Dec. 26, 1922. 1,439,723

W. G. BLAUVELT.

NUMBERING SYSTEM FOR AUTOMATIC TELEPHONE EXCHANGES.

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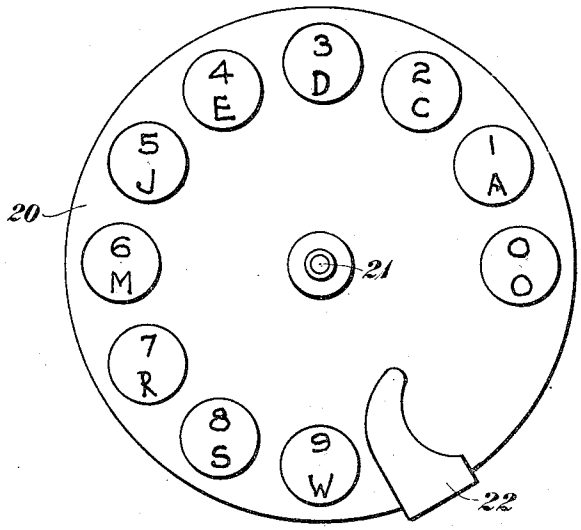


Fig. 1

ORChard	5321
ACAdemy	7128
CORtland	9432
DECatur	8612
EASt n.y.	5683
JAMaica	9210
MORningside	3361
RECtor	1987
SEAford	6213
WORth	4121

Fig. 2

ORchard	5321
ACademy	7128
COrtland	9432
DEcatur	8612
EAst n.y.	5683
JAmaica	9210
MOrningside	3361
REctor	1987
SEaford	6213
WOrth	4121

Fig. 3

Orchard	5321
Academy	7128
Cortland	9432
Decatur	8612
East n.y.	5683
Jamaica	9210
Morningside	3361
Rector	1987
Seaford	6213
Worth	4121

Fig. 4

INVENTOR.

W. G. Blauvelt

BY *G. E. Folk,*

ATTORNEY.

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UNITED STATES PATENT OFFICE.

WILLIAM G. BLAUVELT, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

NUMBERING SYSTEM FOR AUTOMATIC TELEPHONE EXCHANGES.

Application filed September 17, 1918. Serial No. 254,464.

To all whom it may concern:

Be it known that I, WILLIAM G. BLAUVELT, residing at New York, in the county of New York and State of New York, have invented certain Improvements in Numbering Systems for Automatic Telephone Exchanges, of which the following is a specification.

This invention relates to the art of telephony and more particularly to telephone systems in which subscribers are connected by means of automatic switching machinery.

Heretofore it has been customary to designate subscribers by means of a number which is listed in the directory opposite the subscriber's name so that any one desiring to call a particular subscriber may call his number instead of his name. Where the number of subscribers' lines is 10,000 or over, it has been deemed inexpedient to follow this practice inasmuch as each subscriber's number would then involve five digits or over, so that the liability of error due to the subscriber or operator forgetting the number is greatly increased.

Where such a large number of subscribers is involved it has been customary to divide the subscribers' lines into different groups terminating at different central offices, connections between subscribers of different offices being established by a system of inter-office trunking. By keeping the number of lines terminating at a given office below 10,000, it is possible to designate each subscriber in the directory by the office name followed by the number of his line in that office. In this case it is only necessary to remember a name and a number of not more than four digits.

Where connections are established by means of switching machinery under the control of a sender manipulated by the subscriber this scheme is no longer feasible for the reason that the sender in all practical cases is an arrangement such as a dial provided with ten calling positions representing the ten fundamental digits of the Arabic system of notation. In this case, in order to avoid numbers of more than four digits, it has been proposed that each calling position of the dial be designated by a letter in addition to a digit, and in place of the office name in the directory a combination of one or more letters be substituted. The calling subscriber will then dial the letters of the called subscriber's designation in the same manner as the digits comprising the number.

This scheme involves a number of disadvantages in that it requires each subscriber to be listed by two designations in the directory of a locality employing both manual and automatic switching, and furthermore where three letters or more are used in addition to the four digits comprising the subscriber's number, the liability of errors due to the difficulty of memorizing the subscriber's designation, is increased.

It is one of the principal objects of this invention to overcome the difficulties above mentioned, although other and further objects will be clear from the detailed description hereinafter appearing.

In carrying out the objects of this invention it is contemplated that each position of the dial be designated by one or more letters, these letters being so chosen that combinations of letters may be made up therefrom which are suggestive of the office name which in manual practice forms a part of the subscriber's designation. These combinations of letters may then be printed in the directory in a manner distinguishing them from the other letters making up the office names, so that a subscriber desiring to complete a connection automatically may readily observe and memorize as the called subscriber's designation, the distinctive combination of letters and the associated number. At the same time the subscribers whose lines terminate in manual and semi-mechanical offices may repeat to the operator the office name and associated number as in the usual manual practice. In the case of the semi-mechanical office the operator may actuate her sender by registering letters instead of office names as is now the practice.

