No. 744,041. PATENTED NOV. 17, 1903.

C. G. BURKE.

TELEGRAPHIC CODE.

APPLICATION FILED SEPT. 21, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

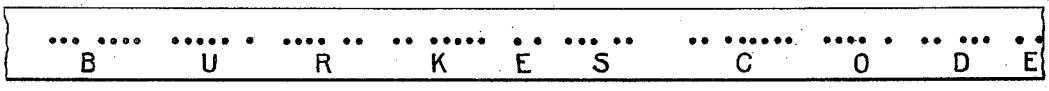

Fig. 1.

	1	2	3	4	5	6
1	E	T	H	P	G	F
2	A	N	D	W	K	C
3	I	S	L	B	V	I
4	0	R	M	J	2	3
5	U	Q	X	4	5	6
6	Y	Z	7	8	9	0

Fig. 2.

1	1	2	3	4	5	6
2	1	2	3	4	5	6
3	1	2	3	4	5	6
4	1	2	3	4	5	6
5	1	2	3	4	5	6
6	1	2	3	4	5	6

Fig. 3.

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NO MODEL. 2 SHEETS—SHEET 2.

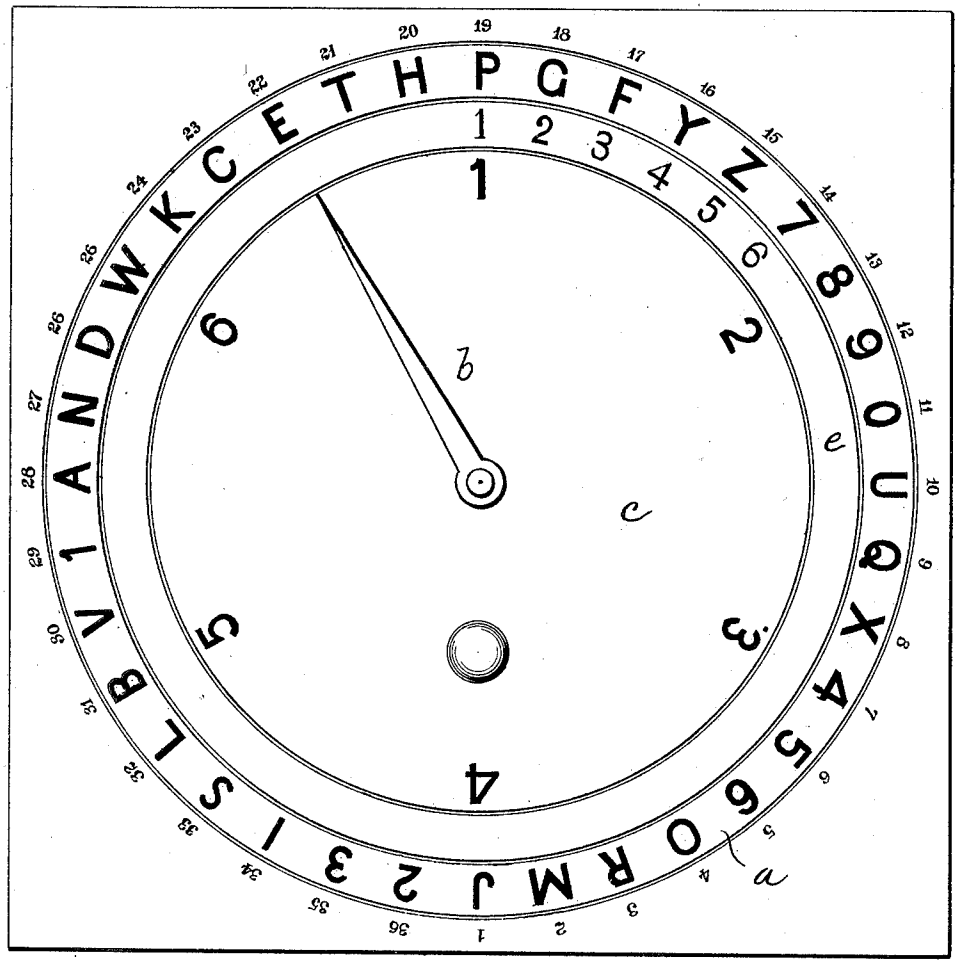

Fig. 4.

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No. 744,041. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

CHARLES G. BURKE, OF BROOKLYN, NEW YORK.

TELEGRAPHIC CODE.

