

No. 841,952.

PATENTED JAN. 22, 1907.

A. M. FISHER.
TELEGRAPHIC CODE.

APPLICATION FILED AUG. 11, 1905.

6 SHEETS—SHEET 1.

Fig. 2.
TABULATION No. 2.
B¹ FIRST WORD, SECOND SYLLABLE. C

TRANSLATION NUMERALS	D				8	8	8	8
	11	12	13	14	bu	ef	ge	ip
					ac	by	eg	gi
					ad	ca	eh	go
					af	ce	el	gu
					ag	ci	ep	ha
					ah	co	er	he
					al	cu	es	hi
					ap	cy	et	ho
					ar	da	ex	hu
					as	de	ez	hy
					at	di	fa	ib
					ax	do	fe	ic
					az	du	fi	id
					ba	dy	fo	if
					be	eb	fu	ig
					bi	ec	fy	ih
					bo	ed	ga	il
Substitute for Repeated Syllables								

Fig. 1.
TABULATION No. 1.
B FIRST WORD, FIRST SYLLABLE. C

TRANSLATION NUMERALS	D				1	1	1	1
	4	5	6	7	bu	ef	ge	ip
					ac	by	eg	gi
					ad	ca	eh	go
					af	ce	el	gu
					ag	ci	ep	ha
					ah	co	er	he
					al	cu	es	hi
					ap	cy	et	ho
					ar	da	ex	hu
					as	de	ez	hy
					at	di	fa	ib
					ax	do	fe	ic
					az	du	fi	id
					ba	dy	fo	if
					be	eb	fu	ig
					bi	ec	fy	ih
					bo	ed	ga	il
Substitute for Repeated Syllables								

WITNESSES:
Goldbener
Reed

INVENTOR
Alexander M. Fisher
BY *Myers*
ATTORNEYS

No. 841,952.

PATENTED JAN. 22, 1907.

A. M. FISHER.
TELEGRAPHIC CODE.

APPLICATION FILED AUG. 11, 1905.

6 SHEETS—SHEET 2.

TABULATION No. 1.
FIRST WORD, FOURTH SYLLABLE.

TRANSLATION NUMERALS		22		22	22	22	22	22
			23					
				24		24	24	24
		ab	bu	ef	ge	ip	oh	ri
25		ac	by	eg	gi	ir	ol	ro
	26	ad	ca	eh	go	is	op	ru
	27	af	ce	el	gu	it	or	ry
	28	ag	ci	ep	ha	ix	os	sa
25	26	ah	co	er	he	iz	ot	se
25	27	al	cu	es	hi	la	ox	si
25		ap	cy	et	ho	le	oz	so
	26	27	ar	da	ex	hu	li	pa
	26	28	as	de	ez	hy	lo	pe
		27	28	at	di	fa	ib	lu
25	26	27	ax	do	fe	ic	ty	po
25	26		28	az	du	fi	ob	pu
25		27	28	ba	dy	fo	if	oc
	26	27	28	be	eb	fu	ig	od
25	26	27	28	bi	ec	fy	ih	of
Substitute for Repeated Syllables				bo	ed	ga	il	og

TABULATION No. 3.
FIRST WORD, THIRD SYLLABLE

TRANSLATION NUMERALS		C-15		C-15										
18		D-ab		bu	ef	ge	ip	oh	ri	ub				
				ac	by	eg	gi	ir	ol	ro	uc			
	19		A-ad	ca	eh	go	is	op	ru	ud				
	20		af	ce	el	gu	it	or	ry	uf				
		21	ag	ci	ep	ha	ix	os	sa	ug				
18	19		ah	co	er	he	iz	ot	se	uh				
18		20	al	cu	es	hi	la	ox	si	ul				
-18		21	ap	cy	et	ho	le	oz	so	up				
	19	20	ar	da	ex	hu	li	pa	su	ur				
	19		as	de	ez	hy	lo	pe	sy	us				
		20	at	di	fa	ib	lu	pi	ta	ut				
18	19	20	ax	do	fe	ic	ty	po	te	ux				
18	19		az	du	fi	id	ob	pu	ti	uz				
18		20	ba	dy	fo	if	oc	py	to	za				
	19	20	be	eb	fu	ig	od	ra	tu	ze				
18	19	20	bi	ec	fy	ih	of	re	ty	zi				
Substitute for Repeated Syllables			bo	ed	ga	il	og							

WITNESSES:

Geo. C. Cheney
Rev. J. H. Foster

INVENTOR

Alexander M. Fisher

BY

Munn & Co.

