

Dec. 28, 1965

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3,226,122

LETTER SELECTING DEVICE FOR USE IN WORD BUILDING GAME

Filed March 1, 1962

2 Sheets-Sheet 1

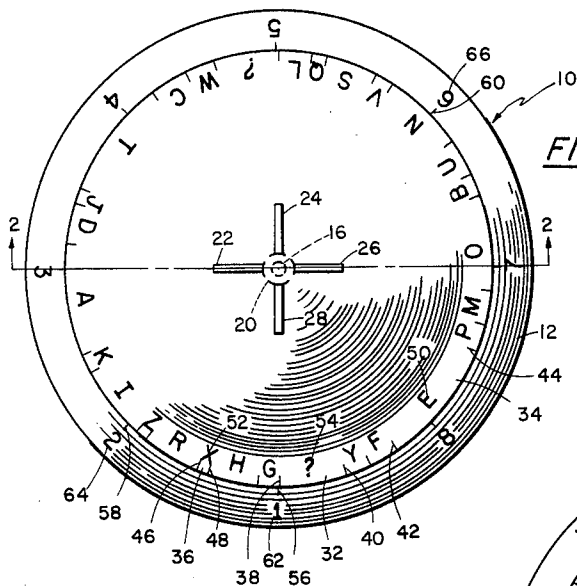


FIG. 1

FIG. 2

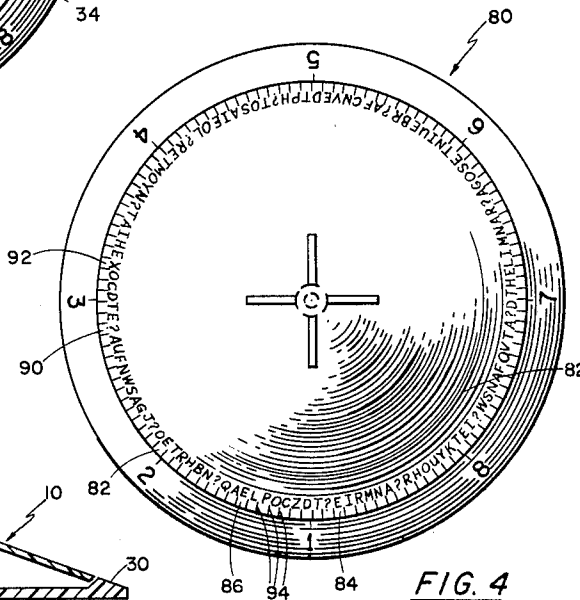
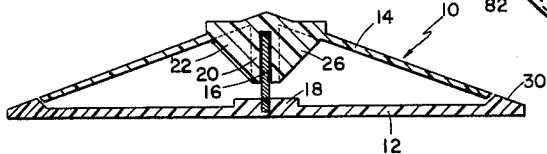


