Sept. 17, 1929. M. RIVKIN 1,728,805

SPELLING BOARD

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FIG. 1

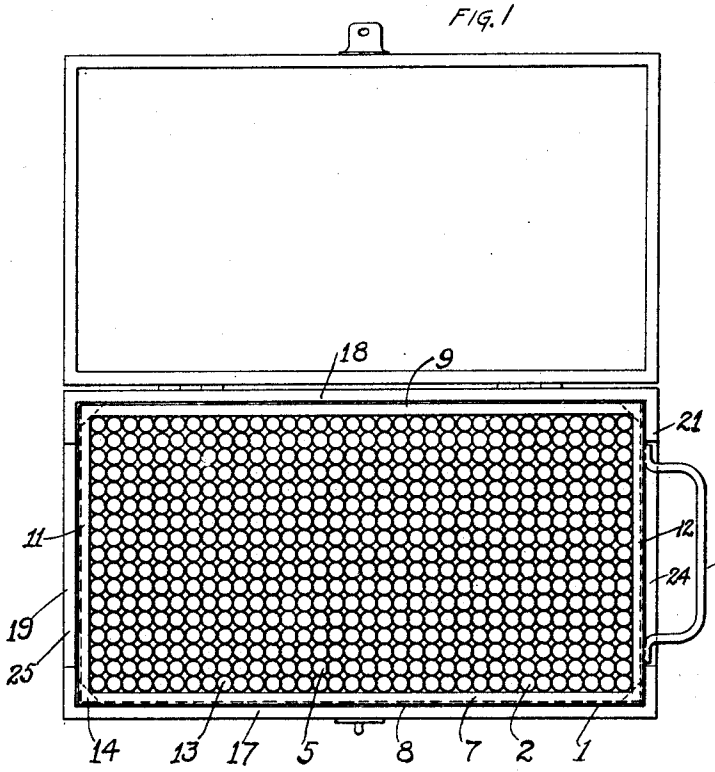


FIG. 2

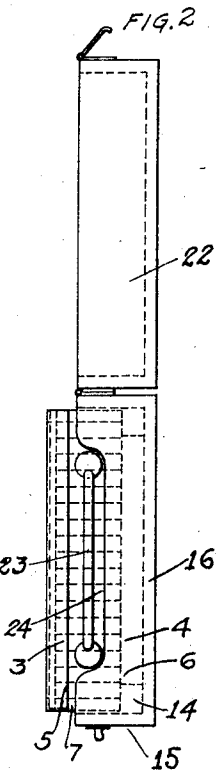


FIG. 3

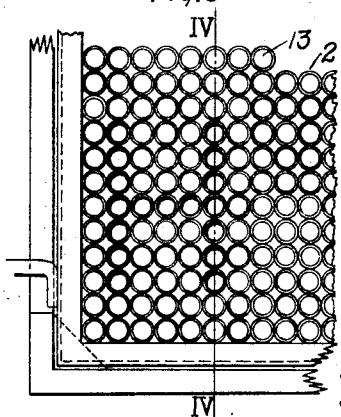


FIG. 4

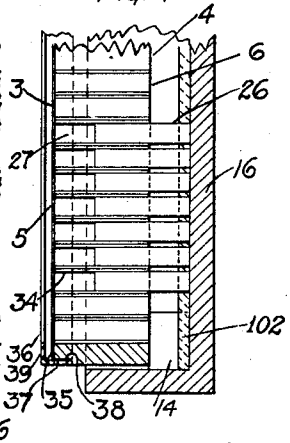


FIG. 5

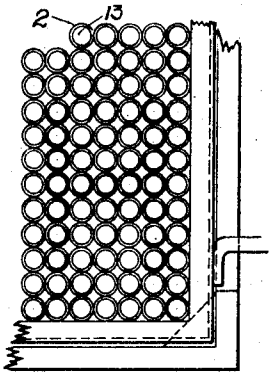
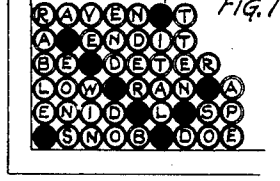