ATTORNEYS

A. M. FISHER.
TELEGRAPHIC CODE.

APPLICATION FILED AUG. 11, 1906.

6 SHEETS—SHEET 3.

32 32 32 32

Fig. 5. Geometrical Progression of Two.
Tabulated to show sums.

Geometrical Progression	1	2	4	8	16	32
1 Equals the sum of	1					
2	"	"				
3	"	"	"			
4	"	"	"	"		
5	"	"	"	"	"	
6	"	"	"	"	"	"
7	"	"	"	"	"	"
8	"	"	"	"	"	"
9	"	"	"	"	"	"
10	"	"	"	"	"	"
11	"	"	"	"	"	"
12	"	"	"	"	"	"
13	"	"	"	"	"	"
14	"	"	"	"	"	"
15	"	"	"	"	"	"
16	"	"	"	"	"	"
17	"	"	"	"	"	"
18	"	"	"	"	"	"
19	"	"	"	"	"	"
20	"	"	"	"	"	"
21	"	"	"	"	"	"
22	"	"	"	"	"	"
23	"	"	"	"	"	"
24	"	"	"	"	"	"
25	"	"	"	"	"	"
26	"	"	"	"	"	"
27	"	"	"	"	"	"
28	"	"	"	"	"	"
29	"	"	"	"	"	"
30	"	"	"	"	"	"
31	"	"	"	"	"	"
32	"	"	"	"	"	"
33	"	"	"	"	"	"
34	"	"	"	"	"	"
35	"	"	"	"	"	"

Fig. 5. TABULATION No. 5.
FIRST WORD, FIFTH SYLLABLE.

TRANSLATION NUMERALS	29	30	31	32	33	34	35
D	ab	bu	ef	ge	ip	oh	ri
ac	by	eg	gi	ir	ol	ro	uc
ad	ca	eh	go	is	op	ru	ud
af	ce	el	gu	it	or	ry	uf
ag	ci	ep	ha	ix	os	sa	ug
ah	co	er	he	iz	ol	se	uh
al	cu	es	hi	la	ox	si	ul
ap	cy	et	ho	le	oz	so	up
ar	da	ex	hu	li	pa	su	ur
as	de	ez	hy	lo	pe	sy	us
at	di	fa	ib	lu	pi	ta	ut
ax	do	fe	ic	ly	po	te	ux
az	du	fi	id	ob	pu	ti	wz
ba	dy	fo	if	oc	py	to	za
be	eb	fu	ig	od	ru	tu	ze
bi	ec	fy	ih	of	re	ty	zi
bo	ed	ga	il	og			
Substitute for Repeated Syllables							

WITNESSES:
John Cheney
Henry Heston

INVENTOR
Alexander M. Fisher
BY *Munn & Co*
ATTORNEYS

A. M. FISHER.

TELEGRAPHIC CODE.

APPLICATION FILED AUG. 11, 1905.

6 SHEETS—SHEET 4.

Fig. 7.

Illustration.
Specification of Machine.

F

Translation Key.

<i>Translation Numerals.</i>	<i>Meanings.</i>	<i>Translation Numerals.</i>	<i>Meanings.</i>
1	1 } H	19	Taper Attachment
2	2 } Engine Lathes	20	German Tail Stock —H
3	4 }	21	Turret on Carriage
4	8 }	22	1
5	1 }	23	2
6	2 }	24	4 } Inch
7	4 } Inch Swing	25	8 }
8	8 }	26	16 }
9	16 }	27	Plain Chuck
10	1/2 }	28	Universal Chuck
11	1 }	29	Combination Chuck
12	2 } Foot Bed	30	1/8 }
13	4 }	31	1/4 } Inch Drill Chuck
14	8 }	32	1/2 }
15	16 }	33	1 }
16	Plain Rest	34	Face Plate Jaws
17	Raise and Fall Rest	35	Back Geared Lathe
18	Compound Rest		

Fig. 8.

