

J. D. WARD.
BOOK AND LIKE INDEX.
APPLICATION FILED AUG. 19, 1911.

1,015,658.

Patented Jan. 23, 1912.

7 SHEETS—SHEET 1.

Fig. 1.

Terminal Letter Key	Same name Trail	Line No.	Name	Address	Other Info
		1	Hastings J.		
7-815	Jas D. H. M. W. 28	2	Harrison W. Exors	b.	
	T. H. P. W. G. 28 W. 27	3	Hodgson & Nelson		
		4	Hayton S.		
	J. G. R. 21	5	Hall R.		
		6	Hall J.		
	R. 10 C. F. W. 26	7	Hudson E.		
		8	Harrison Jas		H
		9	Hardacre W.		
		10	Heavenly J. R.		
7-28		11	Horan J.		
		12	Harrison A. & Co.		
	W. 23	13	Holme Geo		
		14	Harrison R. & M.		
		15	Harris T.		
		16	Hudson R.		
	R. 31 G. 21 W. 25 J. 51	17	Holmes Wm.		
	r. 29	18	Hughes E.		
		19	Hudson E. R.		
8-60 262		20	Hind Mrs		
		21	Hall R. & Sons		
		22	Hodgson T. H.		
		23	Hodson J. E.		
9-54	W. 27	24	Hardley J. M.		
		25	Hodgson W. & Sons		
		26	Hill W.		
		27	Hardley W. Exors		
		28	Hodgson E.		
		29	Hargreaves G. L.		
7-24		30	Hewitt J. & Sons.		
	e.	31	Holmes R.	b.	
f.		32	Hoysham U. D. C.		

Witnesses:
W. A. Williams.

G. J. McCurdy.

by,

James D. Ward
Attorney.

1,015,658.

Patented Jan. 23, 1912.

7 SHEETS-SHEET 2.

Fig. 2.

Terminal Letter Key.	Same name Trail	Line No.	Name	Address	Index Files
		33	H. L. Company	b.	
		34	Henderson R		
y 38		35	Henderson A		
		36	Hydraulic Press Co		
	712	37	Hadwin G		
		38	Hornby E		
		39	Howard C		
		40	Heap J		
		41	Holmes G		
		42	Hadwin T		
		43	Holmes H		
	W 46	44	Huddleston J		
		45	Hutchinson Tr Lons		
		46	Huddleston W		
	H.C. W.S. 50 57	47	Hodgson W		
	768	48	Harrison W		
		49	Hughes & Stirling		
		50	Hodgson H. B		
	M 52	51	Holmes J		
		52	Holmes Mrs		
	W 53	53	Hoggarth W		
		54	Hart W		
		55	Hea J		
		56	Hendley Jno		
		57	Hodgson W. L.		
		58	Harrison J		
		59	Hoggarth W		
		60	Hindle Arthur		
		61	Hudson Jas		
		62	Hindson		
f.	e.	63	Helm W	b.	
		64	Houghton J		
			a.		

Witnesses:
W. A. Williams.

J. J. Mc Curdy.

Inventor.
James D. Ward.

by *Amie*
Attorney.

1,015,658.

Patented Jan. 23, 1912.

7 SHEETS—SHEET 3.

Fig. 3.

Fig. 3.

<i>H</i>											
A	E	CONSONANT ALPHABET	I	O	U	A	E	CONSONANT ALPHABET CONT'D	I	O	U
		<i>B</i>				<i>22d9</i>	<i>p10</i>	<i>R</i>		<i>n11</i>	
		<i>C</i>				<i>22d9</i>	<i>29</i>				
<i>w37</i>		<i>D</i>	<i>g1236</i>	<i>g3</i>	<i>23 07.299</i>	<i>21</i>		<i>S</i>			
		<i>F</i>									<i>H</i>
		<i>G</i>			<i>g5364 h18</i>						
		<i>H</i>									
		<i>J</i>						<i>T</i>			<i>C45</i>
		<i>K</i>									
<i>l5</i>	<i>m13</i>	<i>L</i>	<i>l26</i>	<i>m17</i>				<i>V</i>			
		<i>M</i>									
						<i>l30</i>		<i>W</i>		<i>n39</i>	
	<i>d35</i>	<i>N</i>	<i>d20</i>								
<i>B40</i>		<i>P</i>				<i>22d36</i>	<i>d32</i>	<i>Y</i>			
								<i>Z</i>			
						<i>Hea. J.</i>	<i>55</i>	<i>NIL</i>			<i>(After</i>
		<i>Q</i>				<i>HLG33</i>		<i>AS</i> <i>EXCEPT</i> <i>words with no sound (except index</i> <i>letters) or other special names</i> <i>e.g. X.L.C.</i>			<i>)</i>

Witnesses:

W. A. Williams

J. J. McCurdy.

10

Inventor:
James D. Ward.

by *James D. Ward*
Attorney.