FIG. 4

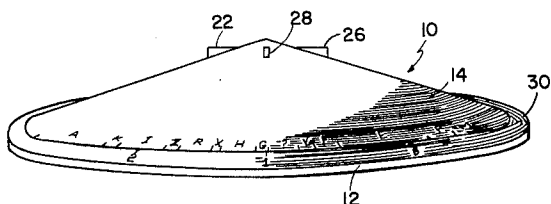


FIG. 3

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LETTER SELECTING DEVICE FOR USE IN WORD BUILDING GAME

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2 Sheets-Sheet 2

**WORD GAME**

GAME NO. 1  
NAME John Doe

**1ST. ROUND 4 MIN.** 70

Q	U	I	T	4
	K	E	A	
H	E	N	N	3

N A Q P  
A P N E  
H T K Q  
72 13

**2ND. ROUND 6 MIN.**

N	E	A	R	4
I			I	
C	A	N	E	4
E	E	H		4

H H E I  
C Q E R  
N E A N  
Z E A I  
12

**3RD. ROUND 8 MIN.**

W	H	I	T	E	5
H	O	U	S	E	5
E	S			L	76
E	T	U	G	Y	3
L	S	A	F	E	26

G V H W U  
P Q S T E  
E Q Q E T  
H S W P S  
S L E S E  
5 5 3

**BONUS ROUND 12 MIN.**

P	O	W	D	E	R	6
E	N	T	R	E	E	6
D	I	D	D	L	E	6
D	N	A		B	F	78
L	T	Y		O		
E	H	S		W		42

R A V P A V  
D P D E W W  
P Q R R N E  
Q E Q B T Q  
D E N E T P  
P Q H M Q D  
6 5 4 5 4

BONUS SCORE 42

GAME TOTAL 93

FIG. 5

68

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3,226,122  
**LETTER SELECTING DEVICE FOR USE IN  
 WORD BUILDING GAME**

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 Filed Mar. 1, 1962, Ser. No. 176,549  
 1 Claim. (Cl. 273-142)

The present invention has to do with new and useful improvements in games and pertains to a game of educational, entertainment and intellectual competition value, and the invention more particularly relates to a playing sheet in combination with a method and apparatus for randomly selecting letters used in the playing of the game in a manner such that the relative frequency of selection of each letter from an alphabet is related to the relative frequency at which such letter is used on the average in meaningful letter sequences in a language employing the alphabet.

The primary object of the invention is to provide a game having interest for a solitary player or for two or more competitive players, wherein the player or players are required to construct words or combinations of words from an arbitrarily or randomly selected group of letters (which can and usually does include duplications), with such group of letters being such that a high probability of solutions or word combinations are possible therewith.

Another object of the invention is to provide a game such that all players use the same group of given letters, and work independently against either a clock or until one of the players uses all his letters in word combinations and calls "time," whereupon relative scoring is made on the basis of the extent to which the players have used the given letters in word combinations.

Yet another object of the invention is to provide a game in accordance with the above objects, except that the players are provided with different groups of given letters.

An important object of the invention is to provide a method of and apparatus for selecting groups of letters such that a relatively high probability will exist of the letters of the group being susceptible to rearrangement to constitute a word or combination of words.

Briefly, the invention involves a letter arranging game comprising a flat sheet and a pattern of predetermined configuration on one side of the sheet, said pattern comprising a plurality of intersecting vertical and horizontal lines forming a rectangular array of rectangular spaces with respect to which the letters are to be arranged, and means for randomly selecting the identity of letters of an alphabet to be arranged in the array, said last means including provision for making the frequency of selection of any particular letter generally proportional to the average frequency of usage of such letter in a language employing such alphabet.

Another aspect of the invention involves in accordance with the preceding paragraph the additional provision of a second pattern on the sheet disposed adjacent the first pattern and comprised of lines demarking at least one boundary each of a plurality of areas equal in number to the number of spaces of the array, such areas being for receiving the letters that are to be arranged.

A broad aspect of the invention involves the method of and apparatus for randomly selecting letters from an alphabet for use in an educational word building game or exercise, with each selection being such that the frequency of selection of any particular letter is approximately related proportionally to the frequency of usage of such letter in meaningful letter sequences in a language employing the alphabet.

Another aspect of the invention involves; for use in an educational game (wherein a grouping of letters and a

symbol that can be used as a letter of the player's choice) are placed by the player in a meaningful sequence in a language using an alphabet inclusive of the letters; the method of and apparatus for making the likelihood of selection of any particular letter of the alphabet for use in the grouping approximately relate proportionally to the relative frequency of the usage of such letter in meaningful letter sequences in the language employing the alphabet, making the selection of the symbol have a predetermined likelihood in relation to the likelihood of selection of any of the letters of the alphabet, and randomly selecting enough letters and symbols to constitute the grouping on the basis of their relative likelihoods of selection.