SPECIFICATION forming part of Letters Patent No. 744,041, dated November 17, 1903.

Application filed September 21, 1901. Serial No. 76,060. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. BURKE, a citizen of the United States, residing at the city of New York, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Telegraphic Codes, of which the following is a full, clear, and exact description.

This invention refers to that class or system of telegraphy wherein telegraphic signals are sent for the purpose of indicating or signifying the letters of the alphabet or other desired characters, and is more particularly adapted for telegraphing where the means available do not admit of producing unit signal elements which are readily distinguishable from one another by some inherent special characteristic or of imprinting the letters of the messages.

Aside from printing-telegraphs, in which the words of messages are automatically printed, it has heretofore been usual to use the Morse code, in which the signals are composed of dots and dashes. In many forms of telegraphy Morse dashes have been found to be a serious impediment to speed and accuracy, and hence objectionable. In wireless telegraphy, for instance, the dots of the Morse code are easily, rapidly, and accurately produced, owing to the fact that they require but a single impulse and that all the impulses or waves in wireless telegraphy are all uniform in their duration and effect, and therefore especially adapted for the transmission of dots. Morse dashes, however, because of requiring a prolongation of current operation three times as long as that of a dot, are all but impracticable in wireless telegraphy, as is well known. It is also well known that the signaling of Morse dots and dashes by means of flags, lights, whistles, &c., is attended with much difficulty and that to send or receive messages in the Morse code by such means requires much experience, long practice, and considerable technical skill or by any other code based upon signals composed of elemental units differing from each other in some special inherent characteristic. To avoid all such difficulties referred to and to minimize the amount of experience required in telegraphy, I have devised a new method and system based upon a new code in which all the signals consist of dots or their equivalents only, and I arrange these dots in such a way in the signals that the signification and meaning of the signal can be easily and readily learned even by persons having no experience in telegraphy or previous familiarity with the code.

A distinguishing and novel feature of my new code is that each of its characters or complete signals consists of two distinct parts, that each of such parts is composed of one or more dots or like elemental units, that each part has a fixed numerical signification determined by the number of its unit elements, and that both parts construed as a whole signal signifies or indicates a definite position or numbered space on a chart or scale to which has been assigned a letter of the alphabet, a figure, or other character of predetermined meaning.

This new code will be best understood by reference to the accompanying drawings, in which—

Figure 1 illustrates a record of signals sent under this new code signifying the letters comprised in the two words selected. Fig. 2 illustrates a reference-chart arranged upon a plan based upon the principle of my new code and embracing the twenty-six letters of the alphabet and the ten figures of notation. Fig. 3 is a plan of a keyboard of a printing-machine or type-writer arranged for translating and printing in ordinary type the signification of the code-signals; and Fig. 4 illustrates a means whereby the signification of individual complete signals may be varied at will without varying the signification of the separate parts of signals or their relation to the positions, numbers, or spaces of the chart.

Referring to the chart, Fig. 3, it will be seen that it is divided into uniform spaces arranged in rows and forming a square, there being six horizontal and six vertical rows of such spaces, aggregating thirty-six in number. In these thirty-six spaces are arranged the twenty-six letters of the alphabet and the ten figures from "1" to "0." For general use it is desirable to arrange the letters of the alphabet in these spaces in such order that the signals which designate the letters most frequently employed shall have the fewest number of elemental units in their parts.

It will be noted in connection with this chart that the horizontal rows are numbered from "1" to "6," reading downward, while the vertical rows are also numbered from "1" to "6," reading from left to right. In forming my signals I arrange that the first part of each signal shall signify or indicate one of the six horizontal rows, and this is done by having a number of dots or unit elements in the part corresponding with the number of the row. The vertical rows are also always indicated by the second part of the signals, and as in the case of the horizontal rows the number of dots or unit elements are made to correspond with the number of the row required. By this arrangement the parts of the signals by the number of their unit elements point out the required rows both horizontal and vertical. It is obvious that any signal which by the conjunction of its numerical units arranged as described will indicate any of these thirty-six spaces in the chart will equally signify the letter or figure assigned to such space. To signal any of the figures or letters arranged as shown, it is only necessary, therefore, to have the first and second parts of the signal contain, respectively, a number of dots or unit elements corresponding with the numbers of the horizontal and vertical rows at the intersection of which the desired letter is located. For instance, the letter "B," according to the chart shown in Fig. 2, would be signaled by three dots or units in the first part of the signal to indicate the third horizontal row, and by four dots or units in the second part of the signal to indicate the fourth vertical row, a space or period of time longer than that between any two successive units in either part separating the parts. In the use of this code in all instances it is necessary for greatest accuracy that the space or period of time separating parts of signals shall be perceptibly longer than between successive unit elements, that the space between letters shall exceed that between parts of signals, and the space between words that which separates letters.

