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CIPHER CODE.

APPLICATION FILED DEC. 5, 1904. RENEWED MAR. 7, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

Fig. 2.

Fig. 3.

00 - 0	0000 S. C. Hams-Boxes 8/10	0700	1400
01 - 1/4	0001 " " 10/12	0701	1401
02 - 1/2	0010 " " 12/14	0710	1410
03 - 3/4	0011 " B' 14/16	0711	1411
04 - 1 A'	0020 " " 16/18	0720	1420
10 - 1/4	0021 " " 18/20	0721	1421
11 - 1/2	0030 L. C. Hams-Boxes 8/10	0730	1430
12 - 3/4 B	0031 " " 10/12	0731	1431
13 - 2	0040 " " 12/14	0740	1440
14 - 1/4	0041 " " 14/16	0741	1441
20 - 1/2	0100 " B' 16/18	0800	1500
21 - 3/4	0101 " " 18/20	0801	1501
22 - 3	0110 Lard in Tierces	0810	1510
23 - 1/4	0111 Lard in Bbls	0811	1511
24 - 1/2	0120 Lard in Tubs	0820	1520
30 - 3/4 A'	0121 Lard in Pails	0821	1521
31 - 4	0130 Beef in Bbls	0830	1530
32 - 1/4	0131 Beef in 1/2 Bbls	0831	1531
33 - 1/2	0140	0840	1540
34 - 3/4	0141 B'	0841	1541
40 - 5	0200	0900	1600
41 - 1/4	0201	0901	1601
42 - 1/2	0210	0910	1610
43 - 3/4	0211	0911	1611
44 - 6	0220	0920	1620
50 - 1/4	0221	0921	1621
51 - 1/2	0230	0930	1630
52 - 3/4 B	0231	0931	1631
53 - 7	0240	0940	1640
54 - 1/4	0241	0941	1641
60 - 1/2	0300	1000	1700
61 - 3/4	0301	1001	1701
62 - 8 A'	0310	1010	1710
63 - 1/4	0311	1011	1711
64 - 1/2	0320	1020	1720
70 - 3/4	0321	1021	1721
71 - 9	0330	1030	1730
72 - 1/4	0331	1031	1731
73 - 1/2 A'	0340	1040	1740
74 - 3/4	0341	1041	1741
80 - Accept	0400	1100	1800
81 - Decline	0401	1101	1801
82 - Renew offer	0410	1110	1810
83 - Confirm sale	0411	1111	1811
84 - Quote	0420	1120	1820
90 - -----	0421	1121	1821
91 -	0430	1130	1830
92 -	0431	1131	1831
93 -	0440	1140	1840
94 -	0441	1141	1841
	0500	1200	1900
	0501	1201	1901
	0510	1210	1910
	0511	1211	1911
	0520	1220	1920
	0521	1221	1921
	0530	1230	1930
	0531	1231	1931
	0540	1240	1940
	0541	1241	1941
	0600	1300	
	0601	1301	
	0610	1310	
	0611	1311	
	0620	1320	
	0621	1321	
	0630	1330	
	0631	1331	
	0640	1340	
	0641	1341	

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2 SHEETS—SHEET 2.

Fig. 4.

Use on first 6 figs					
	A	E	I	O	U
B	000	200	400	600	800
C	001	201	401	601	801
D	010	210	410	610	810
F	011	211	411	611	811
G	020	220	420	620	820
H	021	221	421	621	821
J	030	230	430	630	831
K	031	231	431	631	831
L	040	240	440	640	840
M	041	241	441	641	841
N	100	300	500	700	900
P	101	301	501	701	901
R	110	310	510	710	910
S	111	311	511	711	911
T	120	320	520	720	920
V	121	321	521	721	921
W	130	330	530	730	930
X	131	331	531	731	931
Y	140	340	540	740	940
Z	141	341	541	741	941

E

Fig. 5.

