

Feb. 13, 1940.

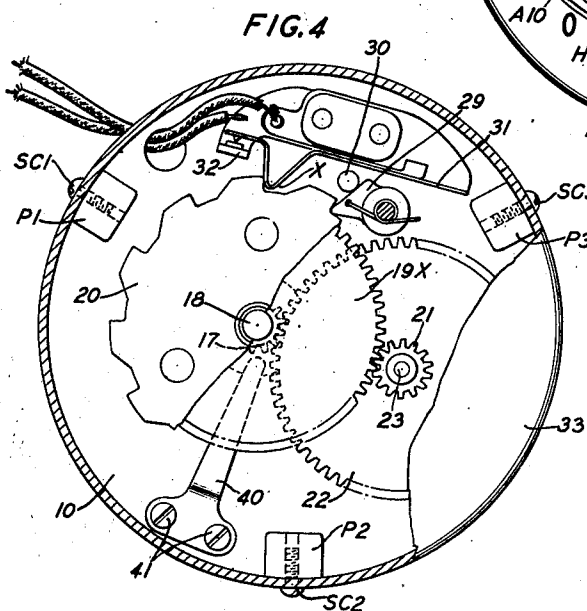
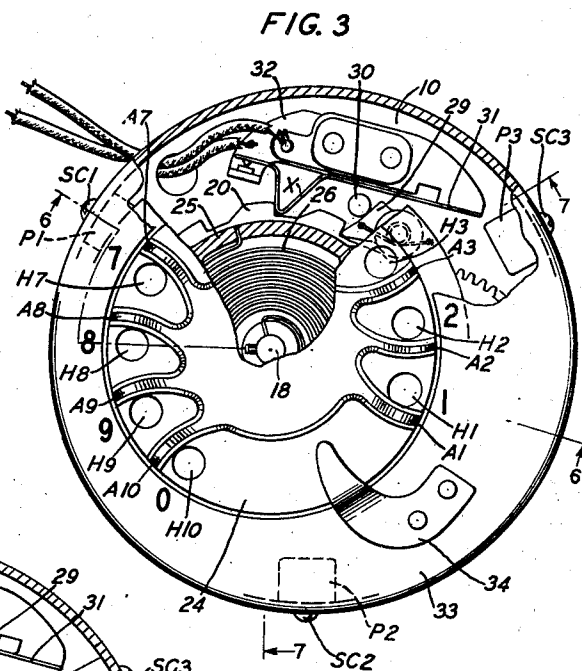
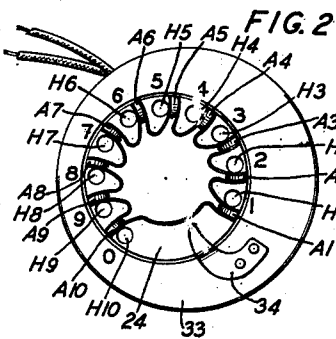
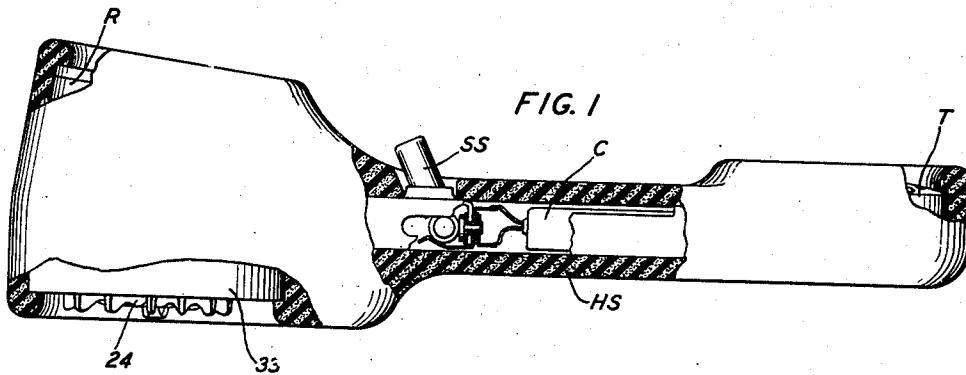
J. C. FIELD