1,015,658.

7 SHEETS--SHEET 4.

Fig.4.

H.									
A	E	I			O	U	Y		
				B					
				C					
W.37				D	g3 828	37 244	r36		
				F					
				G	g53 764	716			H
				H					
				J					
				K					
65	7618	026		L	m17				
				M					
	235	220		N					
	40			P					
72 23 724 510				Q	711				
g28				R					
3a 21				S					
				T		695			
				V					
	730			W	739				
				X					
74	532			Y					
				Z					
	W.1			N.I.L.					
	55			W.					
W.10				EXCEPT					
32				-IONS					

Witnesses: .
W. A. Williams.
J. J. McCurdy.

Inventor
James D. Ward.

by, Ima Marie
Attorney.

1,015.658.

7 SHEETS-SHEET 5.

Fig. 5.

[illegible]

Witnesses:
W. A. Williams.
J. J. McCurdy.

Inventor.
James D. Ward.

by

Mr. Justice
Attorney.

1,015,658.

Patented Jan. 23, 1912.
 7 SHEETS—SHEET 6.

Fig. 6.

H																									
A																									
B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z					
		11.37						2.5					2.2 2.9 2.29 9.23	7.1					2.4						
E																									
B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z	H				
								11.13		2.35	4.0		8.10				2.34		3.32						
I																									
B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z					
								2.26		2.20															
O																									
B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z					
		9.3 2.23		9.53 1.64				11.7					11.11				2.32								
U																									
B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z					
		8.7 2.99		11.18											11.95										
Y																									
		2.36																							

Witnesses:
 W. W. Williams.
 J. f. Mc Curdy.

Inventor
 James D. Ward.
 by *James D. Ward*
 Attorney.

APPLICATION FILED AUG. 19, 1911.

7 SHEETS—SHEET 7.

Fig. 7.

[illegible]

by, *Ernie*
Attorney.

Witnesses:
W. W. Williams.
G. J. McCurdy.

UNITED STATES PATENT OFFICE.

JAMES DAVIS WARD, OF GRANGE OVER SANDS, ENGLAND.

BOOK AND LIKE INDEX.

1,015,658.

Specification of Letters Patent.

Patented Jan. 23, 1912.

Application filed August 19, 1911. Serial No. 644,996.

To all whom it may concern:

Be it known that I, JAMES DAVIS WARD, a subject of the King of England, residing at Grange Over Sands, in the county of Lancaster, England, have invented certain new and useful Improvements in or Connected with Book and Like Indexes, of which the following is a specification.

This invention has reference to indexes, or catalogues, especially, those in book form, with stepped pages for the letters of the alphabet, and which are filled up with names or other matter, generally without any regard to or opportunity for arranging the same in order.

This invention has for its objects and effects the provision of a new system which gives all the advantages of alphabetical or other order for finding any name, word, or other matter, irrespectively of the consecutive order of the words in the index, and by this system any word can be found at once by a simple and logical method of classifying and indicating the positions of approximately similar words by means of special entries in "keys".

Under this invention a system or method and means are provided, whereby any word in an index having a similarity to another word, such as in its root, affix or initial or first portion, or in its termination, suffix or latter portion, or being of a similar character or having reference thereto, is easily and quickly traced by means of an entry or entries arranged in a column or columns provided with different denominations, according to the matter indexed, the entries being arranged in such a manner as to facilitate ready reference between approximately similar words and afford means of quickly indicating the position of any name, number or other matter for which the improved system may be used; while any word having no similarity to any other word in the list, will have a similarity to its own key entry, by means of which it can at once be found.

