Sept. 27, 1966 | W. ZANDER | 3,274,727

MOSAIC PLUG-IN TOY

Filed June 28, 1962

FIG. 1

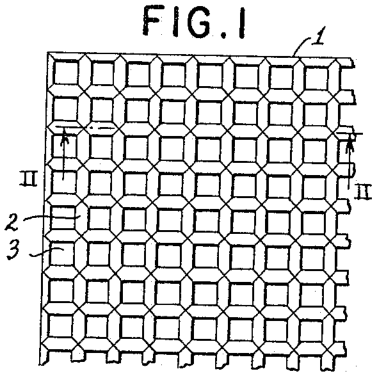


FIG. 2

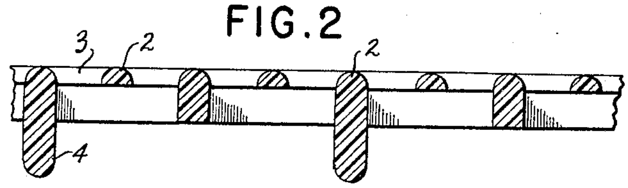


FIG. 5

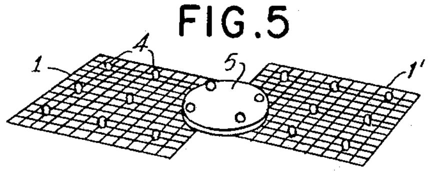
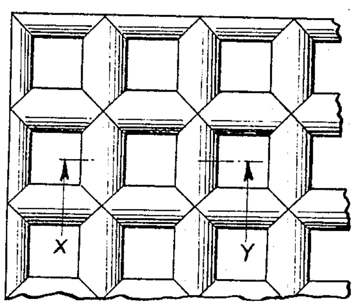


FIG. 3



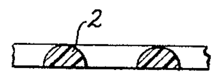


FIG. 4a

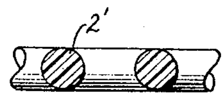


FIG. 4b

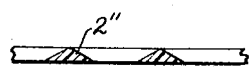
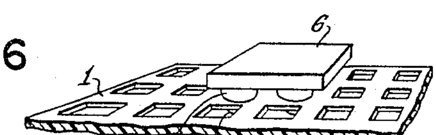


FIG. 4c

FIG. 6



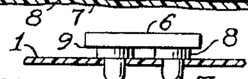


FIG. 7

FIG. 8

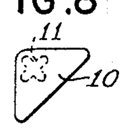


FIG. 9

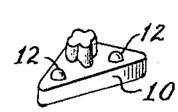
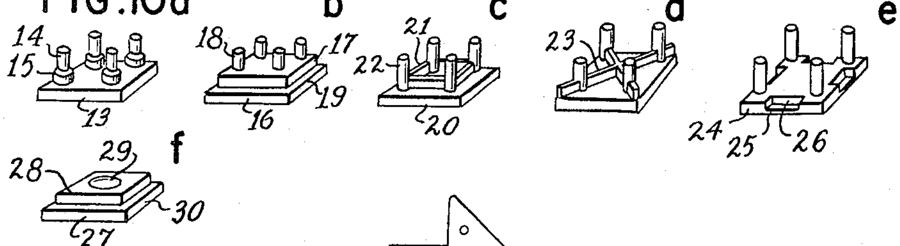


FIG. 10a



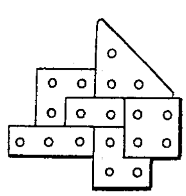


FIG. 11

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MOSAIC PLUG-IN TOY

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9 Claims. (Cl. 46—16)

My invention relates to mosaic pattern toys of the type comprising a base panel or plate upon which a number of individual pattern elements can be placed in any desired grouping.

There are known toys of this type, especially designed for children 2 to 6 years old, in which the base plate consists of regularly perforated cardboard into which beads or balls of glass, wood or ceramic can be placed, the spacing between the perforations being so narrow as to have adjacent balls nearly touch each other to permit laying a mosaic pattern in any desired contour or color combination. The base panel must be kept in a substantially horizontal position and at a fixed place to prevent the balls from rolling out of the perforations. These disadvantages have been avoided in other known mosaic toys of which one comprises a base plate of wood or plastic in grid shape having rather deep recesses into which pegs of wood or plastic of respectively different colors can be stuck. Another known toy comprises a perforated cardboard with balls as mentioned above, except that each ball is provided with a stem or peg that can be plugged fast into one of the perforations.