The game of the invention involves supplying players with a plurality of letters together with the optional provision of privileges, such as blanks and/or "wild-letters" (the identity of which "wild-letters" can be specified at the election of the player), with the object of each player being independently to arrange the supplied letters (using such privileges as may be provided) in a rectangular array such that as many horizontal rows and vertical columns (normally read from the left and top, respectively) constitute meaningful letter (and optionally blank) sequences according to prearranged language authorities (dictionaries, grammars, etc.) in a manner somewhat analogous to crossword puzzles. While the expression "meaningful letter (and optionally blank) sequences" will in the preferred mode of playing the game have reference solely to the construction or arrangement of letters to form single words, such expression also encompasses playing the game according to rules accepting additionally rule-defined classes of phrases and/or sentences.

Scoring of the game is based upon the number of letters and blanks used in constructing the meaningful letter sequences in the rectangular array.

Each player can either use a writing instrument to record directly on the sheet (having a representation of the array to be completed thereon) adjacent the letters, etc., supplied to him or optionally, small cards or chips bearing representations of the letters, etc., can be supplied to the player for placement directly on the spaces or areas of the sheet delineated by the array representation. Should the latter alternative not be adopted, the sheets are inexpensively made so as to be expendable and the writing instrument can be used directly on the sheet for recording the letters supplied, the arrangement of the letters in the areas or spaces delineated by the array representation, and also for computing and totaling the player's score.

The group of letters which a player is to arrange can be such that a player is free to place or arrange any letter (and optionally blanks) at any position in the array (it being intended that the number of letters and spaces provided the player be at least as great as the number of spaces included in the array representation), or optionally the group can be composed of mutually exclusive subgroups with the player restricted to arranging all the letters and spaces of each subgroup to individual horizontal rows (or vertical columns) of the array representation.

The invention also comprises the provision of a method of and apparatus for randomly selecting letters (optionally, also, privileges and/or blanks) from an alphabet for use in the game, with each letter selection being such that the frequency of selection of each distinct letter is approximately related proportionally to the relative frequency of usage of such letter in meaningful letter sequences in a language employing the alphabet.

According to the invention, the letters can be sequentially selected (as when all players are to use independ-

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ent effort on the same selected group of letters and blanks) with the total group of selections constituting a playing group with no restriction as to placement in the array imposed by the rules, or sequentially selected sets of consecutively made selections can constitute the afore-mentioned subgroups when placement restrictions are desired to be imposed by the rules of the game.

Alternatively, according to the invention, sets of letters can be simultaneously selected, which sets can constitute subgroups of the character discussed above, or such sets can have the same number of members as there are players, the invention also encompassing the ordering of the members of each selected set in a manner such that each member of every selected set can be positively related to and assigned to a particular player.

The invention will be best understood in the light of the following description of preferred embodiments thereof taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a top plan view of the selector used in selecting letters for playing the game;

FIGURE 2 is a central vertical sectional view taken upon the plane of the section line 2—2 in FIGURE 1;

FIGURE 3 is a side elevational view of the selector shown in FIGURES 1 and 2;

FIGURE 4 is a top plan view of a modified form of selector; and,

FIGURE 5 is an illustration of a playing and scoring sheet used in the conduct of the game.

Referring now to the drawings, wherein like numerals designate corresponding parts throughout the various views, attention is first directed to the selector shown in FIGURES 1, 2 and 3. The reference numeral 10 designates the selector generally, the same being comprised of a substantially flat circular base 12 upon which is rotatably mounted a rotor 14.

A vertical shaft 16 has its lower end fixedly secured to a relatively thick central portion 18 of the plate or base 12. The rotor 14 has a convex configuration generally corresponding to a conical shell, and depending from the central apex region of the rotor 14 and disposed within the rotor 14 is a cylindrical hub 20, such hub 20 being provided with a central vertical bore within which the shaft 16 is rotatably received as shown in FIGURE 2. The hub 20 is preferably integral with the rotor 14, and is further connected to the rotor 14 in such a manner as to reinforce the latter and reduce any vibration or oscillation thereof by means of a plurality of angularly spaced vanes 22, 24, 26 and 28 that are integral with the hub 20 and the rotor 14. In the preferred construction the vanes 22, 24, 26 and 28, or what may be considered as continuations of such vanes, project above the upper conical surface of the rotor 14 to constitute finger gripping means whereby rotation can be conveniently imparted to the rotor 14 on the base 12. Such structure constituting the finger gripping means is particularly strong and enables the rotor 14 to be of lighter and less expensive construction. Though not shown, the lower peripheral margin of the rotor 14 can be relatively thick, or dynamically balanced spaced weights can be fixed to the rotor 14 at concealed positions therein to increase the rotational inertia thereof so as to prolong any rotation imparted thereto.

