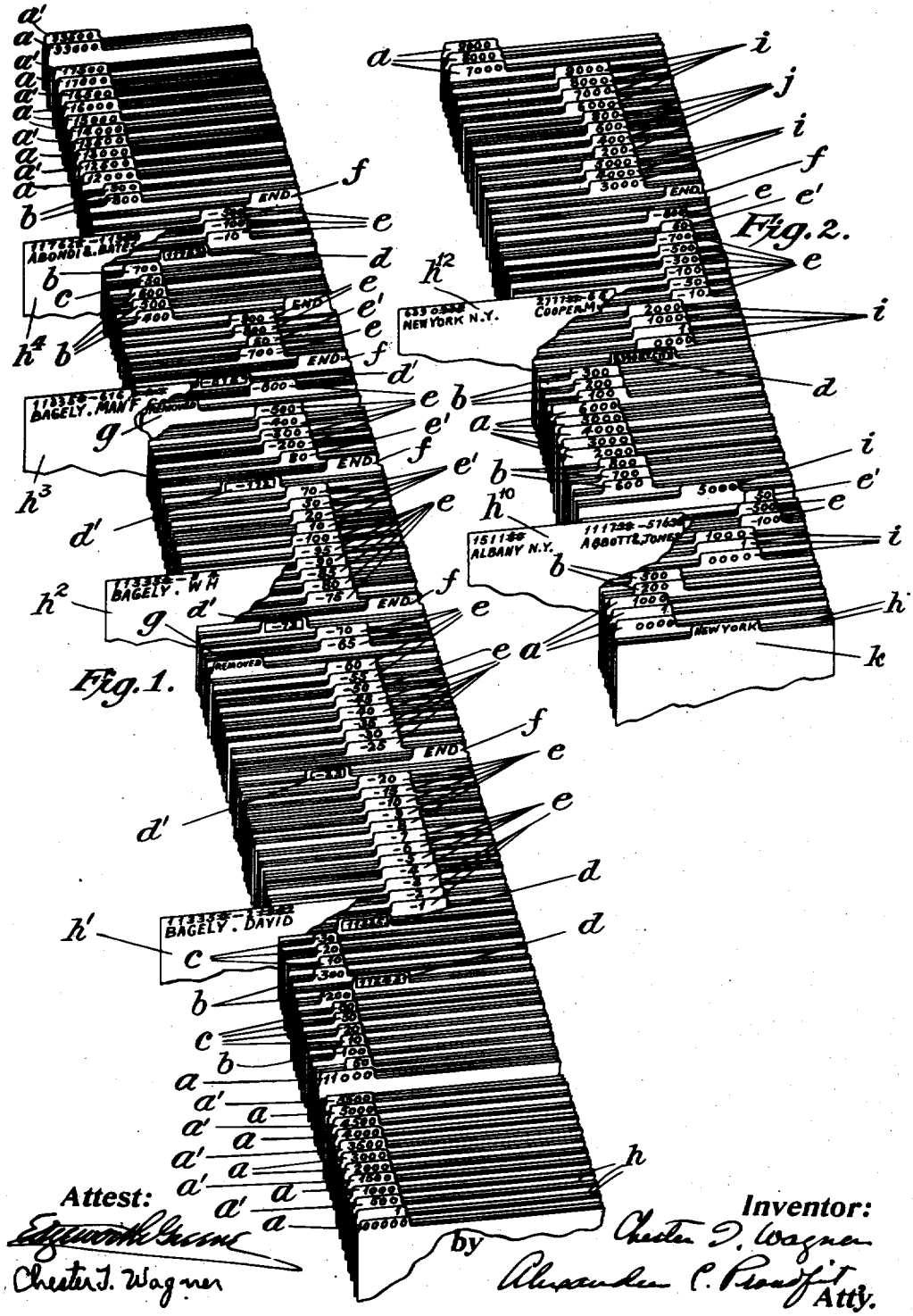
April 15, 1924. 1,490,547

C. I. WAGNER

INDEXING

Filed Jan. 24, 1917 5 Sheets-Sheet 1



Attest:
Chester J. Wagner

Inventor:
Chester I. Wagner
by Alexander C. Brandt Atty.

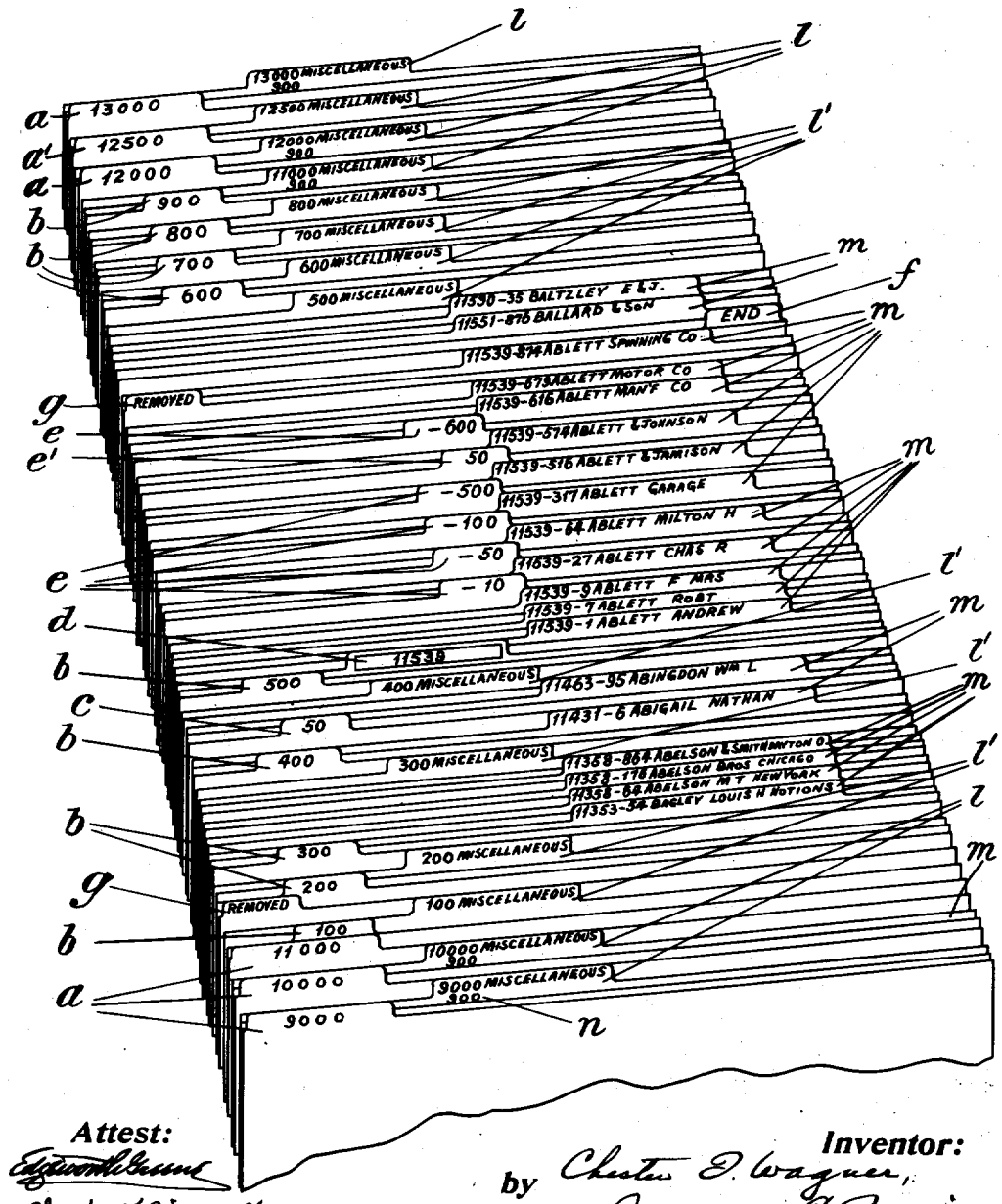
April 15, 1924. 1,490,547

C. I. WAGNER.

INDEXING

Filed Jan. 24, 1917 5 Sheets-Sheet 2

Fig. 3.