Use on 7th & 8th figs					
	A	E	I	O	U
B	00	20	40	60	80
C	01	21	41	61	81
D	02	22	42	62	82
F	03	23	43	63	83
G	04	24	44	64	84
H	05	25	45	65	85
J	06	26	46	66	86
K	07	27	47	67	87
L	08	28	48	68	88
M	09	29	49	69	89
N	10	30	50	70	90
P	11	31	51	71	91
R	12	32	52	72	92
S	13	33	53	73	93
T	14	34	54	74	94
V	15	35	55	75	95
W	16	36	56	76	96
X	17	37	57	77	97
Y	18	38	58	78	98
Z	19	39	59	79	99

F

Fig. 6.

Use on last 6 figs					
	A	E	I	O	U
B	000	100	200	300	400
C	001	101	201	301	401
D	002	102	202	302	402
F	003	103	203	303	403
G	004	104	204	304	404
H	005	105	205	305	405
J	006	106	206	306	406
K	007	107	207	307	407
L	008	108	208	308	408
M	009	109	209	309	409
N	010	110	210	310	410
P	011	111	211	311	411
R	012	112	212	312	412
S	013	113	213	313	413
T	014	114	214	314	414
V	015	115	215	315	415
W	016	116	216	316	416
X	017	117	217	317	417
Y	018	118	218	318	418
Z	019	119	219	319	419

G

Fig. 7.

B	0	1	2	3	4	5	6	7	8	9
D	1	2	3	4	5	6	7	8	9	
E	2	3	4	5	6	7	8	9		
L	3	4	5	6	7	8	9			
M	4	5	6	7	8	9				
P	5	6	7	8	9					
R	6	7	8	9						
S	7	8	9							
T	8	9								
Y	9									

Use only in
terminating
word

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UNITED STATES PATENT OFFICE.

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CIPHER-CODE.

No. 832,156.

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To all whom it may concern:

Be it known that I, ERNEST E. PETERSON, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cipher-Codes, of which the following is a specification.

This invention relates to cipher-codes, and relates particularly to a cipher-code especially designed and adapted for use in transmitting cablegrams and telegrams.

Primary objects of the invention are to reduce the cost of transmitting cablegrams and telegrams and to provide a code which is relatively very small and compact as compared with other cipher-codes having even approximately the same capacity, thereby effecting a great saving of time in finding desired code expressions in the tables and in compiling and translating cipher-messages.

To this end a cipher-code of my invention consists of the various features, combinations of features, and details of construction hereinafter described and claimed.

In the accompanying drawings, in which a code of my invention is fully illustrated, Figures 1, 2, and 3 are code-tables containing desired code expressions; and Figs. 4, 5, 6, and 7 are key-tables for use in connection with the tables shown in Figs. 1, 2, and 3 for compiling and translating cipher-messages therefrom.

Under the rules of the cable companies covering the transmission of cablegrams five figures or less constitute a "word," whereas words may contain ten letters if combined in a euphonious word. By providing code-tables, therefore, in which the code expressions are represented by numbers and then providing a key, whereby two or more "figure-words" may be converted into a single letter-word, it is obvious that the cost of transmitting a message may be reduced at least one-half.

Broadly stated, a cipher-code of my invention consists of code-tables comprising numbers having desired code expressions arranged in coöperative relation, preferably in line therewith, and which may be combined to form message or order numbers which will identify two or more code expressions, and key-tables consisting of numbers formed by dividing the message-numbers identifying

the different code expressions into groups according to an adopted rule, and letters which represent each number of said key-tables, comprising vowels and consonants, which when substituted for their respective key-numbers in the message-numbers divided into groups, according to the rule adopted, will form a pronounceable or euphonious word. Obviously the key-tables must comprise all numbers which can be formed by dividing the message-numbers into groups in accordance with the rule adopted in the use of my improved code.

In its preferred form a cipher-code of my invention comprises the tables shown in Figs. 1, 2, and 3, of which Fig. 1 comprises two-figure numbers A, with a code expression A' in line with each number thereof, Fig. 2 comprises four-figure numbers B, with a code expression B' in line with each number thereof, and Fig. 3 comprises single numerals D, with a code expression D' in line with each figure thereof.

By combining a number from each of said tables a single message-number of seven figures will thus be produced, which, however, will represent three different code expressions.

In the use of my code when a message consists of two or more seven-figure numbers made up as above described said numbers are considered in pairs, or in case there is an odd number of message-numbers the final or odd number is considered separately.

