

Feb. 17, 1953

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2,628,838

ROTARY BLOCK GAME APPARATUS

Filed Jan. 29, 1947

3 Sheets-Sheet 1

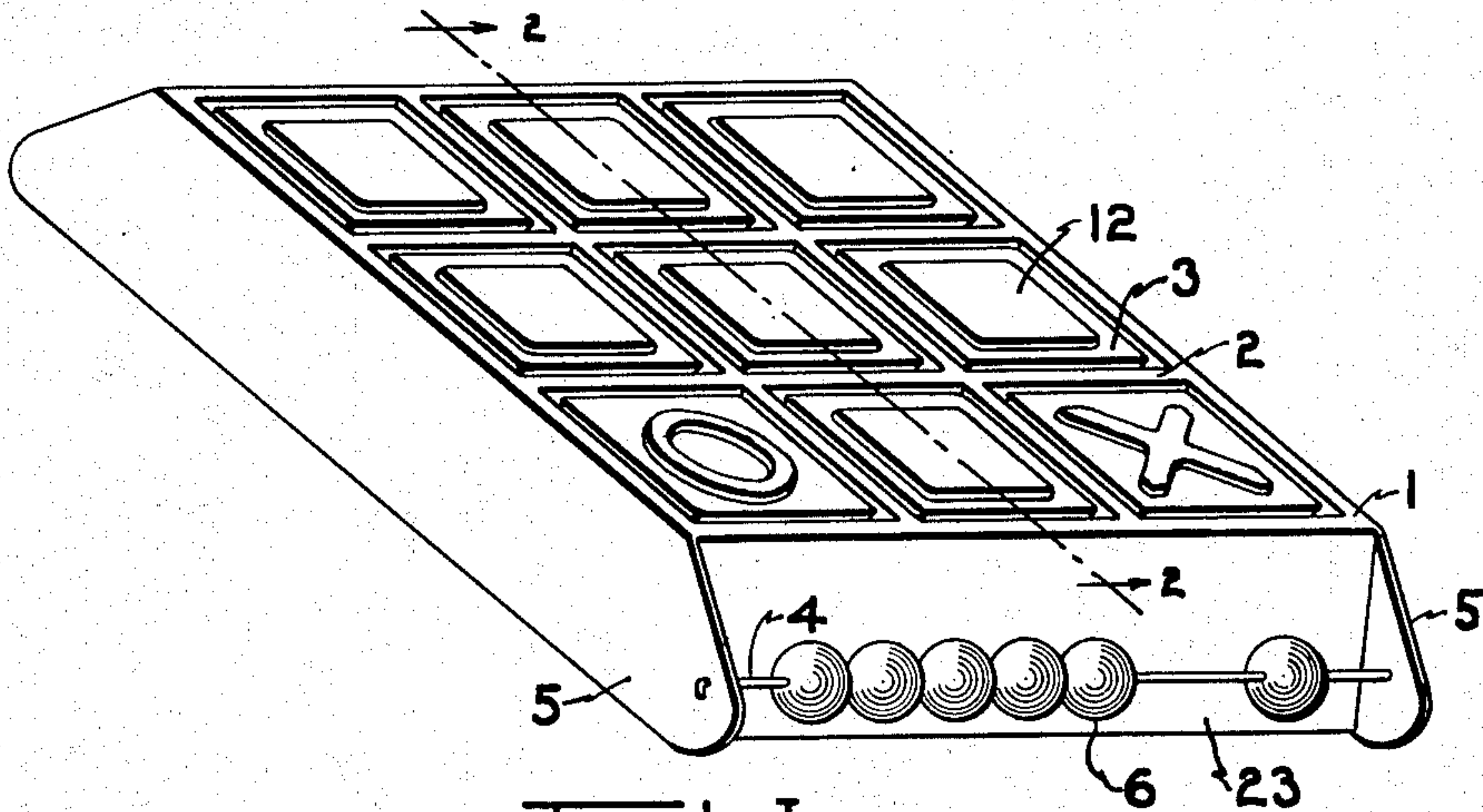


FIG-1