By means of the system or method referred to above, a word or part of a word, such as a name, is readily trailed or tracked by arranging a part of the index in such a manner that upon turning to the sheet, such as of a stepped index and agreeing with the first letter of the word, and examining a part thereof, which by cross reference agrees with the next two or more letters, an entry will be recorded therein, such as a

number, or another letter with a number recorded at the side thereof. Such number refers to a line in the general or another index, and upon reference being made thereto, a name composed or partly composed of the letters built up or tracked or trailed in the part of the "key" index, will be found. This name however may not be the one required, but is similar thereto, then the other part of the "key" index is examined, such as the same name or same initials, or a terminal letter or same terminal letter key, to track or trail by letters and numbers, or by the letters alone, other entries of the same or similar name or word, until the right name is found.

The primary, or general method of classification in the trail keys is to link together all words with a similar radix; that is to say, each group is a natural branch off a radix entry, and absorbs all (and only those) words starting with that radix, so that when any word is required only these words built up on its radix, and forming one group or trail, have to be searched, all else in the index being ignored.

The system is as follows, but is subject to modification in details for different classes of indexes or catalogues. The usual form of index book, with one or more pages for each letter, section, or division of the alphabet is employed, and each division of the index is found in the usual way by stepped marginal or equivalently arranged alphabet. Each alphabetical division or names section of the index has the lines successively numbered, or otherwise indicated such as 1, 2, 3, onward, so that each name has its own line number, and its position can be instantly found when the number of the line is known or ascertained. The names are entered in the usual indiscriminate way on the numbered lines, line by line as they arise, having no regard to any order or arrangement, and if desired with addresses and other particulars. Each stepped division or "letter" of the index is provided with, what is to be called a "radix key", which consists of an arrangement or arrangements of the letters of the alphabet, in one or more series, (either complete series, or consonant, or vowel series) in ruled columns or otherwise, but so that, if more than one series are used, any and every possible combination of two, three or more letters, (viz., of one letter of each series forming the key) will be, or can be

formed by relative position, and be at once found owing to that position; making it easy to find any word in the index by a suitable entry in the key against the combination corresponding to the "radix" (viz., prefix or first letters) of the word. The numbers on the lines on which the names in the index are written, as stated above, form an essential part of the construction and working of this key, though the numbers also serve other keys also.

As stated, a radix key may be ruled or arranged in several ways to give one or more letters following the index letter. A comprehensive form consists of a ruled column having spaces for all the consonants of the alphabet, printed in alphabetical order, the spaces for the letters being divided over the whole length of the column by suitable varying distances to allow most room for the most frequently used letters; and adjoining the consonant column are other columns, for the vowels A, E, I, O, U, and maybe Y. The vowel columns work by cross reference with the consonant alphabet to represent the consonant and vowel first following the index, letter,—viz. first letter of the word. This is done by an entry being made in the vowel column opposite the consonant required, *e. g.* the combination a-r or r-a is an entry in "A" column and opposite "R" of the consonant column. It is the position of the entry which indicates r-a or a-r, and that which is written in the position gives more information still.

Means for carrying out the system or method are hereinafter described in connection with the accompanying drawings in which—

Figures 1 and 2 represent two pages from the stepped general index for the letter H. Fig. 3 represents a page from one form of the so called "radix" index which enables a word or name to be easily and quickly tracked or trailed by building up or forming the word or part thereof by the arrangement of the letters on this page. Figs. 4, 5, and 6, represent modifications of the arrangement illustrated in Fig. 3; the difference between the modifications being in the spacing or ruling of the page, the difference between Figs. 3 and 4, being that in Fig. 4 only one vowel line or series is employed in place of the two shown in Fig. 3, while in Fig. 5 each consonant is provided with a separate vowel line or series; and in Fig. 6 each vowel is provided with a separate consonant line or series. Fig. 7 represents a modification of the arrangement illustrated in Figs. 1 and 2.

Referring to Figs. 1 and 2, *a* designates the name column, *b* the address column, and *c* the line number column, while the columns *e* and *f* respectively designate the "same name trail" column, and the "terminal let-

ter key" column. These two latter columns serve for tracing or trailing other entries having the same surname or word, and similar initial part with a different terminal letter.

The arrangement shown in Figs. 3 to 6 comprises consonant, or consonant and vowel columns or spaces arranged if desired, on a stepped index page, and by any one of these modifications, any word or name in the general index, and having no similarity to previous entries in the general index, are "keyed" by means of such arrangements; while names or words having a similarity to previous entries in the general index are "keyed" by means of the "trail" keys illustrated in Figs. 1 and 2.

