

N^o 7208



A.D. 1914

Date of Application, 21st Mar., 1914
(Patent of Addition to No. 14,614, 24th June, 1913)
Complete Specification Accepted, 17th June, 1915

COMPLETE SPECIFICATION.

Improvements in Number Instruments for Automatic Telephone Systems.

We, SIEMENS BROS. & Co. LTD., of Caxton House, Westminster, S.W., and EARL ALEXANDER PETITHORY, of 17, St. John's Park, Blackheath, London, S.E., Electrical Engineers, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and
5 ascertained in and by the following statement:—

The present invention relates to the number instruments for setting the numerical selecting devices of automatic telephone installations and is a modification of the arrangement described in Patent Specification No. 14,614 of 1913, and forms an addition thereto.

10 The construction of the number instrument according to the main patent specification allows a longer interval of time between the actuation of the dial and the transmission of the first current impulse, than is obtained in previously known arrangements. This is effected by interposing an idle path on the
15 return movement of the dial, which has been set to the number of the wanted connection, so that no impulses are transmitted until this idle path has been traversed.

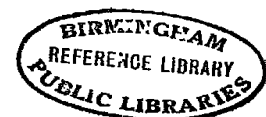
In the construction shown in the main patent, the impulses are sent by the impulse wheel opening and closing contacts, which cause the transmission of the impulses.

20 According to the present invention these contacts, instead of being directly operated by the impulse wheel, are operated by an auxiliary pair of spring arms, interposed between the contacts and the impulse wheel. A feature of the invention is that while the wheel is moving over the idle path, the auxiliary
25 arms move with the impulse wheel, and at the end of the idle path they come to rest in such a position that, when they are operated by the impulse wheel, they control the contacts which transmit the impulses.

The accompanying drawing shows by way of example, a construction of the number instrument according to the invention. Fig. 1 is a rear view; Fig. 2 shows more particularly the arrangement of the impulse wheel; and Fig. 3 is
30 a section on the line A—B of Fig. 1.

On the shaft 1 of the number instrument, which is journaled in the base plate 12, are arranged in known manner besides the number disc 2, an impulse wheel 3, a worm wheel 5 coupled by a worm 17 with a centrifugal governor 4, and a spring 6 for returning the disc 2 to its normal position after it has been
35 set. The impulse wheel is provided with a certain number of teeth 7 with radial flanks with rounded edges. On each side of the impulse wheel there is a spring arm 8 and 9. These arms are frictionally coupled with the impulse wheel and have at one end projections 10 and 11, made of insulating material, which are in contact, when lying in the spaces between the teeth of the impulse
40 wheel, but are separated when the teeth pass between them during the rotation

[Price 6d.]



Improvements in Number Instruments for Automatic Telephone Systems.

of the wheel. On the base plate 12 there are two stops 13 and 14 which limit in either direction the movements of the other ends of the arms 8, 9. Two spring contacts 15, 16, inserted in the line circuit are normally in contact and are arranged so that, as shown in Fig. 1, they are opposite the projections 10 and 11 of the arms 8, 9, when the rear ends of these arms are in contact in their normal position with the stop 13. As the teeth 7 of the impulse wheel 3 pass between the projections 10, 11, the arms 8 and 9 are forced apart and thereby open the contacts 15, 16. The spindle 1 is journaled at the end opposite to the number disc in a bridge piece 19 secured to the base plate 12. The spring 6, which returns the number disc to its normal position, is enclosed in a cap 18 attached to the bridge piece 19.

The action of the number instrument is as follows: When the number disc 2 is rotated in the direction of the arrow for the purpose of setting the wanted number, the arms 8 and 9 are carried with the impulse wheel 3, until they come in contact with the stop 14, in which position the projections 10 and 11 cannot act on the contact springs 15, 16. By the continued rotation of the number disc 2, some of the teeth 7, corresponding to the finger-hold selected, are caused to move past the projections 10, 11. When the number disc is released, it is brought back to its normal position by the spring 6 and the impulse wheel again carries with it the arms 8, 9 until they come in contact with the stop 13, hence during this part of the return movement of the impulse wheel there is no impulse transmission by the contact springs 15, 16. It is only when the arms 8, 9 have returned to their normal positions, that the contact springs 15 and 16 are intermittently opened and closed as the teeth of the impulse wheel pass between the projections 10 and 11.

The idle path of the number disc represented by the travel of the arms 8, 9 is proportioned so as to allow sufficient time for the setting of the pre-selecting devices under any conditions arising in practice.

In the construction shown, the teeth of the impulse wheel extend over the whole circumference; this allows the impulse wheel to be placed in any required angular position and facilitates the fitting up and adjustment of the number disc.