Attest:

Edward Bassett

Chester I. Wagner.

Inventor:

by Chester I. Wagner,

Alexander C. Brackett,

Atty.

April 15, 1924. 1,490,547

C. I. WAGNER

INDEXING

Filed Jan. 24, 1917 5 Sheets-Sheet 3

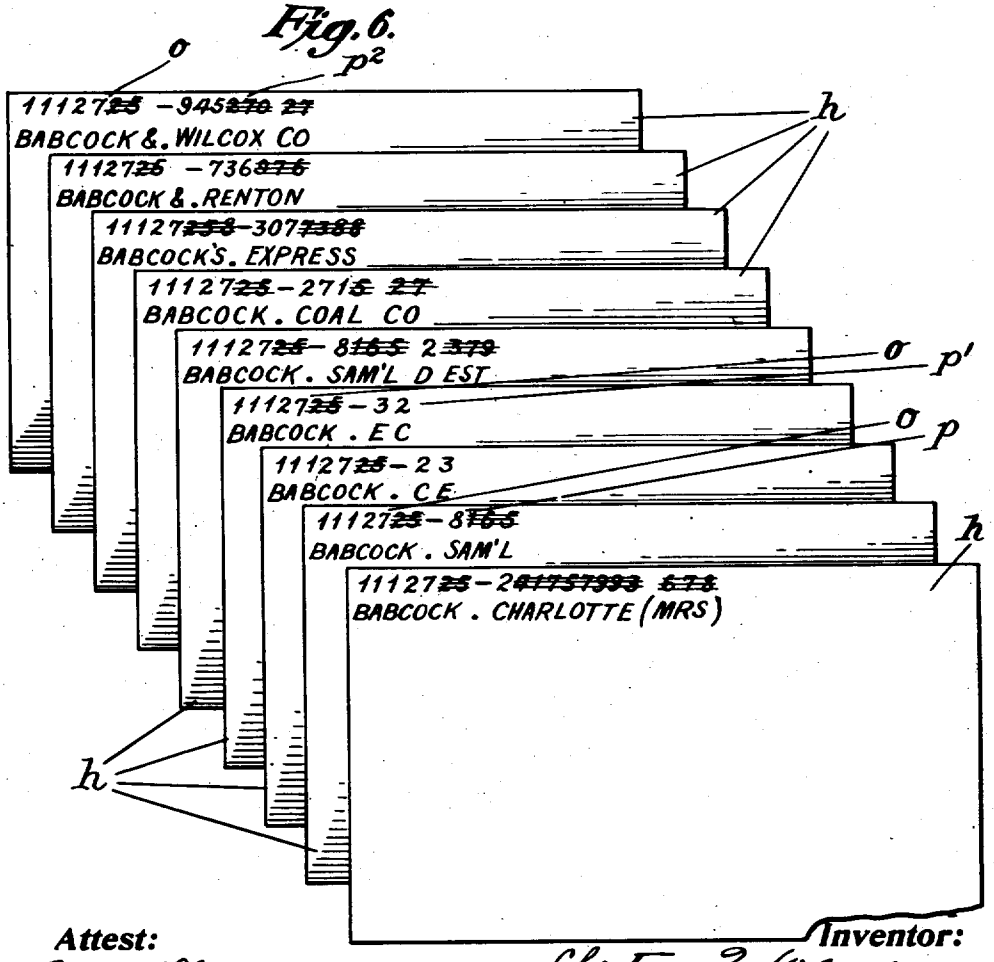
Fig.4.

7109803227399 31 04695645 75-7
QAZWSXEDCRFVTGB YHNUJMIK?0L.P:!
1"@2#×3$÷4%£5_¢ 6&*7'^8(°9).0=/

Fig.5.

1 2 3 4 5 6 7 8 9 0
(AB)(CD)(EFG)(HI)(JKL) (MN)(OPQR)(S)(TUVW)(XYZ)

Fig.6.



Attest:
Edgar Worthington
Chester I. Wagner.

Inventor:
by Chester I. Wagner,
Alexander C. Prescott,
Atty.

April 15, 1924. 1,490,547

C. I. WAGNER

INDEXING

Filed Jan. 24, 1917 5 Sheets-Sheet 4

Fig. 8.

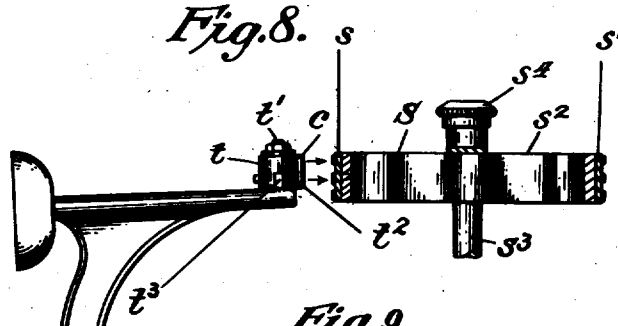


Fig. 9.

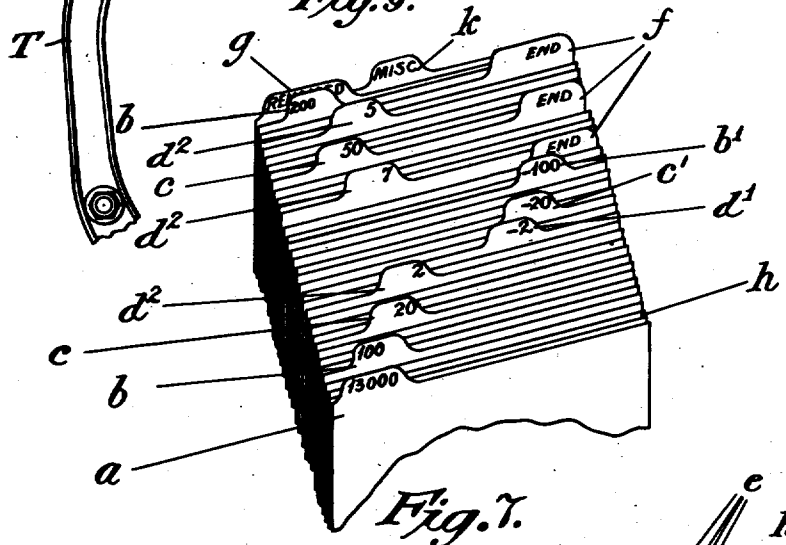
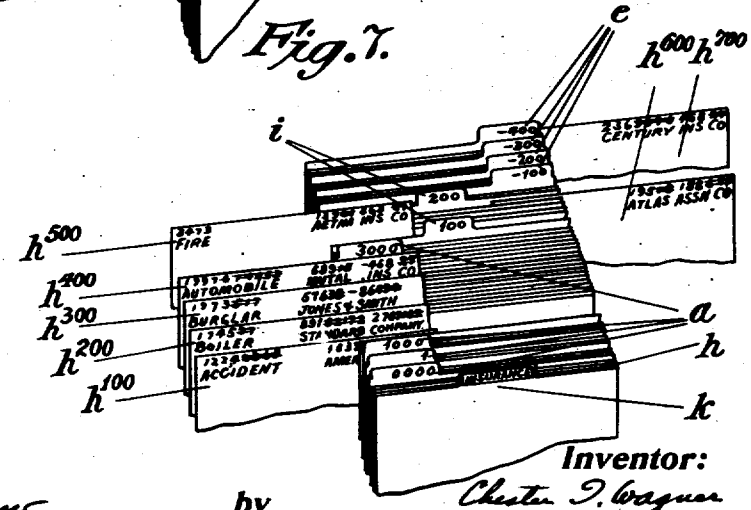


Fig. 7.



