UNITED STATES PATENT OFFICE.

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IMPULSE TRANSMITTER FOR AUTOMATIC TELEPHONE SYSTEMS.

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To all whom it may concern:

Be it known that I, JOHN ERICKSON, a citizen of the United States of America, and a resident of Chicago, Cook County, and State of Illinois, have invented certain new and useful Improvements in Impulse Transmitters for Automatic Telephone Systems, of which the following is a specification.

The present invention relates in general to impulse transmitters, or calling devices, for automatic telephone systems, but more especially to impulse transmitters of the type in which a manually operable rotatable dial is provided; and the object of the invention is the provision of an attachment comprising an operating member, or handle, which greatly facilitates the use of a calling device of this character. Although the invention with perhaps slight modifications will be found to be useful in connection with various calling devices of the rotatable dial class, the embodiment shown herein has been designed especially for a calling device of the particular type shown and described on pages 34 and 35 of the book entitled "Automatic Telephony" by Smith and Campbell, and published by the McGraw-Hill Book Company.

In this calling device, as in most others of the dial type, a series of finger holes are arranged in a semi-circular row around the outer edge of the dial, and the person operating the calling device is expected to insert the index finger of the right hand in the finger hole which corresponds to the required digit for the purpose of pulling the dial around to a point determined by a fixed finger stop. In this operation the finger acts as a pivot, more or less; that is, as the dial is turned the finger must necessarily turn in the finger hole to a certain extent depending on the number of degrees the dial is rotated. This causes no inconvenience where the person operating the calling device is an ordinary subscriber who will use his telephone only a few times a day; but in the case of an operator at an exchange who is required to call numbers almost constantly serious effects are sometimes produced.

It has been found in practice that the relatively thin edge of the dial is apt to cut or wear through the skin of the finger of the operator, creating a condition which is painful to say the least, and which may even result in serious physical injury. To remedy this situation, therefore, a suitable handle or operating member has been provided through the medium of which the operator can actuate her calling device as desired without having to insert her finger in the finger holes of the dial.

The object and scope of the invention having been set out in general terms, the device itself will now be described more in detail with reference to the accompanying drawings, in which—

Fig. 1 is a front view of the calling device with a handle or operating member attached.

Fig. 2 is a side view of the same calling device, showing the operating member to better advantage.

Fig. 3 is a cross section through the calling device dial and operating handle on the line A—A, Fig. 1.

Referring to the drawings, the reference character 1 indicates the calling device, or rather the frame thereof, to which the invention is applied. The dial of the calling device is indicated by the reference character 2 and comprises a flat metal plate having a series of ten finger holes as shown clearly in Fig. 1. The main shaft of the calling device, partly shown in Fig. 3, is indicated by the reference character 7. This shaft is rotatably mounted in the frame of the calling device and passes through a hole in the center of the dial 2 to which it is rigidly attached by riveting, or in any other suitable manner. The parts mentioned and all other parts of the calling device proper are all old and well understood, and will not need to be described further, the dial and its method of support having been pointed out merely to assist in the explanation of what is to follow:

According to the usual practice a name plate is located in the center of the calling device dial and is secured in place by means of a screw entering the head of the main shaft. Thus, the shaft of the calling device is so constructed that the operating handle provided by the present invention may be attached thereto with a minimum of trouble. The name plate is simply removed and the operating handle is substituted therefor, it being necessary however
to use a somewhat longer screw for securing the handle to the shaft.

Considering the construction of the operating member more in detail, it comprises a crank 4 which is pivoted on the shank of a member 5, and between the outer flange of the said member 5 and the plate 3. The shank of the member 5 fits loosely in a hole in the crank 4 and the contracted end thereof, after passing through an opening in the plate 3, bears against the end of the main shaft 7 to which it is rigidly attached by means of a screw 6. The plate 3 is preferably provided with four short legs which bear against the face of the dial.

At the end of the crank 4 a short upright cylindrical member 9 is attached by soldering, or other suitable means, after being passed through a hole in the end of the crank. The member 9, which is the actual operating member, is tapered on the end to enable it to enter the holes in the dial readily and has a stem 10, which passes up through the center of the member 9. The handle 11 is preferably made of hard rubber and is hollowed out for about one-half of its length to form a sleeve which fits over the end of the cylindrical member 9. The handle 11 is attached to the stem 10 by means of the screw 12. The space between the stem 10 and the inside of the cylindrical member 9 is occupied by a coil spring 13 which is under tension and serves to retain the operating member 9 in the position shown in the drawing.

