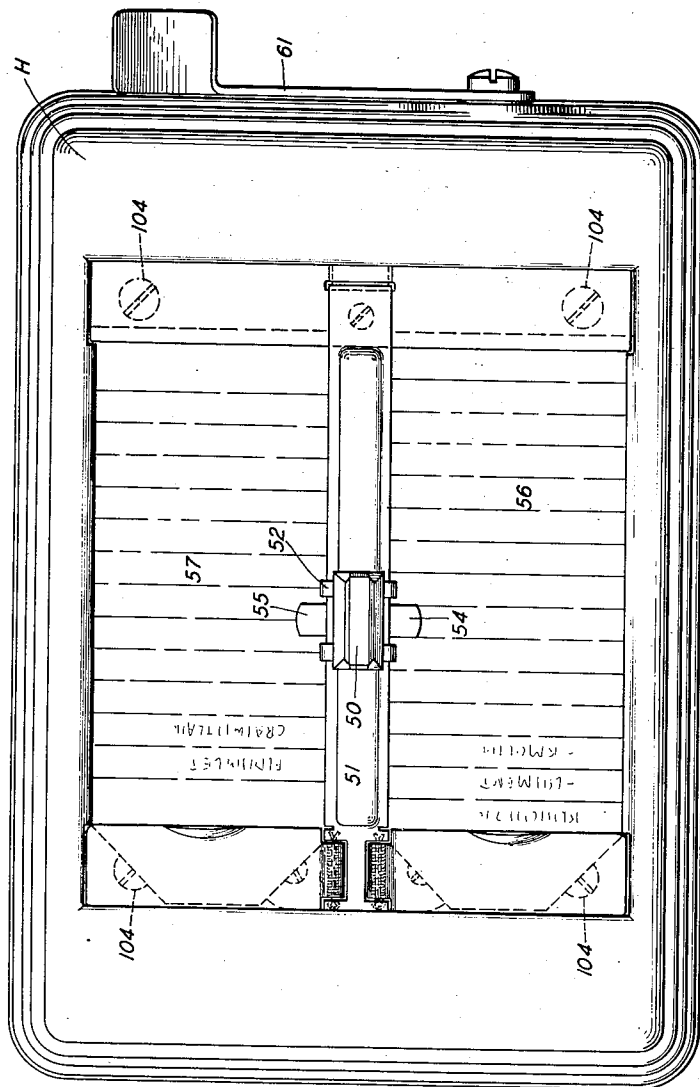
2,075,536

CALL TRANSMITTER

Filed Sept. 18, 1935

4 Sheets-Sheet 1

FIG. 1



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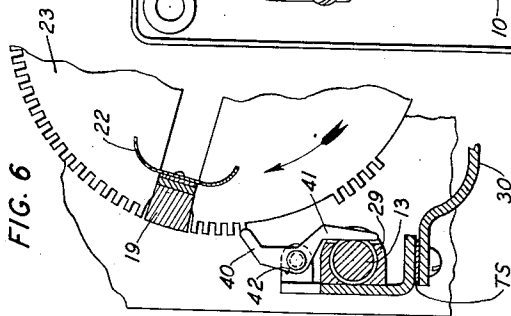
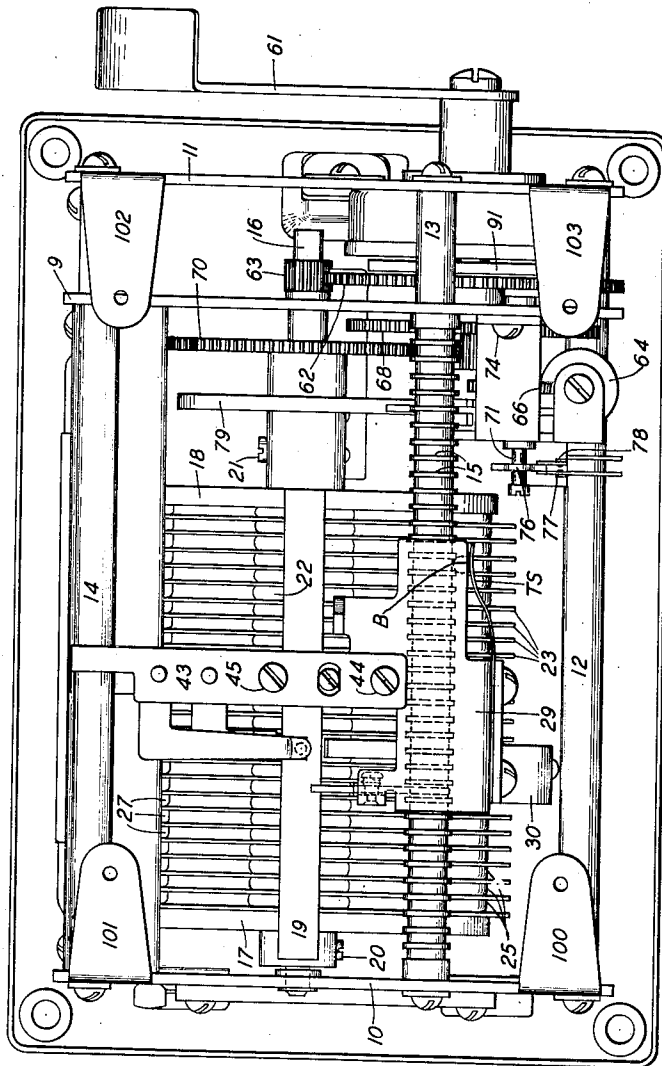
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FIG. 2



