

Nov. 6, 1945.

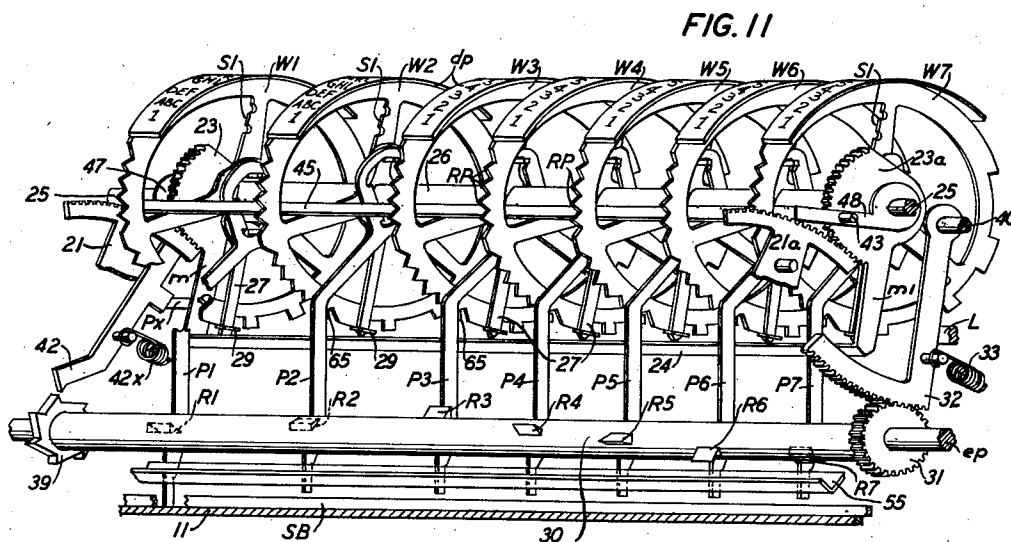
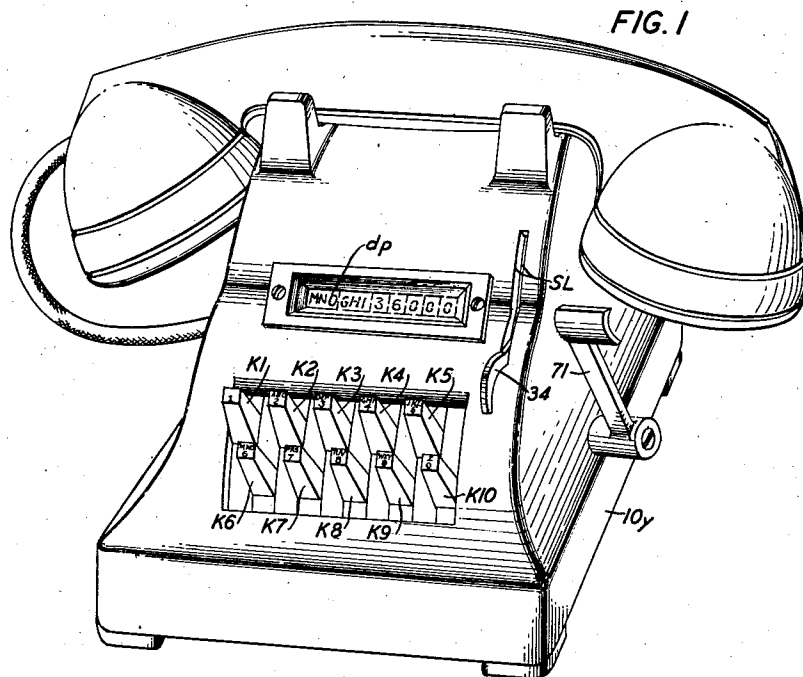
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2,388,313

TELEPHONE CALL TRANSMITTER

Filed Jan. 25, 1944

7 Sheets-Sheet 1



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FIG. 3

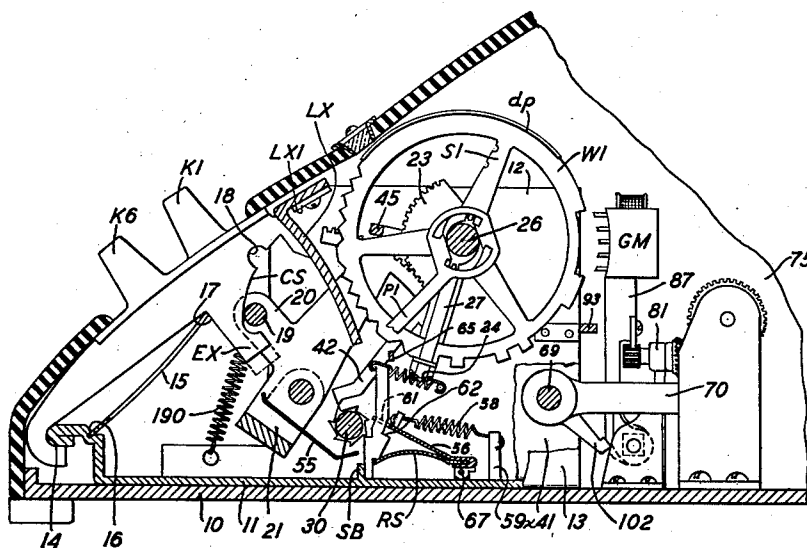
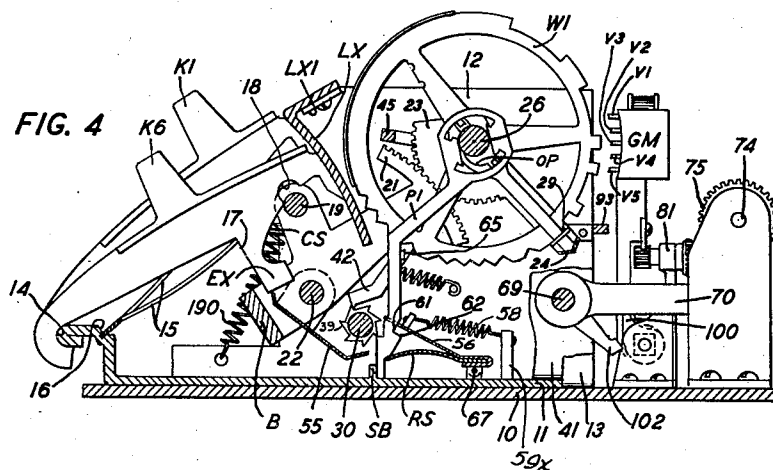