For the purpose of preparing a key for compiling the message-numbers into words made up of letters I have adopted the following rule for dividing said seven-figure numbers into groups. When said seven-figure numbers occur in pairs, the first six figures of the first number are divided into two groups of three figures each, the next two figures, being the last figure of the first seven-figure number and the first figure of the second seven-figure number, form a group of two figures, and the last six figures of the second number are divided into two groups of three figures each. It is thus seen that each pair of seven-figure numbers consists of five different groups, and by substituting two letters for each of said groups a word of ten letters will be produced, and by a proper arrangement of vowels and consonants it is obvious that a

pronounceable or euphonious word, in accordance with the rules governing the transmission of cipher-messages, may be produced and the numbers, aggregating fourteen figures, or three figure-words, converted into a single word of ten letters, conformable to the rules of the cable companies. In the case of odd or single numbers I divide them into two groups of three figures each, beginning at the left, and a single final figure.

In order to convert the numbers formed by the different groups of figures into which the message-numbers are divided, as above described, into words made up of letters, it is obvious that the key-tables must comprise all possible numbers which may be produced by subdividing the message-numbers into groups. For example, with the described method of subdividing the message-numbers it is obvious that the first three-figure group of each number will comprise the two figures of a number in Fig. 1 and the first figure of a number in Fig. 2, the second three-figure group will comprise the last three figures of said number in Fig. 2, the two-figure group will comprise a figure of the table shown in Fig. 3 and the first figure of a number of the table shown in Fig. 1, the first three-figure group following the two-figure group will consist of the final figure of said number in the table shown in Fig. 1 and the first two figures of a number of the table shown in Fig. 2, and the final group of three figures will comprise the last two figures of said number in the table shown in Fig. 2 and a figure from the table shown in Fig. 3. If, therefore, these five groups were all made up of dissimilar numbers, five different keys would be required for converting them into letters. For the purpose, therefore, of simplifying to as great an extent as possible the key-tables I have so selected the figures forming the tables shown in Figs. 1, 2, and 3 that the numbers of the first and second three-figure groups will be duplicates of each other and so, also, that the numbers formed by the two final three-figure groups will be duplicates of each other. With this arrangement it is obvious that a single key-table may be used for said duplicate sets of numbers. To this end the table shown in Fig. 1 is made up of the first five numbers of each tens, as "00," "01," "02," "03," "04," "10," "11," "12," "13," "14," &c., to and including "94." Said table will therefore contain fifty different numbers of two figures each.

The table shown in Fig. 2 comprises four-figure numbers, beginning with "0000" and comprising the first two units of the first five tens of the first twenty hundreds, as "0000," "0001," "0010," "0011," "0020," "0021," "0030," "0031," "0040," "0041," "0100," "0101," "0110," "0111," "0120," "0121," &c., to and including "1941." Said table

will thus contain two hundred four-figure numbers.

The table shown in Fig. 3 comprises single figures only, preferably the figures "0" to "9," inclusive.

With tables made up in the manner described it is found that by combining the numbers of the table in Fig. 1 with the first figures of the numbers of the table in Fig. 2 one hundred different numbers will be produced, which will be duplicates of the numbers formed by the last three figures of the numbers in the table shown in Fig. 2, and also that by combining the last figures of the numbers of the table shown in Fig. 1 with the first two figures of the numbers in the table shown in Fig. 2 one hundred different numbers will be produced, which will be duplicates of the numbers formed by combining the last two figures of the numbers of the table shown in Fig. 2 with the figures of the table shown in Fig. 3. It is thus obvious that a single key may be used for the first two and the last two three-figure groups, respectively, thus reducing the number of key-tables required by two.

The first two three-figure groups of the message-numbers are transcribed by the key shown in Fig. 4, which comprises one hundred different numbers E of three figures each, formed by combining the two-figure numbers of the table shown in Fig. 1 with the first figures of the numbers of the table shown in Fig. 2, being the first two units of the first five tens of each hundreds, as "000," "001," "010," "011," "020," "021," "030," "031," "040," "041," "100," "101," "110," "111," &c., to and including "941."