Attest:

Edgeworth Wagner

Chester I. Wagner

by

Inventor:

Chester I. Wagner

Alexander C. Fraser

Atty.

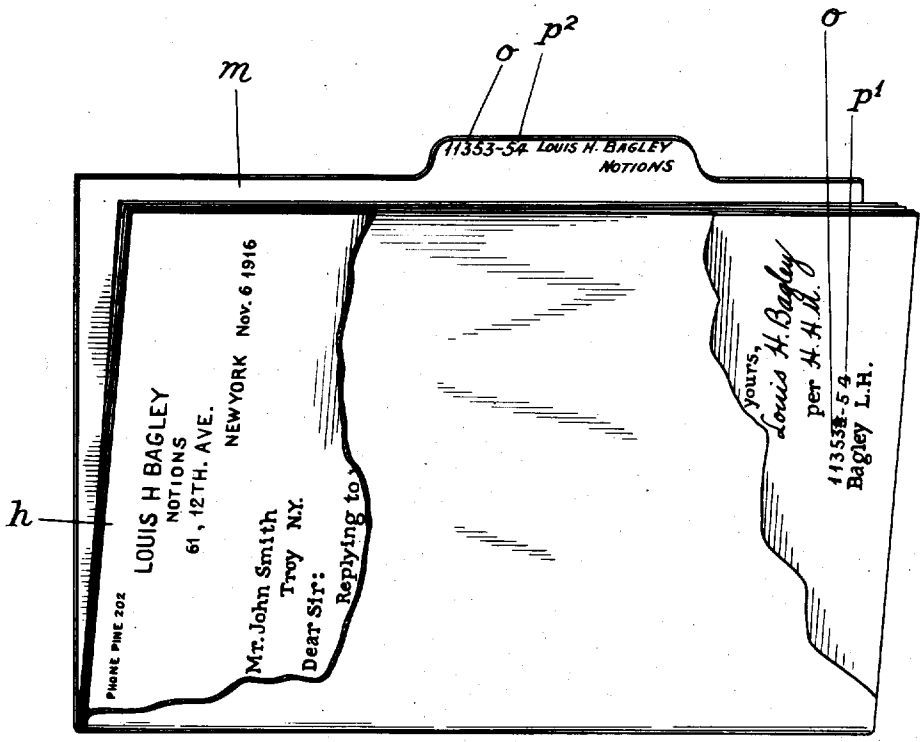
April 15, 1924. 1,490,547

C. I. WAGNER

INDEXING

Filed Jan. 24, 1917 5 Sheets-Sheet 5

Fig. 10.



Attest:
Chester I. Wagner.

Inventor:
by Chester I. Wagner,
Alexander C. Prondfit,
Atty.

Patented Apr. 15, 1924. 1,490,547

UNITED STATES PATENT OFFICE.

CHESTER I. WAGNER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO ALUMINUM INDEX COMPANY, OF EDGEWATER, NEW JERSEY, A CORPORATION OF NEW JERSEY.

INDEXING.

Application filed January 24, 1917. Serial No. 144,260.

To all whom it may concern:

Be it known that I, CHESTER I. WAGNER, of New York city, New York, have invented certain Improvements in Indexing, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings designating like parts.

This invention relates to indexing, and is of special utility when embodied in a system comprising a multiplicity of units associated with various subject-matters, such as the letters constituting the correspondence of a firm or corporation with a large and increasing number of customers, or a card index of said customers, although I do not limit myself to any particular use, but contemplate the employment of my improvements in any field for which they are adapted by their nature.

An important object of my invention is to provide stock indexes having highly developed expansible and contractible capacities and to render the filing and finding of matter by means of such indexes more accurate and rapid, for which purpose I produce means by which to overcome the limitations, disadvantages and unnecessary expense of present methods, and in order that the object of my invention can be more fully understood I consider it necessary to review critically the prior methods, as follows:—

First: Alphabetic indexing by means of guides bearing on their tabs or projections indexing data consisting of sub-divisions of the alphabet. In stock indexes of this character the number of guides assigned each letter of the alphabet and bearing sub-divisions thereof is based on some broadly inclusive list of names. For example, the indexing value of each letter of the alphabet in a number of stock indexes is based on the names given in the New York city telephone directory, and as these names in their alphabetic construction are greatly varied by the many nationalities and varied classes of business listed therein, a business dealing with only a certain few nationalities or classes of business will have an unnecessary amount of guides for certain letters and lack enough for others.

Contraction or expansion of any one set of alphabetic subdivisions is impracticable; the sequence thereof should remain unbroken, each unit of an alphabetic sub-division index being necessary to its effective operation, and therefore, in order to select the proper size, or proper number of sub-divisions, the user of indexes of this character must forecast the maximum amount of matter which will be filed in the index at some future period, and to do so accurately is of rare occurrence, owing to the uncertainties of business, hence the index proves too small or too large, at the conclusion of the filing period, to properly index the matter filed therein. The user is also obliged to place the whole of the index in the files at the beginning of the filing period, yet it is obvious that the full volume of matter to be filed will not be received or filed until the end of the period, and as a result investment is made in guides long before their use is required, the file clerks are filing and finding matter for the major part of the period in larger sub-divisions of the alphabet than the volume of matter justifies (it being admittedly proportionally more difficult to file and find matter as the size of alphabetic indexes increases) and this excessive use subjects the surplus guides to unnecessary wear.

Furthermore, each time matter is filed or found in an alphabetic index each file clerk is obliged to interpret the alphabetic construction of the designation of the matter to be filed in order to determine its place among, and alphabetic relation to, the subdivisions of the alphabet shown on the guides in the index, such determination being obviously more difficult than the numeric interpretation which I provide and will describe later.

Second: Geographic indexing, which is commonly practiced by means of guides bearing on their tabs or projections indexing data consisting of names of States, towns or localities, these guides being generally supplemented by sets of alphabetic indexes. In stock indexes of this character the disadvantages, limitations and unnecessary expense characteristics are the same as those to which alphabetic indexes are subject, with the additional disadvantage that the volume of matter to be filed therein has to be forecast upon both the alphabetic and State, town or locality basis.

Third: Numeric indexing, which utilizes

guides bearing on their tabs or projections indexing data consisting of jump numbers. In indexes of this character, numbers are assigned to the units of matter filed in numerical sequence and without bearing any relation to the alphabetic construction of the designation of the matter, wherefore it is necessary that an alphabetic cross-index containing a record showing to which matter the numbers have been assigned be maintained separately. Although matter filed in a numeric index is admittedly filed and found more easily and with far less danger of mis-filing than is possible with any other method, yet prior to my invention this system has been impracticable in most cases owing to the necessity of maintaining a cross-index, and referring thereto to ascertain the number assigned to the matter filed before it can be filed or found, and furthermore this alphabetic cross-index is subject to all the disadvantages of alphabetic indexing.

Fourth: Alphabetic-numeric indexing, by means of guides bearing on their tabs or projections alphabetic sub-divisions in combination with a number is often employed, the number being usually based on the guide sequence to assist in back filing, or on groups of name initial letters only, intended as a supplementary means of dividing matter first indexed in the index by alphabetic subdivision. In indexes of this character the numeric means are so dependent on the alphabetic means, and so limited in their scope, that they do little towards overcoming the disadvantages of alphabetic indexing.

In contradistinction to the above systems, my invention contemplates the provision, on matter to be filed in filing devices of all kinds, of a numerical designation in such a manner that no separate record, cross index or like record will be necessary to identify the numeric designation with the adphabetic, geographic or subject designation under which the matter is commonly identified, and, in accordance with an important feature of my invention, this numeric designation is arranged to remain on the matter in conection with the ordinary designation, to facilitate the reference to, filing and finding of the matter.

Another important object of my invention is to provide a mechanical means of placing the numeric designation on the matter and by the same operation and at the same time the alphabetic, geographic or subject designation from which the numeric designation is derived, and my preferred means for accomplishing this purpose takes the form of a codifying attachment to a typewriter.

