

H. F. DOBBIN AND E. W. GENT.
 IMPULSE TRANSMITTER.
 APPLICATION FILED NOV. 21, 1919.

1,390,679.

Patented Sept. 13, 1921.
 2 SHEETS—SHEET 1.

Fig. 1.

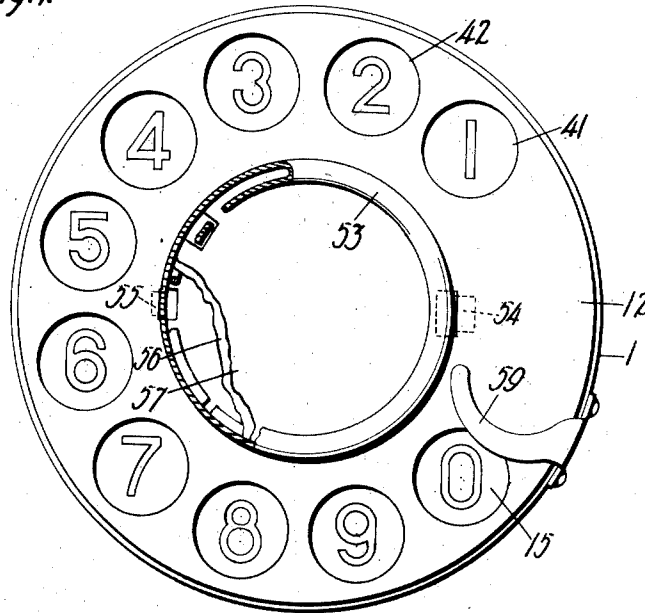
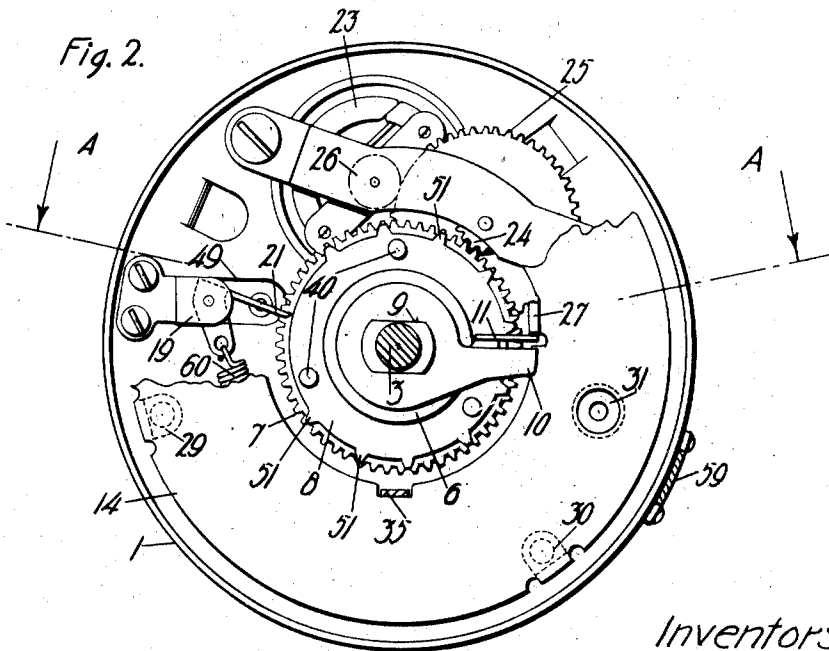


Fig. 2.



Inventors:
 Henry F. Dobbin
 Edgar W. Gent.
 by *J. C. Ramey*
 Att'y

H. F. DOBBIN AND E. W. GENT.
 IMPULSE TRANSMITTER.
 APPLICATION FILED NOV. 21, 1919.

1,390,679.

Patented Sept. 13, 1921.

2 SHEETS—SHEET 2.

Fig. 3.