2,189,944

TELEPHONE CALL TRANSMITTER

Filed Oct. 9, 1937

2 Sheets-Sheet 1



INVENTOR
J. C. FIELD
BY
J. Mac Donald
ATTORNEY

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FIG. 5

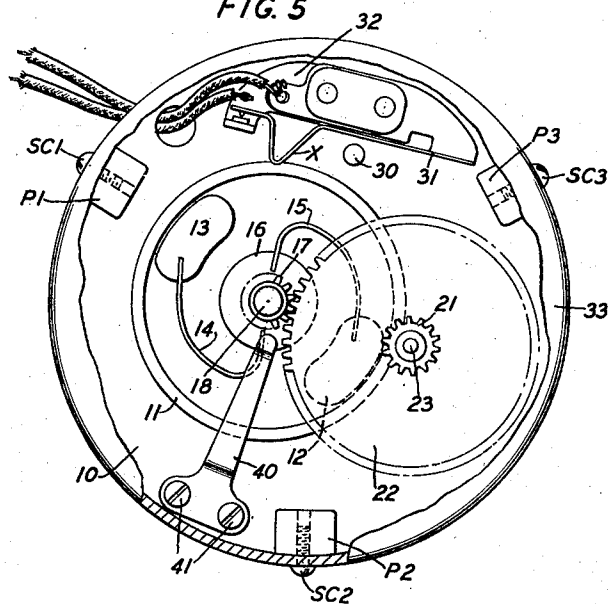


FIG. 6

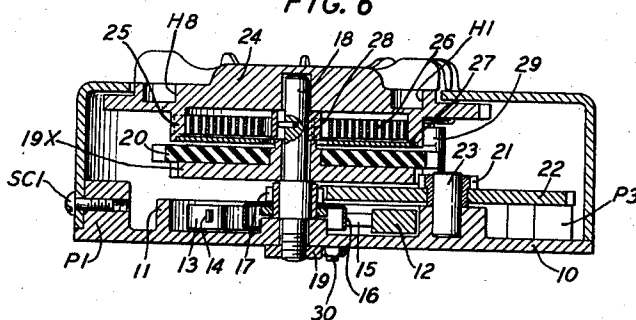
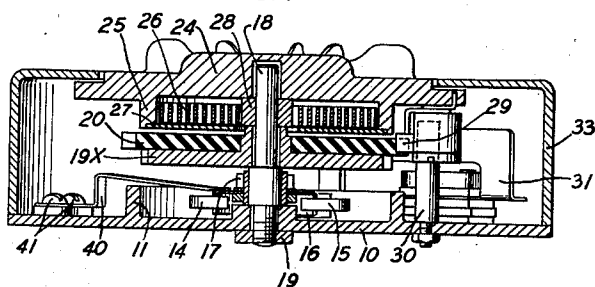


FIG. 7



INVENTOR
J. C. FIELD
BY *J. Mac Donald*
ATTORNEY

UNITED STATES PATENT OFFICE

2,189,944

TELEPHONE CALL TRANSMITTER

Joseph C. Field, Maplewood, N. J., assignor to
Bell Telephone Laboratories, Incorporated,
New York, N. Y., a corporation of New York

Application October 9, 1937, Serial No. 168,188

3 Claims. (Cl. 179-90)

This invention relates to telephone call transmitter devices and especially to call transmitters of the finger-wheel operated type for use in connection with so-called lineman's handsets.

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

According to the invention, a spindle which is secured to a base plate serves for supporting a speed governor mechanism, an impulse mechanism and a finger-wheel in superposed relation to each other, and a motor spring which is located in a recess formed in the finger-wheel, is provided for returning this wheel to normal unoperated position after each selective movement. Means carried by the finger-wheel is provided for operatively connecting the pulsing cam with the finger-wheel during the return movement of the latter to normal for opening a normally closed contact and thereby transmitting a series of pulses corresponding to the digit selected, such digits being printed on the face of a casing provided for housing the transmitter mechanism. Means in the form of a gearing mechanism is provided for operatively connecting the pulsing cam to the speed governor mechanism for controlling the movement of the finger-wheel and thereby the rotation of the pulsing cam for actuating the pulsing contact at a predetermined rate of make-and-break operation.