A raised annular rib 30 extends about the periphery of the circular base 12, such rib 30 being spaced close to the periphery of the rotor 14 with just sufficient running clearance being afforded to allow free rotation of the rotor 14. As plainly shown in the drawings, the upper surface of the annular rib 30 constitutes a virtually smooth continuation of the smooth upper surface of the rotor 14.

The upper peripheral marginal portion of the rotor 14 is subdivided or segmented into a plurality of arcuate portions such as those indicated at 32, 34, and 36 by indicia such as those indicated at 38, 40, 42, 44, 46 and

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48. The various portions extending around the periphery of the rotor 14 such as those indicated at 32, 34 and 36 bear designations representing various letters of the alphabet and relate such portions to the letters in a manner such that the portion 34 bears the designation "E" 50 and portion 36 bears the designation "X" 52. Optionally, one or more of the portions extending about the periphery of the rotor 14 can bear a designation or symbol indicative of some privilege in playing the game in the manner that the portion 32 bears the designation "?" 54.

It will be noted on inspection of FIGURE 1 that all of the letters of the English alphabet are designated on the portions extending about the peripheral margin of the rotor 14, with each letter of the English alphabet being designated once. It will also be obvious on inspection of FIGURE 1 that the annular extents of the portions designating various letters of the alphabet vary greatly, as for example the obvious difference between the annular extents of the portions 34 and 36 that respectively bear the designations "E" 50 and "X" 52. The annular extent of each letter-designated portion is directly related at least approximately to the frequency with which the letter designating the same occurs in meaningful letter sequences in the language (assumed for the present to be English) employing the alphabet composed of the letters designating portions of the rotor 14. For example, the central angle at the apex of the rotor 14 subtended by the portion 34 between the indicia 42 and 44 is to the sum total of the central angles subtended by all letter-designated portions as approximately the frequency of occurrence of the letter "E" is to the frequency of occurrence of all the letters of the alphabet in meaningful letter sequences. As the letter "E" occurs much more frequently than the letter "X" in meaningful letter sequences in the English language, the angular or peripheral extent of the portion 34 is correspondingly considerably greater than that of the portion 36.

Again, by "meaningful letter sequences" is meant ordinary plain text words, or phrases, or sentences composed of such words. Preferably the expression "meaningful letter sequences" is to apply only to such letter sequences that occur in individual words.

The provision of portions such as portion 32 bearing any symbolic designation 50 suitable for indication of some game privilege is for the purpose of increasing enjoyment of a game played with the use of the selector 10. The symbol 50 can be indicative of the privilege of a "wild-letter," which means that a player receives a letter which he can designate as being any particular letter of his choice. Alternatively or additionally, the privilege can extend to the player being entitled to the use of a blank as is necessary to the spacing of words when the playing of the game extends to the formation of phrases and sentences.

As is well known to those familiar with the subject of cryptography, the frequency of occurrence of various letters of an alphabet in meaningful letter sequences in a language employing such alphabet is subject to fairly accurate determination by statistical methods. Relatively minor variations in the frequency of occurrence of a particular letter will occur in a manner dependent upon the basis of the statistical study. For example, the frequency of use of the letter "E" in English will vary somewhat when considering only a large set of distinct words from that as may be obtained from a study made with respect to a quantity of plain text English writing. A minor difference will also occur when only words of certain lengths or range of lengths are considered. Nevertheless, such variations are relatively minor ordinarily, and the relative frequencies of occurrence of the various letters of an alphabet is susceptible to reasonably accurate quantitative determination. Exemplifying the results of statistical studies made with respect to the frequency of occurrence of letters in the English language broken

down with respect to the occurrence of upper case letters and as lower case letters is data presented in the 1948 issue of the World Almanac published by the New York World-Telegram Corporation, such data being set forth in the following Table I.