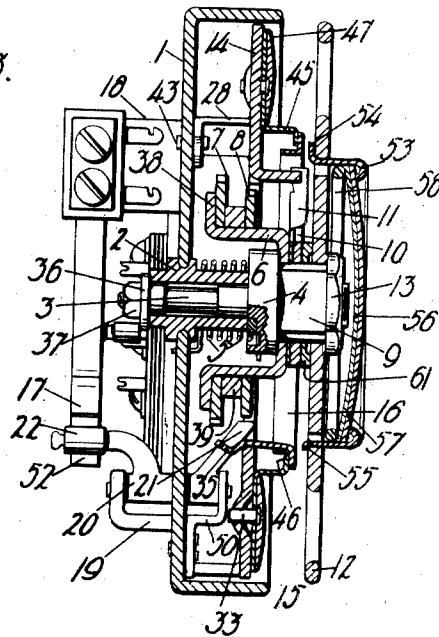
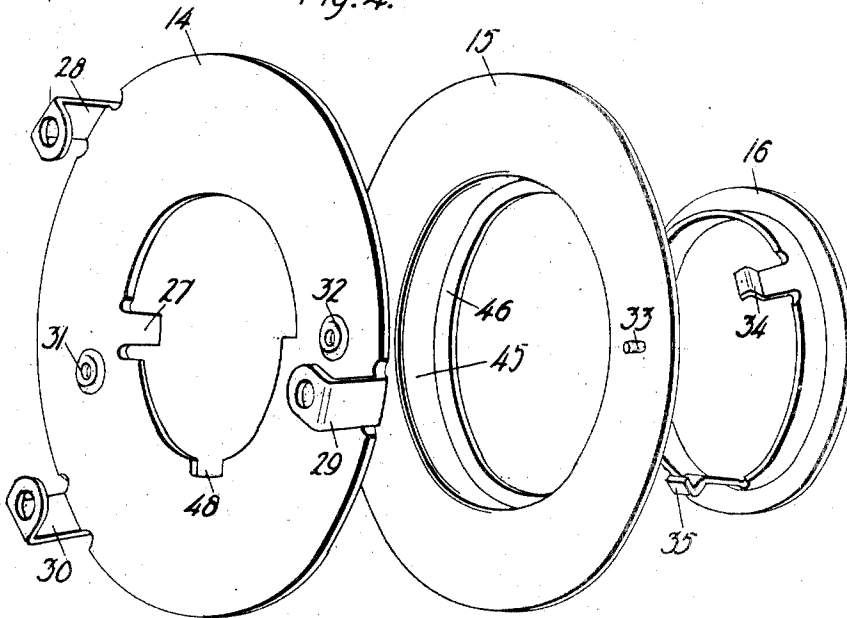


Fig. 4.



Inventors:
 Henry F. Dobbin.
 Edgar W. Gent.
 by *John C. Palmer*
 Atty

UNITED STATES PATENT OFFICE.

HENRY F. DOBBIN AND EDGAR W. GENT, OF NEW YORK, N. Y., ASSIGNORS TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

IMPULSE-TRANSMITTER.

1,390,679.

Specification of Letters Patent. Patented Sept. 13, 1921.

Application filed November 21, 1919. Serial No. 339,640.

To all whom it may concern:

Be it known that we, HENRY F. DOBBIN and EDGAR W. GENT, citizens of the United States, both residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Impulse-Transmitters, of which the following is a full, clear, concise, and exact description.

This invention relates to impulse transmitters, and particularly to transmitters of the character used in automatic telephone systems where the selective switches for establishing connections are operated in response to current impulses transmitted either from the subscriber's sub-station or from an operator's position.

The object of this invention is to improve the construction of these devices by providing an arrangement in which the removal of certain parts may be easily and readily accomplished, and with the necessity of dismantling only a comparatively few other parts of the transmitter.

A feature of the invention relates to a transmitter construction wherein a designation plate, bearing numerals or other inscriptions, is arranged to be detachably secured by resilient holding means to a stationary support so as to be readily removable without disturbance to other parts of the mechanism.

Other features and improvements will be more readily understood from a consideration of the following description and appended claims.

The construction of the impulse transmitter disclosed in this application is in the nature of an improvement in the transmitter shown in the patent to Forsberg, 1,161,854 issued November 30, 1915.

In the drawings Figure 1 is a top plan view of an impulse transmitter embodying the novel features of this invention; Fig. 2 is a top plan view with the finger hold dial and number plate removed and with other parts broken away to show the interior mechanism of the transmitter; Fig. 3 is a sectional view taken on the line A—A of Fig. 2 and Fig. 4 is a perspective showing of the number plate assembly.