The invention may now be more fully understood from the following description when read in connection with the accompanying drawing, Figure 1 of which is a schematic representation of a subscriber's dial suitable for use in establishing connections in accordance with the method of this invention, while Figs, 2, 3 and 4 illustrate three different ways of designating the subscribers in the directory.

Referring to Fig. 1, a dial 20 is shown

pivoted at 21 and provided with a series of finger holes about its periphery, said finger holes being designated by the ten Arabic digits, and also by ten letters of the alphabet. In the particular case illustrated the letters O, A, C, D, E, J, M, R, S, and W are employed, but it will be understood that letters other than those illustrated may be employed, the essential requirement being that the letters be so chosen that a large number of combinations suggestive of office names, may be made up therefrom. When ten letters are insufficient to provide the necessary number of combinations each finger hole may, if desired, be designated by two letters and one numeral, so that twenty letters of the alphabet will be available, thus allowing a greater latitude in the office names employed. In operating the dial 20 the calling subscriber, having first memorized the designation of the called subscriber, which will consist of a combination of letters representing the office and a combination of digits representing the number of the called subscriber's line at that office, will insert his finger in the hole corresponding to the first letter of the called subscriber's designation and pull the dial in a clockwise direction until his finger engages with the stop 22, whereupon he releases the dial and permits it to be restored to normal. In the same manner he dials the succeeding letters, if any, together with the associated number in regular order. This operation results in the completion of a connection with the called subscriber by means of switching machinery in a well known manner.

To assist the calling subscriber in memorizing the called subscriber's designation, the designations will comprise an office name and a line number printed in the directory in accordance with the usual manual practice, except that one or more letters of the office name which are suggestive thereof will be printed in such a way as to distinguish them from the other letters of the office name. For instance in large communities, the first three letters or a combination of letters of the office name may be printed in capitals and the remaining letters printed in small type as shown in Fig. 2. A subscriber desiring to call by means of his dial RECtor 1987 will successively dial the letters R. E. C. followed by the digits, 1, 9, 8, 7. This is equivalent to dialing a subscriber whose number is 7421987. A comparison of these two designations shows at once the advantages of the present system. Not only is the subscriber's designation easier to memorize, but in addition, the same designation may be used for either manual or full automatic switching, thus avoiding printing two subscriber's designations in the directory of a community where both switching systems are employed. If for automatic calling the first name be replaced by three arbitrarily chosen letters, as has heretofore been the practice, not only will the combination be difficult to memorize, but, owing to the difficulties of enunciation, it will be necessary to give the subscriber an additional designation involving an office name instead of a group of letters for the use of subscribers whose lines terminate at manual exchanges. It will be understood of course that when an operator completes a connection by means of a sending arrangement under her control, the sender may be actuated by registering combinations of letters and numerals as occurring in the directory instead of registering an office name and number.

In smaller communities it will only be necessary to use the first two letters of the office name in dialing, as shown in Fig. 3, since two letters and four figures will give a sufficiently large number of combinations. In still smaller communities, involving not over ten exchanges, only the first letter of the office named need be used in dialing as shown in Fig. 4.

When it is realized that it has heretofore been impractical to establish connections between subscribers in extremely large communities by means of the full automatic method, by reason of the difficulties involved in designating the subscribers by numbers involving a large number of digits or by combinations of arbitrarily chosen letters and numbers, the advantages of the present invention may be more fully realized.

By means of the present invention it is possible to use full automatic machine switching systems in communities having several hundred offices of approximately 10,000 lines each, which is well above the requirements of the largest communities now in existence.

It will also be obvious that the general principles herein disclosed may be embodied in many other systems and organizations widely different from those illustrated and described without departing from the spirit of the invention as defined in the following claims.

What is claimed is:

1. The method of dialing in a mechanical switching system in which subscribers are designated by a combination of office names and numbers, which consists in assigning names to the offices of the system each having a characteristic letter which is different for each office dialing the letter of the office name which is suggestive thereof to establish a connection to a desired office, and then successively dialing the digits of the number of the subscriber's designation to establish a connection to a subscriber in the office.

2. The method of dialing in a mechanical switching system in which subscribers are designated by a combination of office names and numbers, which consists in dialing in succession a plurality of letters of the office name which are suggesive thereof to establish a connection to a desired office, and then successively dialing the digits of the number of the subscriber's designation to establish a connection to a subscriber in the office.