FIG. 4



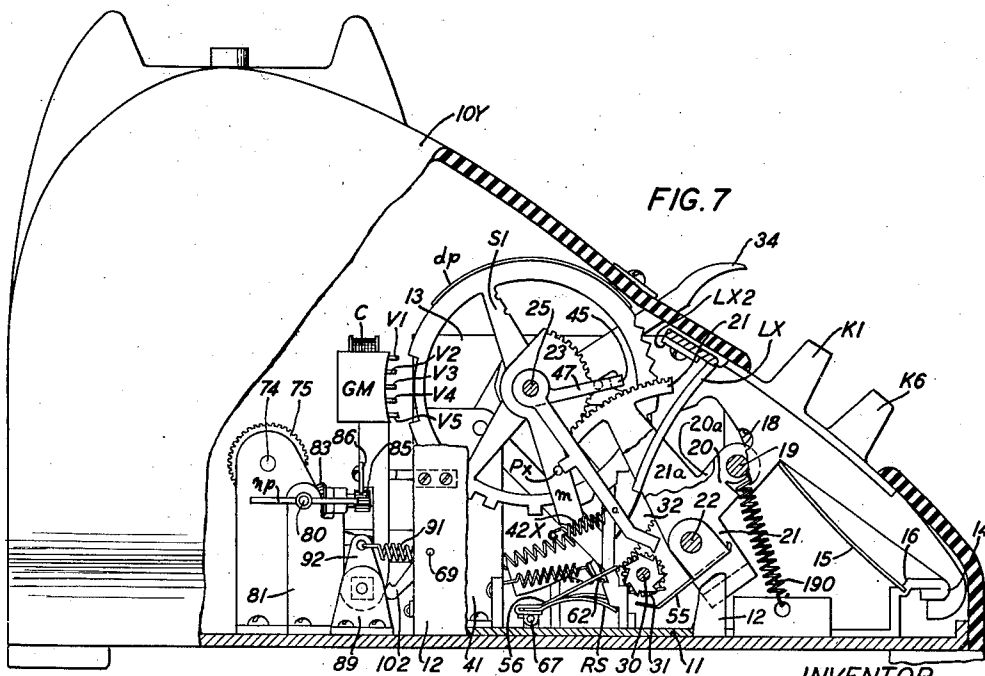
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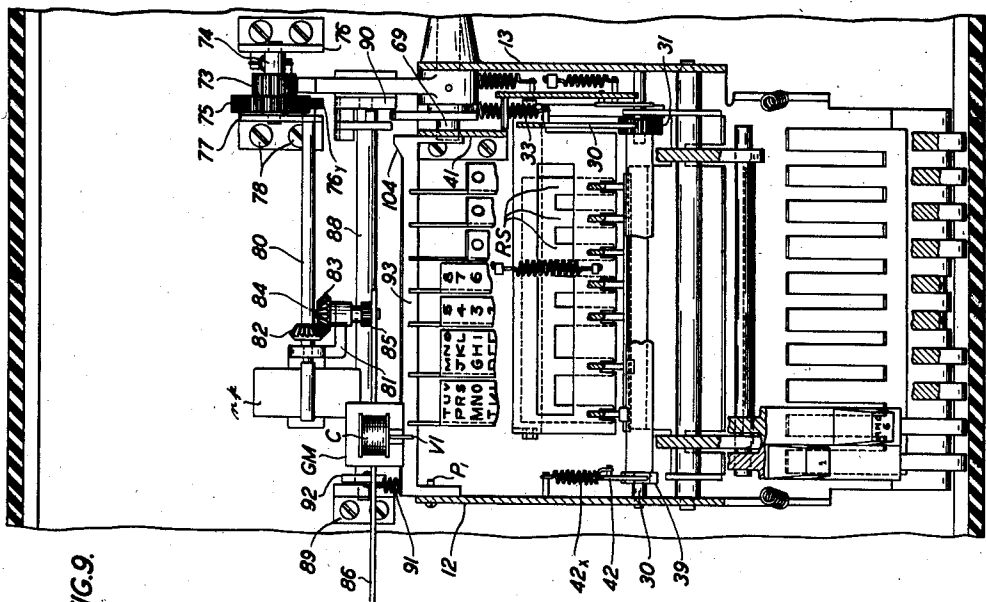


FIG. 9.