The two-figure groups, formed by the last figure of the first of a pair of seven-figure message-numbers and the first figure of the second of said pair of seven-figure message-numbers, are transcribed by the key shown in Fig. 5, which consists of one hundred two-figure numbers F—to wit, "00," "01," "02," &c., to and including "99."

The last two three-figure groups of each pair of seven-figure message-numbers are transcribed by means of the key shown in Fig. 6, which consists of one hundred three-figure numbers G, comprising the first twenty units of the first five hundreds, beginning "000," "001," "002," "003," &c., to and including "419."

The final figure of odd or single seven-figure message-numbers is transcribed by means of the key shown in Fig. 7, which consists of the same figures H as the code-table shown in Fig. 3.

Each of the keys shown in Figs. 4, 5, and 6 comprises, in addition to the numbers heretofore specified, different letters comprising vowels and consonants arranged to identify the numbers of each of said tables.

While any desired or approved form of tabulation may be adopted, for the purpose of economizing space I prefer the arrangement shown, in which the numbers comprising said tables 4, 5, and 6, respectively, are arranged in five vertical rows of twenty numbers each and twenty transverse rows of five numbers each, with a different consonant arranged in line with each transverse row of numbers and a different vowel arranged in line with each vertical row of numbers. The vowel and consonant corresponding to any number of a table is found by joining the consonant and vowel in line with the transverse and vertical rows at the intersection of which said number is located. With this arrangement it is obvious that the one hundred numbers of each table will require all of the letters of the alphabet excepting one, and as the letter "Q" occurs in words only in connection with the letter "U" it has not been used.

In addition to the figures specified the key shown in Fig. 7 comprises a single letter, as shown a consonant, arranged in line with each of said figures.

For guidance in the use of the key-tables the table shown in Fig. 4 is usually accompanied with the following note of instruction, "Use on first six figures;" the table shown in Fig. 5 by the note of instruction, "Use on seventh and eighth figures;" the table shown in Fig. 6 by the note of instruction, "Use on last six figures," and the table shown in Fig. 7 by the note of instruction, "Use only in terminating a word."

A code of my invention is of particular value for commercial use in transmitting orders for any particular class of merchandise with reference to which it is arranged. To illustrate, suppose that the code-tables are arranged with particular reference to packing-house products. Opposite the numbers of the table shown in Fig. 2 are placed the names of different products, accompanied by any desired description thereof, as "Short-cut hams in boxes averaging 8 to 10 lbs," written in the tables "S. C. hams in boxes 8 to 10," "S. C. hams in boxes 10 to 12," "S. C. hams in boxes 12 to 14," &c.; "Long-cut hams in boxes averaging 8 to 10 lbs.," written in the tables "L. C. hams in boxes 8 to 10," "L. C. hams in boxes 10 to 12," &c.; "Lard in tierces;" "Lard in tubs;" "Lard in pails," &c.; "Beef in barrels;" "Beef in half-barrels," &c. As the table shown in Fig. 2 contains two hundred different numbers, it is obvious that provision is made for quoting on two hundred different articles.

Opposite the numbers of the table shown in Fig. 1 are placed the price of the article, which in the case of packing products is usually the price per hundredweight of the different articles enumerated. The prices are indicated in desired units of value, as in shil-

lings sterling for codes to be used in commerce with Great Britain and her colonies, marks for German commerce, francs for French commerce, &c.

Excepting in extraordinary cases the range of prices for packing-house products is not very great from day to day, and it is therefore only necessary to quote the last figure of the number to correctly indicate the price instead of the full number. For example, suppose the price of ham of any particular description is eighty-five shillings per hundredweight. It would not be necessary to indicate "85" in full, but merely the last figure, "5," by which the buyer and seller would understand that eighty-five shillings was meant, as the market at the time was between eighty and ninety shillings. Similarly, "0" would indicate "80," "1" would indicate "81," &c., or if the market were between seventy and eighty shillings these expressions would in like manner indicate "70," "71," &c.