Also known are kits that comprise base plates and a number of pre-shaped elements of ceramic or glass to be cemented onto the base plate. These kits, constituting a collection of material for an art or craft rather than a toy, do not permit readily modifying or substituting a design or pattern once chosen by another pattern to be composed of the same mosaic elements.

Further known is a mosaic toy comprising several perforated base plates of plastic which can be placed loose beside each other to provide for a correspondingly larger plug-in surface, and the appertaining mosaic elements are each provided with a plug that can be stuck into the perforations of the base plates to remain frictionally held therein. Mosaic elements of larger size, having two plugs, have also been provided for the purpose of straddling two adjacent base plates so that the two plugs engage respective perforations of the two plates. However, the mosaic elements firmly stuck into the perforations and tightly placed against the surface of the base plate or plates cannot be readily removed. An ejector tool is necessary for pushing the mosaic elements out of their seats from the rear of the base plates.

The mosaic elements are sometimes difficult to plug into the base plate, because it is necessary to first seek the holes of the base plate with the tips of the plugs. Those mosaic elements that have only one plug located in an individual base plate also tend to rotate in the base plate so that it is sometimes difficult to properly place one base plate closely beside the other. Another and essential disadvantage is the fact that even if several base plates are located beside each other, a large and uniform plug-in surface is not provided because the base plates still constitute individual units which are only loosely held together by the plugs of a few mosaic elements that form part of the pattern. The size of the plug-in surface is thus rather limited.

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It is an object of my invention to devise a mosaic plug-in toy which avoids the disadvantages of the known toys mentioned above and thus greatly improves the playing possibilities and playing facility.

Another object of my invention is to provide a mosaic toy that permits composing a plug-in surface of any desired size from a plurality of individual base plates without being limited by the particular mosaic design to be plugged in, and that affords a satisfactorily rigid but always readily releasable interconnection of the base plates, thus providing the possibility of readily assembling firmly coherent plug-in surfaces for planning and executing large mosaic designs.

Another object of my invention is to improve the surface conditions of the base plates in such a manner as to facilitate rapid and easy insertion of the plugs that form part of the mosaic elements.

Still another object of my invention is to facilitate removing the individual mosaic elements even if they are fully and firmly held in the perforations of the base plate, thus permitting a rapid removal of the individual mosaic elements without the need for lifting or ejecting tools.

To achieve these objects and advantages, and in accordance with a feature of my invention, I provide the perforated base plates of the toy with protruding studs at the rear side of the plates, the studs being distributed at least over the marginal zones of the base plates. I further equip the toy with perforated connecting plates or discs engageable with the rear studs of at least two closely adjacent base plates thus establishing a firm connection between the two plates on their respective rear sides. The connecting discs need be engageable with only one stud of each of the base plates to be interconnected, but it is preferable to provide a plurality of perforations in the connecting plate for simultaneous engagement by at least two studs appertaining to each base plate. It is further preferable to distribute the studs uniformly over the entire rear side of each base plate to prevent the base plate from bending when the mosaic element plates are plugged into the perforations of the base plate from the front side of that plate.

According to another feature of my invention, the front surface of each base plate is so shaped as to minimize its planar areas, preferably so that each perforation or socket hole constitutes a funnel-shaped opening. It is particularly preferable to entirely avoid planar areas on the front surface of the base plate. This can be done by giving the base plate a grid-like design, the grid consisting of mutually crossing ribs of generally circular, oval or sector-shaped shaped cross section. As a result, the perforations of the base plate attain a generally rectangular or square cross section. When using cylindrical plugs at the individual mosaic elements, such rectangular perforations have the advantage to compensate any excessive diametric sizes of the plugs as may occur in mass production.

According to another feature of my invention, the base plates are provided with quadrangular, preferably square, perforations and the plugs of the mosaic elements are given a corresponding four-cornered shape, so that when the plugs are stuck into a base-plate perforation, the element cannot turn in the base plate even though it may have only one plug.