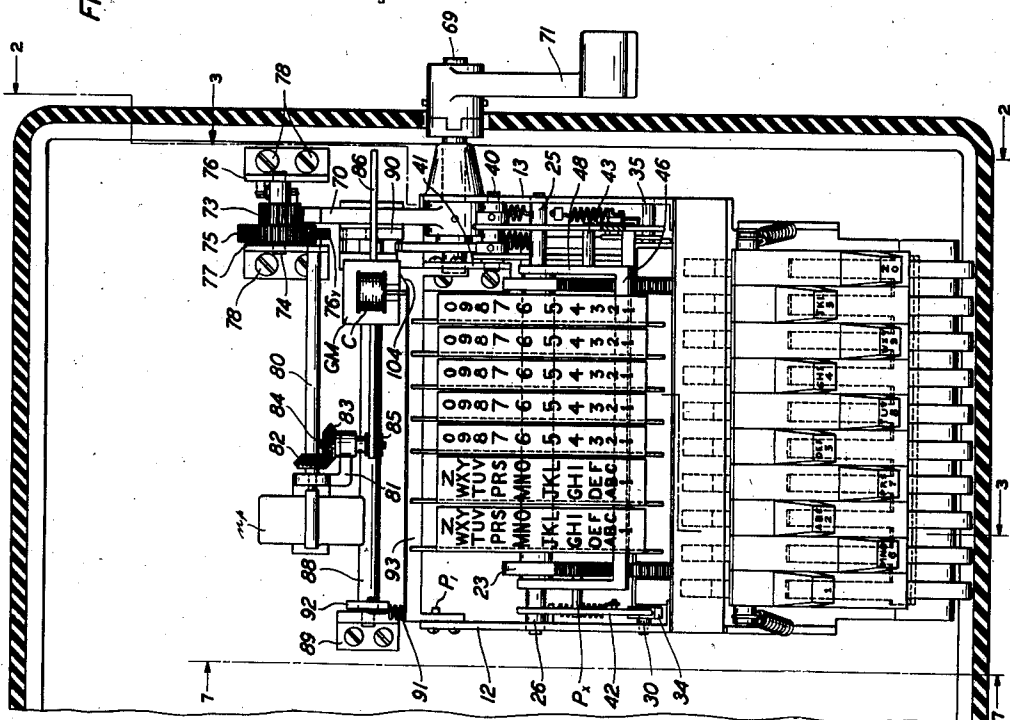


FIG. 8.

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TELEPHONE CALL TRANSMITTER

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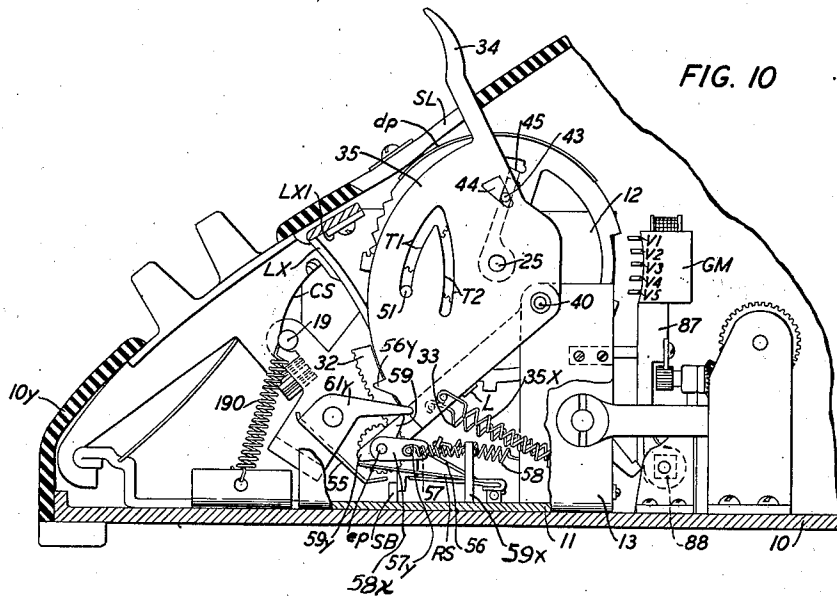


FIG. 10

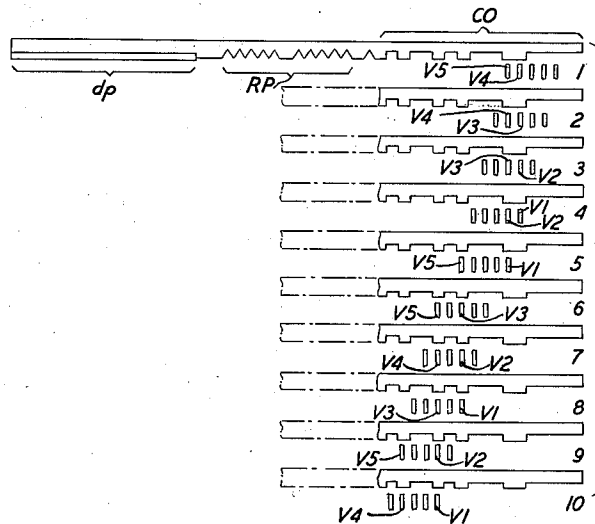


FIG. 19

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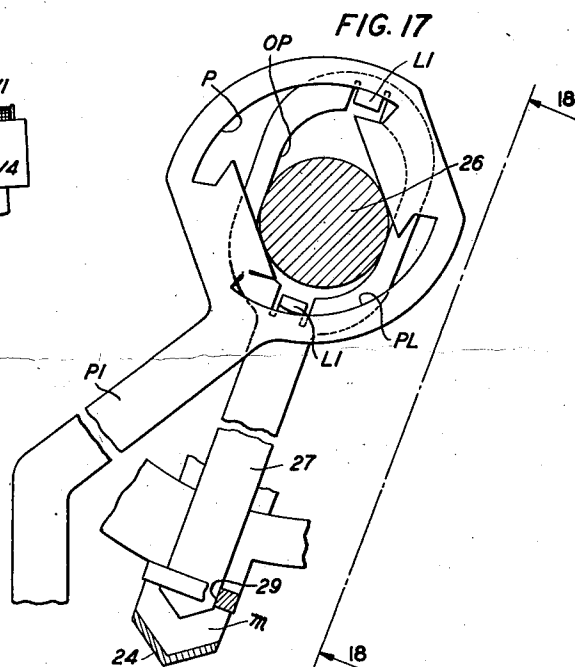
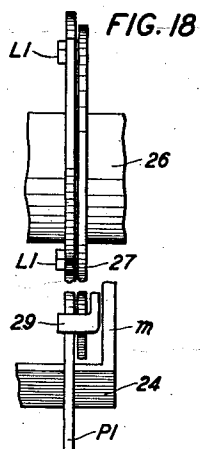
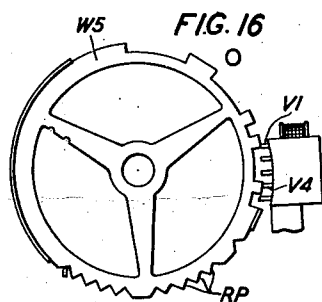
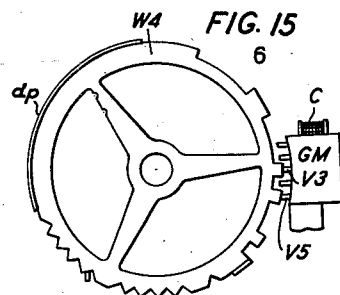
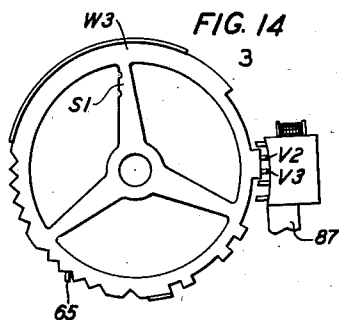
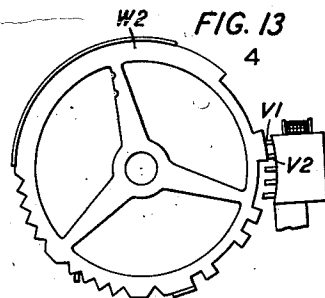
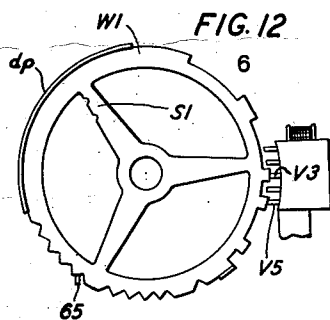
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TELEPHONE CALL TRANSMITTER