3. The method of dialing in a mechanical switching system in which subscribers are designated by a combination of office names and numbers, which consists in dialing in succession a combination of letters of the office name to establish a connection to a desired office, and then dialing the digits of the number of the subscriber's designation to establish a connection to a subscriber in the office.

4. The method of directively operating switches to establish a connection in a mechanical switching system in which subscribers are designated by a combination of office names and numbers, and in which the switches are operated in response to the transmission of varied groups of impulses, each group of impulses representing either a letter or a digit, which consists in assigning names to the offices of the system each having a characteristic letter which is different for each office transmitting a group of impulses corresponding to a letter of the office name which is suggestive thereof to establish a connection to a desired office, and then transmitting successive groups of impulses corresponding to the digits of the number of the subscriber's designation to establish a connection to a subscriber in the office.

5. The method of directively operating switches to establish a connection in a mechanical switching system in which subscribers are designated by a combination of office names and numbers, and in which the switches are operated in response to the transmission of varied groups of impulses each group of impulses representing either a letter or a digit, which consists in transmitting a succession of groups of impulses corresponding to a plurality of letters of the office name which are suggestive thereof to establish a connection to a desired office, and then transmitting successive groups of impulses corresponding to the digits of the number of the subscriber's designation to establish a connection to a subscriber in the office.

6. The method of directively operating switches to establish a connection in a mechanical switching system in which subscribers are designated by a combination of office names and numbers, and in which the switches are operated in response to the transmission of varied groups of impulses, each group of impulses representing either a letter or a digit, which consists in transmitting a succession of groups of impulses corresponding to a combination of letters of the office name to establish a connection to a desired office, and then transmitting successive groups of impulses corresponding to the digits of the number of the subscriber's designation to establish a connection to a subscriber in the office.

7. A code for designating telephone subscribers in a system in which subscribers' lines are grouped so that lines of different groups terminate in different offices between which trunk connections may be established, said code comprising a combination of the office name and the number of the subscribers' lines in said office, at least one of the letters of the office name which are suggestive thereof being represented in a manner characteristically different from the manner in which the other letters are represented, so that subscribers desiring manual connections may call the office name and number of the subscriber, and subscribers requiring to establish mechanically switched connections may dial the characteristic letter of the name and the digits of the number of the subscriber's designation.

8. A code for designating telephone subscribers in a system in which subscribers' lines are grouped so that lines of different groups terminate in different offices between which trunk connections may be established, said code comprising a combination of the office name and the number of the subscriber's line in said office, certain of the letters of the office name which are suggestive thereof being represented in a manner characteristically different from the manner in which the other letters are represented, so that subscribers desiring manual connections may call the office name and number of the subscriber, and subscribers requiring to establish mechanically switched connections may dial the characteristic letters of the name and the digits of the number of the subscribers' designations.

9. A code for designating telephone subscribers in a system in which subscribers' lines are grouped so that lines of different groups terminate in different offices between which trunk connections may be established, said code comprising a combination of the office name and the number of the subscribers' lines in said office, a combination of letters of the office name being represented in a manner characteristically different from the manner in which the other letters are represented, so that subscribers desiring manual connections may call the office name and number of the subscriber, and subscribers requiring to establish mechanically

switched connections may dial the combination of letters of the name and the digits of the number of the subscribers' designations.

10. The method of designating telephone subscribers in a system in which subscribers' lines are grouped so that lines of different groups terminate in different offices, between which trunk connections may be established, and in which said trunk connections may be established through switching machinery under the control of dials, which consists in applying letters to the dial so that at least one letter is correlated with each of a group of numerals on the dial, and adopting a word name for each office, said word name being made up of letters, at least one of which is characteristic of the name and is dialed for controlling connections to that office, said names being so chosen that different characteristic letters appear in each name.

11. The method of designating telephone subscribers in a system in which subscribers' lines are grouped so that lines of different groups terminate in different offices, between which trunk connections may be established, and in which said trunk connections may be established through switching machinery under the control of dials, which consists in applying letters to the dial so that at least one letter is correlated with each of a group of numerals on the dial, and adopting a word name for each office, said word name being made up of letters, a plurality of which are dialed in sequence for controlling connections to that office.

12. The method of designating telephone subscribers in a system in which subscribers' lines are grouped so that lines of different groups terminate in different offices, between which trunk connections may be established, and in which said trunk connections may be established through switching machinery under the control of dials, which consists in applying letters to the dial so that at least one letter is correlated with each of a group of numerals on the dial, and adopting a word name for each office, said word name being made up of letters, a combination of which is dialed for controlling connections to that office.

In testimony whereof I have signed my named to this specification this thirteenth day of Sept., 1918.

WILLIAM G. BLAUVELT.