In the tables provision is made for quotations varying by one-quarter of a unit—in the case assumed one-quarter of a shilling per hundredweight of the different articles enumerated in the table shown in Fig. 2. Forty different numbers will thus be necessary for indicating the range of prices between "0" and "9 $\frac{3}{4}$." In practice, also, I prefer to utilize additional numbers in said table to indicate terms, conditions, remarks, &c., and I also prefer to include in said table certain numbers opposite which are blank spaces, which may be filled in to meet any special requirements of the user of the code. As previously stated, the table shown in Fig. 1 contains fifty different numbers.

Opposite the figures of the table shown in Fig. 3 are placed numbers indicating quantity, as boxes of ham, tierces of lard, barrels of beef, &c. Orders for these various products commonly run for five packages of a given product or a multiple of five, as five boxes of ham, twenty tierces of lard, seventy-five barrels of beef, and the like.

It is thus obvious that the numbers of the table shown in Fig. 1 will indicate the price of the particular article which it is desired to order, of Fig. 2 the kind of merchandise it is desired to order, and of Fig. 3 the quantity thereof, and that by selecting numbers from said tables which correctly indicate the particular article, the price, and the quantity and combining them a single seven-figure message-number will be produced which will correctly indicate the article desired, together with the price and quantity thereof. In arranging the present code I have adopted the rule of combining the numbers of the different tables in the order in which said tables are numbered, the first two figures of each seven-figure number being a number of the table shown in Fig. 1, the next four figures

being a number of the table shown in Fig. 2, and the final figure being a figure of the table shown in Fig. 3. The key-tables are likewise made up with reference to this order of combination.

I will now describe the method of using my improved code.

When it is desired to send a code-message, as an order for a number of boxes of short-cut hams, a quantity of lard in tierces, and of beef in barrels, at specified prices, from the table shown in Fig. 1, the numbers are selected which correspond with the prices per hundredweight of the articles to be ordered. To these numbers are successively joined, respectively, the numbers from Fig. 2 which indicate the particular articles or goods desired and the figures from the table shown in Fig. 3 which indicate the quantities desired. For example, suppose it is desired to order twenty boxes of long-cut hams averaging from twelve to fourteen pounds at eighty three and one-half shillings per hundredweight. By referring to the tables we note that the number in Fig. 1 which indicates the desired price (eighty three and one-half shillings) is "24". We note also that the number of the table shown in Fig. 2 which designates long-cut hams averaging twelve to fourteen pounds is "0040" and from Fig. 3 that the number representing twenty boxes is "3." The cipher-number identifying this order is first the number "24" of Fig. 1, indicating the price, followed by the number "0040" of Fig. 2, which indicates the article desired, followed by the figure "3" of Fig. 3, which indicates the quantity desired, the full number being "2400403," or, vice versa, the number "2400403" in a message would indicate first the number "24" of the table shown in Fig. 1, second the number "0040" of the table shown in Fig. 2, and third the figure "3" of the table shown in Fig. 3, which by reference to said tables indicate an order for twenty boxes of long-cut hams averaging from twelve to fourteen pounds at eighty-three and one-half shillings per hundredweight.

In order to fully illustrate the manner of using a code of my invention, let us assume that it is desired to compile a code-message embodying the following order: thirty boxes of short-cut hams averaging from fourteen to sixteen pounds at eighty-two shillings per hundredweight, seventy-five tierces of lard at seventy-five shillings per hundredweight, and forty barrels of beef at sixty-nine shillings per hundredweight. As heretofore explained, these several orders are indicated by the following message-numbers, respectively: thirty boxes short-cut hams averaging from fourteen to sixteen pounds at eighty-two shillings per hundredweight equals "1300115;" seventy-five tierces of lard at seventy-five shil-

lings per hundredweight equals "4001108;" forty barrels of beef at sixty-nine shillings per hundredweight equals "7101306." In compiling these message-numbers into words made up of letters the first two of said numbers are considered together and the last number separately. The first two numbers, considered as a pair, are divided into groups in the manner heretofore described; the first six figures into groups of three figures each, the seventh and eighth figures into a single group of two figures, and the last six figures into two groups of three figures each. Dividing said numbers as directed, we obtain the following groups: "130-011-54-001-108." As previously explained, the first two three-figure groups are transcribed by means of the key-table shown in Fig. 4, the two-figure group by the key-table shown in Fig. 5, and the two last three-figure groups by the key-table shown in Fig. 6. As previously explained, also, the last message-number is divided into two groups of three figures each and a final letter, said groups and letter being as follows, "710-130-6," of which the two three-figure groups are transcribed by means of the key-table shown in Fig. 4 and the final figure by means of the key-table shown in Fig. 7.