Still another important object of my invention is to provide means by which the numeric designation of matter can be indexed by means of guides and miscellaneous folders in such a manner that the matter can easily be located for reference, filing or finding and can also be transferred at the end of a filing period in such a manner as to utilize the numeric designations on the miscellaneous folders as an index for the matter when transferred, thus obviating transfer of the guides.

An object of primary importance is to devise a system by which matter can be indexed, and the index expanded or contracted, by the addition or subtraction of sub-guides in such parts thereof, only, as the amount of matter filed and the nature of its designations justify, and as a corollary of this system to provide means by which it will be unnecessary in the initial installation of an index to forecast or ascertain the amount of matter to be filed therein eventually, in order that the proper size index can be installed.

Among other important results accomplished by my invention a notable one is that in large filing systems requiring a number of file clerks, only one (commonly called the chief file clerk) is required to codify the numeric designation from the alphabetic, geographic or subject designation of the matter to be filed or found, the other clerks filing and finding the matter by means of its numeric designation only, thus greatly decreasing the chances of mis-filing, and increasing the speed with which the matter is filed and found.

I have devised also means by which the end or last part of a group of indexed units of matter can be indicated, this novel means taking preferably the form of a guide bearing a suitable designation in order to render it unnecessary to look through such matter to locate the next adjacent matter.

A highly important object accomplished is to so organize the alinement of the projections or tabs bearing indicia as to present the decimal components of the filing numbers in successive overlapped positions readable as a whole to indicate the exact position of any single unit or group thereof, and in the same manner to further index a group by projections or tabs alined differently and bearing indicia with differentiating characteristics in connection with similar decimal components derived numerically from secondary designations, such as Christian names or initials.

The various features of my invention will be illustrated and described fully in the accompanying drawings and specification and pointed out in the claims.

In the drawings:—

Fig. 1 represents a number of cards constituting part of a numerical filing system arranged in accordance with my invention,

a sufficient number of each set of guides being shown in this and other figures to illustrate their use.

Fig. 2 is a view in perspective of a group of cards similar to that of Fig. 1, except that the position of certain guide tabs or projections is changed, and certain guides are added (as is more fully explained later) in order that the invention can be adapted to a system by which both geographic and name reference is possible.

Fig. 3 is a similar view which represents the invention when applied to indexing matter such as correspondence, invoices, catalogues, pamphlets and matter other than cards. Miscellaneous and individual folders, as shown, are generally used for such matter, but if desired the matter could be filed loose, between the guides, without departure from the intent of the invention.

Fig. 4 illustrates an arrangement of type faces in accordance with my invention by which, when the printing impact is made, each letter has printed above it the number digit from which the numerical identification is codified. The order illustrated is that of the standard typewriter keyboard.

Fig. 5 illustrates a codifier presenting the preferred preassignment, to groups of letters of the alphabet, of digits in the series 1, 2, 3, 4, 5, 6, 7, 8, 9 and 0, with the number digit shown above each group, this codifier serving as a guide in placing the proper number above the name, geographic or subject designation of the matter indexed, when such designation is placed thereon by being written with pen or pencil; the arrangement of the type faces upon the typewriter shuttle shown in Fig. 8 is also in accordance with this codifier when mechanical means, as herein described, are used to print the designation on the matter to be filed.

Fig. 6 represents a number of cards with the same surname designation but with different initials, Christian names, partnership and firm identifications thereon, and illustrates the manner in which each card may have a separate numerical identification by means of a sub-number when the main number is the same on several cards. Fig. 6 also illustrates the manner in which surplus digits are crossed out by the chief file clerk in order that the proper number of digits only shall be used by the file clerk.

Fig. 7 illustrates a modification of the groups shown in Figs. 1 and 2, the position of certain guide tabs or projections being changed and certain guides added in order to adapt the invention to a system employing both subject and name reference.

Fig. 8 illustrates codifying devices applied to a typewriter constituting the preferred form of means to effect mechanically by a single operation the imprint upon the matter to be filed of the numerical character constituting the indexing number, and also the alphabetical characters selected previously from the matter to be filed as the significant or designatory portion thereof.

Fig. 9 represents a group of cards indexed by this system in which special group guides are used to indicate a group bearing the same main number, and Fig. 9 represents also on each of the several guides, the preferred relative positions, from left to right, of the tabs or projections thereon, and illustrates also the tab or projection positions when the guides are reversed to act as secondary number guides; illustrating also an "end" guide, and the position of the tab thereof when the guide is reversed, from right to left, thus displaying the word "Removed".

Fig. 10 represents an individual folder with correspondence, or other matter therein, and illustrates the manner in which the identification designation is written or printed on the tab of the individual folder, which tab or projection when the folder is in the index stands at the same height as the guide tabs or projections, thus facilitating reference to the same; Fig. 10 illustrates also the manner in which the numerical designation is written on the matter for filing and finding.

In the embodiment of my invention selected for illustration and description to permit ready and complete understanding of my novel expansible and contractible numerical index, the members designated by the reference character *a* are "main guides", which may be of any suitable material and shape to carry out the purposes of my invention as broadly stated hereinbefore.

In the instance illustrated, the main guides *a* shown in Figs. 1, 2, 3, 7, and 9, take the form of a well-known type of guide member, each having a specially positioned upward projection or tab bearing an index number, these numbers constituting a series arranged in predetermined progression, preferably decimal, the original installation of a series preferably comprising a set of guide members bearing index numbers beginning with a guide having ciphers only, then a guide bearing the number 1, and from there on in jumps of one thousand, i. e., 1, then 1000, and up by thousand units, viz, 2000, 3000, &c., and in the spaces between these guides are inserted the units of matter to be filed, designated by the reference character *h* in the figures now being described.

These units may be of any suitable material and form, and may bear any suitable indicia to permit their identification with the various subject matters which they represent, in order to carry out that purpose of my invention which may be restated at

this juncture as primarily to provide an exclusively numerical index capable of infinite expansion or contraction according to a numerical progression.

Accordingly, the units designated "h" in Figs. 1, 2, 7, 9 will be readily recognized as cards such as are ordinarily used to record data of all kinds, and which have to be indexed to permit easy reference, and such cards bearing the character h in Fig. 2, have been indexed by means of my invention in such a manner that they can be referred to, filed or found either by their geographical or name designation, while the cards h in Fig. 7 have been so indexed that they can be referred to, filed or found either by their subject or name designation as will be more fully explained hereinafter.

Each unit bears an index number which determines its place in my novel numerical index, and in accordance with my invention this number alone suffices for all purposes of identification in reference to, filing or finding the unit, and so the clerk, or any person using the index, need have no special skill in such use, but needs only to know the number of the unit in question, as everyone of ordinary intelligence is capable of locating any given number in a numerical series indexed as I provide for purposes of removing or back-filing a card or other matter.

The assignment to each unit of its index number, and the physical application of that number to the unit in permanent form, is a single act which may be readily accomplished by a chief filing clerk of moderate attainments, but should be done with care, and must be done in accordance with a predetermined system of coding by which the numerical indicia are related to, and determined by, selected verbal characteristics or designations of the original subject matter associated with or represented by each index unit, and such preassignment may be according to any system suitable to carry into effect this important feature of my invention, and the physical application of the selected indicia may be accomplished by any suitable means, manual or mechanical.

As an example of one convenient mode of such application of the selected numerical indicia to units, and illustrating at the same time my preferred system of preassignment, reference may be had to the card h^1 in Fig. 1, which bears the index number 11335—2, and also to the card h^2, which bears the index number 11335—94, and to the card h^3, which bears the index number 11335—616; the number 11335 in each instance constituting the main number, while the number after the dash constitutes the sub-number.

