

Aug. 11, 1936.

R. MITCHELL

2,050,498

CROSS WORD PUZZLE

Filed May 18, 1933

2 Sheets-Sheet 1

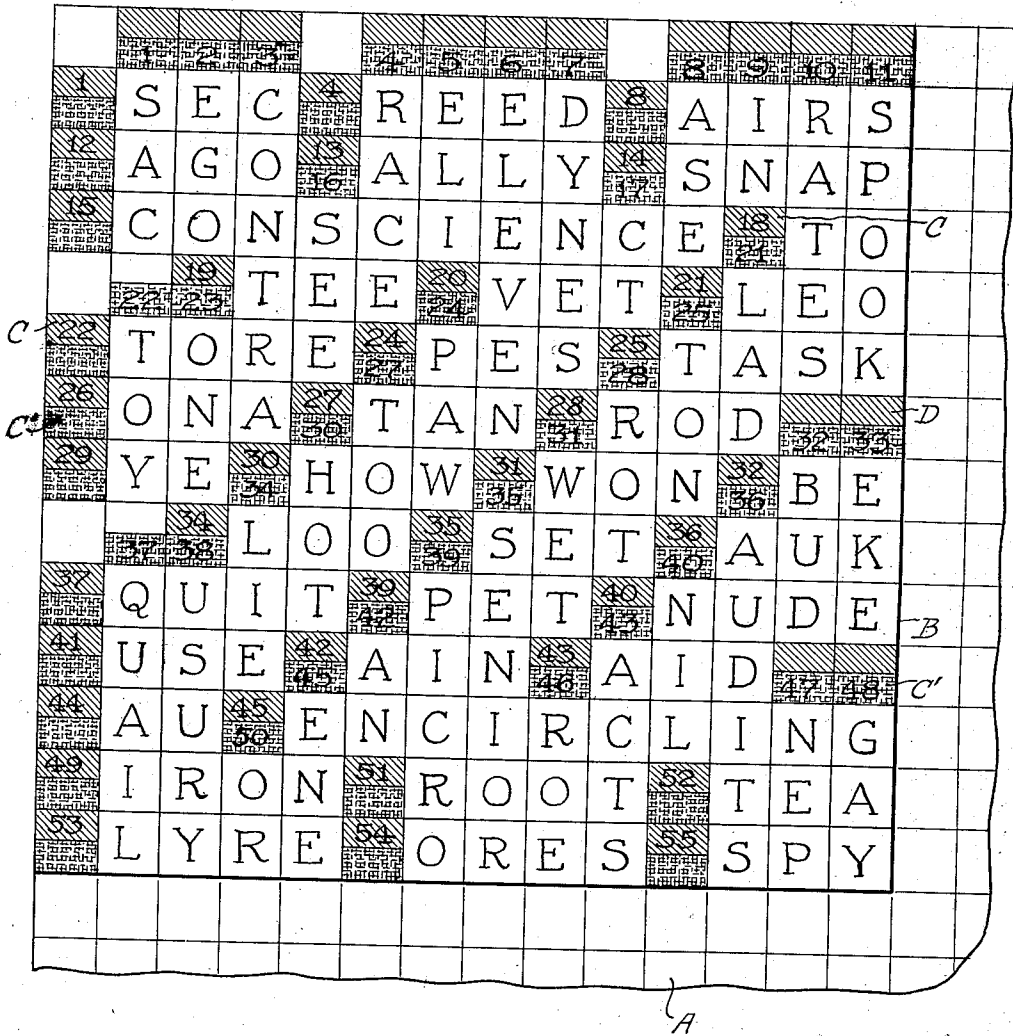


Fig. 1.