Determining Code Word for Message.

<i>Specifications.</i>	<i>Translation Numerals.</i>
5 Engine Lathes	1, 3
14-inch Swing	6, 7, 8
6 1/2-foot Bed	10, 12, 13
Plain Rest	16,
Compound Rest	18,
Taper Attachment	19,
12-inch	24, 25,
Combination Chuck	29,
1 1/2-inch Drill Chuck	32, 33,
Face Plate Jaws	34,
Back Geared Lathe	35,

(From Tabulation No. 1, 2, 3, 4, 5.)

WITNESSES: Code Word:— pi pa er gi ec INVENTOR

Geo. C. Cheney
Rev. G. Foster

Alexander M. Fisher

BY *Mundt & Co.*

ATTORNEYS

No. 841,952.

PATENTED JAN. 22, 1907.

A. M. FISHER.

TELEGRAPHIC CODE.

APPLICATION FILED AUG. 11, 1905.

6 SHEETS—SHEET 5.

Fig. 5.

Translating Code Word.

<i>pi</i>	<i>pa</i>	<i>er</i>	<i>gi</i>	<i>ec.</i>	<i>Translation.</i>
1,					1 } 5 Engine Lathes
3,					4 }
6,					2 }
7,					4 } 14-inch Swing
	8,				3 }
	10,				1/2 }
	12,				2 } 6 1/2-foot Bed
	13,				4 }
		16,			Plain Rest
		18,			Compound Rest
		19,			Taper Attachment
			24,		4 } 12-inch
			25,		1 }
				29,	Combination Chuck
				32,	1/2 } 1 1/2-in. Drill Chuck
				33,	1 }
				34,	Face Plate Jaws
				35,	Back Geared Lathe

<i>A¹</i>	<i>C¹</i>	<i>A²</i>	<i>C¹</i>
<i>ab</i> 1 2 3 4 5 6 7		<i>bo</i> 1 2 4 5 6 7	
<i>ac</i> 1 2 3 4 5 6 7		<i>bu</i> 1 2 4 5 6 7	
<i>ad</i> 1 2 3 4 5 6 7		<i>by</i> 1 2 4 5 6 7	
<i>af</i> 1 2 3 4 5 6 7		<i>ca</i> 1 2 4 5 6 7	
<i>ag</i> 1 2 3 4 5 6 7		<i>ce</i> 1 2 4 5 6 7	
<i>ah</i> 1 2 3 4 5 6 7		<i>ci</i> 1 2 4 5 6 7	
<i>al</i> 1 2 3 4 5 6 7		<i>co</i> 1 2 4 5 6 7	
<i>ap</i> 1 2 3 4 5 6 7		<i>cu</i> 1 2 4 5 6 7	
<i>ar</i> 1 2 3 4 5 6 7		<i>cy</i> 1 2 4 5 6 7	
<i>as</i> 1 2 3 4 5 6 7		<i>da</i> 1 2 4 5 6 7	
<i>at</i> 1 2 3 4 5 6 7		<i>de</i> 1 2 4 5 6 7	
<i>ax</i> 1 2 3 4 5 6 7		<i>di</i> 1 2 4 5 6 7	
<i>az</i> 1 2 3 4 5 6 7		<i>dc</i> 1 2 4 5 6 7	
<i>ba</i> 1 2 3 4 5 6 7		<i>du</i> 1 2 4 5 6 7	
<i>be</i> 1 2 3 4 5 6 7		<i>dy</i> 1 2 4 5 6 7	
<i>bi</i> 1 2 3 4 5 6 7		<i>eb</i> 1 2 4 5 6 7	
		<i>ec</i> 1	

WITNESSES:

John Cheney
Rev. H. H. H.