The main index number 11335 is determined in each instance by the first five letters of the name "Bagely"; according to my preferred system of preassignment, according to which certain verbal characteristics of the subject matter to be indexed, consisting of these first five letters of the surname of a correspondent in the instance under discussion, are adopted to serve as the basis for composing an index number of five digits, all the letters of the alphabet are arbitrarily divided in to ten groups, to the individual letters of each of which groups is assigned one of the digits 1 to 0, in the order 1 (AB), 2 (CD), 3 (EFG), 4 (HI), 5 (JKL), 6 (MN), 7 (OPQR), 8 (S), 9 (TUVW), 0 (XYZ).

Thus all of the card units representing Bagelys bear the main index number 11335, and to differentiate these from each other, they are provided respectively with the sub-index numbers shown, which are assigned in the order 1 (AB), 2 (CD), &c., as above, except that a one or two digit sub-number may suffice in the case of an individual, and a three digit sub-number in the case of a firm or corporation as shown.

The number of main guides composing a set is determined by the number of digits comprised in the main number; for example, in Figure 1, five digits form the main number, the balance of the number digits, if any, shown above the letters of the first word or surname being crossed out; hence a set of main guides consists of one hundred guides, the first of which is for all main numbers beginning with a cipher, the second for all main numbers from one to one thousand and from there on the guides are numbered by jumps of one thousand to ninety nine thousand. In Fig. 2, however, only four digits are used to form the main number, and hence a set of main guides consists of ten, numbered from 0000 to nine thousand.

The numeral indicia control absolutely the location of units filed in the index, as will be noted by reference to the unit h^4 in Fig. 1, bearing the index number 11762—119, codified from the name Abondi and Bates, a card for which in the alphabetical type of index would be located ahead of the card for W. H. Bagely, whether said alphabetical index were of the straight alphabetic type, or of the combined alphabetic-numerical type, and this difference in location serves to emphasize the radically novel character of my exclusively numerical index.

A detailed description of the particular method of, and preferred means for, applying to the units the index numbers and sub-numbers, will be given later herein, as it is desired to lay stress at present upon the expansible and contractible features of the system, which can be understood to advan-

tage at this stage by considering the details of this portion of the index containing the Bagely cards, of which a large number are illustrated to indicate the typical demands of large name groups in constructing an index.

First, however, it will be observed that the main-guides bearing index numbers in jumps of one thousand have been supplemented in the lower portion of Fig. 1, by guide members a^1 bearing index numbers beginning with the number 500 and continuing midway of the thousand intervals, as at 1500, 3500, 4500 and 5500, by which the indexing capacity of the main guides may be doubled; also that a further increase in the indexing capacity has been provided for by inserting subsidiary guide members b bearing numbers 100, 200, 300, &c.; and still further by the use of guides c numbered in jumps of ten, as at 10, 20, and 30; such increases being capable of ready extension by addition of guide members in jumps of five, or in digital sequence, 1, 2, 3, &c.

Main guides a^1 need only be added when the volume of the matter filed is so great that there are not enough main guides a in any one filing drawer to make reference easy; for example, if the matter filed should in time occupy more than one hundred drawers, than main guide a^1 would be added, so that each drawer would have some main guides therein showing the thousand digits; it is also the intent of the invention that should the quantity of matter filed justify, main guides bearing the thousands digits could be numbered in jumps of less than five hundred, and even in jumps of only one hundred for a like purpose. In such case the main sub-guides b would be eliminated.

The Bagely group shown in Fig. 1, is so large as to transcend the indexing capacity of all these main and subsidiary guides, however, and while it falls under the subguide 11335 (and will preferably have a special individual guide card 11335, as shown at d, to mark its commencement) the further indexing of the Bagelys requires special provision, which I prefer to accomplish by the use of a secondary group of guide members e having projections bearing secondary subsidiary index numbers to index the subsidiary indicia of the units, and distinguishable from the primary subsidiary index numbers by a differentiating characteristic, such as the dash preceding the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, &c., upon the secondary members e in Fig. 1, so that without any difficulty the capacity for indexing units representing Bagelys may be run up to 900, as shown.

Ordinarily the existence of the distinguishing characteristic, such as the dash, will be sufficient to afford ample visual differentiation, but I prefer to provide a further aid to the eye in distinguishing secondary indicia by placing the projections or tabs bearing the secondary index numbers in a special position on each guide which position occupies an alignment differing from the alignment of the main guide index numbers.

I have devised a novel organization of tab alignments which constitutes a highly important feature of my invention, and this is illustrated clearly on a somewhat enlarged scale in Fig. 9, where the main guide member appears at a with its index number 13000 upon a projection or tab located in the first position from left to right, transversely of the guide; then follows the number for the hundreds column upon a tab b carried by its guide member in the second overlapped position, while the number for the tens column follows upon a tab c in the third overlapped position on the guide, and the number for the units column upon a tab d^2 in the fourth position on the guide, at a point to the left of the medial line of the index, which is preferably left open on the guides bearing index numbers.

By this alignment of tabs the complete index number of any selected member can be observed directly by reading from left to right 13000, 100, 20, 2, i. e., 13122, as shown in Fig. 9; or 13127; or 13155, as the case may be.

A further development of this novel plan of alignment provides for the arrangement of tabs to the right of the medial line, with tabs bearing units in the sixth position (still reading transversely from left to right) tens in the seventh position, and hundreds in the eighth position, the last right-hand position being preferably left free upon these members, as well as the fifth, or middle, position.

These sixth, seventh and eighth tab positions to the right of the middle line I prefer to utilize for the secondary index numbers having distinguishing characteristics—as for example, the dash shown in Fig. 9— for such an alignment constitutes these secondary members an easily recognizable group, and facilitates accuracy in reference thereto, and in finding and filing by the sub-number the individual cards or other members having the same main number.

In accordance with a valuable feature of my invention, the secondary index numbers with their distinguishing characteristics may be applied to the reverse sides of tabs which bear a similar number, without the distinguishing characteristic, on the obverse side; for example the guides having "20" on one side of their tabs may have —20 upon the other side of the tab, in each instance, and the tab will appear in the primary sequence on the left hand side with the number 20 in

its proper relative position, or in the secondary sequence at the right-hand side, with —20 in its proper relative position, according to which side of the guide is presented forward.

The reservation of the extreme left-hand, the middle and the last positions, upon guide members having projections bearing subsidiary index numbers permits the ready combination thereof with the main guides having projections at the left corner bearing the main index numbers, and also the combination with miscellaneous or individual guide, folder or container members, or subject matter units, having medial projections in suitable position for alignment along the medial region of the index, as illustrated at k in Fig. 9, where they may be observed conveniently in the open middle space corresponding with the fifth position on the index number guides; and so at the extreme right hand region of the index use may be made of the space conveniently to present projections bearing indicia signifying the termination of a group of units at the position occupied by the guide member having that projection, the word "End" being suitable for that purpose, as shown at f which designates several such cards indicating group terminations.

I may also provide guide members having projections bearing indicia signifying that each such member occupies the space of a unit which has been removed, and for that purpose I prefer to print the word "Removed" upon a projection occupying the extreme left-hand position, as indicated at g in Fig. 9. Such indicia may be provided to advantage upon the reverse of the projections of the guide members bearing the word "End" upon their obverse sides, thus serving the purposes of economy, as less members need to be kept in stock when they bear both indicia, and require only to be used in reverse position to exhibit the desired indicia.

In Fig. 2, the characters h^{10} and h^{12} represent cards bearing both geographic and name designation; h^{10} illustrates a card of Abbott & Jones of Albany, N. Y. These designations having been codified and typed, or written, on the card, according to this invention, as described elsewhere, give the town number as 1511 (four number digits being used) also the name designation, main and sub-number 1117–576; hence the card would be found as follows: First, the State guide k bearing New York on its tab, then main guide a 1000, then main sub-guide b 500. thus locating the town (Albany); next, the name designation being number 1117–576. the main 1000 guide i is located, then sub-number-100 guide e, between which and e guide-500 the card is filed. h^{12} indicates a card bearing a different town designation (New York, N. Y.) and name designation (Cooper, M. J.), and this card would be found by the name procedure, but by the use of guides bearing different jump numbers on their tabs or projections, thus illustrating the manner in which towns are separated into different groups in the index.