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2 Sheets-Sheet 2

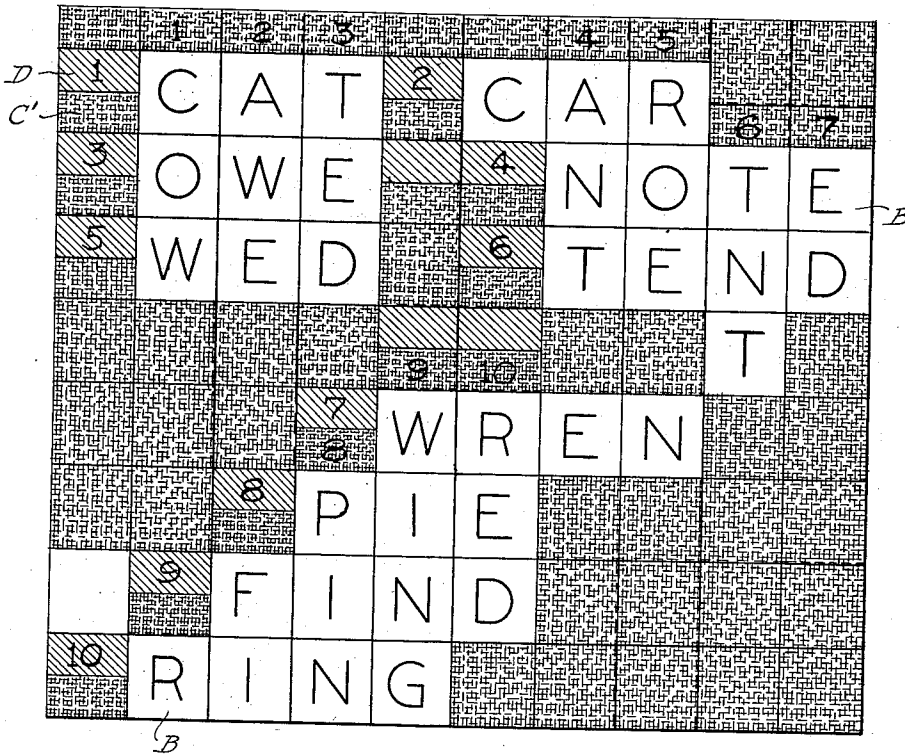


Fig. 2.

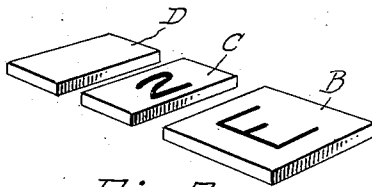


Fig. 3.

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CROSS-WORD PUZZLE

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5 Claims. (Cl. 35—35)

This invention relates to improvements in educational apparatus, and pertains more particularly to apparatus adapted for service in the solving of "cross-word" puzzles.

5 The educational value of the well-known cross-word puzzle is well understood, being beneficial educationally both to those who develop the puzzle as well as to those who solve it. To the fashioner as well as the solver of the puzzle, the spelling and meaning of words is of importance, and since both spelling and meaning of words is essential in this type of puzzle, there is thus set up an educational benefit to the devotee of this type of entertainment. The greater portion of cross-word "fandom" is found amongst the solvers, but it is obvious that the developer of the puzzle to be solved is an important member of the devotee family.

10 The puzzle itself is generally found as a printed diagram, properly keyed by numbers placed in the key squares, so that the solver can, by referring to the definition table, gradually develop his puzzle by placing the proper letters in the row or line headed by the key number corresponding to the key number of the table. With such diagram and a pencil the devotee can gradually "fill up" the diagram.

15 A variation of this puzzle has developed during the later years, known generally as the "diagramless" puzzle. This variation differs from the general form in that the diagram itself is omitted, the definition table alone being presented with the information as to the number of squares which should be contained in the diagram vertically and horizontally. Hence, the pattern of the diagram is one of the unknown factors to be solved, the result being that the puzzle becomes more difficult. In the general or diagram form the pattern itself often presents a clue to the word meeting the definition through the number of squares included in the row which is to receive the word; in the diagramless type this clue is necessarily absent. A ruled sheet of paper will permit the devotee to solve this puzzle similar to the general form, but the necessity for positioning the key number positions renders the puzzle more difficult.

20 While it would be possible to solve a puzzle of these types by utilizing a board having squares as a substitute for the diagram itself, and having

alphabetical markers to fill in the spaces, such a combination would be of little service in the absence of the diagram, since the key number positions would not be found on the board, and this would require the presence of the diagram as a check to position the markers. Under such conditions the simpler way of using the diagram and pencil is preferable to the solver, since it avoids the necessity for constant reference to and checking with the diagram.

25 However, the use of a board of this type, together with such markers is made beneficial if the key number positioning can be indicated on the board; the ability to use the board repeatedly with different puzzles, the ability to readily substitute markers, etc., makes such an apparatus of value. This is especially true with respect to the fashioner of puzzles of both forms, and to the solver of the diagramless puzzles. The markers or indicators being shiftable and interchangeable, they can be shifted to different points, etc., making it possible to gradually develop the solution.