In forming an index under the system or method described and with ruled pages as illustrated in the drawings, the names or words are entered as they come to hand in alphabetical order so far as the initial or first letter is concerned, and are then "keyed" in the "radix" and may be "trail" indexes.

Referring to Fig. 1 line 1, the name "Hastings" occurs as at 1, Fig. 1. When this is entered in the general index, it is also keyed in by means of any of the forms of radix indexes shown in Figs. 3 to 6; that is, the division "H" of the "radix" is referred to, and in the space agreeing with the vowel column or space "A" and the consonant column or space "S" the letter "T" is entered, with the figure "1" against it (as at 3, Fig. 3; 3^a, Fig. 4; 3^b, Fig. 5; 3^c, Fig. 6). This entry indicates that a word or name commencing with or consisting of "Hast" occurs on line 1 of the general index.

If the name Harrison W. Exors on line 2 Fig. 1 is to be entered in the radix index shown in Fig. 3, this is recorded in the space agreeing with the vowel column or space A and the consonant column or space "R" by entering the letter "R" with the figure 2 against it as at 5, Fig. 3, and indicating that a name or word consisting wholly or partly of "Harr" is entered on line 2 of the general index. If after other names have been entered, the name or word commencing with "Harr" has to be again entered, such as with the same or other Christian name initials, or other differentiating letters, or with a different terminal letter, and as shown on lines 8, 12, 14, and 15, Fig. 1, these various entries will be recorded in the general index, and if necessary the "radix" index referred to, when it will be seen that a similar entry has already been effected with reference to line 2 of the general index, which is again referred to, and the entries are then recorded in the proper "trail" column; that is, the entry on line 8 "Harrison Jas" is recorded also in the "same

name trail" opposite to or agreeing with entry "Harrison W. Exors" by the indication "Jas 8"; the entries on lines 12 and 14, viz., "Harrison A. & Co." and "Harrison H. & M." are also recorded in the "same name trail" opposite to or agreeing with the entry "Harrison W. Exors" by the indications "A. & Co. 12" and "H. & M. 14" (see 6, Fig. 1); while the entry on the line 15 "Harris T" is recorded in the "terminal letter key" opposite the entry "Harrison W. Exors" by the characters 15 S as at "7." This latter entry indicates that there is entered on line 15 (Fig. 1) a name or word commencing with "Harr" and terminating with "S." Precisely the same system is used for entering names in the radix keys shown in Figs. 4, 5 and 6. If it is desired to carry the trail farther, other columns or spaces may be provided in connection with the general index. An example of extensions is illustrated in Fig. 7, wherein are shown columns or spaces for entering in similar manner to that described above, the trails of the same surnames having the same Christian name initials such as the occurrence more than once of a name such as J. Harrison or for entering similar names having the same terminal letter, such for instance as "Harris" and "Harrims." The "same initials key" is of considerable use in connection with a common name, such as "Jones," which may occur, say 50 times in a list while some of the Christian name initials will be repeated from 5 to 10 times. By this "same initials key" operations for ascertaining the position of any one name are considerably curtailed. That is to say, if "J" Jones is required, on finding the first "J" Jones not to be the name wanted, the other "J's" are trailed or traced through the "same initials" trail; for on arriving at the first "J" Jones the next is found keyed in a "J" trail thrown off by the first "J" into the "same initials key," each subsequent "J" of course following the same way. Thus the "same name" trail is liberated from repetitions of the same Christian name initials, while the search for "J" Jones (if there be 8 in the list) will be confined to about that limit, instead of being spread over the whole 50 "Jones."

Any name having two Christian names would be keyed in by the first initial, for instance, J, JW, JH, would all be keyed on the "J" trail in "same initials key." In a very large index, say one having more than 20,000 names the "same terminal letter key" is adopted also in a similar manner to the "same initials key." Suppose in tracing a name the search passes to the terminal letter, and on arriving at the line indicated for the terminal letter the name is another name (a different surname but with the same ter-

минал letter and same radix). In an ordinary size index under this system the search would revert to the terminal letter trail, for a second entry of the same terminal. By means of the "same terminal letter" key the search for another surname with the same terminal would not revert to the "terminal letter" trail, but would go forward to a new (branch) trail in the "same terminal letter key" on exactly the same principle as "same initials trails" branch from the "same name trails". It is possible therefore with "same terminal letter key" to see at once whether on any radix trail a second word with the same terminal will be found farther on, whereas without this key, it would be necessary to follow the terminal letters to the end of the main trail line by line.