Referring to the drawings and particularly to Fig. 3, there is shown at 1 a cup-shaped housing or base member. The member 1 is provided with a central aperture

within which is rigidly secured a sleeve 2 having a cylindrical opening passing axially therethrough. The cylindrical opening in the sleeve 2 serves as a bearing for a rotatable shaft 3. The shaft 3 is secured at one end against longitudinal movement by means of a plate 36 which rests against the end of the sleeve 2 and is held in place by means of the nut 37 engaging threads on the end of the shaft 3. Intermediate of its ends the shaft 3 is provided with an enlarged portion or collar 4. This collar furnishes a supporting shoulder which carries a bell-shaped member 6. The lowermost edge of the member 6 is flared outwardly at 38 to provide a supporting surface parallel to the base member 1. A gear wheel 7 and an impulse wheel 8 are mounted upon the supporting surface 38. These wheels are separated at the proper interval by means of a spacing ring 39. The wheels 7 and 8 are secured in position on the bell-shaped member 6 by means of rivets 40 which are driven through the supporting flange 38. A helical spring 5 is arranged to restore the rotatable shaft 3 to its normal position whenever it is displaced therefrom for the purpose of operating the impulse mechanism. Accordingly said spring is coiled about the outer surface of sleeve 2, one end being secured to the stationary base member 1 and the other end fastened to the collar 4.

Beyond the collar 4 the enlargement of the rotatable shaft 3 is maintained and for substantially the remainder of its length said shaft is provided with diametrically opposite flattened sides, as indicated at 9. This is more clearly shown in Fig. 2. A stop device which comprises a resilient member 11 and a rigid finger 10 fits on over the flattened portion of the rotatable shaft and rests against the upper surface of the bell-shaped member 6. The function of this stop device will be clearly described hereinafter. The finger hold dial 12 is provided with a central aperture of the proper shape to receive the outermost end of the rotatable shaft 3. A spacing washer 61 interposed between the finger hold dial 12 and stop finger 10 affords a sufficient clearance for the rotation of said dial. After the finger hold dial 12 has been assembled in position, it is firmly secured by means of a nut 13 which engages the threaded end of the shaft 3. The dial 12 has a series of openings such as 41 and 42 which

serves as finger holds for the manipulation of the instrument. When the dial is in its normal position, characters such as the numerical digits, may be viewed through the openings in said dial. As will be presently seen, these characters are inscribed or otherwise suitably arranged on a number plate which lies immediately below the dial 12.

The number plate assembly, which is shown in detail in Fig. 4, comprises a stationary supporting plate 14, the number plate 15 and a retaining ring 16. The supporting plate 14 is provided at its outer periphery with three fastening members 28, 29, 30. These members have their lower ends overturned and drilled to receive securing bolts or screws. The plate 14 is of such diameter as to fit loosely within the cup-shaped base 1, the fastening members 28, 29, 30 resting on the bottom of said base. Mounting screws such as 43 are passed through the openings in the members 28, 29 and 30 to rigidly secure the supporting plate 14 to the base member 1. The number plate 15 has a circumferential flange 45, the uppermost edge of which is overturned to provide a shoulder as shown at 46. The dowel pins such as 33, project from the flat surface of the plate 15 and when the number plate 15 is assembled in position upon the supporting plate 14, the dowel pins 33 register with and engage apertures 31 and 32 provided in the supporting plate 14. The supporting plate 14 is depressed, as shown in the drawings, at the points where the apertures 31 and 32 occur. This insures a more ready assembly and also a more perfect fit between the surface of the supporting plate and number plate. The upper surface of the number plate 15 may be coated, as shown at 47, with enamel or any other suitable substance upon which the designating characters are inscribed.

The retaining ring 16 is provided with a plurality of resilient spring fingers such as 34 and 35. After the number plate 15 has been adjusted in position upon the surface of the supporting plate 14 as explained, the retaining ring is clamped into position to firmly maintain said number plate in place. The shouldered surface of the retaining ring 16 bears against the shoulder 46 on the number plate when the fingers 34 and 35 have been sprung into holding engagement with the inner periphery of the stationary supporting plate 14. Owing to the irregular fashion in which the central portion of the plate 14 is cut away, a notch 48 is provided for receiving one of the spring fingers on the retaining ring 16. The notch 48 is cut so that its arc is of the same radius as the inner periphery of the plate 14 against which the other spring fingers are brought to bear. This arrangement insures an even distribution of tension of all of the spring fingers

on the retaining ring. In order to remove the number plate for inspection, replacement or for any other purpose, it is only necessary to withdraw the retaining ring 16 until the spring fingers 34 and 35 release their engagement with the inner periphery of the stationary supporting plate 14.