During the idle path of the impulse wheel, the projections 10 and 11 are rotated and are not actuated and consequently do not operate the contacts 15 and 16; but the device might be so arranged, that the projections 10 and 11 should not rotate during the idle path and would be constantly operated. In that case, the circuit in which the contacts 15 and 16 are placed would be opened or shunted during the idle path for example, by means of the arms 8 and 9, which would be disconnected from the stationary projections 10 and 11.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A number instrument according to Claim 1 of Specification No. 14,614 of 1913, in which the contacts for transmitting the impulses are controlled by an intermediate member operated by the impulse wheel.

2. A number instrument according to Claim 1, in which the intermediate member is moved through a certain distance away from the said contacts on the forward movement of the impulse wheel, and during the first part of the release movement is again returned to the position in which it is adapted to operate these contacts.

3. A number instrument according to Claim 1, in which the intermediate member consists of two arms arranged respectively on each side and in frictional engagement with the impulse wheel, which arms are intermittently actuated by the teeth of the impulse wheel and thereby effect the opening and closing of the contacts.

4. A number instrument according to Claim 1, in which the contacts are

Improvements in Number Instruments for Automatic Telephone Systems.

operated during the idle path of the wheel, but the arrangements are such that no impulses are transmitted during this idle path.

5. A number instrument, substantially as described with reference to the accompanying drawing.

5 Dated this 21st day of March, 1914.

ABEL & IMRAY,
Bank Chambers, Southampton Buildings, London, W.C.;
Agents for the Applicants.

Fig. 1.

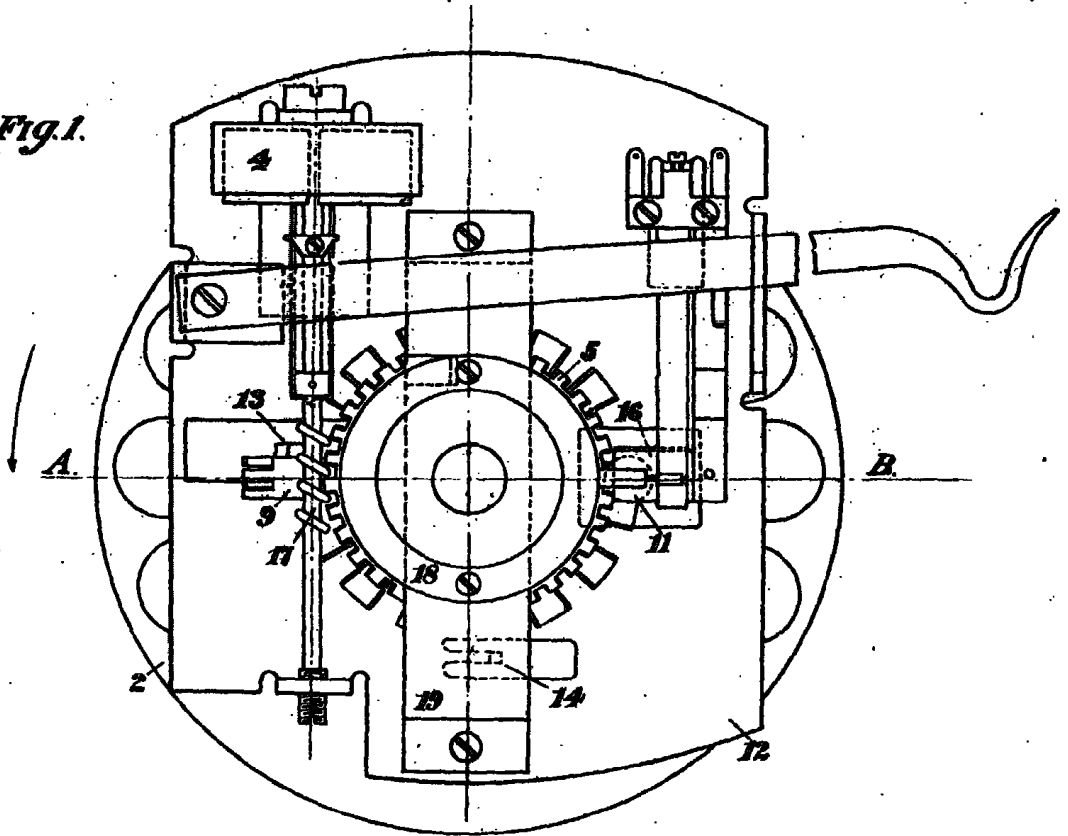


Fig. 3.

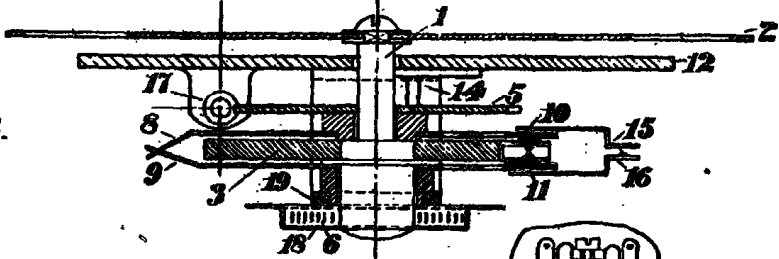


Fig. 2.