Similarly, in Fig. 7, the reference characters h^{100}, h^{200}, h^{300}, h^{400}, h^{500}, h^{600}, h^{700}, indicate cards bearing both subject and name designations; in this case the subject "Insurance" is used, although the name of any subject or article, etc. could be used equally well, by this invention. The method of referring to, filing and finding is in all respects the same as that described for geographic and name filing with relation to Fig. 2, except that where a State name is used in Fig. 2, on a guide k, in Fig. 7 the subject is shown; likewise, instead of towns giving the right hand numerical designation in Fig. 7, classifications of the subject are used; further only three number digits are used in the main number of the name designation, hence guides i are in jumps of one hundred.

In Figs. 2 and 7, these main guides designated by the reference characters i are similar to the main guides a, a^1, but preferably have tabs or projections in a medial position, bearing numbers in jumps of one thousand (or one hundred as in Fig. 7), used to index the main number of the name designation where both geographic and name designations, or subject and name designations, of the matter filed, are desired.

In Fig. 2, the reference characters j indicate main sub-guides similar to b with medial tabs or projections used to further subdivide the main numbers of the name designation where both geographic and name designations, or subject and name designations, of the matter filed, are desired.

In Figs. 2 and 7, the reference characters k indicate guides having tabs or projections in the center position either printed with the name of States as in Fig. 2 or having written or printed thereon the name of a subject as in Fig. 7. These are used as shown for either geographic and name, or subject and name, filing.

As further illustrations of the capability which my novel numerical indexing system possesses for use with folders, or other containers of correspondence, and similar matter, I have shown in Fig. 3 "Main guide miscellaneous folders" l having tabs or projections in a medial position bearing index numbers in the same sequence as the main guides a, a^1 and having in addition the word "Miscellaneous" printed thereon. These folders are used to carry units of matter whose quantity does not warrant individual folders.

In Fig. 3, l^1 represents "Sub-guide miscellaneous folders" having tabs or projections in the same position as folders l and bearing

the same jump numbers as main sub-guides *b* in connection with the word "Miscellaneous", except that a set consists of only eight folders, the main guide miscellaneous folder *l* acting as the ninth one of the set.

In Fig. 3, *n* refers to the number 900 printed on the folders *l* under the jump number, and its purpose is as follows: When the amount of the matter filed between the guides *a*, a^1, or the matter filed in the folders *l* becomes large, main sub-guides *b* and sub-guide miscellaneous folders l^1 are added to the index, the matter filed in folders *l* is taken therefrom, and filed in folders l^1 in accordance with its numerical designation except that all matter bearing a main number of which the hundred units are between 900 and 1000 is left in the folder *l*, which then serves as the l^1 folder for the main sub-guide *b* numbered 900.

In Figs. 3 and 10, the letter *m* indicates the individual folders having tabs or projections in a medial position and the tabs or projections are blank in order that the numerical and alphabetical designation of the contents can be written or printed thereon as described under Fig. 10 and shown in Fig. 3; these folders are used to carry such matter as is filed in quantities sufficient to warrant the provision of such an individual folder.

The contractible properties of this index may be readily recognized from the foregoing, since any subsidiary guides rendered useless by the removal or transfer of matter indexed thereby may be themselves removed from the index for use elsewhere, without affecting the efficiency of the remaining index members.

In the above description of the expansible and contractible properties of my novel numerical index, as particularly illustrated by the treatment of a group of names creating such a demand as does the Bagely group, I have indicated my preferred mode of predetermination of the numbers in a decimal sequence for application respectively to the units of filable matter, according to the alphabetic designations assigned to the several units by the chief file clerk, and I will now describe the preferred means of effecting the physical application of the indicia to the units, with special reference to Figs. 4 and 5, in which the codifier arrangement appears, and also with reference to Fig. 8 in which the preferred form of codifier apparatus is illustrated, and Fig. 6, in which are shown a few card units upon a sufficiently large scale to exhibit very clearly the numerical indicia associated with the alphabetic designations to which they correspond.

In Fig. 6, the index cards *h* bear respectively the main index number 11127, indicated by the reference character O, and which the codifying or chief file clerk has placed thereon because each of these units is associated with the name "Babcock" as the designatory portion of the matter which these units represent, and in accordance with the selected codifier illustrated in Fig. 5, the relation of numeric to alphabetic indicia is $\frac{1112725}{\text{Babcock}}$; and the proper number of these digits—five in the instance illustrated, that being the number of digits used throughout this particular index—have been thus determined by the codifying act of the clerk, once for all, to stand for the designation Babcock, so that the index number 11127 thereafter furnishes a complete and sufficient means of locating all filable matter relating to Babcock entirely independent of whether or not any person other than the chief file-clerk, referring to the index, finding or back-filing, knows that 11127 means Babcock, or has seen the codifier illustrated in Fig. 5.

Having thus emphasized once more the exclusively numerical character of my novel indexing system, and the invariable reliance upon the index number in locating the index members associated with the units of matter to which that number has once been assigned, I wish to make equally clear the necessity for strict adherence to the predetermined relation of the numerical indicia to their determinative designations, and while it is quite within the scope of my invention to have the codifying clerk simply write the number 11127 in pen and ink upon the letter or other matter which may have furnished the designation Babcock, and while a similar pen and ink entry of the number 11127 may be deemed entirely sufficient without any alphabetical accompaniment, at all times, to represent the designation for which it stands, nevertheless I have devised a convenient means for enabling the codifying clerk, or any other person using the indexing system, to perform the codifying act mechanically, without a possibility of error in applying the proper index number to the matter, at the time of, and as a part of, the act of applying to said matter the designation selected—in this instance $\frac{11127}{\text{Babcock}}$.

Any suitable means may be adopted for this purpose, and as one convenient form of device I have illustrated in Fig. 4 the characters constituting a font of type in which each letter of the alphabet has arranged above it the number which corresponds thereto according to the selected form of codifier, shown in Fig. 5; the expression "font" not being used in this connection with any limited technical significance, as I prefer to embody the characters,

so arranged, in such a convenient imprinting apparatus as a typewriter or addressing machine.

Any suitable typewriter mechanism may be employed, and I have shown in Fig. 8 one convenient form of apparatus which embodies in general a well-known mechanism comprising oscillating shuttle S provided with a series of type characters arranged according to Fig. 4, in three rows, the middle row containing the alphabetic characters in the order known as that of the "standard" keyboard preferably, to facilitate its operation readily by the typist of usual skill, and the lower row comprising any suitable arrangement of punctuation marks, &c., while the upper row contains exclusively numerical characters corresponding to the codifier order of Fig. 5, and a dash.

In accordance with a valuable feature of my invention, I have thus provided means whereby an operator depressing the several alphabetic keys, (which may be of usual construction, connected with the shuttle S by usual mechanism, and therefore not shown) the respectively corresponding numerical characters will be brought into the position for imprint, so that without the need for any mental selection of the appropriate number, the operator performs the codifying act coincidentally with the ordinary act of depressing the alphabetic key, and the imprint may follow. Any suitable form of platen or impact device may be provided, and as the preferred form of such device I have shown a well known form of swinging hammer device T, bearing an adjustable hammer head t secured rotatably in place by a nut t^1 so that it may be turned manually to present for impact any selected hammer face, two such faces being shown in Fig. 8, one bearing the reference character t^2, and the other t^3.