FIG. 16



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FIG. 6

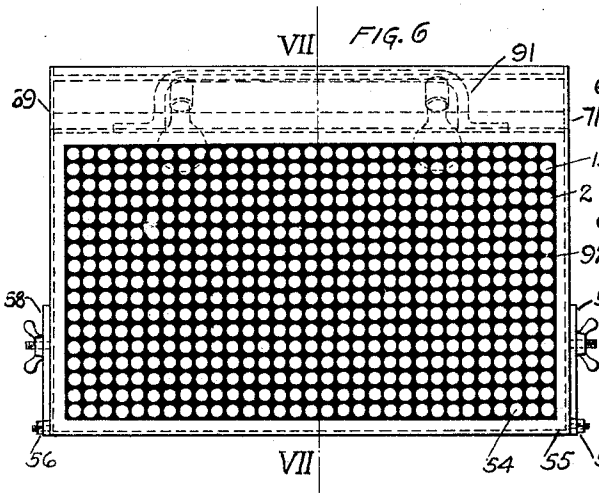


FIG. 7

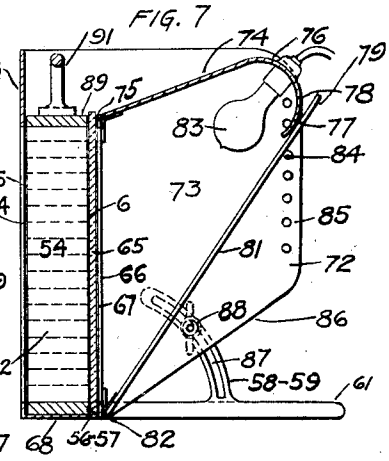


FIG. 8

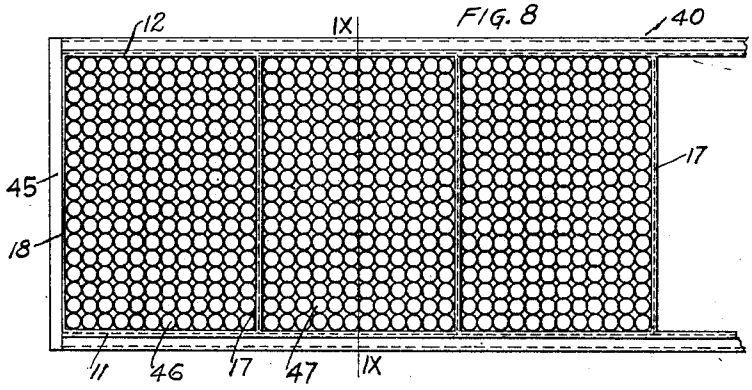


FIG. 9

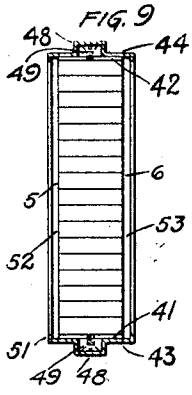


FIG. 11

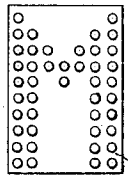


FIG. 10

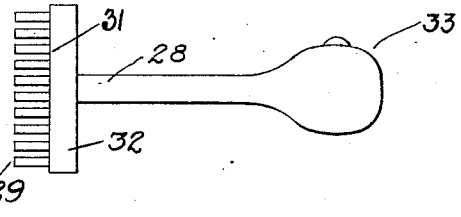
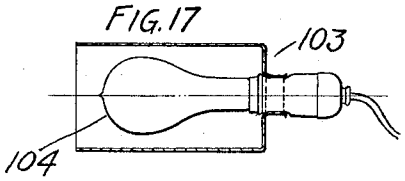