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UNITED STATES PATENT OFFICE

2,388,313

TELEPHONE CALL TRANSMITTER

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Application January 25, 1944, Serial No. 519,598

8 Claims. (Cl. 177—380)

This invention relates to telephone call transmitters and more specifically to a type of call transmitter in which code wheels are actuated by the operation of key members for setting a call with a motor mechanism for moving an alternating generator in direction transverse of the wheels to cause the operation of vibrative reeds between the poles of a magnet for generating signals corresponding to the setting of the wheels, the call being indicated prior to the transmitting of the call by dials carried by such wheels.

The object of this invention is the provision of a call transmitter of the type above referred to which will be simple in construction, convenient in use and positive in operation.

In the drawings:

Fig. 1 is an elevation view shown in perspective, the indicating wheels being shown in the operated position;

Fig. 2 is a right side elevation view shown with the casing partly in vertical longitudinal section taken on line 2—2 of Fig. 8;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 8 with the keys in normal non-operated position;

Fig. 4 is a view similar to Fig. 3 but showing one of the keys and a number of parts actuated thereby partly operated;

Fig. 5 is a view similar to Figs. 3 and 4 but showing one of the keys and the operated part actuated thereby in full operated position;

Fig. 6 is another view taken on line 3—3 of Fig. 8 but showing the driving mechanism for the alternating current generator in the operated position;

Fig. 7 is a left side elevation view shown with the casing partly in vertical section seen along the line 7—7 of Fig. 8, the operating parts being shown in normal non-operated positions;

Fig. 8 is a top view shown with the casing in horizontal sections, showing the generator in normal non-operated position;

Fig. 9 is a horizontal sectional view taken on line 9—9 of Fig. 6 showing the generator in starting position;

Fig. 10 is a right side elevation showing the re-setting mechanism for the code wheels in the operated position;

Fig. 11 is a detail view enlarged showing the code wheels and their actuating mechanism in perspective;

Figs. 12, 13, 14, 15 and 16 are views of the code wheels shown in operated position relative to the vibrative reeds of the generator for the transmitting of the signal indicated in Fig. 1;

Fig. 17 is a partial view showing the clutch elements used in the driving mechanism for the code wheels;

Fig. 18 is a side view of Fig. 17 looking in the direction indicated by the line 18—18 in Fig. 17; and

Fig. 19 is a diagrammatic view of the code wheels developed showing portions of these code wheels in relation to the combination of the vibrative elements of the alternating current generator representing the digits printed on the key.

The call transmitter of this invention consists of a base 10 to which is secured a plate 11 formed with two upright supports 12 and 13 shown in Figs. 2, 3, 4, 9 and 10. The plate 11 at its front disposed end portion is bent upwardly at right angles to the base 10 and down turned upon itself to form a semicircular edge 14 serving as a common pivot for a set of manually operable piano shaped key members K1, K2, K3, K4, K5, K6, K7, K8, K9 and K10. These keys are held in assembled position on the pivotal edge 14 by respective retractile springs 15 formed in the manner of a comb having its longitudinal edge abutting against a shoulder portion 16 formed by the bending of the plate 11 and a small distance from the pivotal edge 14 while the free end of retractile springs 15 thus formed abut with a predetermined normal tension against shoulder portions 17 formed with the respective keys K1, K2, K3, etc.

The free end portions of key members K1, K2, K3, etc. extend into guiding slots in a plate LX secured at both ends to lugs LX1 and LX2 formed in uprights 12 and 13 and are formed with camming surfaces CS of different length terminating in semicircular recesses 18 shown in Figs. 2, 3, 4, 5, 6 and 7 serving as stops for limiting the movement of a bar 19 actuated by the camming surfaces CS to movements corresponding to the digit value of the keys. The bar 19 which is of circular cross-section is supported at both ends by the arms 20—20a formed with similar gear sectors 21—21a in turn forming the arms of a U-shaped bar B, mounted for free pivotal movement against the tension of a spring 190 on a shaft 22 journaled at both ends in the upright supports 12 and 13. Gear sectors 21 and 21a, as shown in Figs. 3, 4, 5, 6, 7 and 11, engage respective gear sector members 23—23a mounted for free rotation on the reduced end portions 25 of a shaft 26. Sector members 23—23a are formed with arms m and m1 to which is secured as by welding the ends of a clutch bar 24 of V-shaped cross-section for movement concentric to a plurality of wheels