Making the substitution for the above groups from the various tables we find the equivalents thereof to be as follows:

130 (Fig. 4)	=	W A	
011 " "	=	F A	
54 " 5	=	T I	100
001 " 6	=	C A	
108 " "	=	L E	
710 " 4	=	R O	
130 " "	=	W A	
6 " 7	=	R	105

or joining these letters to form words of ten letters, as far as possible, we derive the following words: "wafaticale" and "rowar," which are pronounceable words containing not more than ten letters, conformable to the rules relating to the transmission of cablegrams. Vice versa, when a cablegram is received, it is divided up into groups of two letters, beginning at the left, and the numbers of the key-tables corresponding to said groups of letters are substituted therefor. As heretofore explained, the first and second groups of letters are translated by the key shown in Fig. 4, the third group by the table shown in Fig. 5, and the fourth and fifth groups by the table shown in Fig. 6. In the case of five-letter words the first and second groups are translated by the key-table shown in Fig. 4 and the final letter by the table shown in Fig. 7. Thus upon receipt of a message containing the words "wafaticale rowar" said words are divided into groups as follows: "wa-fa-ti-ca-le ro-wa-r" and substi-

tuting from the key-tables, as directed, we derive the following numbers:

W A (Fig. 4) = 130
 F A " " = 011
 T I " 5 = 54
 C A " 6 = 001
 L E " " = 108
 R O " 4 = 710
 W A " " = 130
 R " 7 = 6

which numbers combined and divided into seven-figure message-numbers gives

1300115
 4001108
 7101306,

of which the two first figures of each number are numbers of the table shown in Fig. 1, the next four figures of each number are numbers of the table shown in Fig. 2, and the final figures of each number are figures of the table shown in Fig. 3, and which together embody an order for a definite quantity of a given article at a specified price, or, by referring to the tables, "1300115" equals thirty boxes short-cut hams averaging fourteen to sixteen pounds at eighty-two shillings per hundred weight, "4001108" equals seventy-five tierces of lard at seventy-five shillings per hundred-weight, and "7101306" equals forty barrels of beef at sixty-nine shillings per hundred-weight.

In the case assumed two words are thus made to take the place of four figure-words and where the numbers in a message form even pairs or a message comprises a large number of numbers a saving of upward of fifty per cent. is effected.

With the three code-tables shown in Figs. 1, 2, and 3 of the drawings, consisting of fifty, of two hundred, and of ten different numbers, respectively, it is obvious that two hundred thousand different seven-figure message-numbers may be produced by joining the numbers of the different tables in the manner hereinbefore fully described, in all possible combinations, and that said two hundred thousand seven-figure numbers would identify different code expressions identified by the numbers of the different tables.

By means of my code-tables the seven-figure number identifying any given code expressions can obviously be compiled in a very much shorter time than would be required to find the desired code expressions in a table consisting of the two hundred thousand seven-figure message-numbers with their corresponding code expressions. It is also obvious that a code of my invention will be very small, indeed, as compared with the full code formed by combining the numbers of my code-tables, consisting, in fact, of but a

single page, whereas a code consisting of the full two hundred thousand message-numbers and corresponding code expressions would form a volume of several hundred pages. In this manner are the desired economies of time in the use of my code and of bulk or volume effected. It is obvious, moreover, that even were a code-table consisting of the full two hundred thousand seven-figure numbers used instead of being derived as desired according to a code of my invention they could be compiled into words consisting of letters, and vice versa, words consisting of letters could be translated by means of the key-tables shown in Figs. 4, 5, 6, and 7.

I claim as my invention—

1. A cipher-code consisting of code expressions and code-numbers which identify said code expressions and a key comprising numbers formed by arranging said code-numbers into groups of figures, according to an adopted rule, and letters comprising vowels and consonants arranged to identify the different numbers of said key.