FIG. 17



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FIG. 13

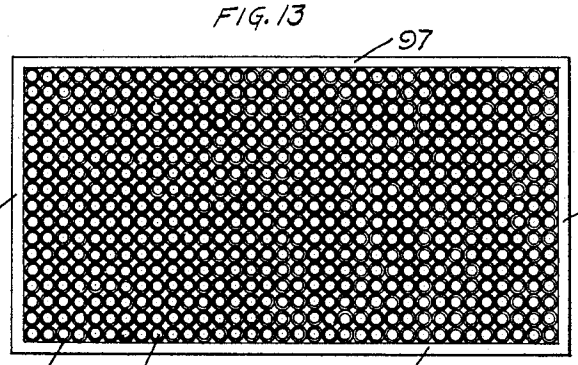


FIG. 15

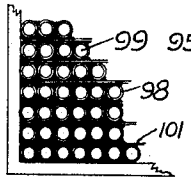


FIG. 14

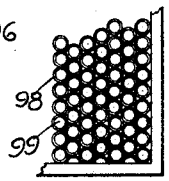
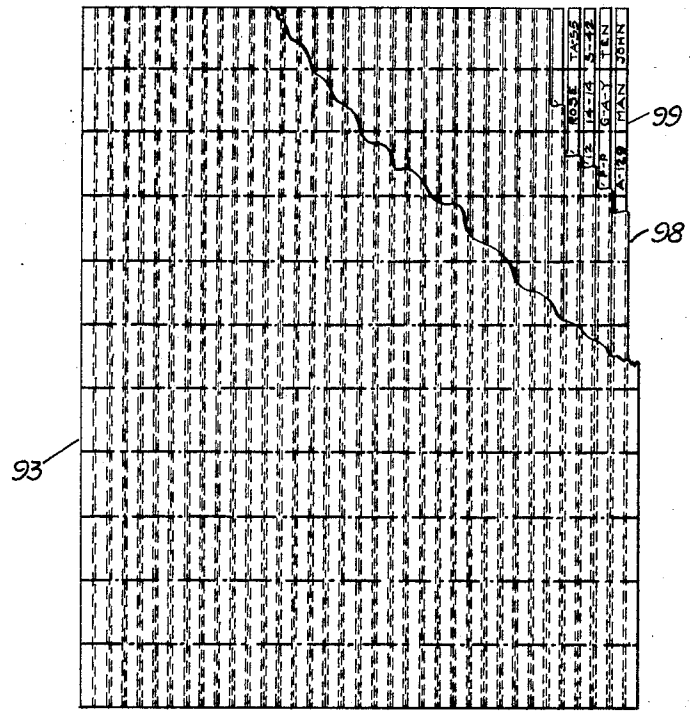


FIG. 12



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Patented Sept. 17, 1929 1,728,805

UNITED STATES PATENT OFFICE

MENAHEM RIVKIN, OF PHILADELPHIA, PENNSYLVANIA

SPELLING BOARD

Application filed April 30, 1926. Serial No. 105,774.

In its broad aspect, one object of my invention is to provide a member, wherein either side thereof has a desired visual effect together with means whereby said effect may be modified to a desired extent.

A more specific object of my invention is to provide a plurality of plug elements in such relation as to define a surface having a desired appearance, the plug elements being independently movable relative to said surface, whereby said appearance may be modified as desired.

Another object of my invention is to provide a plurality of cells, corresponding ends of which terminate in a working surface, together with a plurality of plug elements extending from said working surface, said plug elements being independently movable whereby a desired character may be formed on said working surface in accordance with the particular arrangement of the plug elements displaced.

A further object of my invention is to provide an educational amusement device for children. permitting any desired letters or other configurations to be formed thereon in accordance with their ingenuity or a pattern, the characters being easily changed with no resulting injury to the device.

A still further object of my invention is to provide a structure, wherein a member is provided with a plurality of apertures extending from an exposed side thereof, a plurality of plug elements for closing all of said apertures but those corresponding to a desired representation visible on said exposed side, together with means whereby light may be projected through said last mentioned apertures to accentuate the desired visual effect.

A still further object of my invention is to provide a simple, efficient and inexpensive method of manufacturing apparatus of the above-indicated character in quantities.