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

Fig. 1 is a side view of a telephone lineman's handset embodying the call transmitter of the invention, the handset being shown with portions cut away.

Fig. 2 is a front view of the call transmitter.

Fig. 3 is an enlarged front view showing the casing and finger-wheel with portions cut away.

Fig. 4 is a partial view shown with the finger-wheel removed from its supporting spindle and the pulsing cam with portions cut away.

Fig. 5 is a partial view shown with the finger-wheel and pulsing cam removed from their supporting spindle and the casing with portions cut away.

Fig. 6 is a cross-sectional view taken on line 6-6 of Fig. 3 and

Fig. 7 is a cross-sectional view taken on line 7-7 of Fig. 3.

In the drawings 10 is a circular base plate

which is formed with a rim or drum portion 11, shown in Figs. 5, 6 and 7, serving as a raceway for the weights 12 and 13 of a centrifugal speed governor the function of which will be hereinafter described in detail.

The governor weights 12 and 13 are mounted on the ends of ribbon springs 14 and 15 having their other ends secured in an inverted cup-shaped member 16 secured to the hub of a pinion 17, this pinion being rotatably mounted on the enlarged portion of a spindle 18 secured to the base plate 10 and in position concentric relative to the rim 11 by a nut 19.

On spindle 18 in superposed relation to pinion 17 is rotatably mounted a gear 19X on the hub of which is securedly mounted a pulsing cam 20 of insulating material. The movement of cam 20 is imparted to governor weights 12 and 13 through a pinion 21 engaged by the gear 19X and a gear 22 engaging the pinion 17. The gear 22 is secured on the hub of pinion 21 which is in turn rotatably mounted on a spindle 23 extending perpendicularly from the base plate 10 as shown in Figs. 4, 5 and 6.

On the top end of spindle 18 is rotatably mounted a finger-wheel 24 having a circular rim 25 which cooperates with a disc member 27 to form a drum for receiving the spiral motor spring 26, the disc member 27 engaging a shoulder portion in the rim 25 with a press-fit adjustment for securing it thereto.

One end of motor spring 26 is secured to a bushing 28 keyed to the spindle 18 as shown in Fig. 6 and the other end of this spring is hooked to the rim 25 as shown in Fig. 3 so that the rotating movement of the finger-wheel 24 in a clockwise direction will tension the motor spring 26.

The finger-wheel 24 carries a spring pressed pawl 29 shown in Figs. 3, 4, 6 and 7 disposed in engaged relation with the pulsing cam 20 for rotating it upon the counterclockwise movement of finger-wheel 24 as effected by the tension of motor spring 26, a stop in the form of a pin 30 being provided for engaging the pawl 29 when in the position shown in Figs. 3 and 4 for limiting the angular movement of the pulsing cam 20 and that of the finger-wheel 24 in their return movement to normal position.

A spring member 40 has one of its ends secured to the base plate 10 by screws 41 and its free end frictionally engages the inverted cup-shaped member 16 for preventing chattering of the governor weights in their cyclic movement in the raceway formed by the rim 11.

An operable pulsing spring 31 and its cooperating contact 32 are mounted in a pile-up arrangement on the base plate 10. The operable pulsing spring 31 is formed with a bent portion α shown in Figs. 3, 4 and 5 disposed in engaged relation with the pulsing cam 20 to serve as a check pawl for preventing the movement of the impulse cam 20 during the selective movement of the finger-wheel 24.