30 The ability to produce this result, however, depends upon the ability to present key-number indications as a part of the apparatus. Obviously, the placing of pencilled notations on the squares of the board, while serviceable, would be impracticable where the apparatus is designed for continued service—it would be necessary to erase the applied numerals when the succeeding puzzle is to be solved. Hence, the ability to utilize apparatus for this purpose efficiently depends upon the ability to present temporary key number indications as a part of the developed diagram being solved.

35 The present invention is designed to meet this condition by adding to the above apparatus—the board divided into squares, and the alphabetical indicators—key numeral indicators which can be utilized with the alphabetical indicators in developing the completed solution upon the board. The "key" markers are designed to indicate the key-numbering as well as direction of extension of the row controlled by the numbering; also blank indicators to be applied to idle squares are included. Hence, it is possible to use the apparatus in the developing of puzzles of this nature, as well as in the solving of them, whether they be of the general type or diagramless; in fact, the apparatus will enable the user to discard the 50

diagram of the general form and in this way make each puzzle diagramless for his own solving, the distinction between the two forms being simply the omission of the diagram in the diagramless form.

In addition, the invention contemplates not only the use of the usual method of utilizing the key numbering, but also a different form of such numbering by which the clues presented by the general method is more completely concealed.

To these and other ends, therefore, the nature of which will be more fully understood as the invention is hereinafter disclosed, said invention consists in the improved construction and combinations of parts as more particularly described hereinafter, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views,—

Figure 1 is a plan view of a board on which a cross-word puzzle of the general key-numbering type is shown as completed by the use of various marker or indicator elements comprised in the present invention;

Fig. 2 is a similar view of the board presenting a completed puzzle in which the key-numbering is modified and applied under the teachings of the present disclosure;

Fig. 3 is a composite view showing, in perspective, different markers of the apparatus.

The term "marker" or "indicator" as used herein, refers to a block or other form of element which is of suitable configuration and which can be readily placed on a square of the board used. The indicators may be formed to complete the dimensions of the squares when assembled, or, as with checkers, etc., they may occupy but a portion of the square dimensions. I prefer the full size form, since the completed puzzle will then cover the portion of the board utilized, but this latter is not essential, as is obvious.

The board, indicated at A, is divided into squares, and is preferably of a size such as to provide a sufficient number of squares to enable the solution of large and complicated problems; for instance, it may have as many as twenty-five squares horizontally and vertically, it being obvious that a smaller puzzle can be developed on a section of the board.

The alphabetical markers, indicated at B, are blocks or other forms of element each of which contains a letter of the alphabet. Since the marker B represents a character of an active square of the board, it may equal the dimension of the square, if desired, or may be of smaller dimension than the square. The marker may be of card-board or other material, and preferably has a distinctive color, although the color of the alphabetical marker is of less importance since the marker is distinguished by the alphabetical character thereon. A number of markers for each letter of the alphabet are comprised within the apparatus, the specific number being as desired; for instance, the relationship of the letters of a font of type may be utilized as a guide, the purpose being to supply a sufficient number to permit the solution of different puzzles. For instance, the letter "A" may have 35 markers; the letter "B" 12 markers; the letter "C" 12 markers; the letter "E" 35 markers, etc.

The key-number markers, indicated at C, are preferably half the dimensions of the markers B, assuming the latter occupy the dimensions of the

squares; if the markers B are smaller, the markers C may be correspondingly smaller. Each marker C carries a numeral, the apparatus including a series of numerals 1, 2, 3, etc., up to a number such as would be included within the definition table of the puzzle; excepting to provide for loss, the series may comprise a single marker for each number.

However, the markers C are in two series, generally similar excepting as to some characteristic which will serve to distinguish the two series. For instance, they may distinguish in color of the markers, or by difference in numeral appearance, etc. The purpose of the distinction in series is to enable distinction as between horizontal and vertical directions of the squares of the boards. For example, as indicated in the drawings, the markers C for service as key markers for horizontal words have the marker colored green, while the key markers for the vertical words are colored yellow. The color of the marker carrying the numeral will thus indicate whether the definition is found in the vertical or horizontal sections of the definition table.