Other objects and applications of my invention, as well as details of construction and operation, whereby my invention may be practiced, will appear more fully hereinafter, when taken in connection with the accompanying drawings, wherein

Figs. 1 and 2 are top-plan and side elevational views respectively of one form of embodiment of my invention;

Fig. 3 is an enlarged detail view of one corner section of the structure of Fig. 1, illustrating the formation of a character by recesses in the working surface;

Fig. 4 is a transverse sectional view taken on the line IV—IV of Fig. 3, showing the extent of movement of the plug elements away from the working surface:

Fig. 5 is a view similar to Fig. 3, but showing the effect produced by extending the plug elements outwardly of the working surface rather than inwardly;

Fig. 6 is a front elevational view of an embodiment of my invention, wherein the visual effect is modified by a source of light and a screen;

Fig. 7 is a transverse sectional view taken on the line VII—VII of Fig. 6;

Fig. 8 is a side elevational view of a sectional structure embodying my invention;

Fig. 9 is a transverse sectional view taken on the line IX—IX of Fig. 8;

Fig. 10 is a side elevational view of a punching device for simultaneously actuating the plug elements necessary to form a desired character on the working surface;

Fig. 11 is an end elevational view of the structure of Fig. 10;

Fig. 12 is a side elevational view of an enclosing casing for the elongated tubes and rods, illustrating the quantity production method involved in my invention;

Fig. 13 is a top plan view of the structure of Fig. 12, showing the tubular elements in one relation;

Fig. 14 is a similar fragmentary view, illustrating the tubular elements in another relation;

Fig. 15 is a view similar to Fig. 14, but showing an alternative method of manufacturing the frame units;

Fig. 16 is a view similar to Fig. 3, but illustrating an embodiment of my invention, wherein the ends of the plug elements are provided with desired representations; and

Fig. 17 is a longitudinal sectional view of a modified form of plug element.

Referring particularly to Figs. 1 to 5, inclusive, a member 1 comprises a plurality of tubular elements 2 of circular or other desired cross-section, opposite ends 3 and 4 of said elements respectively defining substantially flat, working surfaces 5 and 6. The tubular elements 2 may be secured in the side-by-side relation illustrated by means of a circling band 7 shown as a frame having front and rear sides 8 and 9, respectively, and ends 11 and 12. The cells defined by the tubular elements 2 may be filled by independently movable plug elements 13 extending between the opposite working surfaces 5 and 6.

The frame 7 may be normally supported on abutments 14 positioned at the four corners of a box 15 having a base 16, whereby the under working surface 6 may be spaced from said base 16, for reasons as will presently appear. The box 15 further comprises side members 17 and 18, which parallel the sides 8 and 9 of the frame 7, and the end members 19 and 21 which correspondingly enclose the ends 11 and 12 of said frame 7.

A lid 22 for the box 15 may be hinged to the side member 18 so that the exposed working surface 5 may be suitably protected when not in use. The structure as a whole may be carried by means of a handle 23 which extends from the end wall 12 of the frame 7 through a recess 24 in the adjacent end wall 21 of the box 15. The opposite end 19 of the box 15 is provided with a recess 25 similar to the recess 24 through which the handle 23 may extend when the position of the frame 7 is so reversed that the under working surface 6 is uppermost.

When a desired representation or character is to be formed on the blank upper working surface 5 of Fig. 1, the plug elements 13 are actuated inwardly of the cells until the ends thereof abut against the bottom 16 of the box 15, each plug element having an end portion 26 extending beyond the under working surface 6 and a recess 27 between the opposite end of said plug and the upper working surface 5. The several recesses 27 on the exposed working surface 5 together define the desired character. One such character is shown in Fig. 3, the particular representation being the letter H. When the position of the frame 7 is reversed from that shown in Fig. 3 to that shown in Fig. 5, the working surface 6 is exposed and the desired representation is formed by the projecting ends 26 of the displaced plug elements 13. Thus, any desired configuration may be formed on the working surfaces 5 or 6. When a new representation is desired, the displaced plug elements 13 may be returned to their original position, as illustrated in Fig. 1, intermediate the working surfaces 3 and 4,—this being accomplished without in any way injuring the device as a whole. The frame 7 and asociated parts thus in effect constitute a so-called "spelling board" which lends itself particularly to use by children.

The formation of a character on the working surface 5 in one stroke may be accomplished by a pushing device 28, illustrated in Figs. 10 and 11, wherein a plurality of pins 29 conforming to a desired character, say the letter M, project outwardly from a substantially flat side 31 of a supporting plate 32 having a handle 33. The pins are of such dimensions that they may enter the tubular elements 2 to the extent of the desired displacement.