INVENTOR

Alexander M. Fisher

BY

M. M. M.

ATTORNEY'S

UNITED STATES PATENT OFFICE.

ALEXANDER METCALF FISHER, OF NEW YORK, N. Y.

TELEGRAPHIC CODE.

No. 841,952.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed August 11, 1905. Serial No. 273,760.

To all whom it may concern:

Be it known that I, ALEXANDER METCALF FISHER, a citizen of the United States, and a resident of New York city, borough of Manhattan, in the county and State of New York, have invented a new and Improved Telegraphic Code, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved telegraphic code, more especially designed for the use of large business concerns and arranged to permit convenient and accurate codifying of correspondence, specifications, orders, and the like, each code-word being readily pronounceable and of not more than ten letters.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figures 1 to 5, inclusive, illustrate the tables for the successive syllables of the first code-word of ten letters. Fig. 6 illustrates a table of the geometrical progression of two. Fig. 7 illustrates the translation-key adapted for use in ordering machinery. Fig. 8 illustrates a sample message and code-word for the same. Fig. 9 illustrates the translation of the code-word. Fig. 10 illustrates a table having syllables and translation-numerals arranged in a modified form, and Fig. 11 illustrates a translation-key of modified form.

As is well known, a telegraphic word under the ruling of the International Telegraphic Conference of 1903 is considered to be a pronounceable combination of not more than ten letters. In the telegraphic code presently to be described in detail each telegraphic word consists of ten letters in five syllables, each syllable A being formed of one vowel and one consonant, and the syllables are arranged, preferably, in the form of tables B, B', B², B³, and B⁴, one of the syllables in the table B forming the first syllable for a code-word the second syllable of which is taken from the second table B', and so on, so that a code-word of five syllables contains one syllable A from each one of the five tables.

As shown in Figs. 1, 2, 3, 4, and 5, the syl-

lables in the five different tables are alike and are similarly arranged—that is, are disposed in intersecting vertical and horizontal rows headed by translation-numerals C, arranged singly and in combinations of twos, threes, and fours. Thus on the first table B the translation-numerals "1 2 3" and the combinations thereof, "1-2," "1-3," "2-3," and "1-2-3," head the vertical rows of syllables A, while the numerals "4 5 6 7," either singly or in combinations of twos, threes, and fours, are arranged to the left of the horizontal rows of syllables A.

On the second table B' the translation-numerals run from "8" to "14," consecutively, of which the numerals "8," "9," and "10" and their combinations form the headings for the vertical rows of syllables A, while the numerals from "11" to "14" form the headings for the horizontal rows of syllables, either singly or in combinations of twos, threes, and fours. In a like manner the tables B², B³, and B⁴ have translation-numerals up to the numeral "35," and all are arranged either singly or in combinations of twos, threes, and fours, as before explained and shown in the drawings. In order to quickly distinguish the single translation-numerals and the combinations of the same, I prefer to use heavy lines (both vertical and horizontal) between adjacent sets of such translation-numerals, as will be readily understood by reference to Figs. 1, 2, 3, 4, and 5.

It will also be noticed that the single translation-numerals are arranged in diagonal form, and the individual translation-numerals of the ones in combination are arranged in the horizontal or vertical row containing the same single numeral. Thus, by reference to Fig. 1, it will be seen that all the numerals "1," for instance, are in the same horizontal row and all the numerals "4" are in the same vertical column. By this arrangement confusion is avoided in using the translation-numerals both when making up the telegraphic word or retranslating it. Each of the tables also contain a syllable D, to indicate that none of the translation-numerals of the table are used and to maintain the relative position of table syllables following. On the bottom on each table is found a row of syllables E, intended as substitutes for such syllables A as happen to be repeated in the telegraphic word. The numerals C in the several tables B, B', B², B³, and B⁴ deter-

mine which of the syllables A is to be used in the code-word, and each of the said numerals or their combinations stands for a predetermined subject-matter. For instance, if the subject-matter of the beginning of the mes-
 5 sage is indicated by the numeral "1" then the syllable "bu" (see Fig. 1) headed by the numeral "1" is the proper one to be used as the first syllable in the code-word.