W1, W2, W3, W4, W5, W6 and W7 each having as shown diagrammatically in Fig. 19 a code portion CO representing digits 1 to 9 plus a zero, ratchet teeth RP and a dial portion *dp*. These wheels are mounted for free rotation on the shaft 26 and are provided with radial longitudinal movable clutch arms 27 having at one of their ends substantially oval-shaped openings OP best seen in Fig. 17 engaging the shaft 26 and their opposite ends are fitted in slots in lugs 29 formed at the periphery of the wheels W1, W2, W3, etc. Longitudinal movements are successively imparted to arms 27 for engaging their V-shaped ends with the bar 24 by the operation of respectively associated pawl-like members P1, P2, P3, P4, P5, P6 and P7 also mounted for sliding movement on shaft 26 as shown in Figs. 3, 4, 5, 6, 11 and 17. These pawl-like members are provided with diametrically opposite arcuated portions P and PL, engaged by a pair of lugs L1 carried by the radially slidable arms 27 so as to permit rotary movement of these arms and that of wheels W1, W2, W3, etc. relative to their associated pawl-like members P1, P2, P3, etc. as effected by the engagement of arms 27 with bar 24 under control of any one of the key members K1, K2, K3, etc. as will be hereinafter described in detail.

The successive operation of pawl-like members P1, P2, P3, etc. and therefore the successive longitudinal movement of their associated arms 27 for engaging the bar 24 is effected by the rotation of a shaft 30, Figs. 3, 4, 5, 6, 7, 8, 9 and 11. This shaft is operated in a clockwise direction by a gear sector 32 engaging a pinion 31 keyed to this shaft the gear sector being itself actuated by a retractile spring 33 tensioned upon the operation of this gear sector as effected by a lug L carried by a manually operable sector-shaped plate 35 best seen in Figs. 2 and 10 having a handle 34 extending through a slot SL in a casing 10Y cooperating with the base 10 for housing the transmitter mechanism.

The sector plate 35 and gear sector 32 are pivoted on a common shaft 40 journaled in upright supports 13 and 41 best seen in Fig. 8 while a pawl 42 pivoted on shaft 26, Figs. 7, 8 and 11, is engaged by a pin PX carried by the arm M of gear sector 23 to be moved against the tension of a retractile spring 42X out of engagement from ratchet wheel 39 keyed on shaft 30 following the return movement of the bar 24 to normal unoperated position shown in Figs. 3, 6 and 7 for permitting the rotation of shaft 30 an angular distance corresponding to one tooth of ratchet wheel 39 in a manner which will be hereinafter described in detail. Shaft 30 which with the pawl-like members P1, P2, P3, etc. form a transfer mechanism is journaled at both ends in upright supporting plates 12 and 13, and, in addition to pinion 31 and ratchet wheel 39, is provided with ratchet teeth R1, R2, R3, R4, R5, R6 and R7 disposed in staggered or spiral relation thereon corresponding to the number of pawl-like members P1, P2, P3, etc. and to the number of teeth of ratchet wheel 39.

According to this mechanism the movement of sector shaped plate 35 by handle 34 from the position shown in Fig. 2 to the position shown in Fig. 10 is effective to tension a retractile spring 35x and through lug L carried by the plate 35 operates the gear sector 32 for tensioning its retractile spring 33 while imparting a complete counterclockwise movement to pinion 31 and thereby to shaft 30, while the pawl 42 is held disengaged from the ratchet wheel 39 by the pin PX

due to the bar 24 being in normal non-operated position. Upon the return movement of sector-shaped plate 35 and the gear sector 32 under the tension of their retractile springs 35x and 33, the movement of gear sector 32 rotates the shaft 30 in a clockwise direction causing the tooth R1 carried by this shaft to engage the pawl-like member P1 for moving it downward longitudinally against the tension of a retractile spring RS to a point whereby its free end engages the plate 11 for stopping the rotation of shaft 30 while the longitudinal movement of pawl-like member P1 causes its associated clutch arm 27 to engage with the clutch bar 24 thus operatively connecting the wheel W1 to the bar 24 which, as above stated, is rotated in position concentric to the wheels W1, W2, W3, etc. by the movement of gear sectors 23—23a in engagement with gear sectors 21—21a, the latter being actuated through the different cam portions CS of the keys K1, K2, K3, etc. in engagement with the common bar 19. The pawl-like members P2, P3, etc. like pawl-like member P1 are normally held by similar retractile springs RS against a ridge element SB in position to be engaged by their respective teeth R1, R2, R3, etc. on shaft 30, these springs being formed as shown in Figs. 3, 4, 5, 6, 7, 9 and 10 in the manner of a comb having its longitudinal edge clamped to a plate 56 in turn mounted on a pivot 67 and normally held in retracted position by a coil spring 58 having sufficient tension to collectively flex the springs RS of pawl like members P1, P2, P3, etc. This spring is hooked at one end to upright 59x and at its other end to a lug member 60 formed with the plate 56 disposed transverse of the pawls P1, P2, P3, etc. and plate 56 is provided at its free edge portion with notches 61 serving to guide and hold the free end of pawls P1, P2, P3, etc. in vertical alignment or registry with the teeth R1, R2, etc. on shaft 30, the plate being actuated through the operation of an arm 55Y by a cam 59Y mounted for rotation as a unit with a cam 59 on the reduced end portion *ep* of shaft 30, as shown in Figs. 2 and 10 and actuated by the manual movement of plate 35 in a manner which will be hereinafter described in detail.

Pawls P1, P2, P3, etc. are formed with shoulder portions 62, best seen in Figs. 3, 4 and 5, engaged by the plate 56 for collectively moving these pawls downwardly for disengaging lugs 65 carried thereby from any one of the ratchet teeth RP of code wheels W1, W2, W3, etc. for permitting the return of the latter to normal unoperated position by the pivotal movement of a bar 45 concentric to shaft 26 upon the manual operation of the sector shaped plate 35 following each call transmitting operation.