Two impulse springs 17 and 52, serve to intermittently open and close the impulse circuit. These springs are insulated from each other and mounted by means of a supporting bracket 18 upon the rear surface of the housing member 1.

The member 1 is provided with an aperture 49 as seen in Fig. 2. Pivoted for oscillation between the brackets 19 and 50 and passing through the aperture 49 is a member 20 provided with a finger 21 and a striker 22. The finger 21 extends into a position to be engaged by the impulse teeth 51 on the impulse wheel 8. The striker 22 is adapted to engage the impulse spring 52 to cause its separation from the spring 17 each time an impulse tooth 51 engages the finger 21 on the return movement of the dial.

In order to secure a constant speed of rotation for the shaft 3, a governor 23 is provided. The governor 23 has a gear wheel 26 which meshes with a larger gear wheel 25. A pinion 24, securely attached to the gear wheel 25 meshes with the gear wheel 7 which is mounted for rotation with the rotatable shaft 3. Through this train of gears the governor 23 serves in the usual manner to regulate the speed of the rotatable parts.

In order that the person using the transmitter may be given the necessary instructions in its operation, an instruction-card holder is arranged to be secured upon the face of the finger hold dial 12. This card holder comprises a retaining ring 53 which is equipped with two diametrically opposite fingers 54 and 55. These fingers are adapted to be sprung into receiving apertures in the dial 12 and detachably secure the card holder in position. It will be observed from Fig. 1 that the finger 54 is wider than finger 55. By this expedient it is impossible to attach the card holder to the face of the dial in any other than the proper manner. The instruction card 56, which contains the information concerning the operation of the instrument, is held in place within the retaining ring by means of a spring ring 58. A transparent member 57 serves as a protection to the instruction card.

A description of the operation of the device will now be given.

When it is desired to transmit a series of impulses, the person manipulating the transmitter inserts the finger in the proper one of the finger holds and rotates the dial 12 until the stop 59 is reached. The dial is then released and permitted to return to its normal position. During the forward or setting

movement of the dial, the shaft 3 is rotated in the sleeve 2, causing the rotation of the bell-shaped member 38 and the gear wheel 7 and impulse wheel 8 mounted thereon. The impulse teeth 51 on the wheel 8 engage and pass by the finger 21 of the rotatable member 20. However, the member 20 is rotated in such a direction in the setting movement of the dial that the striker 22 does not cause the separation of impulse springs 17 and 52. The spring 5 which interconnects the stationary housing member 1 and the rotatable shaft 3, is tensioned by the displacement of the dial 12 from its normal position. Upon the release of the dial, the spring 5 serves to restore the same to normal, the governor 23 acting to maintain a constant speed of rotation. During the return movement, the finger 21 is successively engaged by the impulse teeth 51, the number of these teeth that are effective depending upon the amount of displacement of the dial 12, and the member 20 is rotated against the tension of spring 60. Each time an impulse tooth passes the finger 21, the striker 22 engages impulse spring 52, causing its momentary separation from impulse spring 17. As the dial 12 approaches its normal position, the resilient stop member 11 carried by the rotatable shaft 3 engages the projection 27 on the stationary plate 14. The member 11 being flexible, yields and permits the continued rotation of said dial until the rigid stop finger 10 is

brought into engagement with the projection 27. This means serves to absorb the shock incident to the stopping of the rotatable parts of the device.

What is claimed is:

1. In an impulse transmitting device, a stationary base member, a supporting plate attached to said base member, a number plate supported by said supporting plate, a retaining ring arranged to engage said number plate, and resilient fingers on said ring arranged to engage said supporting plate to detachably secure the number plate to said supporting plate.

2. In an impulse transmitting device, a stationary base member, a supporting plate attached to said base member and having holes therein and depressions about said holes, a number plate carried by said supporting member and having projections thereon spaced to correspond with said holes so as to fit into the same, a retaining ring arranged to engage said number plate and resilient fingers on said ring arranged to engage said supporting plate to detachably secure the number plate to said supporting plate.

In witness whereof, we hereunto subscribe our names this 20th day of November, A. D. 1919.

HENRY F. DOBBIN.
EDGAR W. GENT.