The visual effect of the character formed on the working surface 5 may be varied by differently coloring an inner surface 34 of the tubular elements 2 and the end 3 of the plug elements 13. Thus, color is given to the design as well as to the background. The opposite ends 4 of the plug elements may be given a color different from the ends 3, so that when the position of the so-called "spelling board" in the box 15 is reversed, another effect may be produced. The sides 26 of the plugs may also have a color different from the ends.

A member 35 of relatively thin transparent material of desired color may be positioned on the upper working surface 5 of the spelling board and secured in position by means of a frame 36, as illustrated in Fig. 4. The frame 36 comprises side members 37 which fit in recesses 38 formed in the frame 7 and flange portions 39 which extend inwardly the thickness of said frame 7. The flange portions 39 are also spaced from the working surface 5, whereby a sheet of glass or other transparent material (not shown) may be retained on the working surface 5, for reasons as will presently appear. When the plug elements 13 are displaced with the member 35 in position, openings are formed therein corresponding in position to the displaced plug elements 13, so that when the desired character is formed on the spelling board, the counterpart is also present on the member 35 in the form of a series of apertures.

Under certain conditions, it may be desirable to assemble a plurality of spelling boards in one unit, as will be the case where my invention is used for advertising purposes on a large scale. To this end, I provide a supporting frame 40, as shown in Figs. 8 and 9, wherein the opposite ends 11 and 12 of each frame 7 respectively engage inner sides 41 and 42 of vertically spaced top and bottom members 43 and 44, respectively corresponding ends of the members 43 and 44 are connected by a side member 45 against which the side 18 of an end frame 46 may abut. An intermediate spelling board 47 abuts against the opposite side 17 of the end frame 46.

The members 43 and 44 are provided with outwardly projecting elongated grooves 48 for the reception of blocks 49, whereby the

frames 46 and 47 may be slidably keyed in position. Thus, successive spelling boards may be mounted in side-by-side relation, being inserted in the supporting frame 40 from one end thereof.

As shown in Fig. 9, the side edges of the members 43 and 44 extend beyond the opposite working surfaces 5 and 6 and are provided with transversely extending flanged edge portions 51, whereby glass plates 52 and 53 may be retained in operative relation to the working surfaces 5 and 6. The glass plate 52 may comprise a single member but preferably a plurality of sections, one for each spelling board, and they may be inserted in position simultaneously with each frame or after each frame is in position. The particular function of the glass plates 52 and 53 is to accentuate the visual effect of the representation formed on the spelling board, as will appear more fully hereinafter.

My invention also contemplates apparatus, whereby the visual effect of the spelling board may be modified by illumination. Accordingly, I provide a structure, as illustrated particularly in Figs. 6 and 7, wherein a spelling-board 54 is mounted in a frame 55 pivoted at 56 and 57 to a pair of rearwardly extending arms 58 and 59 mounted on a supporting floor 61. The frame 55 is provided with a front compartment 62 having a front wall 63 provided with an opening 64 co-extensive with the working surface 5 of the spelling board 54. The opposite working surface 6 faces a color screen 65 in the form of a flat plate. The latter is retained in position by a rear wall 66 having an opening 67 co-extensive with the front opening 64.

The front and rear walls 63 and 66 have an interconnecting base section 68 constituting a support for the spelling board 54 and the color screen 65, and also rearwardly projecting side walls 69 and 71 having sections 72 extending beyond the rear wall 66. The sections 72 define a compartment 73, the upper side of which is closed by the plate 74 hinged on the rear wall 66 at 75. A rear end 76 of the plate 74 is curved as shown in Fig. 7 with a forwardly projecting edge portion 77 defining a curved surface 78, the latter being in slidable engagement with one end 79 of a plate 81 constituting the lower wall of the chamber 73. The plate 81 is also hinged on the rear wall 66 at 82.

A source of illumination in the form of a pair of lamps 83 is positioned in the chamber 73, being mounted on the curved end portion 76 of the hinged top plate 74, as shown in Figs. 6 and 7. The angularity of the rays of light with respect to the rear working surface 6 may thus be changed by raising or lowering the bottom plate 81, the weight of the top plate 74 and lamps 83 being sufficient to cause the maintenance of a sliding contact between the curved surface 78 and the outer end 79 of said bottom plate 81. The latter may be retained in any desired position by means of a pin 84 which may be disposed in any one of a series of apertures 85 formed in the side wall sections 72 adjacent to the rear edge thereof.