The bar 45 is formed with arms 47 and 48 pivoted on the reduced end portions 25 of shaft 26 and extends in engageable relation with similar aligned spokes S1, of wheels W1, W2, W3, etc. for returning the latter to normal non-operated position through the engagement of a pin 43 carried by arm 48 of bar 45, see Figs. 2, 8, 10 and 11, this pin extending into a slot 44 formed in sector shaped plate 35 so that the manual operation of the latter from the position shown in Fig. 2 to the position shown in Fig. 10 is effective to return the wheels W1, W2, W3, etc. collectively to normal non-operated position but timed to secure following the movement of pawl-like members P1, P2, P3 and thereby the disengagement of lugs 65 from teeth of wheels W1, W2, W3, etc.

The plate 35 as shown in Figs. 2 and 10 is pro-

vided with a substantially V-shaped opening forming paths or tracks T1 and T2 for a pin 51 carried by gear sector 21a. The track T2 as shown in Fig. 2 is generated by a radius from the center of shaft 22 on which the gear sectors 21 and 21a are pivoted so as to permit when the plate 35 is in normal non-operated position the pivotal movement of the sectors 21 and 21a as effected by the operation of the keys K1, K2, K3, etc. acting on bar 19, while the track T1 serves as a lock for the gear sectors 21 and 21a and for the keys K1, K2, K3, etc. upon the movement of plate 35 from the position shown in Fig. 2 to the position shown in Fig. 10, while the movement of plate 35 as above described actuates the gear sector 32 through the lug L carried by this plate for tensioning the spring 33 the function of which is to return the gear sector 32 to normal non-operated position and thereby rotating the shaft 30 a complete turn step by step upon the successive operation of key members K1, K2, K3, etc. and the consequent operation of bar 24 actuating the pawl 42 to cause the rotation of shaft 30 for the successive engagement of ratchet teeth R1, R2, R3, etc. with their corresponding pawl-like members P1, P2, P3, etc.

On shaft 22, as best seen in Figs. 2, 3, 4, 6, 7 and 10, is mounted for free pivotal movement thereon, a plate 55 operated through its engagement with projections EX carried by the key members K1, K2, K3, etc. The function of this plate is to successively move the pawls P1, P2, P3, etc. out of engagement from the spirally disposed teeth R1, R2, R3, etc. carried by shaft 30 so as to permit rotation of this shaft step by step following each successive operation of the keys.

The sector shaped plate 35 as best seen in Figs. 2 and 10 is provided at its periphery with a ratchet tooth 56Y disposed in engageable relation with a pin 57 carried by an arm 58 secured to the cam elements 59—59Y mounted for movement as a unit on the reduced end portion ep of shaft 30. The cam element 59 in turn is disposed in engageable relation with an arm 61Y formed with one of the arms of the plate 55 for actuating the latter and the pawl-like members P1, P2, P3, etc. collectively out of engageable relation from the ratchet teeth R1, R2, R3, etc. so as to prevent noise which would otherwise be generated by their frictional engagement during the counter-clockwise rotation of shaft 30 as imparted by the movement of gear sector 32 by the sector shaped plate 35.

On upright supports 13 and 41, best seen in Figs. 2, 4, 5, 6, 9 and 10, is mounted a shaft 69 on which is keyed a gear sector 70 while a handle 71 also keyed on this shaft is provided for moving the gear sector 70 from the position shown in Figs. 2, 3, 4 and 5 to the position shown in Fig. 6, for tensioning a motor spring 72 having one of its ends hooked to the gear sector and its other end to a pin laterally extending from an upright support 76, while actuating a pinion 73 and gear 75, keyed on a shaft 74 journaled at both ends in upright supports 76 and 77 secured by a number of similar screws 78 to the base 10.

The rotation of gear 75 is imparted to a pinion 76Y best seen in Figs. 6, 8 and 9 keyed at one end on a shaft 80 supported at one end on upright support 77 and at its opposite end in an angle-shaped support 81 secured at its lower end to base 10, while on the end of shaft 80 adjacent the support 81 is keyed a winged governor np and an angle gear 82 meshing with an angle gear 83 formed at one end of a spindle 84 mount-

ed for free rotation in the support 81. To the opposite end of spindle 84 is keyed a pinion 85 for engagement with a gear rack 86 secured to a carriage 87 mounted for sliding movement on a shaft 88 of square cross-section pivoted at both ends on upright supports 89 and 90, best seen in Figs. 4 and 9, secured at their lower ends to the base 10. On carriage 87 is mounted an alternating current generator having a coil C, a permanent magnet GM and a plurality of vibrative elements V1, V2, V3, V4 and V5 normally held out of engageable relation from the code portion of wheels W1, W2, W3, etc. by a latching mechanism consisting of an arm 100, see Fig. 6, keyed on the square shaft 88, a spring-pressed pawl 101 pivoted on support 90 and an arm 102 keyed on shaft 69 provided for moving the pawl 101 out of engagement from arm 100 when the gear sector 70 and arm 102 are moved from the position shown in Figs. 2, 3, 4 and 5 to the position shown in Fig. 6 by the manual operation of arm 71 for permitting the movement of the generator in position, wherein the vibrative elements are disposed in engageable relation with the code portion of wheels W1, W2, W3, etc. for transmitting the call while a cam 104 best seen in Figs. 8 and 9 formed at the end of a guide bar 93 engages the generator carriage 87 to cause the pivotal movement of its supporting shaft 88 and thereby re-engaging the latch 101 with arm 100 at the end of each call transmitting operation. A retractile spring 91, see Figs. 6, 7 and 8, hooked to an arm 92 secured to shaft 88 and to a pin P1 laterally extending from the upright plate 12, normally serves for yieldably holding the alternating current generator in position wherein the vibrative elements V1, V2, V3, V4 and V5 as above described engage with the code portion of wheels W1, W2, W3, etc., such engagement being determined by the stop or guiding bar 93, extending in line parallel to the movement of the generator and transverse of wheels W1, W2, W3, etc.