10 It is understood that the substitute syllables E are used to prevent a repetition of the next preceding syllable in a telegraphic word. Thus if the telegraphic word spells "cucudaolol," for instance, then the sub-
 15 stitute syllables E—say "bo" and "og"—are substituted for the several repeated syllables "cu" and "ol," so that the telegraphic word reads "cubodaolog," which is more phonetic than the word "cucudaolol," which it dis-
 20 places. If, however, the subject-matter is represented by, say, the numerals "2-3-4," then the syllable "ro" will be found in the table B at the intersection of the verti-
 25 cal column headed by the numerals "2-3" and the horizontal column headed by the numeral "4." If the subject-matter for the beginning of the message is represented by the numerals "1-2-3-4-5-6-7," then the syl-
 30 lable "zi" is the first syllable of the code-word, and it is found at the intersection of the vertical column headed by the numerals "1-2-3" and the horizontal column headed by the numerals "4-5-6-7."

If more than one telegraphic word is to be
 35 sent, use may be made of additional sets of tables—that is, each set of tables uses the same syllables A and numerals C of a higher but consecutive order. In arriving at quan-
 40 tities use is made of the geometrical progression of two—that is, a series of numbers in which two is a constant multiplier. Such a series is shown, for instance, in Fig. 6, and consists of the numerals "1," "2," "4,"
 45 "8," "16," and "32," and with this series can be made any number from one up to sixty-three. For instance, fifteen equals the sum of one, two, four, and eight; twenty-one equals the sum of one, four, and sixteen;
 50 thirty-one equals the sum of one, two, four, eight, and sixteen, and sixty-three equals the sum of the whole series. It is understood that the geometrical progression mentioned can be increased indefinitely, but is carried out only to thirty-two in order to be able to
 55 make any number from one to sixty-three, and which latter is sufficiently high for use in the example selected and hereinafter more fully explained. Various geometrical progressions can be used, varying in accordance with the
 60 unit of differences desired. Thus, for instance, by fifty—"50, 100, 200, 400, 800, 1,600"—giving all quantities from fifty to three thousand one hundred and fifty by differences of fifty; by sixteenths—"1/16,
 65 1/8, 1/4, 1/2, 1, 2, 4, 8, 16," &c.—giving all

quantities from one-sixteenth to thirty-one and seven-sixteenths by differences of one-sixteenth; by twenty-fourths—"1/24, 2/24, 4/24, 8/24, 16/24, 1, 2, 4, 8, 16," &c.—giving all quantities by differences of one
 70 twenty-fourth; by one-hundredths—"1/100, 2/100, 4/100, 8/100, 16/100, 32/100, 64/100, 1, 2, 4, 8," &c.—giving all quantities by differences of one one-hundredth. Thus from the above it will be seen that there are no
 75 limitations in making up different series. In using the series of numbers of a geometrical progression in a translation-key F, for instance, as shown in Fig. 7, it is necessary to
 80 consider the numbers of the series as subject-matter and assign them as meanings of the translation-numerals. Thus the translation-key F contains the translation-numerals G from "1" to "35" and subject-matter
 85 H, each item opposite a translation-numeral G. By reference to Fig. 7 it will be seen that some of the translation-numerals represent the name of an article only. For instance, the numeral "16" represents "plain rest." Some of the translation-numerals, however,
 90 represent both the name of an article and a certain dimension thereof. For instance, the numeral "14" stands for "eight-foot bed." In a like manner some of the translation-numerals G stand for the name of the article
 95 and a certain quantity thereof. For instance, the numeral "3" stands for "four engine-lathes." Some of the translation-numerals G stand for certain dimensions only. For instance, the numeral "8" represents
 100 "eight-inch swing." Now the set of numerals for the several dimensions or the several quantities given for any particular subject or article are the numerals of the geometrical
 105 progression of two, and hence by combining the said numerals G any desired dimension or quantity can be indicated. For instance, numerals "1" and "3" represent "five engine-lathes," and numerals "6, 7, 8" stand for
 110 "fourteen-inch swing."