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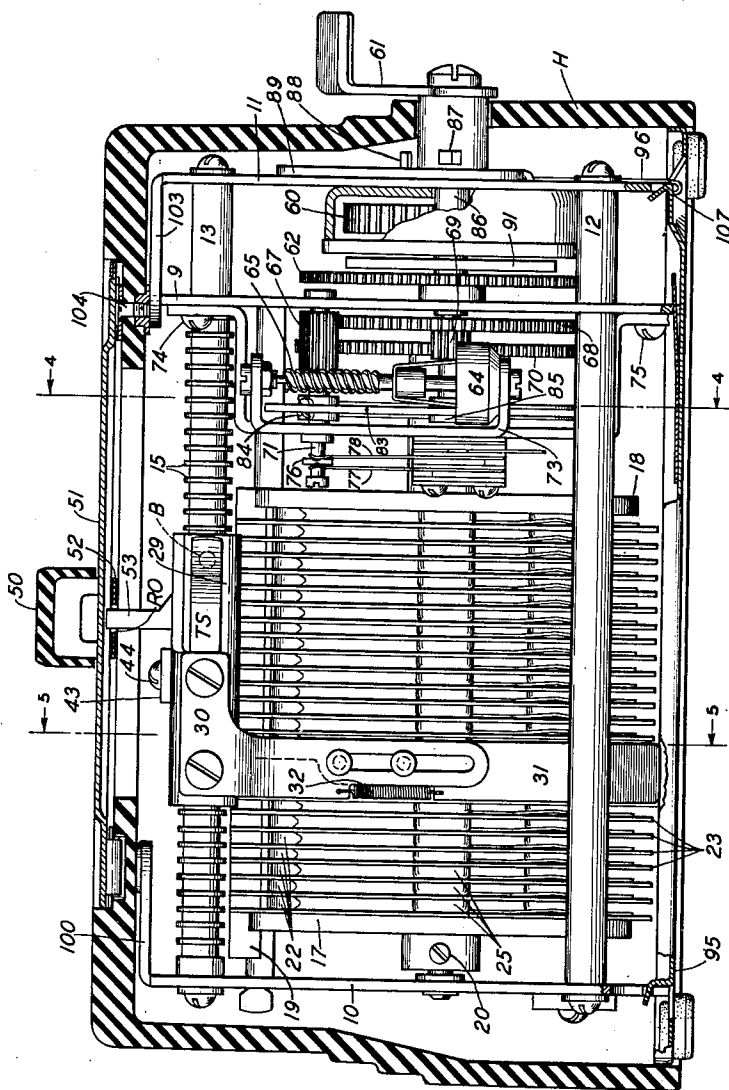
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Filed Sept. 18, 1935