In a typical operation of the device of this invention as for transmitting the telephone call designation MH-36000, for example, as indicated by the setting of the code wheels W1, W2, W3, etc. in Fig. 1 and Figs. 12, 13, 14, 15 and 16, the manual operation of sector plate 35 by its handle lever 34 from the position shown in Fig. 2 to the position shown in Fig. 10 operates the resetting bar 45 through the pin 43 carried thereby extending into the slot 44 formed in the plate 35 for returning the wheels W1, W2, W3, etc. to normal non-operated position from a previous call setting operation, while the ratchet tooth 56Y at the periphery of plate 35 engages the pin 57 following a small angular movement of this plate from normal position to operate the arm-cam unit 58—59—59Y against the tension of retractile spring 57Y. The operation of cam 59 through its engagement with arm 61Y of bar 55 causes this bar to move the pawl-like members P1, P2, P3, etc. in a path out of engagement from their respectively associated teeth carried by the shaft 30 followed by the engagement of the lug L carried by sector plate 35 with the gear sector 32 for rotating the shaft 30 to normal starting position in a counter-clockwise direction, the pin 51 as shown in Fig. 10 being positioned in the track T1 in the sector plate 35 so as to prevent the operation of gear sectors 21—21a and thereby that of the keys K1, K2, K3, etc., through their cam portion CS abutting against the bar 19 carried by the gear sectors 21—21a, the pawl-like members P1, P2, P3, etc. being at this time in the raised posi-

tion as shown in Fig. 5 where the lugs 65 carried thereby ride on the teeth RP of wheels W1, W2, W3, etc. during the return of the latter to normal non-operated positions.

The release of sector plate 35 by the operator and its consequent return movement to normal non-operated position by the tension of its retractile spring 35X is effective to return the resetting bar 45 to normal non-operated position while the reverse movement of gear sector 32 under the tension of its retractile spring 33 rotates the shaft 30 in a clockwise direction to a point wherein the tooth R1, see Fig. 11, engages the pawl-like member P1 to move it downward against the tension of its retractile spring RS to a point in abutment against the plate 11, thus preventing further rotation of shaft 30. The movement of pawl-like member P1 is imparted to its respectively associated arm 27 carried by wheel W1 for operatively connecting the latter with the bar 24 now in normal non-operated position as shown in Fig. 3, while the return of sector plate 35 to normal non-operated position as shown in Fig. 2 as above described is effective to position the pin 51 for movement in the track T2 upon the operation of any one of keys K1, K2, K3, etc. in this example the key K6 bearing the letters

MNO
6

the first digit of the call designation above referred to. The movement of key K6 through its camming portion CS is effective to impart an arcuated movement to the bar 19 and consequently to gear sectors 21—21a, 23—23a and thereby to the clutching bar 24 and wheel W1 but limited by the stop afforded by the engagement of the bar 19 into the recess 18 at the end of cam portion CS of key K6, thus setting the code portion of wheel W1 in position for engagement with the reeds V3 and V5, of the alternating current generator for transmitting a signal corresponding to letter M which is indicated by the dial portion dp of the wheel W1 appearing under the glass window in the casing 10Y as shown in Fig. 1.

In the movement of key K6 from the position shown in Fig. 3 to full operated position, the projection EX of this key as shown in Fig. 4 is effective to impart a small movement to the bar 55 for disengaging the pawl-like member P1 from its ratchet tooth R1 for permitting this member to return to normal under the tension of its retractile spring RS so as to disengage its clutching arm 27 from the clutching bar 24 and thereby locking the wheel W1 in the operated position through the engagement of the lug 65 carried by this pawl-like member in the tooth T6 (see Fig. 5) of the ratchet portion of this wheel, the shaft 30 being prevented from operating while the bar 24 is out of normal position by the engagement of spring-pressed pawl 42 with one of the teeth of ratchet wheel 39, as shown in Figs. 4 and 5, until disengaged from this wheel by the pin PX when the bar 24 has reached a small distance from its normal unoperated position.

The return movement of key K6 to normal non-operated position under the tension of its retractile spring 15 and the consequent return movement of gear sectors 21—21a, 23—23a and the clutch bar 24 to normal position, permits the pawl-like member P2, Fig. 11, to move against the common stop bar SB by the tension of its retractile spring RS to a position identical to that shown by pawl P1 in Fig. 6 in engageable rela-

tion with its respective operating ratchet wheel R2 on shaft 30 the operation of which is effected by the movement of gear sector 32 following the disengagement of pawl 42 from the ratchet wheel 39 by the pin PX on the arm M of gear sector 23, rotation of shaft 30 being effective to move clutching arm 27 of wheel W2 in engaged relation with the clutching bar 24, while the operation of key K4 bearing the symbol

GHI
4

the second digit of the call designation above mentioned is effective through its cam portion CS to move the bar 19 and gear sectors 21—21a and 23—23a and thereby the clutch bar 24 for rotating the wheel W2 to position where the symbols GHI of its dial portion dp appear under the glass window in casing 10Y and for engaging the reeds V1 and V2 representing digit 4 and its code portion in position. This cycle of operation is repeated for each of the succeeding numbers in the call designation MH-36000 above mentioned code wheel W3 as shown in Figs. 12, 13, 14, 15 and 16 being disposed to engage the reeds V2 and V3, the wheel W4 reeds V3 and V5, and the wheels W5 and W6 and W7, the reeds V1 and V4 representing the letter O which in turn represents the number 10 as is well known in automatic telephony.