The transmission of the signals of my new code, if through the operation of electricity, whether over a regular telegraph-line or by wireless telegraphy, is preferably by means of a perforated transmitting-tape, such as is used in ordinary automatic telegraphy, and the signal may be recorded by the usual recorders in the ordinary way. The required units in each part of the signals can be secured by appropriate perforations made in the tape in a well-known way with needed spacings between. The signals may, however, be sent by hand in the ordinary way and with no greater skill than that required to send a proper number of dots to indicate the horizontal and vertical rows in which the required letter is found in the chart.

To decipher the signals of my new code as they are being received or when they have been recorded, requires no skill if a type-writer is employed which has its keyboard arranged as shown in Fig. 3. Taking, for instance, the first signal, (shown in Fig. 1,) which consists of three dots in its first part and four dots in the second part, the operator would recognize that the fourth key in the third row was indicated, and pressing this key he would imprint the letter "B," which the signal signified. Of course a skilled operator could commit to memory the representation of each character and write out the message, as is done with the Morse code; but the translating and printing arrangement shown in Fig. 4 is always to be preferred. Indeed, it is obvious that this code and translating type-writer may be made to take the place of all printing-telegraphs and with the advantage of dispensing with the complicated, intricate, unreliable mechanism and complex electrical devices now required in that form of telegraphy, as also technical skill on the part of operators. Inasmuch as all the signals in this code consist entirely of dots, the signals are capable of being transmitted and recorded at the highest speed now attainable in any form of automatic telegraphy and have the additional advantage of being readily converted into printed characters at a commercial speed without technical skill on the part of operators and upon any sized page that a type-writer can be made to carry and in any form that a type-writer can be made to produce. Another important advantage of this code for wireless telegraphy and for military and naval use is the facility which it affords for varying the significations of the signals, and thereby securing the secrecy of messages from all ignorant of the change made in the chart.

Referring to Fig. 4, it will be seen that the characters arranged in circle *a* correspond with those in the chart, Fig. 2, and have the same relation to the index *b* on the rotatable disk *c*. The figures "1," "2," "3," "4," "5," and "6" on disk *c* represent the six horizontal rows of the chart, while the figures "1," "2," "3," "4," "5," and "6" on the circle *e* outside the disk represent the six vertical rows of the chart. The circle *a*, containing the letters and figures, is movable around the axis of the inner circle, and as it moves from "1" to "36" on the outer rim the relation of the letters to the horizontal and vertical figures become all changed at each move and the signals take on a new signification accordingly. By moving the figures on the disk to the figures on the inside ring the index on the disk will point to the letter which the combination of these horizontal and vertical positions indicate. By a reverse operation—that is, by pointing the index to any of the letters on the ring—it will show what combination of signal parts is required to indicate such letter. In signaling by flags, lights, whistles, &c., it is only necessary to indicate in some perceptible way by the means employed the number of units required

in the first and second parts of the signal to indicate the chart position of the letter intended, these signals being construed in either of the ways hereinbefore described.

Since the basis of this code is the indication of two rows, columns, or lines of character-spaces, at the intersection of which the indicated character occurs, it is evident that the scope of my invention includes a code in which each character is composed of two parts, which respectively indicate (by any sign) the two intersecting rows, columns, or lines of character-spaces, and is not restricted to the use of unit elements to indicate said intersecting rows, columns, or lines.

It is obvious that each of the two parts of a signal may represent a horizontal or a vertical column or line so long as it is known to the receiver of the message what the signification is.

Having described my invention, I claim—

A code-building chart, consisting of the combination of a row of characters, a relatively movable row of figures, an index fixed with respect to the row of figures, a second row of figures movable with respect to the first and of a length equal to the distance between any two of the figures in said first row, whereby any figure of the first row can be brought opposite any figure of the second row and the index thereby brought opposite a corresponding character in the row of characters.

In witness whereof I subscribe my signature in presence of two witnesses.

CHARLES G. BURKE.

Witnesses:
FRANK S. OBER,
WALDO M. CHAPIN.