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FIG. 3



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FIG. 4

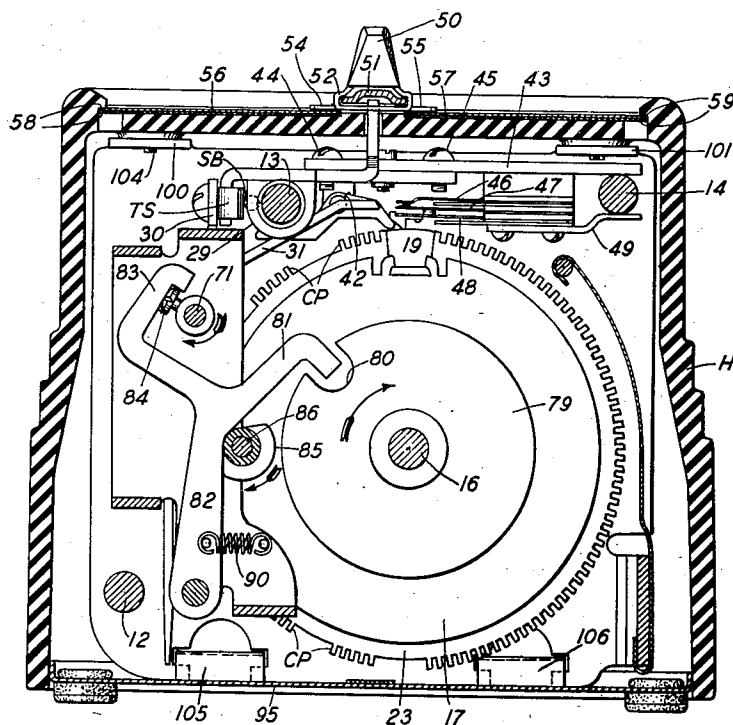
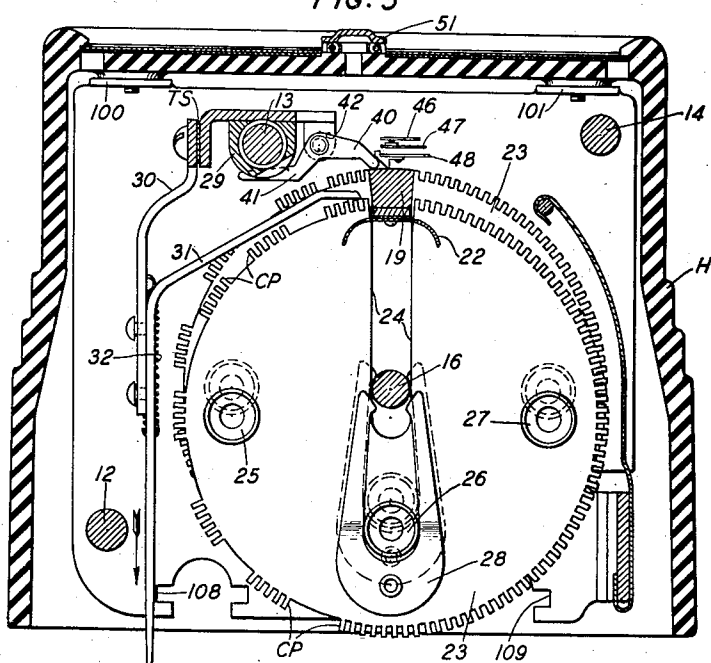


FIG. 5



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2,075,536

CALL TRANSMITTER

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Application September 18, 1935, Serial No. 41,010

3 Claims. (Cl. 179-90)

This invention relates to call transmitters for use with automatic telephone systems and more particularly to repertory call transmitters as shown for example in Patent 1,306,829 to E. A. Mellinger, dated June 17, 1919.

In the call transmitter disclosed in that patent each of the telephone numbers to be called by the device is represented by a code disc, these discs being removably mounted on a shaft. A carriage is provided carrying the impulse springs and a manually operable index member projects from the casing by means of which the springs may be moved into operative relation to any code disc, and upon depression and release of a lever the shaft rotates and the selected code disc actuates the impulse springs to transmit the code individual to said disc.

The object of the invention is to improve the construction and operation of such devices.

According to the invention, means is provided whereby the manual adjusting movement of a carriage, as indicated by a pointer on a cooperating name-plate, is effective to simultaneously position a contact actuating member in operative relation with one of the code discs and a sliding member in position wherein the operation of this member at right angles to its selective movement is effective to disengage the selected code disc from its supporting shafts for replacement by another disc representing another code designation. Automatically operable means is provided for centering the selecting arm and the sliding member with respect to the disc selected. Means actuated by the rotation of the code discs is provided for preventing the movement of the contact actuating member upon the impulse sending operation of the transmitter and means is provided for readily locking and removing the back plate of the housing as to give access to the operating parts of the transmitter and the removal and insertion of the code discs on their supporting shafts with means provided in the front plate of the transmitter housing for removably receiving the cards or name-plates bearing the names of the subscribers represented by the code discs.