The finger-wheel 24 is provided with a peripheral shoulder portion registering with a circular opening in a casing 33 provided for housing the transmitter mechanism. This housing is secured to the base plate 10 by a number of screws SC—1, SC—2 and SC—3 engaging the upward extending portion P1—P2 and P3 formed with the base plate 10. This housing is provided with a finger stop 34 shown in Figs. 2 and 3 and on it are printed the digits 1 to 0 inclusive disposed in space relation and adjacent the arms A1, A2, A3, A4, A5, A6, A7, A8, A9 and A10 formed with the finger-wheel 24, the arms A1, A2, A3, etc. serving as finger-holds for manually operating the finger-wheel against the tension of motor spring 26.

The finger-wheel 24 is provided in position adjacent each arm A1, A2, A3, etc., with blind holds H1, H2, H3, H4, H5, H6, H7, H8, H9 and H10 provided for receiving the end of a pencil, for example, which may be used for rotating the finger-wheel in its selective clockwise movement.

The call transmitter of the invention may be placed in the receiver end of a handset HS as shown in Fig. 1 and secured in adjusted position therein in any well-known manner, and a manually operable snap switch SS is provided for disconnecting the condenser C from the telephone receiver R and transmitter T for a purpose well known in the telephone art.

In a typical example of call transmitting operation the turning movement of the finger-wheel 24 an angular distance from any one of the digits appearing on the housing 33 to the finger stop 34 is effective to move the pawl 29 idly on the pulsing cam 20 and simultaneously tension the motor spring 26, the pulsing cam being prevented from turning during this movement of the finger-wheel by the pulsing spring 31 having its tooth-shaped portion α engaging one of the teeth of the cam. Upon the release of the finger-wheel, the pawl 29 is effective to rotate the pulsing cam an angular distance corresponding to the selective movement of the finger-wheel when the pawl 29 engages the stop pin 30. The return movement of finger-wheel 34 to normal and the consequent operation of impulse cam 20 and that of the gear 19X carried thereby is effective to rotate the pinion 21 and the gear 22 secured thereto for rotating the governor weights through the engagement of gear 22 with the pinion 17. The spring

arm 40 which frictionally engages the inverted cup-shaped member 16 prevents the so-called chattering of the weights in their cyclic movement in the raceway formed by the rim 11 and thereby permits a uniform operation of the pulsing cam and that of the contact actuated thereby.

What is claimed is:

1. A call transmitter comprising a mounting plate, a spindle secured to said mounting plate, a pulsing cam mounted for rotating movement on said spindle, said cam having ratchet-shaped teeth, a finger-wheel rotatably mounted on said spindle and movable thereon in directions opposite to each other, means carried by said finger-wheel engaging the teeth of said cam but ineffective therewith for rotating said cam upon the operation of said finger-wheel in one of said directions and effective in the other of said directions for rotating said cam, and a pulsing spring actuated by the operation of the last-mentioned cam in said direction.

2. A call transmitter comprising a mounting plate, a spindle secured to said plate, a gear and an impulse cam mounted for unidirectional movement as a unit on said spindle, a finger-wheel mounted for rotary movement on said spindle and movable thereon in directions opposite to each other, a motor spring tensioned by the operation of said finger-wheel in one of said directions, means carried by said finger wheel engaging said cam for actuating it upon the return movement of said finger-wheel under the tension of said spring but ineffective relative to said cam upon the movement of said finger-wheel in the other direction, a pulsing contact actuated by operation of the cam upon said return movement of said finger-wheel to normal, and a governor mechanism actuated by the operation of said gear for controlling the operation of said cam.

3. A call transmitter comprising a mounting plate, a spindle secured to said plate, a gear and a pulsing cam mounted for movement as a unit on said spindle, another spindle secured to said plate, a pinion and a gear mounted for movement on the last-mentioned spindle, said pinion engaging the first-mentioned gear, a drum carried by said plate, a governor mechanism in said drum having a pinion engaging the last-mentioned gear, a finger-wheel rotatably mounted on said spindle for movement in directions opposite to each other, a spring tensioned by the operation of said wheel in one of said directions, and means carried by said finger-wheel for operatively engaging said cam for rotating it under control of said mechanism upon the movement of said wheel in the other of said directions, and a pulsing spring actuated by the operation of said cam.

JOSEPH C. FIELD.