2. A cipher-code consisting of code expressions and code-numbers which identify said code expressions and a key comprising numbers formed by arranging said code-numbers into groups of figures according to an adopted rule, the numbers of said key being arranged in rows in two directions, consonants in line with said rows in one direction and vowels in the other.

3. A cipher-code consisting of code expressions and code-numbers which identify said code expressions and a key comprising numbers formed by arranging said code-numbers into groups of figures according to an adopted rule, the numbers of said key being arranged in five vertical and twenty transverse rows, a different vowel in line with each vertical row and a different consonant in line with each transverse row.

4. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted when combined to make message-numbers of seven figures each which identify said code expressions, and a transcribing-key consisting of a key-table comprising numbers formed by grouping the first, second and third figures and also the fourth, fifth and sixth figures of the different message-numbers, and letters comprising vowels and consonants which identify each number of said table, and a second key-table comprising the seventh figures of the different message-numbers and letters which identify each figure of said table.

5. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted to be combined to form message-numbers of seven figures each which identify said code expressions, and a key comprising first a key-table comprising numbers formed

by grouping the first, second and third figures and also the fourth, fifth and sixth figures of the different message-numbers, said tables being arranged in intersecting rows, consonants in line with said rows in one direction and vowels in the other and, said key comprising also a key-table comprising the last figures of the different message-numbers and a different letter in line with each of said figures.

6. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted to be combined to form message-numbers of seven figures each which identify said code expressions, the first, second and third figures and the fourth, fifth and sixth figures of the different message-numbers forming duplicate sets of three-figure numbers, and a key comprising a key-table consisting of the numbers formed by dividing the first six figures of the message-numbers into two three-figure groups, as aforesaid, and letters comprising vowels and consonants which identify the different numbers of said key-table, and said key comprising also a key-table comprising the final figures of said message-numbers and different letters which identify said figures.

7. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted to be combined to form message-numbers of seven figures each which identify said code expressions, the first, second and third figures of said message-numbers and the fourth, fifth and sixth figures thereof forming two duplicate sets of three-figure numbers, and a key comprising a key-table consisting of the numbers formed by dividing the first six figures of the message-numbers into three-figure groups, as aforesaid, the numbers of said key-table being arranged in intersecting rows, vowels in line with said rows in one direction and consonants in the other, and said key comprising also a key-table comprising the final figures of the different message-numbers and different letters to identify said figures.

8. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted to be combined to form message-numbers of seven figures each which identify said code expressions, and a key comprising three key-tables one of which comprises numbers formed by the first, second and third, and also the fourth, fifth and sixth figures of said message-numbers, another the second, third and fourth and also the fifth, sixth and seventh figures of the different message-numbers, and still another key-table comprising two figure-numbers formed by joining the final and the first figures of different message-numbers, and letters comprising vowels and consonants which identify the different numbers of said three tables.

9. A cipher-code consisting of code expressions and code-numbers, said code-numbers being adapted to be combined to form message-numbers of seven figures each which identify said code expressions, and a key comprising four key-tables the first of which comprises numbers formed by the first, second and third, and also the fourth, fifth and sixth figures of said message-numbers, the second table comprising the second, third and fourth and also the fifth, sixth and seventh figures of the different message-numbers, the third key-table comprising two-figure numbers formed by joining the final and the first figures of the different message-numbers and letters comprising vowels and consonants which identify the different numbers of each of said tables, and the fourth table comprising the final figures of the different message-numbers and different letters to identify said figures.

10. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted to be combined to form message-numbers of seven figures each which identify said code expressions, the first, second and third figures of said message-numbers and the fourth, fifth and sixth figures thereof forming duplicate sets of three-figure numbers, and the second, third and fourth figures of said message-numbers and the fifth, sixth and seventh figures thereof also forming duplicate sets of three-figure numbers, and a key comprising a key-table consisting of the numbers formed by dividing the first six figures of the message-numbers into three-figure groups, said key comprising also a key-table consisting of the numbers formed by dividing the last six figures of the message-numbers into three-figure groups, said key also comprising a key-table consisting of two-figure numbers formed by joining final and first figures of different message-numbers, the numbers of said key-tables, respectively, being arranged in intersecting rows with vowels in line with said rows in one direction and consonants in the other direction, said key also comprising a key-table comprising the final figures of said message-numbers and different letters which identify said figures.