Now presuming that an order calls for five engine-lathes having fourteen-inch swing and mounted on a six and one-half foot-bed with a plain rest, a compound rest, taper attachment, a twelve-inch combination chuck,
 115 a one and one-half inch drill-chuck, face-plate jaws, and back gear. Then the translation-numerals will be found as follows: for five engine-lathes it is necessary to make use of the translation-numerals "1" and "3," as
 120 the translation-numeral "1" stands for one engine-lathe, and the translation-numeral "3" stands for four engine-lathes—that is, aggregate five engine-lathes. For fourteen-inch swing we find the translation-numerals
 125 "6," "7," and "8," as "6" stands for two, "7" for four, and "8" for eight, or a total of fourteen-inch swing. In a like manner a six and one-half foot bed is represented by the translation-numerals "10," "12," and
 130

"13," as "10" stands for one-half, "12" for two, and "13" for four, thus aggregating six and one-half foot bed. The plain rest is indicated by the translation-numeral "16," the compound rest by the translation-numeral "18," the taper attachment by the translation-numeral "19," twelve inch by the translation-numerals "24, 25," as they stand opposite four and eight inches, or twelve inches total. Combination-chuck is indicated by the translation-numeral "29." One and one-half inch drill-chuck is indicated by the translation-numerals "32" and "33," as "32" stands for one-half inch drill-chuck and "33" for one-inch drill-chuck—that is, one and one-half inch drill-chuck. Face-plate jaws are represented by the translation-numeral "34," and back-gear lathe by the translation-numeral "35."

In the first table B the numerals run from "1" to "7," and consequently the translation-numerals "1 3 6 7" are found in this table, which has "1-3" as a vertical heading and "6-7" a horizontal heading, the intersection of the two rows giving the syllable "pi." The translation-numerals "8," "10," "12," and "13" are found on the table B' and which has "8-10" for a vertical heading and "12-13" for a horizontal heading of intersecting rows, giving the syllable "pa." In a like manner the translation-numerals "16," "18," and "19" are found on the table B², with "16" as a vertical heading and "18-19" for a horizontal heading, giving the syllable "er" at the intersection of the two rows. The numerals "24" and "25" are found on the table B³ and give the syllable "gi," and the numerals "29," "32," "33," "34," and "35" are found on table B⁴, the numeral "29" being on a vertical heading and the numerals "32-33-34-35" a horizontal heading, the two giving the syllable "ec." Thus the code-word is "pipaergieec."

When this code-word is received, it is translated back into the translation-numerals, and by the use of the key F the order can be written out in full, as will be readily understood by reference to Fig. 9.

It is not absolutely necessary that the syllables A and the translation-numerals C are arranged in tables, as shown in Figs. 1, 2, 3, 4, and 5, as this arrangement may be varied, for instance, as shown in Fig. 10, in which each syllable A' is arranged opposite the translation-numerals C' singly or in combination or groups. In a like manner the translation-key F' (shown in Fig. 11) is provided with translation-numerals C² and subject-matter H', of which the translation-numerals C² are arranged singly and in combinations or groups. It will be noticed that the single translation-numerals are consecutive, and each group of numerals is formed of combinations of the consecutive numerals, and the groups of numerals are arranged between two

consecutive numerals, as will be readily understood by reference to Fig. 11. The translation-numerals C' and C² are arranged and selected in the manner of the numerals forming the geometrical progression of two, as shown in Fig. 6; but it is evident that the translation-numerals, whether arranged in table form, as shown in Figs. 1-5, or otherwise, as above described and shown in Figs. 10 and 11, consist of consecutive numerals, all arranged according to the results of a geometrical progression.

It is understood that I do not limit myself to a plurality of tables or to a syllabic formation or to the use and arrangement of the syllables and translation-numerals shown and described, as the same may be varied without departing from the spirit of my invention. It also evident that for each particular business it is desirable to prepare a translation-key conforming to the names of the goods, articles, or other items liable to be used in telegraph-messages.