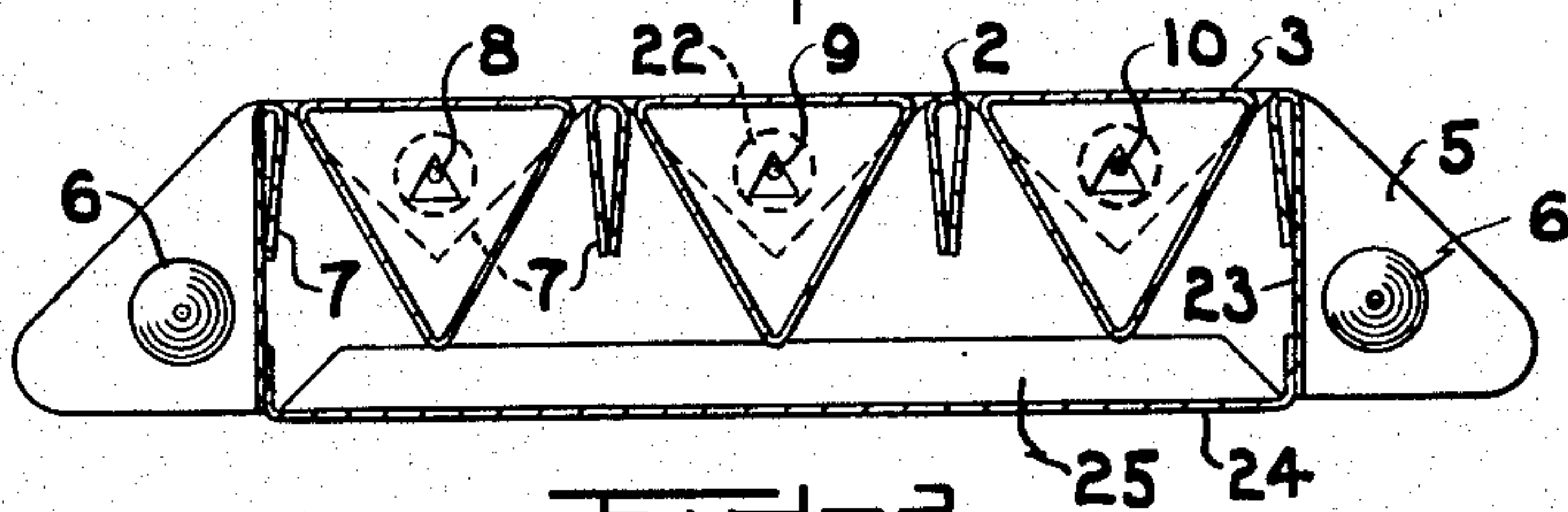


FIG-2

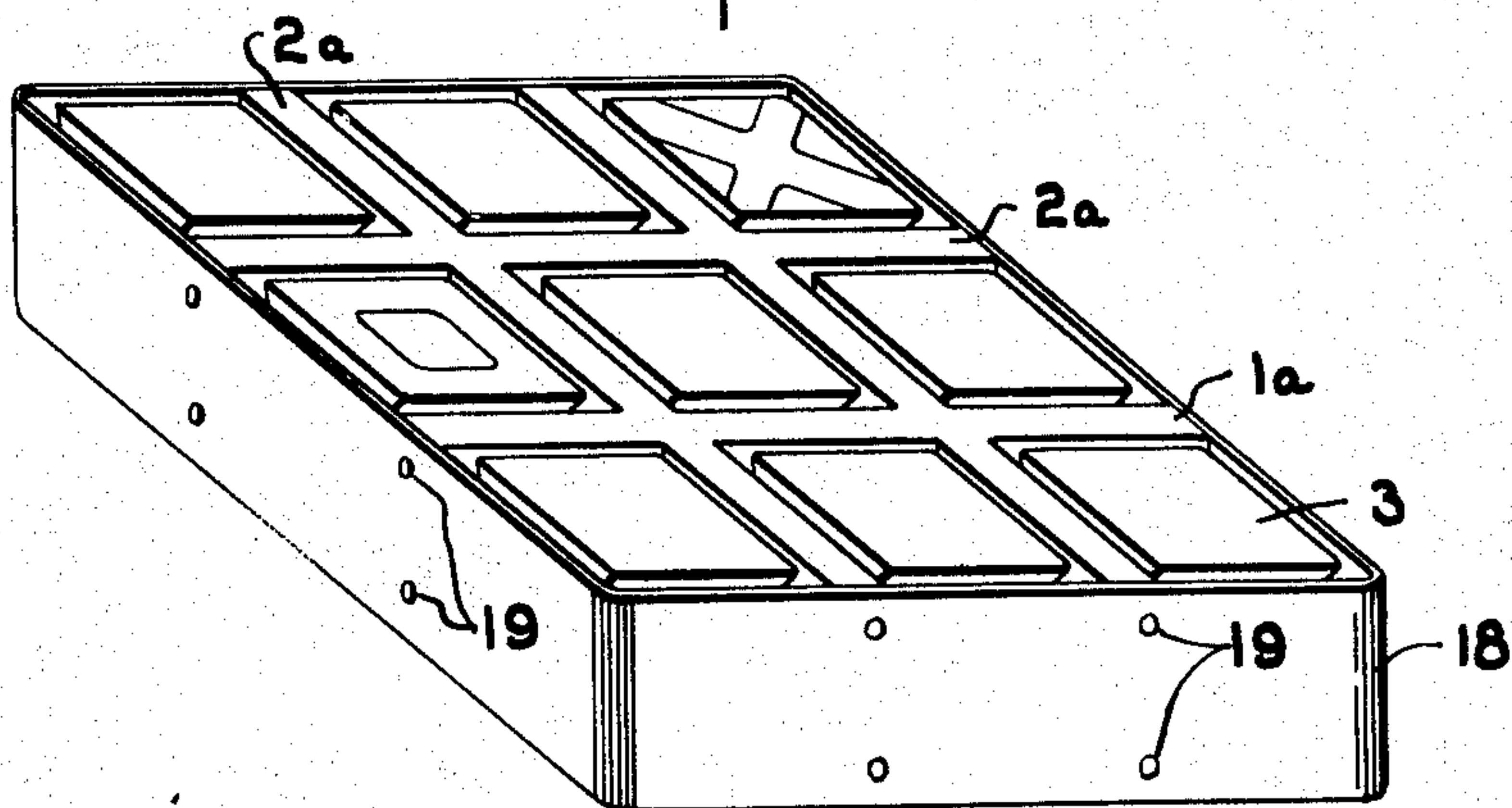


FIG-3