These markers C are placed in squares which precede the first letter of the word which meets the definition of the number. For instance, in the illustrations, the markers colored green will be located in the square to the left of the first letter of the horizontal word, while the yellow markers will be located in the square above the first letter of the vertical word. In Fig. 1, for instance, C indicates a green marker and C' a yellow marker.

The smaller dimensions of the markers C is designed to meet a particular condition presented by cross-word puzzles. This can be noted by reference to Fig. 1. In a printed diagram of the particular cross-word shown, the numbers would be printed in the squares of the first letters. For instance, 13 would be found in the square of the first letter of the word "ally", while the number 16 would be found in the square with the letter s of the word "conscience"; these two words are on successive horizontal lines, with a space present before "ally" and therefore above said letter s. In carrying out the present invention, this particular space is utilized to receive the markers for these two key numbers, the green marker 13 occupying the upper half of the space, and indicating that the first letter of its word begins in the square to the right, while the yellow marker with numeral 16 occupying the lower half of the space indicates that the letter s of the space beneath it is the first letter of the word defined by this number definition in the vertical column—the word "see". Hence, where a space precedes the beginning of a word extending horizontally and another word extending vertically, that space will receive the pair of markers having distinguishing characteristics, as, for instance, the color of the marker, as explained. Obviously, any other desired distinguishing characteristic can be utilized as between the series, as long as the pair of markers thus associated will clearly indicate the particular service it is to perform.

In the development of the diagram the advance space precedes but a single word. For instance, in Fig. 1, the vertical column at the left carries the beginning of horizontal words, and the key-numbers therefore would be in the column which precedes it; since the words of this column which extend vertically have their key numbers in spaces above the words, the column to the left carries only the key numbers for horizontal words—the markers C would thus be used in this

column. Similarly, the key numbers for the words extending vertically and which begin with the upper horizontal row, would have the markers C—colored yellow—above the columns. Since the markers occupy but half the space, the apparatus preferably additionally includes markers D, similar to markers C, but left blank, these being applied in the spaces occupied by the single markers, to complete the square dimensions. Obviously, the markers D may be omitted, if desired, but since the preferred arrangement is to have the completed puzzle cover the used portion of the board, such result can be obtained by the use of such marker D. These may be of a distinguishing color, if desired, although, for convenience, they may have the color of one of the other markers—the drawings indicate a yellow color.

For similar reasons, the apparatus may also include markers E which are similar in dimension to the markers B, but are left blank. These would be employed to occupy spaces otherwise unoccupied—several of these are shown in the column at the left in Fig. 1, as well as the column at the top. These may be colored similar to the markers D.

The definition table for the puzzle shown in Figure 1 is as follows:

Horizontal	Vertical
1—Dry	1—Pouch
4—Tall coarse grass stem	2—Self
8—Melodies	3—Against; prefix
12—Past	4—Speed contest
13—Friendly associate	5—Yale
14—Break suddenly	6—Football team
15—Moral sense of right	7—Units of force
18—As far as	8—Isben character
19—Golf term	9—At home
20—Old soldier; colloq.	10—Fixed charges
21—Constellation	11—Ghost
22—Lacerated	16—Understand
24—Footlike part	17—Copper coin; abbr.
25—Duty	21—Boy
26—South American Indian	22—Playing
27—Light brown	23—United
28—Staff	24—Animal's foot
29—Pronoun	25—Unit of weight
30—In what way	27—Also
31—Was victorious	28—Decompose
32—Exist	30—Very warm
34—Old card game	31—Moisten
35—Obstinate	32—Undeveloped flower
36—Northern bird	33—Piece out
37—Cease	34—Untruth
39—Caress	35—Older
40—Unclothed	36—Examines accounts
41—Employ	37—Game bird
42—Own; Scotch	38—Exorbitant interest
43—Assistance	39—Bitter; comb. form
44—Symbol for gold	40—Nothing
45—Surrounding	42—Article
49—Metal	43—Deeds
51—Part of a plant	45—Compass point
52—Beverage	46—Fish eggs
53—Musical instrument	47—Cluster of fibers in wool staple
54—Native metals	48—Merry
55—Catch sight of	50—Alternative

This particular puzzle is taken from a source which includes the diagram, so that the user of the apparatus can, if desired, place the proper key-number markers in their indicated positions and then proceed with the solving of the puzzle.