Experiments have shown that a "same terminal letter key" hardly becomes useful until an index has about 50,000 names, so effective are the previous steps in dividing the lists into small and convenient groups. Another alternative is to give two or more terminal consonants. In any extension of this kind a connecting vowel should be ignored for the system although it may be written in for clearness when forming a link between two consonants.

For clearness it is preferable that no vowels (except the "cross-reference" vowel) should be used in any key. It is better to use the next consonant instead.

Owing to one radix entry frequently serving for many names, it will be found that in an index having several hundred entries in each section, only a few consonants are required to be entered in each cross reference division of radix key, and these are written in, with necessary line number only, as they arise.

For words of less than 4 or 5 letters, some modification of method is necessary. For instance note "Heap", line numbered 40 Fig. 2 which through having a second and may be useless vowel, has only three letters H-e-p which fall into the system. Therefore in the radix key an arbitrary sign, (for instance a "star" see space (8, Fig. 3) agreeing with "e" and "p") may be used to indicate that no third consonant is available to enter with line number. A sign is adopted rather than leave a "blank" as a sign readily catches the eye when searching for a word requiring that sign, and the accidental omission of a letter from any radix entry would indicate error, and not mislead. The same applies more or less to the name of "Hart" entered on line 54 Fig. 2: where this is entered at some point after a name, with same "radix" such as "Hartley", line 24, Fig. 1, it will be seen that all the consonants of "Hart" are already in "Hartley", and used for it in "radix" and to add another "t" in the terminal letter key against "Hartley"

would indicate a name such as "Hartat", and to avoid this confusion the sign as above stated, and shown in a space agreeing with "Hartley" is employed in the trail index also (as at 9, Fig. 1).

In some cases it is useful to provide, what is called a "nil" space after Z of consonant alphabet as shown in Figs. 3, 4, and 5. This is serviceable for short names, such as "Hea", see line 55 Fig. 2, and "nil" spaces in Figs. 3, 4, and 5 (see 10, Fig. 3). In this name is no consonant to form the "radix" cross reference, therefore "Hea" is entered up or indicated in the "nil" space. Other names which will not otherwise fall into the radix system are entered in an "exceptions" space. A word having no vowel (except index vowel) would be placed here, also names such as "H. L. Company". Words in the "nil" and "exceptions" spaces hardly ever have more than 3 or 4 letters, and are rare of necessity. They may be written in full for clearness.

Sometimes the "cross reference" vowel follows the index letter, and sometimes the second or third letter (*e. g.* Carnforth & Cranks). The "radix" does not indicate the exact position, viz., whether "Car" or "Cra" and it is not necessary, (being better done in trail keys) though it could be done by different colored inks, separate columns, or other arbitrary method. It is sufficient however that the consonants are always shown in right order.

In a large index the stepped divisions or sections might not be into letters only, but into vowel subdivisions of letters—*e. g.* Ba, Be, Bi, Bo, Bu, By. In this case the radix key would be more convenient for reference if divided, each vowel column being attached to its own section of the index and there divided by the consonant alphabet. The essential requirement is a cross reference of any vowel to all consonants, and transversely of any consonant to all vowels; thus producing what is to be called the radix "cross reference" viz., the first consonant-vowel respectively, following the index letter.

Where an index is provided with separate sections for vowel sub-division of letters as Ba, Be, Bi, Bo, Bu, By., the divided radix key in each sub-division could be enlarged, by again sub-dividing for the second vowel of the word, but with an extra column for those words not having a second vowel (in addition to index letter, if it is a vowel).

The following modification of the system is suggested to enable any list to be classified for two or more objects by additional "radix" and "trail keys". For instance in an index of personal names it might be desirable to group the addresses into counties, towns, &c., then, though all the personal names in "B" division would begin with

"B", the addresses, or subject matter for the second radix would not, and the addresses radix key would have to be used as described below.

When in a list of words, all the words do not begin with the same letter, the radix key will be used so that the cross reference will represent the first consonant and vowel (including the index letter) respectively. In this case, supposing the form of radix index shown in Fig. 3 to be adopted, each vowel column will be divided to indicate the order of the two letters (*viz.* R-a or A-r) one sub-column being adopted for each, or two groups of vowel columns could be adopted, one group for words starting with the consonants and the other group for words starting with vowels.