From the foregoing it will be seen that by the use of the numbers contained in the geometrical progression of a number—say 2—the capacity of the telegraphic code is increased without increase in the code-words to be telegraphically transmitted and representing a message. Thus the syllables A and their translation-numbers C have a direct relation to and coact with the translation-numbers G and the subject-matter H of the translation-key F to allow the formation of a single code-word representing a lengthy message.

The telegraphic code shown and described is very comprehensive and at the same time exceedingly simple and accurate to enable any business man to readily make use of it without danger of making mistakes in the compiling of the code-word or in the translation thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A telegraphic code comprising a plurality of tables, one for each syllable of an artificial code-word, each table containing syllables each formed by a vowel and a consonant, and translation-numerals and combinations of the same for determining the syllables on each table, the translation-numerals representing subject-matter to be telegraphed, the quantities of the subject-matter being consecutive numbers of the geometrical progression of a given number.

2. A telegraphic code comprising a plurality of tables, one for each syllable of an artificial code-word, each table containing syllables each formed by a vowel and a consonant, and translation-numerals and combinations of the same for determining the syllables on each table, the translation-numerals representing subject-matter to be tel-

egraphed, the quantities of the subject-matter being consecutive numbers of the geometrical progression of two.

3. A telegraphic code comprising syllables, and translation-numerals for determining the syllables, the numerals representing the subject-matter, the quantities of which being derived from the geometrical progression of a number.

4. A telegraphic code comprising translation-numerals representing subject-matter, the quantities of which being derived from the geometrical progression of the numeral two, and syllables determined by the said numerals and each consisting of a vowel and a consonant.

5. A telegraphic code comprising a plurality of tables, one for each syllable of the code-word, each table being divided into vertical and horizontal intersecting rows of syllables, and translation-numerals for the said rows.

6. A telegraphic code comprising a plurality of tables, one for each syllable of the code-word, each table being divided into vertical and horizontal intersecting rows of syllables, and translation-numerals for the said rows, the translation-numerals for the vertical rows of syllables being less in value than those for the horizontal rows.

7. A telegraphic code comprising a translation-key having consecutive translation-numerals and subject-matter assigned to the said numerals, a plurality of tables, one for each syllable of the code-word to be telegraphed, each table containing a portion of the same translation-numerals given in the said key, the numerals being arranged singly and in combinations of twos, threes and fours, and table-syllables arranged in rows on the table and determined by the said translation-numerals in the table.

8. A telegraphic code comprising a translation-key having consecutive translation-numerals and subject-matter assigned to the said numerals, a plurality of tables, one for each syllable of the code-word to be telegraphed, each table containing a portion of the same translation-numerals given in the said key, the numerals being arranged singly and in combinations of twos, threes, fours, &c., and table-syllables arranged in rows on the table and determined by the said translation-numerals in the table, the said table-syllables being arranged in vertical and horizontal rows headed by the said single translation-numerals and their combinations.

9. A telegraphic code comprising a translation-key having consecutive translation-numerals and subject-matter assigned to the said numerals, a plurality of tables, one for each syllable of the code-word to be telegraphed, each table containing a portion of the same translation-numerals given in the said key, the numerals being arranged singly

and in combinations of twos, threes, fours, &c., and table-syllables arranged in rows on the table and determined by the said translation-numerals in the table, the said table-syllables being arranged in vertical and horizontal rows headed by the said single translation-numerals and their combinations, each table also having a blank syllable.

10. A telegraphic code comprising a translation-key having consecutive translation-numerals and subject-matter assigned to the said numerals, a plurality of tables, one for each syllable of the code-word to be telegraphed, each table containing a portion of the same translation-numerals given in the said key, the numerals being arranged singly and in combinations of twos, threes, fours, &c., and table-syllables arranged in rows on the table and determined by the said translation-numerals in the table, the said table-syllables being arranged in vertical and horizontal rows headed by the said single translation-numerals and their combinations, each table also having substitute syllables for consecutively repeated syllables of the code-word.

