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CODE OR CIPHER SYSTEM.

APPLICATION FILED OCT. 16, 1906.

Sheet B. Fig. 1

1	ab	19	eb	37	ib	55	ob	73	ub
2	ac	20	ec	38	ic	56	oc	74	uc
3	ad	21	ed	39	id	57	od	75	ud
4	af	22	ef	40	if	58	of	76	uf
5	ag	23	eg	41	ig	59	og	77	ug
6	ah	24	eh	42	ih	60	oh	78	uh
7	aj	25	ej	43	ij	61	oj	79	uj
8	ak	26	ek	44	ik	62	ok	80	uk
9	al	27	el	45	il	63	ol	81	ul
10	am	28	em	46	im	64	om	82	um
11	an	29	en	47	in	65	on	83	un
12	ap	30	ep	48	ip	66	op	84	up
13	ar	31	er	49	ir	67	or	85	ur
14	as	32	es	50	is	68	os	86	us
15	at	33	et	51	it	69	ot	87	ut
16	av	34	ev	52	iv	70	ov	88	uv
17	ax	35	ex	53	ix	71	ox	89	ux
18	az	36	ez	54	iz	72	oz	90	uz

Sheet C. Fig. 2.

91	ab	109	eb	127	ib	145	ob	163	ub
92	ac	110	ec	128	ic	146	oc	164	uc

Explanation:- The sheets are designated by letters from "B to Z", "A B to A Z", etc.. The figures denote the number of any prearranged word or words, character or characters, sentence or sentences represented by any of the combinations of a vowel and consonant.

Example:- "Baledilom" - The first letter "B" denotes the sheet; "al" is found opposite number 9; "ed" opposite 21; "il" opposite 45, and "om" opposite 64. By the use of the letter Y exclusively for the purpose transfer is made to any sheet, the first letter following the Y indicating the sheet. Example "Baledycob" transfers to Sheet C, and "ob" is opposite 145.

Witnesses:

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CODE OR CIPHER SYSTEM.

No. 842,106.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES WOOD McDONALD, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, (whose post-office address is, until further notice, Manila, Philippine Islands,) have invented new and useful Improvements in Code or Cipher Systems, as set forth in the annexed diagrams and the following specification.

This invention relates to code or cipher systems, and has for its object the provision of a system which is simple, accurate, and economical for preparing, transmitting, receiving, and translating secret messages.

A further object is to provide a secret code or cipher system wherein prearranged words, numerals, or sentences are designated by numerals, and the numerals by couplets of vowels and consonants of the alphabet.

A further object is to provide a secret code or cipher system wherein couplets of letters of the alphabet are arranged in definite relation to spell pronounceable, receivable, and transmittible words, each couplet identifying a certain number, the numbers identifying words, numerals, or sentences of the message to be communicated.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings, Figure 1 is a view in diagram of a sheet or page prepared and arranged with couplets of letters of the English alphabet and their identifying and corresponding numbers in accordance with the principles of my invention. Fig. 2 is a similar view of a portion of another sheet and illustrating the manner of extension of the system.

In preparing, transmitting, receiving, and translating secret code or cipher messages or communications it is exceedingly desirable to secure absolute accuracy without sacrificing anything of speed or rapidity in preparing and translating the communication. It is also desirable to reduce the expense of transmission of long or complicated messages to the lowest possible degree. These, among others, are the special objects which I desire to attain in the secret code or cipher

system embodying the principles of my invention.

In carrying out my invention I first prepare lists of words, numerals, or sentences. These lists should contain all the words, numerals, or sentences desired in the business of the user and from which the desired messages are to be prepared and translated, the said lists being drawn from in making up any desired message to be communicated. In practice and customarily the selection of words, numerals, or sentences to make up the lists is left entirely in the discretion and will of the particular individual, firm, or corporation in whose interests such lists are prepared, and hence, if desired, a number of different lists may be made up by different individuals or concerns in accordance with my invention, each, however, differing from the other, so the code or system of each user, while embodying the principles of my invention, still remain secret so far as any other user is concerned. The word or words, numerals, or sentences listed as above explained are next identified and distinguished from each other by numbers. I then prepare a series of sheets or pages, each having a distinguishing or identifying character or mark. I have shown one of such sheets in Fig. 1, identified or distinguished as "Sheet B," and a portion of another sheet in Fig. 2, identified or distinguished as "Sheet C." Other sheets or pages may be employed and each distinguished or identified by some other letter of the alphabet. It is obvious that other page or sheet distinguishing characters may be employed without departure from the spirit or scope of my invention. For ordinary purposes, however, the letters of the alphabet of the English language will be found sufficient. If additional pages or sheets should be necessary, they may be supplied with double letters.