Other features of the invention and advantages will appear from the following description and by the claims appended thereto, reference being had to the accompanying drawings, in which

Fig. 1 is a top view of the transmitter housing showing the index and operating knob in selecting position on the name-plates;

Fig. 2 is a top assembly view of the transmitter mechanism shown with the housing removed;

Fig. 3 is a longitudinal assembly view of the mechanism shown with the housing and a number of operating parts in section;

Fig. 4 is a cross-sectional view taken on line 4-4 of Fig. 3;

Fig. 5 is a cross-sectional view taken on line 5-5 of Fig. 3; and

Fig. 6 is a partial view showing the code selecting mechanism in the locked position.

As shown in Figs. 2, 3, 4 and 5, the numerals 9, 10 and 11 indicate upright supports which are held in assembled relation by a plurality of spacer bars 12, 13 and 14, the bar 13 being formed along its length with a plurality of notches 15 provided for a purpose that will be hereinafter described in detail.

In the upright supports 9 and 10 is journaled a rotatable shaft 16 and on this shaft is secured, as by screws 20 and 21, the disc members 17 and 18 provided for mounting a bar 19 of trapezoidal cross-section parallel to the longitudinal axis of shaft 16. On shaft 16 and the bar 19 is mounted in side-by-side relation a plurality of code discs 23, each having a radial slot 24 extending to the center of the disc for readily centering them on the shaft and the slot is tapered adjacent the periphery of the disc for engaging the non-parallel sides of the bar 19 as shown in Figs. 4, 5 and 6. Each disc is provided with a fork-shaped spring member 28 having its prong portions engaging diametrically opposite points on the shaft 16 for holding them resiliently in adjusted position on the shaft while the bar 19 effectively locates these discs in aligned relation with respect to groups of teeth representing telephone designations, as is well known in the telephone art, and disc-shaped spacer members, such as 25, 26 and 27, shown in Fig. 5, carried by each disc serve to hold these discs in spaced relation on the shaft 19, as shown in Figs. 2 and 3.

On the spacer bar 13 there is slidably mounted a carriage 29 having a downwardly extending bracket 30 secured thereon for slidably mounting an arm 31, this arm being held in normal retracted position, as shown in Fig. 4, by a retractile spring 32 shown in Figs. 3 and 5.

On carriage 29 is pivotably mounted a double armed lever member, the arm 41 of which is provided for engaging the notches 15 in the spacer member 13 under the tension of a spring 42 while the arm 40 of this lever extends in opposite direction to arm 41 in operative relation with the bar 19 which when in normal position, as shown in Figs. 2, 4 and 5, impart a small angular movement to this lever member for disengaging the

arm 41 from the notch 15 of spacer 13 and thereby permitting the sliding movement of the carriage for a purpose that will be hereinafter described in detail. It is to be noted, however, that the rotating movement of shaft 16 and the bar 19 carried thereby from the position shown in Figs. 2, 4 and 5 to the position indicated in Fig. 6 is effective to cause the arm 41 to engage, under the tension of spring 42, one of the notches 15 for preventing the lateral movement of carriage 29 on spacer member 13 during the operation of the transmitter.

On carriage 29 (Figs. 2, 3 and 4) is secured, as by screws 44 and 45, an arm 43, the free end of which rests on the spacer bar 14 and to the under side of arm 43 is mounted in a pile-up arrangement the shunt springs 46 and 47, an actuating member 48 for the shunt springs, and an arm 49 bearing against the spacer member 14 with a predetermined tension for frictionally holding the carriage 29 and the contact actuating member 48 in selected position with respect to the code discs 23 in cooperation with a ball B engaging the notches 15 under the tension of the spring TS mounted on carriage 29 which selection is effected by the movement of a knob 50 shown in Figs. 1, 2 and 4, in turn slidably mounted on a guiding bar 51. A plate 52, which is bent around the guiding bar 51 and having its free ends embedded in the knob 50, is provided with a rectangular opening RO in which the upright lug member 53 of carriage 29 extends for operatively connecting this carriage with the knob 50. Plate 52 is formed integrally with index members 54 and 55 movable in juxtaposition to dial plates 56 and 59 on which are printed the names of subscribers as represented by the code discs 23, these name-plates being slipped in adjusted position in parallel disposed grooves 58 and 59 formed in the top portions of the housing H which is secured on laterally extending lug portions 100, 101, 102 and 103 by similar screws 104 while a plate 95, which forms the complement portion of housing H, is provided with a pair of tongues 105 and 106 and a camming portion 107 for engaging the slots 108 and 109 in the upright support 10 while a spring 96 carried by the upright support 11 permits the ready removal of this plate as to give access to the code disc 23 and other operating parts of the transmitter.