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3 Sheets-Sheet 2

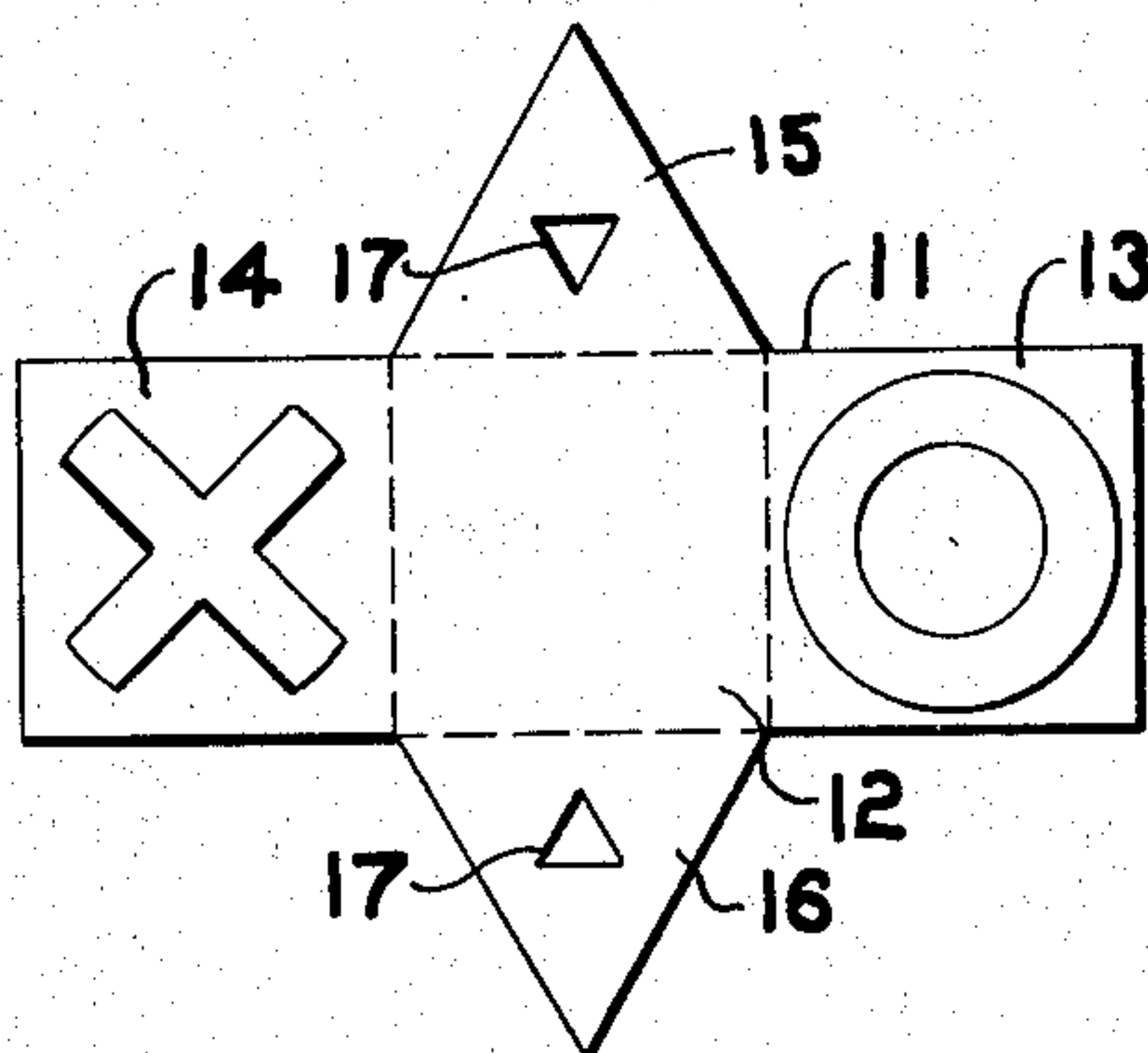