According to still another feature, the individual mosaic plates that form the elements of the design to be produced have a rear edge spaced from the top surface of the base plate in the plugged-in position of the element plate. The rear edge of the mosaic element plate may be spaced from the base plate around the entire perimeter. However, it is sufficient if only certain portions of the rear edge are so spaced from the base plate. The spacing permits one's fingertips to grip slightly behind the element plate, thus permitting the plate to be removed from the base plate without the necessity of using lifting or ejecting tools. It is of particular advantage to provide the element plates with a base or shoulder portion, or with corresponding rear ribs, which keep the above-mentioned rear edge or edge portion sufficiently spaced from the base plate. However, the possibility of lifting the element plate with the fingertips from the base plate is also secured by simply providing the lateral edges of the element plate with notches or recesses that take care of the desired edge spacing at the notched locations.

The above-mentioned and more specific objects, advantages and features of my invention will be apparent from the embodiments of a mosaic toy according to the invention illustrated by way of example on the accompanying drawing and described in the following. On the drawing:

FIG. 1 is a partial top view of a base plate.

FIG. 2 is a cross section along the line II—II in FIG. 1.

FIG. 3 shows one corner portion of FIG. 1 on enlarged scale.

FIG. 4*a* is a cross section along the line X–Y in FIG. 3, and FIGS. 4*b* and 4*c* show respective modifications with reference to a cross section taken at the same location.

FIG. 5 shows schematically two base plates according to FIGS. 1 to 3 placed beside each other and joined on their rear sides by a connecting plate.

FIG. 6 shows partially and in perspective a portion of a base plate and a plug-in element plate.

FIG. 7 is a front view of the same element plate.

FIG. 8 is a top view of another element plate, and FIG. 9 shows the same element plate from the rear in perspective.

FIGS. 10*a* through 10*f* are perspective views of six different modifications respectively of element plates according to the invention; and

FIG. 11 shows an example of a mosaic pattern composed of element plates.

The base plates **1** of the illustrated toy consist essentially of a grid structure made of plastic, although any other suitable material may also be used. The particular dimensions of each base plate, was well as of the matching other components of the toy, are not essential. However, by way of example, it may be mentioned that in a toy commercially made according to the invention the base plates used have rectangular shape, 5½ inches long and 2⅝ inches wide with 16 perforations along the narrow edge and 32 perforations along the long edge. The perforations are formed between longitudinal and transverse rib portions **2** of the grid plate. The cross-sectional shape of the perforations **3** is square. Each perforation is located in the middle of a funnel structure formed by adjacent ribs **2**. According to FIGS. 2 and 4*a* the cross section of the ribs is substantially semispherical. However, a suitable shape, tapering from the top surface of the base plate toward the rear, can also be obtained by giving the ribs a circular cross section as shown at **2′** in FIG. 4*b*, or a triangular cross section as shown at **2″** in FIG. 4*c*. Each base plate is provided on its rear side with protruding studs **4**. The studs need be distributed only along the marginal zones of the base plates, but it is preferable to distribute them over the entire rear surface of each plate as is apparent from the perspective rear view shown in FIG. 5. The studs **4** are preferably integral with the main body of the plates, the entire baseplate structure, including the studs, being molded from plastic material, for example.

According to FIG. 5, a circular connecting plate **5** is provided with four perforations which engage two studs **4** on each of two adjacent base plates **1** and **1′**, thus frictionally holding the two base plates together on their rear sides with sufficient rigidity to provide on their respective front faces a continuous playing or plug-in surface. A number of such connecting plates **5** may be provided and some of them may be given larger size than shown in FIG. 5 so as to contain more than four perforations for the purpose of joining three or four base plates together. While a circular connecting plate **5** is illustrated, these plates may be given any other desired shape, such as the shape of a square. It will be recognized from the following that the connection between two adjacent base plates, jointly forming a single plug-in surface, may be further braced from the front by such mosaic element plates as may straddle two mutually adjacent base plates. However, by virtue of the connection established at the rear with the aid of the connecting plate **5**, any additional connection established by element plates at the front side need not be relied upon. Consequently, a reliable and sufficiently immovable interconnection between base plates is secured even if the two base plates are not straddled by mosaic element plates; and it is also possible to prepare a composite layout or playing surface for planning purposes before commencing the deposition of an intended mosaic design.