The tensioning of a motor spring 60 upon the operation of a handle lever member 61 within the limit determined by the stop lugs 87 and 88 is effective to rotate the shaft 16 and the code discs 23 carried thereby through the operation of gear 62 and pinion 63, connected to the spring shaft 86 by a one-way effective clutch element 91 carried by gear 62 and a complement element not shown carried by shaft 16, the movement of shaft 16 being controlled by a centrifugal governor 64 operatively connected to shaft 16 through the worm 65, the worm gear 66, shown in Fig. 2, the pinion 67 engaged by the gear 68, the pinion 69 carried by this gear, and gear 70 secured to shaft 16. The spindle 71 on which the pinion 67 and the governor worm wheel 66 are mounted has one end journaled in the upright support 9 and its other end is journaled in a bracket 73 secured to this support by screws 74 and 75 as shown in Figs. 2 and 3 and on this end of spindle 71 is mounted a duplex camming member 76 provided for actuating the impulse springs 77 and 78 upon the operation of shunting springs 46 and 47 as effected by the code discs 23 as will be hereinafter described in detail.

On shaft 16 adjacent the gear 70 is securely mounted a disc member 79 having a notch 80 shown in Fig. 4 normally engaged by the arm 81 of a lever member 82, this lever having an arm 83 provided for simultaneously engaging a stop in the form of a screw 84 carried by the spindle 71 for holding the duplex cam 76 and the impulse springs 77 and 78 actuated thereby in the open position and the bar 19 engaging member 47 for closing the shunting contacts 46 and 47.

A cam 85 secured on the motor spring shaft 86 is provided for disengaging the arm 81 of lever 82 from the disc 79 and the arm 83 of this lever from the stop screw 84 upon the movement of handle lever 61 an angular distance limited by the stop lugs 87 carried by the bearing portion of lever 61 and a cooperating lug member 88 extending laterally from a plate 89 which is, in turn, secured to the upright support 11. Upon the release of handle lever 61 by the operator and the consequent turning movement of shaft 16 and the disc 79, the arm 83 of lever 82 is prevented from engaging the stop screw 84 due to the arm portion 81 of this lever bearing on the periphery of the disc 79 under the tension of spring 90, this spring being effective to operate lever 82 at the completion of a complete turn of shaft 16 and of the disc 79 carried thereby by reengaging the arm 83 of this lever with the stop screw 84 for stopping the transmitter mechanism.

A typical call transmitting operation of the device is as follows:

The movement of knob 50 along the guiding bar 51 is effective to move the carriage 29 and to place one of the index members 54 and 55 in registry with the name of the telephone subscriber wanted. The movement of carriage 29 places the shunting contact operating member 48 in operative relation with one of the code discs 23 which are formed, as well known in the telephone art, by cutting groups of teeth CP to represent the telephone number of the subscribers, the names of which appear on the name-plates 56 and 57. Under this condition, the angular movement of the handle lever 61 and its supporting spindle 86 within the limit defined by stops 87 and 88 is effective to tension the motor spring 60 and to rotate the cam 85 carried thereby a small angular distance for pivoting lever arm 82 against the resistance of spring 90 for disengaging the arm 81 from the notch 80 in disc 79 and arm 83 from the stop screw 84. The tension of motor spring 60 upon the release of handle lever 61 by the operator is effective to rotate the gear 62 through the engagement of its clutch element 91 with an associated clutch element, not shown, on the spindle 86. The movement of gear 62 is imparted to shaft 16 through the engagement of this gear with pinion 63, the movement of shaft 16 being effective to rotate the gear 70, the notched disc 79, and the code disc 23 for actuating the shunt springs 46 and 47 through the operation of member 48 according to the formation of the code disc selected.