For catalogues, &c., not only the denominations of the trail keys, but also the method of classification used for the trails will have to be modified to suit individual cases. For instance in an ironmonger's catalogue, the "trails" for "iron" might branch as follows: (1.) Cast and wrought. (2.) "Square" "sheet" and "round." (3.) Thickness. In this case it will be seen that the trails are built up of words, or figures and not letters of alphabet; and it will be seen that the system is elastic so that any logical sequence of ideas may be adopted, whether alphabetical letters, figures, words, or other principles. After "keying in" each name a tick or other sign is preferably made against each entry in the general index to indicate that it has been "keyed".

To trace any name say "Harrison J" in the general index, the radix index (which may be stepped) is opened at H, and examined to find the position representing the "cross reference" (the vowel and consonant following the index letter of the word) which in this case is a-r (Har). Then the next consonant (which is again "r") of the word has to be found there; thus in the vowel column "a" in line with the consonant "r" (the required position) is found an entry, say "r²"; and this entry means (Har-) r (on line) 2. By turning to line 2 of the general index the name "Harrison" is found. It may be mentioned that turning to the position in "a" column opposite "r" the prefix H-a-r is thus mentally built up before seeing any entry. This "Harrison" is not the one wanted, being "Harrison W. Exors" and "Harrison J" is required, and this is found by referring to the "same name key" (on line 2). Here are found the Christian or company name initials of some of the "Harrisons" which follow, but none of the entries is the one required, so the last entry in the "same name key" is noted, and this is, "W 48", line 48 of the same key is next referred to, to see if any more "Harrisons" are indicated in

the "same name key" on the latter line; and it is seen that there is an entry "J 58" and upon referring to line 58 the name of "Harrison J" is found.

5 It will be noted that in all the several "radix key indexes" shown in Figs. 3, 4, 5 and 6, there is a table having a letter head or character denoting the initial letter or syllable of a name; that this table is divided into major spaces, and these in turn are subdivided into minor spaces. In Fig. 6 the major spaces each represent a vowel and the minor spaces of each vowel space a consonant. In Figs. 3, 4, 5 and 6 the major spaces each represent a consonant and these are subdivided in turn into minor vowel spaces. It will be noted that the principle of the radix index is the same in both cases. I find in practice, however, that it is most convenient to provide consonant major spaces divided into minor vowel spaces.

What I claim is:—

1. The combination with a main index having a name column divided into a plurality of numbered name spaces, and a same name trail column divided into a plurality of spaces corresponding to the spaces of the main index and adapted to contain reference characters indicating like names to those entered in the name spaces, of a radix key index comprising a series of key tables, each lettered under an alphabetical head representing the initial letter or syllable of a name, each of said tables being divided into a series of major spaces, and each major space being subdivided into minor spaces, the major and minor spaces being lettered to correspond, one to the consonants and the other to the vowels of the alphabet, said spaces being adapted to contain characters referring to the numbered name spaces in the main index.

2. The combination with a main index having a name column divided into a plurality of numbered name spaces, and also having in conjunction with said name column a like name trail column divided into a plurality of spaces corresponding to the numbered name spaces and designed to contain reference characters indicating like names to those entered in the corresponding

name spaces, and also having a terminal letter key column divided into spaces corresponding to the spaces in the name column and designed for characters referring to names having the same radix as those in the corresponding name space but differing in terminations, of a radix key index comprising a series of key tables, each lettered under an alphabetical head and representing the initial letter or syllable of a name, each of said key tables being divided into a series of lettered major spaces and each major space being subdivided into lettered minor spaces, the major and minor spaces being lettered to correspond, one to the consonants and the other to the vowels of the alphabet, said spaces being adapted to receive numerals referring to the numbered lettered spaces of the name column of the main index.

3. The combination with a main index having a name column divided into a plurality of numbered name spaces also having a like name trail column divided into a plurality of spaces corresponding to the spaces in the name column and designed to contain reference characters indicating like names to those indicated in the corresponding spaces of the name column, said main index also having a like initials column divided into spaces corresponding to the spaces of the name column for entering characters referring to names having like initials to those in the first named name column, a like terminal letter column also divided into spaces corresponding to the spaces of the name column for the entering of names having like terminal letters to those in the name column, and a terminal letter column divided into spaces corresponding to the spaces in the name column for the entering of names having the same radix but differing in terminal letters.

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

JAMES DAVIS WARD.

Witnesses:

SOMERVILLE GOODALL,
ANDREW TAYLOR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."