The angularity of the frame 55 and more especially the working surface 5 with respect to an observer may also be adjusted by reason of its pivotal connections at 56 and 57 to the arms 58 and 59, permitting the base section 68 thereof to be actuated out of engagement with the supporting surface 61. The maximum angular movement of the frame 55 may be determined by the extent to which lower edges 86 of the side wall extensions 72 are beveled with respect to the floor surface 61. Each of the arms 58 and 59 are provided with arcuate slotted projections 87 having clamping means 88 extending into engagement with the plate extensions 72, whereby the frame 55 may be retained in any of its several positions.

An upper side 89 of the spelling board 54 is provided with a handle 91, whereby said spelling board 54 may be easily and quickly removed to permit a change in the arrangement of the removable plugs 13 and also the movement of the color screen 65 to a new position, say adjacent to the front wall 63. The space intermediate the tubular elements 2 may be closed by means of a filler 92, so that the only light visible from the working surface 5 is that which passes through the tubular elements 2, the plugs of which have been removed.

In the practical use of the structure just described the spelling board 54 is removed from the compartment 62 by means of the handle 91 and certain of the plug elements 13 are then removed so that the resulting openings define the desired character, whereupon said spelling board is replaced in the compartment 62. The visual effect of the character may now be accentuated by rendering effective the illuminating means 83. The color screen 5 also causes a change in the visual effect which may be further altered by positioning said screen between the working surface 5 and the front wall 63 of the compartment 62. The effect of the illuminating means 83 may now be adjusted by raising and lowering the same or by adjusting the angularity of the spelling board 54 with respect to the observer.

My invention further contemplates means whereby the spelling boards may be made in quantities with a minimum expenditure of time and of money. One method of accomplishing this desired result is illustrated in Figs. 12 and 13, wherein an elongated casing 93 is initially provided with a bottom wall 94 and side walls 95 and 96 and a removable top wall 97. A plurality of elongated tubular elements 98 filled with rods 99 are then positioned between said walls in the manner

indicated in Figs. 13 or 14 whereupon the top wall 97 is secured in position. The casing 93 and enclosed parts are then cut at a plurality of longitudinally spaced points, along the dot-and-dash lines of Fig. 12, to form a plurality of frames, each of which correspond to the frame 7 of Fig. 1. Should it be desirable to have inscriptions on the side of the plug elements 13 of the frame 7, as, for example, when the device is used in the playing of certain games, the rods 99 are provided with a plurality of markings which are so spaced throughout their length as to be positioned intermediate the dot-and-dash lines.

The construction of the spelling board 54 is substantially the same as that just described with the exception that successive rows of tubular elements are separated by thin sheets 101 of, say paper as illustrated in Fig. 15. One method of filling the space intermediate the tubes 98 is to apply the filler to the upper side of an exposed row of tubes, then place the sheet of paper 101 on the coated upper surfaces of said row, apply a coating of the filler to the exposed side of the separating sheet 101 and then place a row of tubes on the latter, and so on until the casing 93 is completely filled, whereupon the upper side 97 is secured in position. When the filler hardens, the casing may be transversely cut at a plurality of longitudinally spaced points.

When glass plug elements are to be employed in connection with the tubular elements 2 of the spelling board, the above processes are modified to the extent that the plug elements 13 are formed independently of the frame 7 and thereafter associated with the tubular elements.

A further application of the spelling board of Fig. 1 is in the forming of characters by projecting the ends 26 of the plug elements 13 into clay. Such desired result may be readily obtained with the parts shown in Fig. 4 merely by placing a layer of clay 102 on the base 16 of the box 15.

In spelling boards of larger size, the plug elements may be formed with sockets 103 for electric lamps 104, as shown in Fig. 17, whereby the visual effect on the surface of the spelling board may be still further modified. In practice, only sufficient elements are inserted as are necessary to define the desired character.

While I have shown several embodiments of my invention, for the purpose of describing the same and illustrating its principles of construction and operation, it is apparent that various changes and modifications may be made therein without departing from the spirit of my invention and I desire, therefore, that only such limitations shall be imposed thereon as are indicated in the appended claims or as are demanded by the prior art.