Table I

Letter	Upper Case	Lower Case	Letter	Upper Case	Lower Case
A	481	728	N	128	670
B	388	120	O	173	672
C	785	280	P	673	168
D	423	392	Q	49	50
E	285	1,000	R	244	528
F	325	236	S	1,000	680
G	223	168	T	478	770
H	258	540	U	191	296
I	316	704	V	144	152
J	57	55	W	228	190
K	39	88	X	4	26
L	250	360	Y	19	184
M	368	272	Z	15	22

Consideration of the foregoing Table I shows that the order of frequency of occurrence of upper case letters in the English language is S-C-P-A-T-D-B-M-F-I-E-H-M-R-W-G-U-O-V-N-J-Q-K-Y-Z-X, and with respect to the occurrence of the lower case letters the order is e-t-a-i-s-o-n-h-r-d-l-u-c-m-f-w-y-g-p-v-b-k-j-q-x-z.

While the data presented in Table I is pertinent to this discussion primarily only as being indicative of the type of statistical studies that can be made with respect to the frequency of letter occurrence, because of the breakdown as between the upper case and lower case letters, it is manifest that such data is of substantial interest to printers and type setters rather than being of direct interest with respect to the instant invention. Of greater interest to the practice of the present invention is information such as is set forth in "Cryptography" by Laurence Dwight Smith published by Dover Publications, Inc., wherein it is given that the frequency of occurrence of letters in the English language has the order of E-T-O-A-N-I-R-S-H-D-L-C-W-U-M-F-Y-G-P-B-V-K-X-Q-J-Z (double dashes indicating relatively larger gaps in the relative frequencies of letter occurrence). A later computation by the Cryptogram Association shows nine letters to occur 70% of the time and to occur in the order of frequency: E-T-A-O-N-I-R-S-H.

Table II, which follows, gives a suitable set of angular values for assignment of letters and symbols for a selector as that shown at 10, so that the likelihood of selection of any particular letter is related to its frequency of usage, though enjoyment of and practice of the invention does not require slavish adherence to the given proportions.

Table II

?=18°	D=11°	R=16°	Y= 7°	O=26°	S=14°
W= 8°	A=30°	X= 3°	F= 8°	B= 6°	Q= 4°
C=10°	K= 5°	H=14°	E=34°	U=10°	L=10°
T=32°	I=20°	G= 6°	P= 7°	N=22°	
J= 4°	Z= 3°	?=18°	M= 9°	V= 5°	

A statistical study by Dr. William S. Walsh shows a frequency order E (120), T (90), A (85), I (80), N (80), O (80), S (80), H (64), R (62), D (44), L (40), U (34), C (30), M (30), F (25), W (20), Y (20), G (17), B (16), P (16), V (12), K (8), Q (5), J (4), X (4), Z (2). The data of Table II could as well be computed from Dr Walsh's results for the purposes of the invention. Greater departures in size distribution can be made while retaining the fruit of the invention, namely, selected letters having a higher probability of word spelling rearrangement than a set of letters selected so that each letter has an equal probability of occurrence.

The foregoing discussion has been restricted essentially to a discussion of the practice of the invention with respect to the English language and alphabet only. The invention can also be practiced and the selector 10 be

provided with letter-designated portions related in their size to the use of the English alphabet with respect to languages other than English. Also, in an analogous manner the letter-designated portions can be related to other alphabets than the English alphabet and the languages employing such differing alphabets, as for example, the Greek alphabet. In this regard, it may be mentioned that the book by Mr. Smith referred to previously sets forth that the French language uses the letters of the English alphabet in the order of frequency e-n-a-s-r-i-u-t-o-l-d-c-m-p-v-f-b-g-x-h-q-y-z-j-k-w. Similarly, the German language employs the letters of the English alphabet in the order of frequency e-n-r-i-s-t-u-d-a-h-g-l-o-c-m-b-z-f-w-k-v-p-j-q-x-y. Correspondingly, the Italian language uses letters of the English alphabet in the order e-i-a-o-r-l-n-t-s-c-d-p-u-m-g-v-h-z-b-f-q-j-k-w-x-y. The Spanish language employs the letters of the English alphabet in the order e-a-o-s-r-i-n-l-d-c-t-u-p-m-y-q-g-b-h-f-v-j-z-k-w-x.