FIG-4

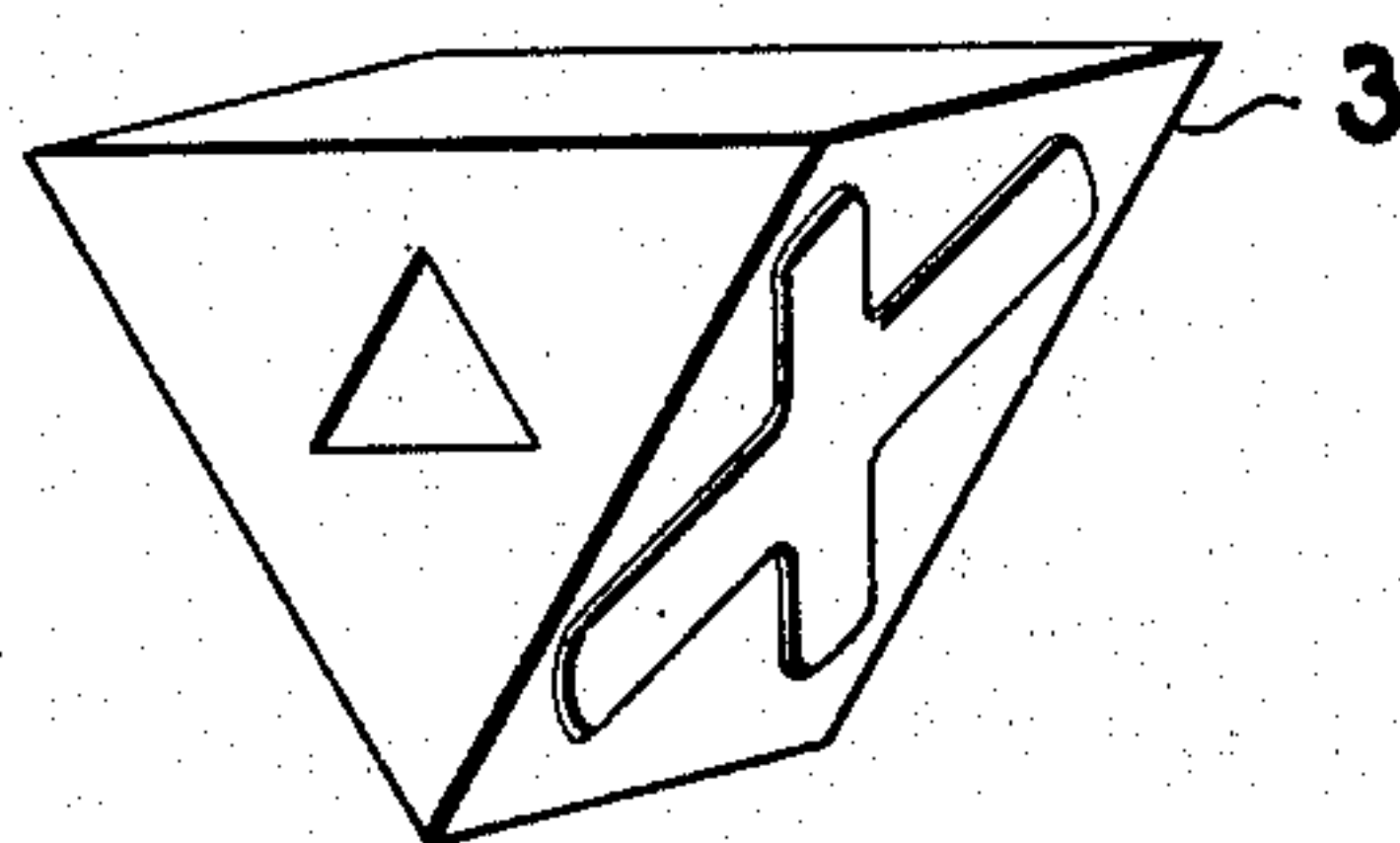


FIG-5

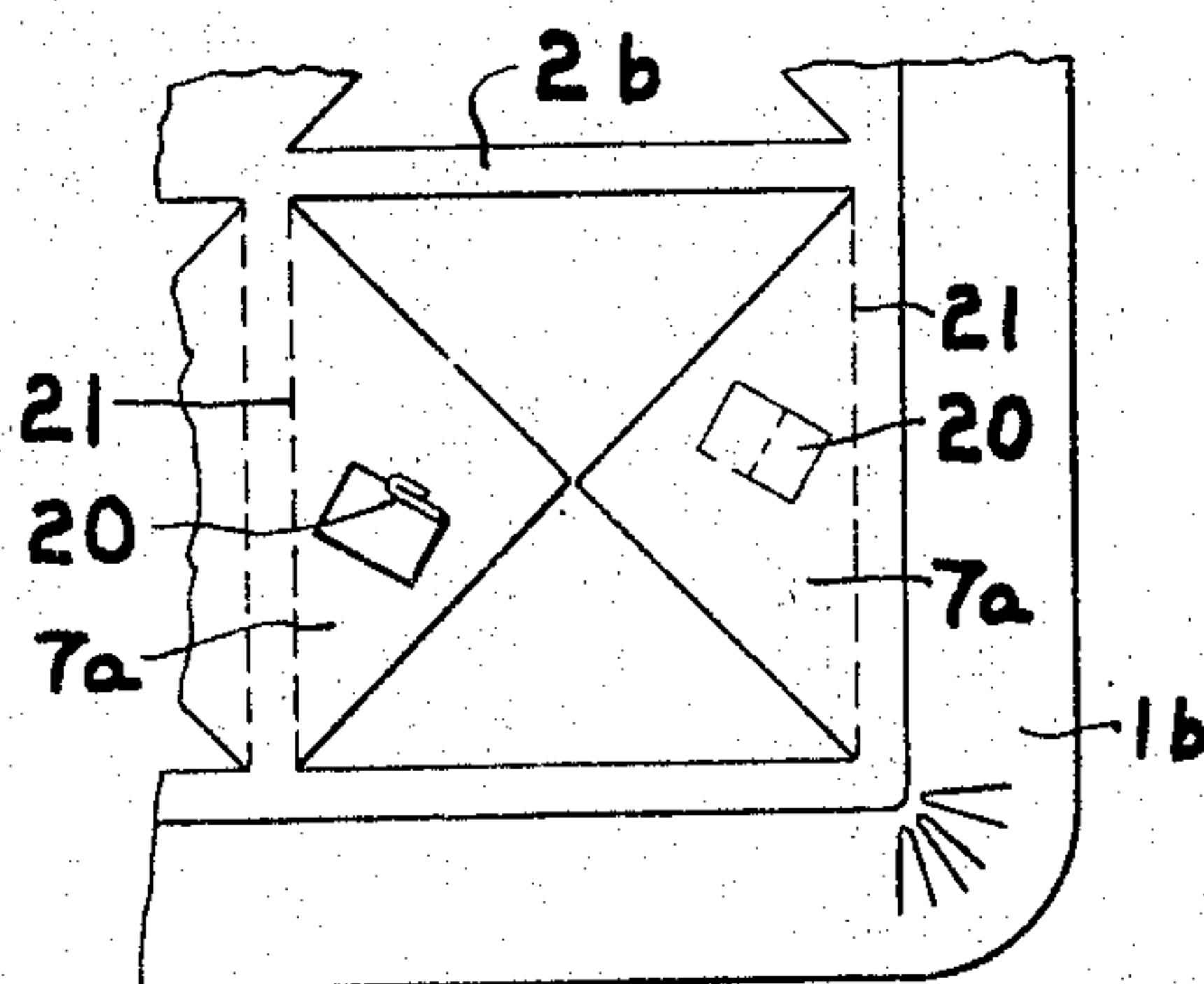