11. A cipher-code consisting of code expressions and code-numbers, said code-numbers adapted to be combined to form message-numbers of seven figures each which identify said code expressions, the first and second figures of said message-numbers comprising the first five units of each tens, beginning with "00" and ending with "94," the third, fourth, fifth and sixth figures of said message-numbers comprising the first two units of the first five tens of each hundreds, beginning with "0000" and ending with "1941" and the seventh figures of said mes-

sage-numbers comprising the figures "0" to "9," and a key comprising a key-table consisting of three-figure numbers comprising the first two units of the first five tens of the first nine hundreds, beginning with "000" and ending with "941," said key comprising also a key-table consisting of two-figure numbers beginning with "00" and ending with "99," said key also comprising a key-table consisting of three-figure numbers comprising the first twenty units of the first five hundreds, beginning with "000" and ending with "419," the numbers of said key-tables, respectively, being arranged in five vertical and twenty transverse rows reading consecutively from top to bottom of each row, a different vowel in line with each vertical row and a different consonant in line with each transverse row, said key also comprising a key consisting of the figures "0" to "9" and a different letter in line with each of said figures.

12. A cipher-code consisting of a plurality of code-tables each consisting of numbers designed and adapted to be combined to form message-numbers and code expressions identified by the numbers of the different code-tables, and a key comprising key-tables consisting of numbers formed by combining the figures of the different code-tables to form message-numbers and dividing said message-numbers into groups of figures in accordance with a definite rule, and different letters comprising vowels and consonants which identify the different numbers of said message-tables.

13. A cipher-code consisting of a plurality of code-tables each consisting of numbers designed and adapted to be combined to form message-numbers and code expressions identified by the numbers of the different code-tables and a key comprising key-tables consisting of numbers formed by combining different numbers of the different code-tables to form message-numbers and dividing said message-numbers into groups of figures in accordance with a rule adopted, the numbers of said key-tables being arranged in intersecting rows with consonants in line with said rows in one direction and vowels in line with said rows in the other direction.

14. A cipher-code consisting of three code-tables, of which the first consists of the first five units of each tens, beginning with "00" and ending with "94," the second of the first two units of the first five tens of the first twenty hundreds, beginning with "0000"

and ending with "1941," and the third consists of the figures "0" to "9," inclusive, and code expressions identified by the numbers of the different code-tables and a key comprising a key-table consisting of three-figure numbers comprising the first two units of the first five tens of the first nine hundreds, beginning with "000" and ending with "941," said key comprising also a key-table consisting of consecutive two-figure numbers beginning with "00" and ending with "99," said key also comprising a key-table consisting of three-figure numbers comprising the first twenty units of the first five hundreds, beginning with "000" and ending with "419," the numbers of said key-tables, respectively, being arranged in five vertical and twenty transverse rows reading from top to bottom of each row, a different vowel in line with each vertical row and a different consonant in line with each transverse row, said key also comprising a key-table consisting of the figures "0" to "9" and a different letter in line with each of said figures.

15. A cipher-code for ordering articles of merchandise, consisting of a series of code-numbers identifying price expressions, a second series of numbers identifying the various articles of merchandise embraced by the code and a third series of numbers indicating quantity, whereby one message-number made up of figures from each of these tables will constitute one order, and a key for transcribing each order into pronounceable syllables, whereby several orders may be translated into one or more euphonious words.

16. A commercial cipher-code consisting, first, of a series of tables of code-numbers identifying the several articles the code is to be used for and the essentials of an order, whereby a message or order number can be made up from the several tables which will constitute the essential elements of an order for an article, and, secondly, of a key for transcribing two or more orders into a pronounceable word or words, said key consisting of groups of figures made up from the figures of the message-numbers, and identifying letters therefor.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 29th day of November, A. D. 1904.

ERNEST E. PETERSON.

Witnesses:

K. A. COSTELLO,
HARRY E. FOX.