The mosaic plate element **6** shown in FIG. 6 is of square shape and is provided with four plugs inserted into four perforations of the base plate **1**. Each plug **7** has a shoulder portion **8** of larger diameter than the plug proper so as to abut against the front face of base plate **1**, which in FIG. 7 is simply shown to have straight shape although its actual shape is in accordance with that described above. As a result, the element plate **6** has a rear edge **9** sufficiently spaced from the base plate **1** to permit the element plate **6** to be gripped with one's fingertips so that it can easily be removed from the base plate even though the element plate is so firmly held in the base plate as to afford placing the base plate with the mosaic design into any position or carrying it about.

The element plate **10** shown in FIGS. 8 and 9 has triangular shape and is provided with a single plug **11** whose cross section has cornered shape so that its four points correspond to the corners of the square openings in the base plate. In the illustrated embodiment the plug **11** has a cross-shaped cross section. As a result, a turning of the mosaic plate element in the base plate is prevented even though it has only one plug. Shown at **12** in FIG. 9 are bosses **12** preferably integral with the material of the plate **10** and the plug **11**. The bosses **12** serve to keep the rear edge of the element plate spaced from the base plate as described in the foregoing.

FIGS. 10*a* through *f* show the rear sides of respectively different element plates which are all so designed that their rear edges remain fully or partly spaced from the base plate in the plugged-in position of the element plate. The element plate **13** according to FIG. 10*a* has its plugs **14** provided with shoulders **15** of wider diameter, corresponding to the shoulder **8** described above in conjunction with FIGS. 6 and 7. The element plate **16** according to FIG. 10*b* has an inwardly stepped portion **17** which carries the plug pins **18** and thus provides for a rear edge **19** that remains spaced from the base plate into which the element plate **16** is stuck. The base plate **20** shown in FIG. 10*c* is provided with ribs **21** between its plug pins **22** for securing a corresponding spacing. Ribs of different arrangement but the same function are shown at **23** in FIG. 10*d*. While in the embodiments of element plates so far described the rear edge that remains spaced from the base plate extends about the entire perimeter of the element plate, FIG. 10*e* shows an element plate **24** in which a corresponding edge portion **25** is formed by a recess **26** or notch. Such notches should be provided on two opposite sides of the element plate, but are preferably located on all four sides as shown. FIG. 10*f* shows an element plate **27** with a stepped portion **28** corresponding to the portion **17** in FIG. 10*b*. This plate is provided at its rear side with a recess **29** for use with a base plate having vertically protruding studs on its front surface upon which element plates according to FIG. 10*f* are to be stuck. The rear edge **30** of element plate **27** then also remains spaced from the front surface of the base plate.

FIG. 11 shows, by way of example, a mosaic pattern composed of a variety of element plates according to the invention, the location of the plugs being indicated by small circles. It will be understood that element plates of different shapes and different sizes may be used or added. The element plates may consist of any suitable material such as ceramic, wood or plastic, the use of plastic being preferred. It is also preferable to provide the toy with element plates of respectively different colors for the purpose of laying multi-colored mosaic patterns.

To those skilled in the art, it will be obvious upon a study of this disclosure, that my invention permits ot a variety of modifications and hence can be given embodiments other than particularly illustrated and described herein, without departing from the essential features of my invention and within the scope of the claims annexed hereto.

I claim:

1. A mosaic plug-in toy comprising grid-shaped base plates, each base plate being formed by a plurality of grid bars intersecting at right angles to each other so as to define rectangular grid openings therebetween, said base plate having a plurality of studs of specific length integral with and extending from said grid bars at one side of said base plate substantially at right angles to a plane passing through said grid bars; at least one substantially flat junction plate having a plurality of perforations and a thickness less than the specific length of said studs, the studs of a plurality of adjacent base plates being insertable in the perforations of said junction plate so that said studs protrude through said perforations and said junction plate being adapted to overlap said adjacent base plates and to be frictionally secured by said studs, said studs being adapted to support said base plate on a substantially horizontal supporting surface so that said junction plate and said grid bars are spaced from the supporting surface whereby the fingertips of a user are insertable in the space between the supporting surface on the one hand and said junction plate and said grid bars on the other hand for raising said junction plate and base plate from the supporting surface; and a multiplicity of mosaic element plates having a rear side and plug means extending only from said rear side thereof at substantially right angles thereto, said plug means defining a multicornered figure in cross section having effective cross-sectional dimensions corresponding to those of at least one of the rectangular grid openings of said base plate and being insertable in said rectangular grid openings so that it is frictionally engaged and positively held therein against rotation, said element plates having spacer means and at least one lateral surface portion at said rear side thereof, said spacer means extending from said lateral surface portion a distance less than the specific length of said plug means so that said spacer means is in abutting engagement with the grid bars of said base plate and said lateral surface portion is substantially parallel to the plane passing through said grid bars when said plug means is fully inserted in said grid opening whereby said lateral surface portion of said element plates is engageable by the fingertips of a user for removing said element plates from said base plate.