Of these faces, the former is constructed, in accordance with a valuable feature of my invention, to provide for imprinting contact with one of the numeric characters of the series s, and at the same time with its related alphabetic character, these being in vertical alignment on the shuttle S as already described, so that in printing the index number 11335 to codify "Bagely," for example, when the operator depresses the "B" key, the shuttle S will operate to present the combination $\frac{1}{B}$ and the hammer T will swing hammer face t^2 over for impact simultaneously with the type-faces $\frac{1}{B}$ and these characters will accordingly appear in that relative position upon each article operated upon by the typewriter, whether such article consist of a letter from or to a Bagely, (and therefore to be provided by the codifier with the numeral indicia 11335), or if the article be an index card (as h^1) or a folder.

In each case the operation of the typewriter to imprint the name "Bagely," and conversely its operation to imprint the number 11335, will result infallibly in the simultaneous production of the codified superimposed indicia $\frac{113350}{Bagely}$; and implicit reliance can be yielded to the accuracy of this relation, owing to the operation by mechanism of imprinting characters acting as a unitary structure, a provision which I claim as broadly novel.

I prefer to provide the hammer head with a face t^3 which can be turned into play to effect imprinting impact with the characters of the alphabetic series independently of the numeric series on the shuttle, (or vice versa, by turning the hammer head upside down), and thus the typewriter may be used to produce a typewritten exclusively numerical record when the operator depresses keys bearing exclusively alphabetic designations.

The form of shuttle S illustrated in Fig. 9 can be employed upon the well-known stock and news tickers for transmission electrically of the co-ordinated numerical and alphabetical records, or either of them, and an original record in tape form comprising both numerical and alphabetical equivalents can be cut apart between the two lines of characters, and either may be sent by mail to serve as confirmation of a message transmitted electrically in synchronism with the production of the combined original, thus affording a degree of accuracy hertofore impossible in the electrical transmission of secret ciphers.

Another shuttle member s^1 of the kind conventionally used on this sort of oscillating typewheel writing machine, or of any suitable form, may conveniently be provided with an additional series of typewritten characters of any well-known character, so that by the usual simple adjustment of the shuttle-members, s, s^1 on their anvil s^2 and post s^3 (the retaining nut s^4 being raised to effect the adjustment, and replaced thereafter) the series s^1 may be brought into operative position and the series s shifted out of operative position, until required, the typewriter serving thus for ordinary correspondence or other uses without the need for any further mechanical alteration than the adjustment of the proper hammer face t^3 for co-operation with the type of series s^1.

It is intended that throughout the whole index each class of guides and folders shall have an appropriate color to permit the further differentiation thereof; for example in the instances illustrated in the drawings

the main guides a and a^1 may be considered as of a gray color and the main sub-guides b of a salmon color, while the secondary main sub-guides c are blue and the special group guides d, d^1 may be white; so also a buff color may be used for the guides having the words "End" and "Removed", while the color red may be used for the miscellaneous folder and the color buff for individual folders in the correspondence file. Other colors may be used as found desirable.

The operation of my novel invention is as follows:

The chief file clerk first places the codified numerical filing designation on the matter to be filed, either by pen or pencil or by my preferred means consisting of a typewriter having the heretofore described codifying apparatus attached.

To place the numeric designation on the matter by pen or pencil the operations are as follows: The chief file clerk first ascertains the ordinary designation of the matter and then by referring to the codifier, Fig. 5 places the pre-assigned numbers above the letters composing the ordinary designation, separating by a dash the surname numbers from the Christian name or initial numbers and the numbers representing the first word of a firm, partnership, or subject designation from the second word numbers thereof, in the same manner, so that a combination from left to right of the number digits constitutes the main and sub-numbers (see o and p, Fig. 6), the number of digits composing the filing numbers being at the option of the chief file clerk, as has been fully explained. When a codifying typewriter is used the chief file clerk first places the card, correspondence or filable matter in the printing position on the typewriter and types the ordinary designation by the usual operation, thus codifying the ordinary designation and placing the numeric filing designation on the matter simultaneously and mechanically accurate, the only remaining operation being to cross out any surplus number digits.

In the accompanying drawings the following rules have been observed, viz: The surname is written first in the case of individual names, the initials or Christian names last; such titles as Dr. Mrs. Mr. Miss, Prof. Hon. etc., being written after the Christian names or initials and being ignored in the composition of the filing number, and likewise the name of a firm or corporation is written as the subject matter gives it, except that conjunctions and prepositions are ignored or placed at the end of the name and not used to form the filing number; abbreviation of any portion of the name is not used if the abbreviation disturbs the regular sequence of the alphabetic construction of the word in such a manner as to interfere with the codifying the necessary number of numeric digits, for example: "Mfg" or "Co." are not used to abbreviate the words "Manufacturing" and "Company" respectively, but "Manf" and "Com" can be used as abbreviations since, by codifying, the necessary three number digits are given in proper sequence, see h^2, Fig. 1.

When subject or geographic and name filing combined is used, the subject or geographic designation should be shown to the left, or precede, and be separated from the name designation. (See Figs. 2 and 7.)

The observance of these rules is not essential to the proper operation of my numeric index by the intent of the invention, but is preferred.

An index for card filing is started by first placing in the files a set of main guides a, or a and a^1. The cards h are then filed therein and as soon as the amount of cards back of any main guide a or a^1 becomes great, (more than ten or twelve pieces), part, or all, of a set of "Main sub-guides" b are added. As the amount of cards filed still increases, "Secondary main sub-guides" c are added. It is very generally true that upon examination the increase of cards back of any main guides will disclose that the increase is due to a group of cards which bear the same main number, and in such case a special group guide d with the main number on its tab is added, or a special group guide such as is shown at d^2 in Fig. 9, having on its tab the last digit of the main number. An "End" guide f is also added, as shown in Fig. 1. Then, as any group increases, "Sub-number guides" e are added, or special sub-number group guides d^1, and the sub-numbers from one hundred to one thousand are expanded by adding secondary sub-number guides e^1, Figure 1. The sub-number guides e, e^1, d^1 are obtained by reversing main number guides b, c and d^2 the tabs of which bear on the reverse side the proper numerals preceded by a dash (Fig. 9).

If geographic or subject and name filing for cards is required, the files are fitted with main guides a, a^1, also State or blank subject guides k, (see Figures 2 and 7), the cards being numbered and designated as elsewhere described; they are then filed in their proper place among main guides a, a^1 by the numerical designation derived from their town or subject designation. As an increase in the amount of cards between guides a, a^1 develops, main sub-guides b are added, and if the increase be due to groups of cards bearing the same town or subject number, then special group guides d, d^1 bearing the designation of the town or subject are added,

and as these groups increase main guides *i*, *j*, and sub-number guides *e*, e^1 are added, these latter to index the name designation of the cards.

For filing matter other than cards, for example correspondence and copies thereof, the same procedure is followed, except that where it is desired to use folders either "Individual" or "Miscellaneous" as shown in Figs. 3 and 10 the chief file clerk writes or prints the number and designation on the correspondence (by preference in the upper or lower right hand corner) and delivers it to a file clerk, who first ascertains whether or not the index contains any individual folder bearing the same number and designation, and if so files the correspondence therein, but if no individual folder is already in the index the correspondence is filed in the miscellaneous folder bearing the proper jump number. As soon as the file clerk observes an accumulation in the miscellaneous folder of correspondence bearing the same main number designation, (say three or five pieces) an individual folder is assigned to carry the same, the designation and number being placed on the tab as shown in Fig. 10, and the correspondence is then removed from the miscellaneous folder, placed therein and the folder filed in its proper place in the index.

While any of the methods commonly used in transferring matters filed can be used in this index, it is particularly adapted to periodic transferring in the following manner: at the end of any transfer period the folders, both individual and miscellaneous containing the correspondence, are removed to the transfer files, thus leaving the guides *a*, a^1, *b*, *c*, &c., composing the index in the current files; then to proceed with the new period it is only necessary to add to the index a new supply of miscellaneous folders, the removed ones remaining in the transfer file in order that the main miscellaneous folders *l* can act as an index thereto.