Upon the completion of the setting of the combined code indicator wheels W1, W2, W3, etc. the manual operation of handle lever 71 from the position shown in Figs. 1, and 2 to the position shown in dotted lines in Fig. 6 is effective to operate the gear sector 70 for tensioning its retractile spring 72 and for rotating the pinion and gear unit 73—75, the pinion 76Y on shaft 80, the angle gears 82 and 83, the pinion 85 engaged by the gear rack 86 for moving the latter from the position shown in Fig. 8 to starting position shown in Fig. 9 wherein the latch release arm 102 keyed on shaft 69 is effective to move the latching pawl 101 best seen in Fig. 6 out of engagement from the arm 100 carried by shaft 88 to cause the pivotal movement of this shaft under the tension of retractile spring 91 to the position against the guiding bar 93 to cause the engagement of the vibrative elements V1, V2, V3, etc. of the alternating current generator with the code portion of combined code indicating wheels W1, W2, W3, etc. successively upon the return of the generator to normal non-operated position by the tension of the motor spring 72 but under control of the speed governor 77 on shaft 80 for transmitting signals corresponding to the call designation MH-36000. The generator is moved in position ineffective to the code elements upon the engagement of its supporting arm 87 with a cam 104 of guiding bar 93 where the latch member 101 reengages the arm 100 for holding the generator in the position shown in Figs. 2, 3, 4, 7, 10 and 11 during its operation by the manual movement of handle 71 as above described and the transmitter is now ready for a succeeding call setting and transmitting operation.

What is claimed is:

1. In a call transmitter, a set of key members, cams of different values carried by said key members, a set of code wheels, a clutch element actuated by the operation of said key members under control of said cams, clutch elements carried by said wheels normally disengaged from the first mentioned clutch element, a ratchet mechanism actuated by the movement of each of said key

members for successively engaging said clutch elements with said first-mentioned clutch element for moving said wheels according to the values of said cams in position for setting a call.

2. In a call transmitter, a set of key members, a pair of pivoted gear sectors, a bar common to said key members mounted on said gear sectors, said key members having cams of different value for actuating said bar, a set of code wheels, a clutch bar mounted for movement concentric to said wheels and having gear sectors engaging the first-mentioned gear sectors, a spring actuated ratchet shaft controlled by the operation of said key members, and clutching elements actuated by the movement of said shaft for successively operatively connecting said wheels to said concentrically movable clutch bar for moving said wheels in position corresponding to the operation of said key members for setting a call.

3. In a call transmitter, a set of pivoted digit key members, cams of different values carried by said members, a plurality of code wheels, a clutching bar mounted for arcuate movement concentric to said wheels, a gearing mechanism operatively connecting said key members to said clutching bar and actuated under control of said cams, a clutching element carried by each of said wheels, a ratchet shaft, means operable by the movement of said key members to cause the operation of said ratchet shaft for successively moving the last-mentioned clutch elements in engaged relation with said clutching bar for moving said wheels upon the operation of said key members in position for setting a call means actuated by said ratchet shaft for locking said wheels in said position, and manually operable means for releasing and returning said wheels to normal for cancelling the call.

4. In a call transmitter, a pivoted bar, a set of key members having cam elements of different values for operating said bar, a plurality of combined code indicating wheels, a clutch bar common to said wheels, a gearing mechanism operatively connecting said pivoted bar to said clutch bar, a transfer mechanism, motor means for actuating said mechanism to cause the successive operation of said wheels under control of said key members for setting and indicating a call, and a signaling device actuated according to the setting of said wheels for transmitting the call.

5. In a call transmitter, a set of key members having cams of different values, a shaft in operative relation with said cams, a bar mounted on said shaft for concentric oscillatory movement relative thereto upon the operation of said key members, a plurality of code wheels, a clutch bar movable concentric to said wheels, gear sectors operated by the movement of the first-mentioned bar for actuating said clutch bar to angular movements defined by said cams, clutch elements carried by each of said wheels, a rotatable ratchet shaft having a gear keyed thereon, a gear sector, a normally tensioned motor spring attached to said gear sector for rotating said ratchet shaft, means associated with each of said wheels actuated by the movement of said ratchet shaft for successively engaging said clutch elements with said clutch bar to cause the successive move-

ment of said wheels to positions corresponding to the cam value of said key members upon the successive operation of the latter for setting a call.

6. In a call transmitter device, a set of key members, a plurality of code wheels, means actuated by said key members for moving said wheels in position for setting a call, an alternating current generator having vibrative elements, motor means for moving said generator to cause the operation of said elements by said code wheels for transmitting the call, a pivoted bar extending transverse of said wheels, a manually operated sector shaped plate for actuating said bar for returning said wheels to normal position following the transmitting of the call, means in said plate cooperating with means carried by the first-mentioned means for preventing the operation of said key members following the operation of said plate from normal non-operated position.

7. In a call transmitter, a set of key members, a plurality of code wheels, a clutch bar, a gearing mechanism actuated by said key member for moving said clutch bar concentric to said code wheels, clutching elements carried by said wheels normally out of engaged relation from said clutch bar, a transfer mechanism for successively engaging said clutching elements with said clutch bar, said mechanism comprising a plurality of spring retracted pawl-like members for actuating said clutching elements, a rotatable shaft having ratchet teeth disposed in staggered relation at its periphery, a motor spring for actuating said shaft to cause one of said teeth to engage one of said pawl-like members for engaging one of said clutching elements with said clutch bar for moving the corresponding code wheel in selected position upon the operation of one of said key members, stop means for limiting the movement of the operated pawl-like member and said shaft, and means actuated by the operation of the depressed key following the setting of one of said code wheels for disengaging the operated pawl-like member from said ratchet shaft to cause the rotation of the latter by said motor spring for engaging the successive ratchet tooth on said shaft with its respective pawl-like member for moving its clutching element in engagement with said clutching bar for operation of its associated code wheel by the operation of a successive key.

8. In a call transmitter, a set of key members, a set of code wheels movable by the operation of said key members in position for setting a call, spring-actuated pawl-like members having means for engaging said wheels for holding the latter in said position, a pivoted plate, means carried by said plate for engaging means carried by said pawl-like members for actuating the latter collectively for releasing said code wheels, a manually operable camming mechanism for actuating said pivoted plate to effect such release, and other means actuated by the operation of said mechanism for returning said code wheels to normal from operated position following the disengagement of said code wheels by the means carried by said pawl-like members.

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