The operation of the device is as follows:

Suppose that the operator is to dial the digit 6 for example on her calling device. The crank 4 is rotated by means of the handle until the operating member 8 is approximately over the finger hole corresponding to the digit 6. The handle is then depressed, causing the operating member to enter the finger hole. Still holding the handle in depressed position the operator now rotates the crank, and the dial also, of course, until the operating member 8 engages the finger stop 14. The handle is then released, whereupon the dial rotates back to its normal position and by means of the well known impulse sending mechanism transmits a series of six impulses over any line circuit with which it may be connected at the time. Any of the other digits may be called in the same way and it will be seen, therefore, that means has been provided whereby an operator can manipulate the finger hole dial of a calling device without inserting her finger in the finger hole.

Having described my invention, what I consider to be new and desire to have protected by Letters Patent will be pointed out in the appended claims.

What I claim as my invention is:

1. The combination, with a calling device having a rotatable finger hole dial, of means for rotating the dial comprising a crank and a member carried thereby for engaging the dial in place of the finger of the operator, said member comprising an endwise movable mechanical finger having a bearing on the free end of said crank, and a handle common to said crank and member for rotating the crank and for operating the said member.

2. The combination, with a calling device having a rotatable finger hole dial, of means for rotating the dial comprising a crank pivoted at the center of the dial, and an operating member on the end of the crank movable independent of the crank at right angles to the plane of rotation of the dial.

3. The combination, with a calling device having a rotatable finger hole dial, of an operating member comprising a crank pivoted at the center of the dial, and a manually operable member supported on the end of said crank and adapted to be moved thereby into position above any desired finger hole, said member then movable at right angles to the crank to engage the selected finger hole.

4. The combination, with a calling device having a rotatable finger hole dial, of means for rotating the dial comprising a crank pivoted at the center of the dial, an operating handle for rotating the crank into position above any desired finger hole in the dial, an operating member movable relative to the crank and adapted to be inserted in the selected finger hole by depression of the handle, whereby the dial may be rotated by further movement of said crank and handle, and a spring for restoring said operating member when the handle is released.

5. The combination with a calling device having a rotatable finger hole dial, of a crank fixed to said device and rotatable independent of said dial, a mechanical finger rotatably mounted on the free end of said crank and adapted to be manually moved into engagement with any finger hole on said dial, means on said finger for then manually rotating said dial, through the medium of said finger, and means in said finger for moving the same out of engagement with a finger hole when released.

6. In combination, a calling device provided with a dial, finger holes in said dial by which the dial may be rotated by means of the finger of an operator, and additional means associated with said dial comprising a crank provided with a mechanical finger whereby an operator may rotate the dial without inserting her own finger in a finger hole of said dial.
7. The combination, with a calling device having a rotatable shaft to which is fixed a finger hole dial, of an operating member comprising a crank secured to but rotatable independent of said shaft, an operating handle for rotating the crank into position above any desired finger hole in the dial, an operating member movable relative to the crank and adapted to be inserted in the selected finger hole by the depression of the handle, whereby the dial may be rotated by further movement of said crank and handle, and a spring for restoring said operating member when the handle is released.

8. The combination, with a calling device having a rotatable shaft to which is fixed a finger hole dial, of means for rotating the dial comprising a crank rotatably secured to said shaft, and an operating member on the end of the crank movable independent of the crank at right angles to the plane of rotation of the dial.

9. In combination, a calling device having a shaft provided with a dial in fixed relation thereto, finger holes in said dial by which the dial may be rotated by the finger of an operator, and additional means associated with said dial and shaft comprising a crank secured to said shaft, but rotatable independent of the dial and shaft, provided with a mechanical finger constituting means whereby an operator may rotate the dial without inserting her own finger in a finger hole of said dial.

In witness whereof, I hereunto subscribe my name this 15th day of March, A. D., 1921.

JOHN ERICKSON.