I claim:

1. A block comprising a plurality of nested tubes, the ends of which lie in the same plane, and plugs for said tubes, said plugs having a length corresponding to the length of the tubes so that the ends of the plugs will be in the same plane as the ends of the tubes, said plugs being movable relative to the said tubes to form recesses therein to denote a desired character.

2. A block having two opposite plane surfaces, in which are disposed the ends of rods encased in tubes, said rods and tubes being disposed side by side and said tubes acting as guides for the independent movement of said rods in order to produce configurations on both planes by the action on one plane.

3. A spelling board having opposed plane surfaces, said board including a plurality of rods disposed side by side, and means for encasing the sides of each of the rods so that such rods can be moved longitudinally relative to each other to produce a desired configuration on both of the said surfaces.

4. A spelling board having opposed plane surfaces, said board including a plurality of rods disposed side by side, and means for encasing the sides of each of the rods so that such rods can be moved longitudinally relative to each other to simultaneously produce a desired configuration on both of the said surfaces.

5. A method of forming a block having two opposite working surfaces disposed in parallel planes, said surfaces consisting of a plurality of independently movable uniform small unit surfaces, which consists in encasing a plurality of elongated tubular elements filled with rods, then in filling the space between the tubes with a binder, and finally transversely cutting the whole at a plurality of points spaced lengthwise of said tubes.

6. A block including a plurality of nested tubes, the ends of the tubes lying in the same plane, and plugs slidably mounted in the tubes and having their ends terminating with the ends thereof.

7. A block including a plurality of nested tubes, the ends of the tubes lying in the same plane, plugs slidably mounted in the tubes and having their ends terminating with the ends of the tubes, and means for limiting the movement of the plugs with respect to the ends of the tubes.

8. A block including a plurality of tubes secured together in side-by-side relation, the opposite ends of the tubes lying in the same plane, and plugs movably mounted in the tubes, the plugs having a height corresponding to the height of the tubes.

9. A block comprising a plurality of encased rods, said block having two opposite working surfaces disposed in parallel planes, the ends of said rods providing the surfaces of the block with a plurality of uniform small

unit surfaces, and each unit surface being independently changeable in order to change the appearance of the whole surface.

10. A block comprising a plurality of encased rods, said block having two opposite working surfaces disposed in parallel planes, the ends of said rods providing the surfaces of the block with a plurality of uniform small unit surfaces, and each unit surface being independently changeable in order to change the appearance of the whole surface, said changes being produced either by depressing or expelling the said unit surfaces.

11. A block having opposed plane surfaces, a portion of said surfaces including the ends of a plurality of rods, and the remaining portion of said surfaces including means surrounding the sides of the rods and filling the spaces therebetween.

12. A block comprising a plurality of tubes, rods slidably mounted in the tubes, and a filler in the spaces between the tubes, the opposite sides of the said block having plane surfaces formed by the ends of the said tubes and rods.

13. A block including a plurality of nested tubes, the ends of the tubes lying in the same plane, plugs slidably mounted in the tubes and having their ends terminating with the ends of the tubes, the ends of the plugs constituting movable surfaces, and means whereby said plugs can be displaced a predetermined distance relative to the ends of the tubes in order to form a configuration having a predetermined height which contrasts with the plane of the unmoved surfaces, the latter forming a background for the configuration.

14. A block comprising a plurality of tubes, a filler between the tubes, and rods slidably mounted in the tubes.

15. A block comprising a plurality of tubes, a binder for uniting the tubes into a solid mass, and rods slidably mounted in the tubes.

16. A block comprising a plurality of tubes, means surrounding the said tubes for binding them into a solid mass, and rods slidably mounted in the tubes, the tubes and rods having the same length whereby the block will have opposite plane surfaces.

17. A spelling board comprising a block having a plurality of apertures formed therethrough and means associated with said apertures and shiftable therein to define sensible indicia at one surface of the block.

18. A block comprising a plurality of tubes of equal length disposed in side to side relation in contact with one another, corresponding ends of said tubes being disposed in common planes and means associated with said tubes for characteristically differentiating selected tubes to thereby produce a sensible indicia.

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