The movement of shaft 16 is imparted to the duplex camming member 76 through the gear train which includes, as above mentioned, the gear 70 carried by the shaft 16, the pinion 69 secured to gear 68 and pinion 67 on spindle 71, the gear ratio from gear 70 to pinion 67 being such as to impart half a turn to cam 76 for each tooth of the code discs and therefore one operation of the impulse contacts 77 and 78 for each of these teeth, but it is to be noted that the

shunting contacts 46 and 47 are closed upon the passing of the groups of teeth CP in registry with the contact operating arm 48, thus negating the operation of the impulse springs 77 and 78 as effected by the operation of their actuating cam 76.

Upon the passing of the recesses RC in registry with the contact operating arm 48, the passing causes the opening of contacts 46 and 47 for rendering the operation of the impulse springs 76 and 78 effective for sending a number of pulses corresponding to the number of teeth cut off from the disc, thus establishing the desired connection.

At the conclusion of a call sending operation when the bar 19 reaches the position shown in Figs. 2 and 4, the arm 81 of lever 82 under the tension of spring 90 is pivoted for engaging its arm 81 in notches 80 of disc 79 and thereby permitting the arm 83 to move in the path of stop screws 84 for stopping the operating mechanism against the initial tension of the motor spring 60. The return of bar 19 to its normal position also engages the arm 40 for pivoting this member and thereby disengaging its arm 41 from the notch 15 of spacer bar 13, thus preparing the transmitter for a succeeding operation.

The code discs 23, as above mentioned, may be disengaged selectively from their supporting shaft 16 for replacement by other discs bearing other telephone designations by moving one of the indices 54 and 55 as the case may be in registry with one of the names appearing on the plates 56 and 57, shown in Figs. 1 and 4, the operation of the knob 50 to which these indices are secured being effective to move the carriage 29, as above described, and the manually operable arm 31 carried thereby in registry with the disc bearing the telephone number of the selected name wherein the sliding movement of the arm 31 on the carriage 29 against the resistance of spring 32 in the direction indicated by the arrow in Fig. 5 is effective to engage and impart movement to this disc for disengaging the spring 26 from the shaft 60 and thereby releasing that disc.

The metallic plate 95 may easily be unhooked from the upright supports 10 and 11 as to give access to the disc and other operating parts of the transmitter.

Changes may be made to the call transmitter of the invention without departing from the scope of the appended claims.

What is claimed is:

1. In a call transmitter, a mounting frame, a

shaft journaled in said frame, a pair of disc members mounted on the opposite ends of said shaft, a bar carried by said members, a plurality of code discs each having a radial slot for engaging said shaft and said bar in side-by-side relation, a fork-shaped member carried by each of said discs for yieldably engaging said shaft, a stationary shaft mounted on said frame in parallel relation to the first-mentioned shaft, a carriage mounted for sliding movement on the second-mentioned shaft, and means positioned by the movement of said carriage and manually operable for imparting movement to the selected disc for disengaging it from said shaft and said bar.

2. In a call transmitter, a mounting frame, a rotatable shaft journaled in said frame, code disc members mounted in side-by-side relation on said shaft, a stationary shaft mounted on said frame in parallel relation to the first mentioned shaft and having notches registering with said disc members, a carriage mounted for sliding movement on the second-mentioned shaft, an impulse mechanism, a member mounted on said carriage actuated by the movement of said disc members for controlling the operation of said mechanism, and a latch set by the movement of said carriage and controlled by the operation of said disc members for engaging the notches in said stationary shaft for locking said carriage from movement on said stationary shaft during the operation of said disc members.

3. In a call transmitter, a mounting frame, a rotatable shaft journaled in said frame, code disc members mounted in spaced relation on said shaft, a stationary shaft mounted on said frame in parallel relation to the first-mentioned shaft and having notches one for each of said disc members, a carriage mounted for sliding movement on said notched shaft, an impulse mechanism, a member mounted on said carriage actuated by the movement of said disc members for controlling the operation of said mechanism, a spring, a plunger mounted on said carriage for engaging the notches in said stationary shaft under the tension of said spring for automatically centering said arm with respect to the code element selected, a latch mounted on said carriage controlled by the operation of said disc members for engaging the notches in said stationary shaft for locking said carriage in adjusted position during the operation of said disc members.

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