Reference to matter filed in this index is simple and its accuracy is insured by use of the following preferred methods, viz, if reference is to be made for the purpose of making entries on, or taking entries from, the matter filed, the chief file clerk places on the list or lists of units from which the entries are to be taken, or on which they are to be made, the main and sub-numbers of the data to be referred to, either by referring to a codifier such as shown in Fig. 5, and writing the numbers on the lists by pen or pencil, or by using a typewriter fitted as described elsewhere; the list is then given to the file clerk, who finds and back-files the matter by the main and sub-numbers, not having to interpret or be guided by any alphabetic designation.

If the reference is by a requisition form, the chief file clerk places the main and sub-numbers on the requisition as described above, before it is given to the file clerk.

Claims covering the codifier apparatus described herein form part of my application, Serial Number 174,415, divided from the present application, and accordingly the claims thereupon are not included herein.

Having illustrated and described my invention thus fully, and suitable means by which the same may be carried into effect, I wish it to be understood that I do not limit myself to the specific materials and constructional forms selected for illustration and description, nor in general do I limit myself otherwise than as set forth in the claims read in connection with this specification.

What I claim as new and desire to secure by Letters Patent is:—

1. An expansible and contractible guide system for interpolation with a multiplicity of units of subject-matter bearing numerical indicia, coded from the designations of said subject-matter, said guide system comprising a series of main guide members having projections bearing index numbers, and arranged in numerical relation, and subsidiary numerical guide members for interpolation between said main guide members in accordance with said numerical relation, said main and subsidiary members serving in combination as guides to subject matter identified with individual numbers on said units.

2. An expansible and contractible guide-system for interpolation with a multiplicity of units of subject-matter bearing numerical indicia coded from the designations of said subject-matter, said guide-system comprising guide-members having projections in offset rows and bearing index numbers and said projections being so arranged that the projections on all members representing numbers which are multiples of a standard number, such as one thousand, will be presented in one row lengthwise of said index when said members are in place, and projections bearing hundreds in another row, and so forth, to permit direct reading of the complete number which any selected member represents, by observation of the one or more component digits of that number carried by said selected member, in association with the number components on projections in preceding rows.

3. An expansible and contractible numerical index for filing systems having a multiplicity of units of subject-matter bearing numerical indicia coded from the designations of said subject-matter, said index comprising a series of guide members having projections bearing index numbers, said projections occupying different positions according to a decimal progression predeter-

mined by, and corresponding to, the decimal sequence of said numerical indicia upon the units interposed therebetween.

4. An expansible and contractible guide-system for interpolation with a multiplicity of units of subject-matter bearing numerical indicia coded from the designations of said subject-matter, said guide-system comprising guide-members constituting main and secondary series, said guide-members having projections bearing index numbers and said projections occupying positions on their respective members corresponding to the decimal sequence of the digits comprising the index number upon the one or more units of subject matter indexed by any given member and thereby also positioned so that said decimal indicia will occupy overlapped positions transversely from left to right in the index beginning with multiples of one thousand in the first position, and from there on by hundreds, tens and single digits respectively to a point at the left of the middle.

5. An expansible and contractible guide-system for interpolation with a multiplicity of units of subject-matter bearing numerical indicia coded from the designations of said subject-matter, said guide-system comprising a series of primary guide-members, and a series of secondary guide-members, said series respectively having projections bearing index numbers, and said projections occupying positions on their respective members corresponding to the decimal sequence of the digits composing the primary number or secondary number upon the one or more units of subject matter indexed by any given member, and thereby also positioned so that said decimal indicia will occupy overlapping positions transversely to the right of the middle of the index, in the instance of secondary numbers, and to the left of the middle of the index in the instance of primary numbers, beginning with single digits, then tens, then hundreds.

6. An expansible and contractible guide-system for interpolation with a multiplicity of units of subject-matter bearing numerical indicia coded from the designations of said subject-matter, said guide-system comprising a series of guide-members having projections bearing index numbers, and said projections occupying positions transversely from left to right, with projections bearing thousands in the first position, hundreds in the second overlapped position, tens in the third overlapped position and digits in the fourth overlapped position, while guide members having projections in the sixth position bear single digit indicia having a differentiating characteristic, and those having projections in the seventh and eighth positions respectively bear tens and hundreds indicia having differentiating characteristics, the fifth and last positions being left open upon the aforesaid guide members, and said index comprising also guide members having projections bearing the word "End" to appear in said last position, and guide members having medial projections bearing miscellaneous indicia to appear in said fifth position.

7. An expansible numerical index having a plurality of groups of guide-members with exclusively numerical indicia, coded from the subject-matter filed, and capable of independent expansion within each group by the addition of guide-members bearing similarly coded numerical indicia, said groups being differentiated by the alignment of said indicia in different positions upon the members composing said respective groups.

8. In a numerical index, a series of guide-members having each a single projection bearing an index number upon one side of the projection, and having upon the reverse side of each projection said index number in combination with a differentiating sign, and a multiplicity of units associated with various subject-matters interposed between said guide members and constituting a plurality of groups distinguishable by said differentiating signs when the guide-members bearing said differentiating signs are inserted in said index in reversed position to display said index-numbers so differentiated.

9. An expansible and contractible numerical index comprising a series of main guide members having projections bearing index-numbers arranged in relation, and subsidiary guide members for interpolation between said main guide members in accordance with said numerical relation, certain of said subsidiary guide members bearing upon the reverse side of their respective projections the same index-numbers as their obverse index-numbers but distinguished therefrom respectively by a differentiating characteristic, to constitute said members so differentiated a readily identifiable group when reversed in said index.

10. A reversible guide-member for filing systems, said member having a projection bearing upon one side indicia signifying that it marks the end of a series of matter contained in said system, the other side of said projection bearing indicia signifying that said member occupies the place of a unit of matter that has been removed therefrom.

11. A numeric filing system comprising units bearing numerical indicia and guide members interposed at the ends of groups of units of a given number or numbers, said guide members each having a projection bearing indicia signifying said group terminations.

12. A numeric filing system comprising

units bearing numerical indicia and guide members interposed at the ends of groups of units of a given number or numbers, said guide members each having a projection bearing indicia signifying said group terminations, said projection being positioned in such manner as to occupy the last position transversely from left to right.

13. An expansible and contractible numeric filing system comprising a multiplicity of units associated with various subject-matters or designations, and provided with verbal indicia permitting identification of the several subject-matters or designations associated with said units respectively, said units having also numerical indicia to permit ready location of said units in numerical order, said numerical indicia being coded from and related to said verbal indicia in accordance with a regular, arbitrarily determined preassignment, and said system being expansible to an unlimited extent by the interpolation of additional units and orders of units of the subject-matter.

14. An expansible and contractible numeric filing system comprising a multiplicity of units associated with various subject-matters or designations, and provided with verbal indicia permitting identification of the several subject-matters or designations associated with said units respectively, said units having also numerical indicia to permit ready location of said units in numerical order, said numerical indicia being coded from and related to said verbal indicia in accordance with a regular, arbitrarily determined preassignment, and being displayed in juxtaposition therewith upon said units, for visual co-observation, and said system being expansible to an unlimited extent by the interpolation of additional units and orders of units of the subject-matter.

15. An expansible and contractible numeric filing system comprising a multiplicity of units associated with various subject matters or designations, and bearing alphabetical indicia thereof, said units having also numerical indicia coded from and in visual juxtaposition with said alphabetical indicia, and said system being expansible to an unlimited extent by the interpolation of additional units and orders of units of the subject-matter.

16. An expansible and contractible numeric filing system comprising a multiplicity of units associated with various subject matters or designations, and bearing numerical indicia coded from alphabetical characteristics or designations of said subject matters, said units bearing also subsidiary numerical indicia coded from selected secondary alphabetical characteristics or designations of said subject matters.

Signed at New York, in the county of New York, and State of New York, this 23rd day of January, 1917.

CHESTER I. WAGNER.

Witnesses:
ALEXANDER C. PROUDFIT,
WILLIAM S. SEAMAN.