From the foregoing and considering again solely the English language, it being understood that similar considerations apply with respect to other languages, it will be noted on reference to FIGURE 1 that the relative size of the portions that are designated with letters tend to be proportional or at least have a size varying on the order of the variation of the order of frequency of occurrence of the letters by which they are designated. It is only essential that the size of the portions approximate being proportional to the frequency of occurrence of the letters that they are designated by. In the aforesaid frequency occurrence of the use of letters in the English language, it will be understood that only minor variations may exist between letters appearing fairly close to each other in the order of frequency listing, and consequently only minor differences, if any, occur between the sizes of the portions designated by such letters. For example, the portion designated by the letter "M" can be larger than the portion designated by the letter "C," however, the purposes of the invention would be served to a far lesser useful extent if the portion designated by the letter "M" is greater in extent than the portion designated by the letter "S." Obviously, the purposes of the invention would be entirely frustrated if letters such as E-T-O-A-N-I were the same size not to mention being smaller than the portions designated by letters X-Q-J-Z.

The upper surface of the annular rim 30 is provided with a plurality of angularly spaced index marks or indicators such as those shown at 56, 58 and 60. The indicators 56, 58 and 60 can be in the form of indicia on the annular rim 30 and are juxtaposed with the peripheral edge of the rotor 14, in a manner similar to that in which the index marks or indicia such as shown at 38 and 40 on the rotor 14 are close to the annular rim 30. The indicia such as those indicated at 56, 58 and 60 are provided with distinguishing characteristics such as the numerals "1" 62, "2" 64 and "6" 66 provided respectively for the indicators 56, 58 and 60. Ordinarily, each of the indicators 56, 58 and 60 do not coincide with any of the indicia 38, 40, 42, 44, 46 and 48 and can therefore each serve to designate or indicate a particular part of a portion of the peripheral margin of the rotor 14 designated by either a letter or a symbol indicative of a privilege as discussed previously. Should any of the indicators 56, 58 and 60 happen to coincide with any of the indicia on the rotor 14 such as the indicia 38, the rotor 14 can be given another spin or spins until such a condition doesn't occur on the rotor 14 stopping.

In playing a game using the selector 10, it is possible by prearrangement for all of the players to use letters selected or designated by a single one of the indicators such as the indicator 56 during a sequence of rotor 14 spins, or alternatively each player can pick a separate one of the indicators 56, 58 and 60 so as to receive on each rotor spin the particular letter designated or selected by

his particular indicator. Yet another manner of playing the game involves each player receiving a number of letters on each spin of the rotor 14, in which event he will receive, for example, the letters selected by the indicators 56, 58 and 60 on each spin of the rotor 14. Such selection of a plurality of letters for a player simultaneously will be discussed hereinafter with such number of simultaneously selected letters being referred to as a subgroup.

Attention is now directed to FIGURE 5 which is a representation of a playing sheet used in the course of the game. The numeral 70 designates a pattern comprised of a plurality of intersecting vertical and horizontal lines that define a rectangular array of spaces that are arranged as horizontal rows and vertical columns. Disposed to the left of the pattern 70 and adjacent thereto is a second pattern 72. The pattern 72 is comprised of lines that demark at least one boundary for each of a plurality of areas that correspond in number to the number of spaces in the rectangular array defined by the pattern 70. Not only does the pattern 72 define a number of areas equal in number to the number of spaces, but it will be noted that the pattern 72 is so arranged and constructed that a number of such areas equal in number to the number of vertical columns appears essentially in alignment with each horizontal row of spaces in the array defined by the pattern 70.