The next step in preparing the code or cipher system in accordance with my invention is to form combinations of letters, preferably vowels and consonants arranged in pairs. Thus the letter "a" may be associated with each of the consonants of the alphabet, and similarly each of the other vowels are also associated with each of the consonants, thereby forming two-letter syllables. These couplets are arranged upon each sheet or page, preferably, though not necessarily, in vertical columns, as clearly shown in the drawings, and opposite or adjacent to each

couplet of letters is placed a distinguishing or identifying numeral. The couplet distinguishing or identifying numerals are arranged in consecutive order, commencing with the couplet "ab" of the first sheet or page—as "Sheet B," for instance. Thus by employing the letter "a" with each consonant there would be twenty-one couplets of letters on each sheet or page beginning with letter "a" and twenty-one beginning with each of the other vowels, making a total number on the first page of one hundred and five, and if twenty-six sheets or pages are employed it will be seen that provision is made for a code containing two thousand seven hundred and thirty numbers corresponding to the same number of numerals, words, or sentences. In practice, however, and as shown the letters "q," "w," and "y" may be omitted, thereby making a total of eighteen couplets for each column, and since there are five columns on each sheet or page there will be a total of ninety couplets on each sheet or page, and this number multiplied by the total number of sheets or pages will give the total number of couplets or numbers. The numbers continue consecutively from page to page throughout the system, and hence while the couplets in number and arrangement are the same on each page the corresponding numerals successively increase in value from the first couplet of the first page throughout the succeeding pages.

In practice and in order to denote a transfer from one page to another I propose to employ one or more characters which I will designate "transfer" characters. These may be letters, numerals, or other marks. By way of illustration I have omitted the letters "q," "w," and "y" from the couplet combinations, and these may also be omitted from page or sheet designations, and one of these letters—as "y," for instance—may be reserved for use as a transfer character to denote a transfer from one sheet or page to another. It is obvious that any other letter, character, or other designation may be employed for this purpose.

I will now give an illustration of the use of a code or cipher system embodying my invention. Suppose the code or key-book contained the following code-sentences: "3—Quote best price f. o. b. New York in gross lots;" "29—Can you ship entire quantity immediately;" "46—If price does not exceed last purchase, ship at once;" "58—Invoice case numbers with gross and net weights." Suppose that all of these sentences were on the same sheet, or, rather, suppose that all of the numbers "3, 29, 46, 58" were each distinctly indicated or designated by couplets or vowels and consonants, as above explained, on the same sheet or page—as, for instance, sheet or page B—and, respectively, as follows: "a," "en," "im," and "of." Then

the code word to be transmitted would be "Badenimof," which is pronounceable, and therefore under the present established rules are acceptable, receivable, and transmittable as one word by the telegraph companies. The receiver of this message, in order to translate it, would turn first to sheet or page B of his code-book. He would then pick out the numbers corresponding, respectively, to the couplets "ad," "en," "im," and "of." With these numbers he then refers to his key to ascertain the sentence, words, numerals, and the like corresponding to each number and would find that the single word "Badenimof" would express the entire four sentences above quoted. If, however, it should be necessary to employ numbers occurring on different pages, then the transfer character—as, for instance, the letter "y"—will be employed. Thus the code-word "Badynimof" would be analyzed as follows: The number corresponding to the couplet "a d" would be found on page or sheet B. "y" would denote transfer to sheet or page N, on which page are to be selected the numbers corresponding to "im" and "of."

It is believed that the use of a code or cipher system embodying my invention will be readily understood and comprehended from the foregoing description.

It will be seen that I provide an exceedingly simple secret code or cipher system and one which enables the user to prepare, transmit, receive, and translate with great speed and accuracy messages at very small expense. It is obvious that changes and variations in the details would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention.

Having now set forth the object and nature of my invention and having explained the principle thereof and the best mode in which I at present contemplate applying such principle, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. A code or cipher system comprising a series of sheets or pages having distinguishing characters, each sheet or page having couplets of characters, adapted to be assembled to form pronounceable words, each couplet being distinguished by one or more numerals, each numeral distinguishing one or more words, numbers or sentences and a transfer character denoting transfer from one sheet or page to another.

2. A code or cipher system comprising a series of sheets, each having a distinguishing character, each sheet containing a series of couplets of letters of the alphabet, each couplet containing a vowel and a consonant, and being distinguished by a number, the couplet-distinguishing numbers being consecutive throughout all the pages, and each representing one or more words, numerals or sentences

and a transfer character denoting transfer from one page or sheet to another.

3. A code or cipher system comprising a series of sheets or pages having distinguishing characters, each sheet or page containing a series of vowels and consonants of the alphabet arranged in couplets containing a vowel and a consonant, each couplet having a distinguishing number, the couplet-distinguishing numbers representing one or more words,

numerals or sentences, and a transfer character denoting transfer from one sheet or page to another.

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

CHARLES WOOD McDONALD.

Witnesses:

ANDREW VAN SMITH,
GEORGE D. BOGERT.