However, the puzzle without the diagram, can be readily solved as a diagramless puzzle. To illustrate briefly, with a knowledge that the puzzle is a 13×13 square, and with the vertical table indicating 1 to 11 with no break in the series, it can be understood that these occupy spaces in the top horizontal row; and since three horizontal words are included in this series, thus providing two breaks, it is apparent that the first word begins in the first column at the left, is three letters long, followed by a space, with the

next word of four letters, and the final word of four letters with a space therebetween. This then locates the top key markers, as well as the three horizontal markers for the first horizontal row. Since the succeeding vertical key number is 16—not present in the horizontal table—it is evident that this number indicates the letter below the first space at the left; since three words are found in the horizontal table ahead of 16 and with the said table also including a 15, it is evident that the second horizontal row is symmetrical to the upper row, and that 15 begins the third horizontal row, with 16 and 17 presenting letters of this word; since 17 must be the letter beneath the space to the right in the first horizontal row, it is clear that the word which is defined by 15 has a length to reach to at least the position of 17. As vertical 9 indicates (by its definition) a two-letter word, it is clear that this word reaches one space to the right of 17, thus placing 18 as a two-letter word. As each of these key-number positions is determined, the proper markers are placed in position. By then solving some of the vertical words, the position of other key-numbers can be readily found and the pattern developed as the solution proceeds. Since patterns are generally somewhat symmetrical, any difficulties can be overcome, for instance, by testing the three bottom horizontal rows with the spacing, etc., reversed from the three top rows; if the pattern does not fit, the markers can be removed and other attempts made.

Generally, diagramless cross-word puzzles are difficult in solution, the pattern intricate, and oftentimes the definitions obscure. Under these conditions the present apparatus is of the greatest value, since it readily permits of changes being made, various trials utilized, etc., until a rather definite knowledge of the pattern is obtained.

And while the apparatus is thus beneficial to the solver, it is of maximum service to the constructor of the puzzle. Generally, he has formed a general idea of his pattern, and can place his key-numbers in the proposed positions. In his search for words to complete the pattern the ability to utilize the positionable markers B is of the greatest benefit. If necessary, he can readily vary the pattern, since the various markers enable him to produce any desired pattern he may wish.

In the above description, the use of the apparatus has been based on the general method of applying the key numerals and their definitions. This method sets up the characteristics of clues, as indicated, for instance, in the brief explanation of the development of Fig. 1 as a diagramless puzzle. However, the apparatus may be employed in the constructing and solving of puzzles in which the key-numbering is by a different method which will now be described:

Instead of employing the key-numbers on the basis of a single series throughout the diagram, as in the general form illustrated in Fig. 1, the method now being described contemplates the employment of two distinct series, one for the horizontal rows and one for the vertical rows. Each series will be complete in itself, so that, in the solution, practically the only clue will be found with respect to the 1 of each series; 2 vertical would obviously not be a clue to 2 horizontal. Because of this condition, it is possible to construct cross-word puzzles, especially of the

diagramless type, which are difficult of solution and at the same time employing small words.

A simple illustration of this method of key-numbering is illustrated in Fig. 2, the definition table of which is as follows:

	Horizontal	Vertical
10	1—Household pet 2—Vehicle 3—Indebtedness 4—Written promise to pay 5—Married 6—Look after 7—Small bird 8—Dessert	1—Domestic animal 2—Reverential fear 3—Man's name (abbreviation) 4—Small insect 5—Fislr eggs 6—High explosive 7—Boy's name (abbreviation) 8—To fasten 9—Part of bird 10—Color
15	9—To locate 10—To peel	

If the diagram or pattern be known, the solution is simple, but when considered on the basis of a diagramless puzzle, the solution is difficult because of the particular pattern used and the absence of clues.

The advantages of the present apparatus in the solution of this puzzle can be readily understood. The upper left corner can be tried by the vertical, and the result inspected to determine as to how the second and third rows present answers to horizontal definitions; this will show 3 and 5, thus indicating that 2 horizontal is on the top row, but the answer is not clear. By trial the fact that the first letter of 2 horizontal is otherwise unkeyed, would be developed, and by continued trial, the pattern would be finally developed. In such development, the ability to readily shift markers from position to position enables a more rapid solution.