The purpose of the provision of the pattern 72 is to enable a player to record upon the sheet 68 the letters and symbols of privileges selected for his use by the use of the selector 10. After a player has recorded in the areas demarked by the pattern 72 the letters and optionally the privileges that have fallen his lot by use of the selector 10, the object of the player is to arrange the letters and exercise his privileges in the spaces delineated by the pattern 70 so as to form meaningful sequences in the horizontal rows and vertical columns of spaces. As a player places a letter in the array delineated by the pattern 70, a player can conveniently encircle the used letter recorded in the pattern 72 to indicate such fact. The use of the pattern 72 is not entirely essential to the use of the game, though it is much preferred. As an alternative to the use of the pattern 72, a stockpile of chips or cards bearing letter and symbol designations can be provided with each player drawing therefrom the letters and symbols selected for him by the use of the selector 10 with a view to subsequently placing such chips or cards or the like in the spaces delineated by the pattern 70. One of the main reasons for preferring the use of the pattern 72 (aside from the nuisance of players scrambling for representations of their selected letters and symbols and the chips or cards becoming lost or getting under foot and presenting housekeeping problems) is the economy of space attained for the pattern 70 as the latter does not have to be so large as to accommodate the placement of chips or cards on the spaces delineated by the pattern 70. Such space economy enables the convenient placement of a plurality of juxtaposed pairs of patterns such as the pairs of patterns designated generally at 74, 76 and 78 (each pair comprised of patterns analogous to patterns 70 and 72) upon a single sheet of paper of about common business letter size dimensions. FIGURE 5 illustrates an arrangement of a plurality of sets of patterns on such a sheet of paper, wherein it will be noted that various sizes (as to the number of rows and columns) of patterns can be used, and it will also be noted that the rectangular arrays need not have an equal number of spaces in the vertical columns as in the horizontal rows.

The principal advantage of the areas demarked by the lines constituting the pattern 72 being in alignment with and equal in number to the spaces in the horizontal rows (though an equivalent arrangement can be made in which the areas bear the same relationship to the vertical columns) is that the selector 10 can be operated to simultaneously produce subgroups of letters and symbols in which the number of letters and symbols simultaneously selected equals the number of spaces in a horizontal row

(or vertical column in the alternative arrangement), and such subgroup of letters and symbols are then recorded in the areas demarked in horizontal alignment with one of the horizontal rows of spaces (or vertical column of areas). Several subgroups are selected sufficient to complete the pattern 72 and the game is then played with the player being restricted to using the letters and symbols of a single subgroup solely in the horizontal (or vertical) spaces of the array defined by the pattern 70 in alignment therewith.

The playing and scoring sheet 68 is shown as in a condition on completion of a game. It will be noted that the sheet includes provision for totaling the scores with respect to each of the horizontal rows and vertical columns of each of the patterns 70, the several pairs of patterns included on the sheet 68 being separately identified as the 1st Round four minutes, 2nd Round six minutes, 3rd Round eight minutes and Bonus Round twelve minutes. As will be evident upon inspection of FIGURE 5, provision is made for recording the total score made by the player for each round, as well as for a game total that includes the 1st, 2nd, 3rd and Bonus Rounds. It will be noted that the scoring for each round is based upon the number of contiguous spaces in each row and column that are filled or have letters arranged therein that spell recognized words.