11. A telegraphic code having translation-numerals indicating a subject and the quantity thereof in a number of the geometrical progression of a given number.

12. A telegraphic code having translation-numerals indicating a subject and the quantity thereof in a number of the geometrical progression of two.

13. A telegraphic code having translation-numerals indicating quantity or dimensions in numbers of the geometrical progression of a number.

14. A telegraphic code having consecutive translation-numerals of which some indicate a subject, some indicate quantity or dimensions in successive numbers of the geometrical progression of a number, and some indicate a subject and quantities or dimensions in successive numbers of the geometrical progression of a number.

15. A telegraphic code having translation-numerals in consecutive order and indicating quantity or dimensions in consecutive numbers of the geometrical progression of a number.

16. A telegraphic code having translation-numerals in consecutive order and representing quantities or dimensions in the consecutive numbers of the geometrical progression of two.

17. A telegraphic code having a table containing syllables, and translation-numerals arranged singly and in combinations of twos, threes, fours, &c., to identify the said syllables.

18. A telegraphic code having a table containing syllables arranged in vertical and horizontal rows, and consecutive translation-numerals of which a portion heads the said vertical rows singly and in combinations, and

the remaining portion heads the horizontal rows singly and in combinations.

19. A telegraphic code having a table containing syllables arranged in vertical and horizontal rows, and consecutive translation-numerals of which a portion heads the said vertical rows singly and in combinations, and the remaining portion heads the horizontal rows singly and in combinations, the same numerals heading the vertical rows appearing in horizontal alinement and the same numerals heading the horizontal rows appearing in vertical alinement.

20. A telegraphic code provided with a translation-key having consecutive translation-numerals and subject-matter for each translation-numeral, the quantity or dimensions of the said subject-matter being in the consecutive numbers of the geometrical progression of a given number.

21. A telegraphic code provided with a translation-key having consecutive translation-numerals, subject-matter for each translation-numeral, the quantity or dimensions of the said subject-matter being in the consecutive numbers of the geometrical progression of a given number, and a series of tables, one for each syllable of an artificial code-word to be formed, each table containing syllables each formed by a vowel and a consonant and translation-numerals of the same value as the ones in the said translation-key, the said table translation-numerals being arranged to determine the syllables on each table.

22. A telegraphic code provided with a translation-key having consecutive translation-numerals, subject-matter for each translation-numeral, the quantity or dimensions of the said subject-matter being in the consecutive numbers of the geometrical progression of a given number, and a series of tables, one for each syllable of an artificial code-word, each table containing vertical and horizontal intersecting rows of syllables and translation-numerals of the same value as the ones on the said translation-key, the said ta-

ble translation-numerals being arranged to determine the syllables on each table.

23. A telegraphic code provided with a translation-key having consecutive translation-numerals, subject-matter for each translation-numeral, the quantity or dimensions of the said subject-matter being in the consecutive numbers of the geometrical progression of a given number, and a series of tables, one for each syllable of an artificial code-word, each table containing vertical and horizontal intersecting rows of syllables and translation-numerals of the same value as the ones on the said translation-key, the said table translation-numerals forming headings for the said rows of syllables and the said table translation-numerals being arranged singly and in combinations of twos, threes, and fours.

24. A telegraphic code provided with translation-numerals indicating subject-matter comprising consecutive numerals and groups of numerals arranged between two consecutive single numerals.

25. A telegraphic code provided with translation-numerals indicating subject-matter comprising consecutive numerals, and groups of numerals arranged between two consecutive single numerals, the numerals in each group being in sequence.

26. A telegraphic code provided with translation-numerals indicating subject-matter comprising consecutive numerals, and groups of numerals arranged between two consecutive single numerals, the numerals in each group being in sequence and composed of numerals which precede the highest numeral of the said two consecutive numerals between which the group is located.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDER METCALF FISHER.

Witnesses:

F. W. HANAFORD,
EVERARD BOLTON MARSHALL.