One of the advantages of the apparatus lies in the ability of more than one person working on the solution at the same time, thus making the apparatus not only educational through the word associations developed in solving puzzles of this nature, but also affording amusement and entertainment for children and adults.

As will be understood, the apparatus is made successful through the ability to clearly and definitely position the key-numerals on the board without placing them as a part of the square with an alphabetical indicator as used in the usual diagram. The latter plan would be impracticable for solution when dispensing with an associated diagram because of the difficulty of applying the numeral to the occupied square. By utilizing unoccupied squares for the key-numbers, and arranging them to be readily understandable as to meaning it is possible to construct as well as solve cross-word puzzles with or without the presence of the printed diagram, doing this by apparatus which is of a simple type, and which can be used indefinitely and with a constantly maintained interest.

While I have herein shown and described a preferred form of my invention and indicated several ways in which it may be employed, it will be readily understood that changes or modifications therein may be found desirable or essential in meeting the exigencies of service or the desires of individuals, and I therefore desire to be understood as reserving the right to make any and all such changes or modifications therein as may be found desirable or essential insofar as the same may fall within the spirit and scope of the invention as described in the accompanying claims.

Having thus described said invention, what is claimed as new is:

1. In the development and solving of cross-

word puzzles, wherein defined words are located as individual words in columnar arrangement vertically and horizontally relatively to the squares of a diagram of juxtaposed squares, wherein individual words of a column are spaced by one or more squares, and wherein individual letters of words of one directional column are in interlocked arrangement with words of columns of the other direction to permit individual letters to form letter units of both column directions and provide a puzzle diagram pattern of definite grouping of words and spaces, the combination with such diagram of squares, of means for numerically keying the diagram spaces to locate the defined words with the numerical key indications corresponding to the key indications of the key table of definitions of the words to be employed, said means bearing an individual numerical key indication adapted to be located in the diagram space of a column in immediate advance of the space intended to contain the first letter of the word being keyed to thereby locate the word of a column and its key indication on a sequence of squares of the diagram column, with the sequence greater by one than the number of letters of the word being keyed, whereby the letter spaces of the pattern will be free from key indications.

2. Means as in claim 1 characterized in that the key number indications are in the form of markers carrying numerals with the marker having dimensions to permit more than one marker to visibly occupy the indication square concurrently, the key number indication marker for words of the horizontal columns distinguishing characteristically from similar markers for words of the vertical columns, whereby a key numeral indication square may contain two key indications differing one from the other as to numerical value and each individual to the word controlled by the key with the distinguishing characteristic active to indicate the columnar direction to which the respective key indications pertain.

3. Means as in claim 1 characterized in that the key indications are in the form of markers carrying numerals, the markers being arranged in two series in which the markers of one series distinguishes characteristically from those of the other series otherwise than numerically, each series carrying its numeral indications as individual to the marker and with the numerals of a series presenting an arithmetical sequence, whereby the markers of one series can serve to present key indications for the words of one columnar direction, the markers of the other series serving a similar purpose for words of the other columnar direction.

4. Means as in claim 1 characterized in that the key indications are in the form of numeral-bearing markers arranged in two series in which the markers of one series distinguishes characteristically from those of the other series otherwise than numerically, each series carrying its numeral indications as individual to the marker and with the numerals of a series presenting an arithmetical sequence, the dimensions of a marker being sufficiently less than the dimensions of a square as to permit a marker from both series to occupy and be exposed on the same square, whereby the markers of one series can serve to present key indications for the words of one columnar direction, the markers of the other series serving a similar purpose for words of the other columnar direction, the columnar direction of the keyed word being indicated by

the distinguishable characteristics of the markers so located.

5 5. Means as in claim 1 characterized in that the key indications are in the form of markers
10 arranged in two series distinguishing characteristically otherwise than numerically, each series having its markers bearing an individual key numeral, the markers of one series serving as key markers for words of the horizontal columns
10 while the markers of the other series serve similarly for words of the vertical columns, said markers having dimensions to permit a marker from each series to concurrently occupy and be

exposed on a single square of the diagram, said means including similarly-dimensioned markers of both series but lacking key indication numerals, whereby the markers of a series serve to indicate the columnar direction by the distinguishable characteristics between the markers of the two series, with the key-indication squares adapted to receive one or two key indications as demanded by the pattern and with the numeral-lacking markers adapted to complete the square indicating where but one key indication is required by the pattern.

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