Attention is now directed to the modified embodiment of the selector shown in FIGURE 4, such modified embodiment of the selector being designated generally by the reference numeral 80. The selector 80 differs from the previously described selector 10 solely in the manner in which the peripheral margin of the rotor 82 thereof is segmented or subdivided and the manner in which the segmented portions of the peripheral portion of the rotor 82 are designated by letters and symbols. The peripheral margin of the rotor 82 is subdivided into a plurality of portions such as those indicated at 84, 86, 88, 90 and 92 by indicia such as those indicated at 94. The number of such portions substantially exceeds the number of letters in the alphabet to be used in the playing of the game, and to a substantial extent such portions subtend equal angles at the apex of the rotor 82. As in the case of the selector 10, the portions about the peripheral margin of the rotor 82 are designated by letters of the alphabet and by symbols such as the "?" designating the portion 90. The number of such portions bearing the designation of a particular letter of the alphabet is related to the frequency of the occurrence of the use of such letter in meaningful letter sequences in a language employing the alphabet, so that the sum total central angle subtended by all portions designated by a particular letter is approximately to the sum total central angle subtended by all portions designated by letters as the frequency of occurrence of the letter in the language under consideration is to the frequency of occurrence of all the letters of such language. Thus, with respect to the English language, the letter "E" designates a substantially greater number of separate portions than does the letter "X" designate, as will be evident upon inspection of FIGURE 4. In the case of a particular letter designating a plurality of portions about the annular peripheral margin of the rotor 82, it is preferred that such portions be randomly spaced about the annular periphery of the rotor 82 as will be evident upon inspection of the portions designated by the letter "E" such as those indicated at 84, 86 and 88.

The use of the selector 80 in playing the game is so analogous to the use of the selector 10 as not to warrant further description.

With respect to both the selectors 10 and 80, all letter designations, indicia, numerals and indicator marks can be either printed, engraved or embossed upon their respective parts. A very satisfactory working model corresponding in many respects to the selector 10 was made in which the letters, symbols, indicia, indicator marks and num-

erals were simply plastic representations thereof that were glued to their respective parts.

Although the base 12 and rotor 14 can either one or both be made of metal, it is particularly preferred that such components be made of any suitable plastic. Preferably, the base 12 and the rotor 10 are pressure molded from any suitable thermoplastic or thermosetting plastic material such as are customarily used in the making of toys, containers, etc. Though the shaft 16 can also be formed of plastic integral with the base 12, it is preferred that the shaft 16 be of metal and securely embedded in the base 12. It will be noted that the illustrated and described construction of the base 12 and the rotor 14 along with the hub 20 and the vanes (including the extended finger grip portions of the latter) 22, 24, 26 and 28 are particularly well suited to conventional pressure molding techniques with plastics and the like. In this latter regard, the one-piece or integral construction of the rotor 14, the hub 20 and the vanes 22, 24, 26 and 28 (including the finger gripping extended portions of the latter) is particularly well suited to such economical mode of fabrication or construction.

The use of the selectors 10 and 80 is preferred to the use of drawing cards or chips bearing letter and symbol designations in proportionate relations analogous to the assignment of different numbers of portions of the rotor 82 of selector 80 to various letters (more cards or chips designated with "E" than with "X," for example) for the reasons that withdrawals from a stockpile thereof can effect the probabilities governing subsequent withdrawals, a large pattern 70 probably would be deemed necessary, less convenience for player participation in making selections, less "roulette-type" of suspense would be enjoyed, etc.

Inasmuch as the illustrated and described embodiments of the invention are susceptible to numerous variations without departing from the scope and spirit of the invention, attention is directed to the appended claims in order to ascertain the actual scope of the invention.

I claim:

An educational toy comprising, a circular, generally flat base member having an upstanding peripheral rim,

a generally conical hollow shell disposed above the base and having its central apex uppermost, a vertically extending hub within the shell and fixed to the shell to depend from the apex of the latter, a plurality of angularly spaced vanes within the hollow shell fixed to and radially extending from the hub and fixed to the shell, an upstanding pin fixed to the center of the base, said hub having a blind bore therein rotatably receiving the pin whereby the hollow shell is rotatably supported in spaced relation above the base, said hollow shell having its outer periphery received with closely spaced free running clearance within the upstanding rim, with the rim and the hollow shell having upper surfaces that approximate smooth continuations of each other, a plurality of upstanding finger grips on the shell that are angularly spaced and extend radially outward from adjacent the apex of the shell, said finger grips being in alignment with and constituting continuations of said vanes above the shell, said shell, hub, vanes, and finger grips being integral and of plastic, and cooperating alphabet letter indicia and selector means spaced about the annular extents of the rim and the peripheral margin of the shell for selecting and indicating individual letters of the alphabet on the basis of the angular resting position of the shell with respect to the base.

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