2. In a mosaic toy according to claim **1**, said grid openings in said base plate having outwardly flaring arcuate shape with their widest cross section at the front to facilitate plugging said element plates.

3. In a mosaic toy according to claim **1**, each of said element plates having a front planar surface, and said plug means comprising at least two plugs to prevent rotary displacement of said element plate when plugged in, said plugs having a substantially uniform cross-sectional area that is only a fraction of said front planar surface.

4. In a mosaic toy according to claim **1**, said grid openings having a quadrangular cross section, and said rear plug means of each of said element plates comprising a single plug having a cross section of substantially four leaf clover shape non-rotatably received in the respective opening.

5. In a mosaic toy according to claim **1**, said plug means consisting of a plurality of plugs extending from each of said element plates and said rear spacer means of said element plates comprising a coaxial shoulder portion of substantially equal length on each of said plugs so as to keep said rear lateral surface portion of said element plates uniformly spaced from said base plate.

6. In a mosaic plug toy according to claim **1**, said spacer means comprising an inwardly stepped rear portion of each of said element plates having a surface abutting said base plate for keeping said rear lateral surface portion spaced uniformly from said base plate.

7. In a mosaic plug toy according to claim **1**, each of said element plates having a front planar surface and said spacer means comprising projections extending substantially perpendicularly to said front planar surface on the rear side of said element plate for keeping said rear lateral surface portion spaced from and parallel to said base plate.

8. In a mosaic plug toy according to claim **1**, each of said element plates having a front planar surface, and said rear lateral surface portion defined by the base of at least one notch extending laterally along a rear edge of said element plates, said rear lateral surface portion being substantially parallel to said front planar surface.

9. A mosaic plug-in toy comprising grid-shaped base plates, each base plate being formed by a plurality of grid bars intersecting at right angles to each other so as to define rectangular grid openings therebetween, said grid bars being tangent along their entire length to substantially parallel planes at front and rear sides of said base plate respectively, said base plate having a plurality of studs of specific length integral with and extending from said grid bars at said rear side of said base plate substantially at right angles to said planes; at least one flat junction plate having a plurality of perforations and a thickness less than said specific length of said studs, the studs of a plurality of adjacent base plates being insertable in the perforations of said junction plate so that said studs protrude through said perforations and said junction plate being adapted to overlap said adjacent base plates and to be frictionally secured by said studs, said studs being adapted to support said base plate on a supporting surface so that said rear side thereof is spaced from the supporting surface whereby the fingertips of a user is insertable in the space between said rear side and the supporting surface for raising said base plate from the supporting surface; and a multiplicity of mosaic element plates each having a front uniplanar surface and a rear side and plug means of specific length located only at said rear side thereof and extending therefrom at substantially right angles to said front surface thereof, said plug means defining a multicornered figure in cross section having effective cross-sectional dimensions corresponding to those of at least one of the rectangular grid openings of said base plate and being insertable in said rectangular grid opening at the front side of said base plate so that it is frictionally engaged and positively held therein against rotation, said element plates having spacer means and at least one lateral surface portion at the rear side thereof, said spacer means extending from said lateral surface portion a distance less than the specific length of said plug means so that said spacer means abuts the grid bars of the base plate and said lateral surface portion is substantially parallel to the plane passing through said grid bars when said plug means is inserted in said grid opening, whereby said lateral surface portion of said element plates is engageable by the fingertips of a user for removing said element plates from said base plate.

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