FIG-6

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3 Sheets-Sheet 3

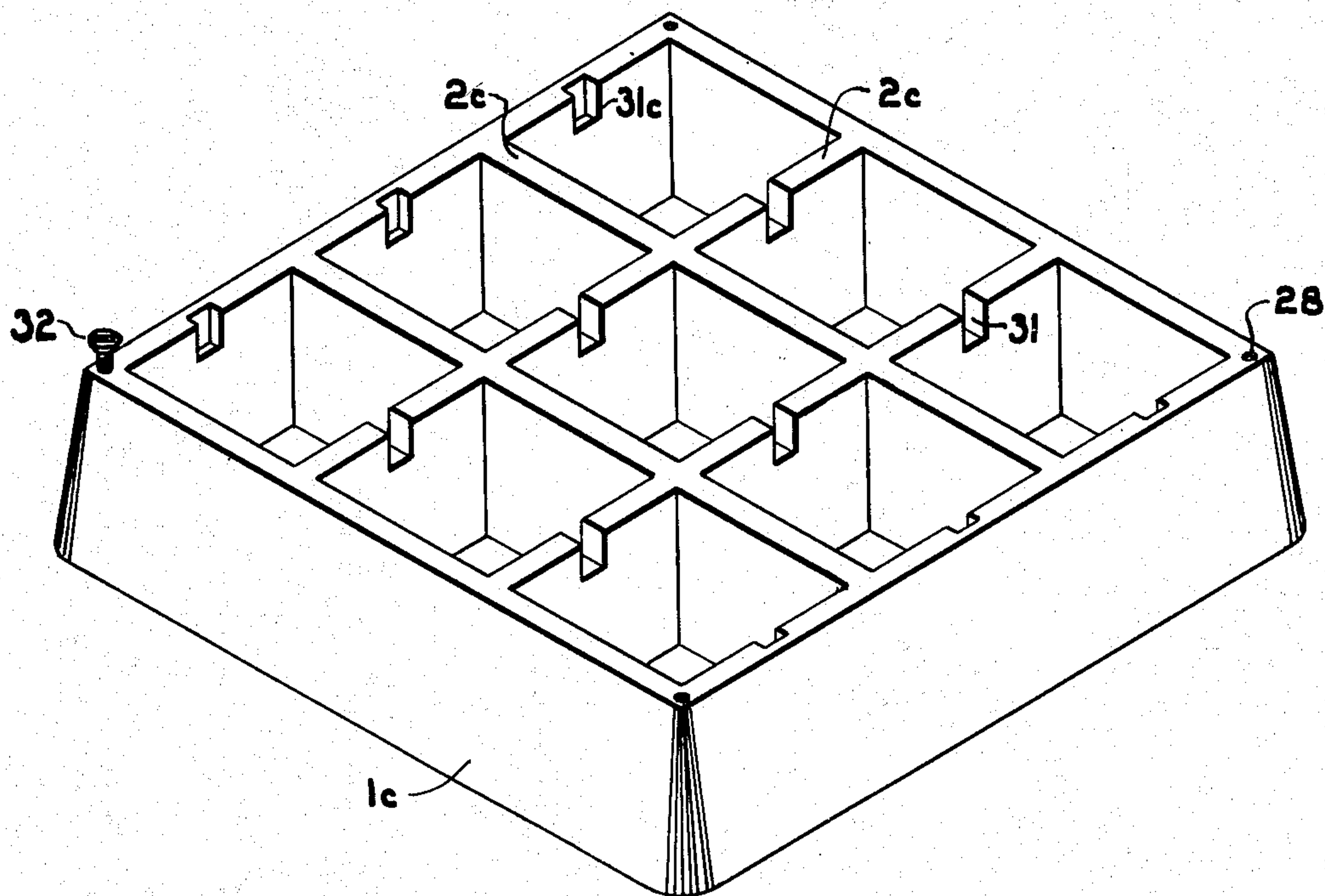


Fig-7

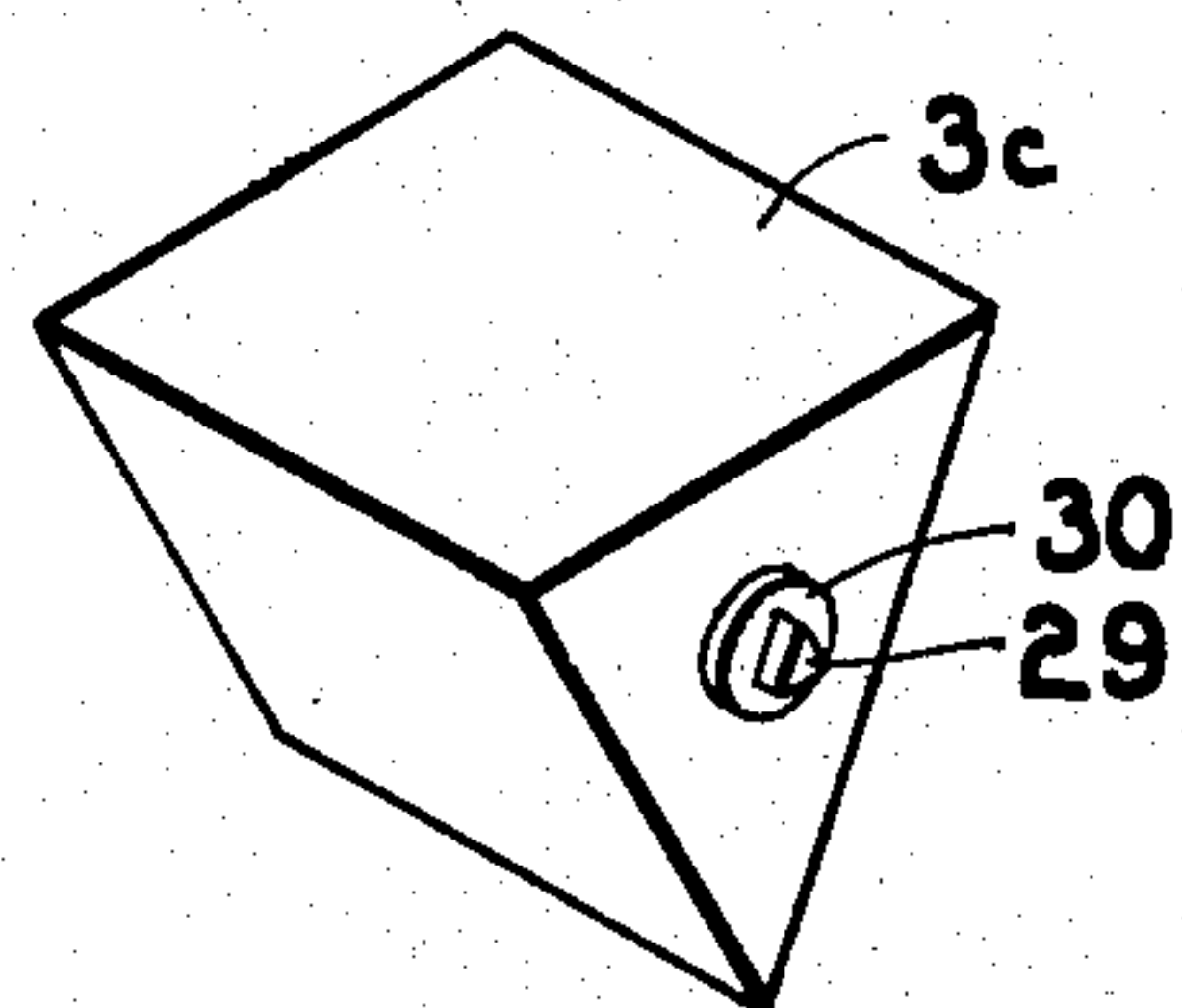


Fig-9

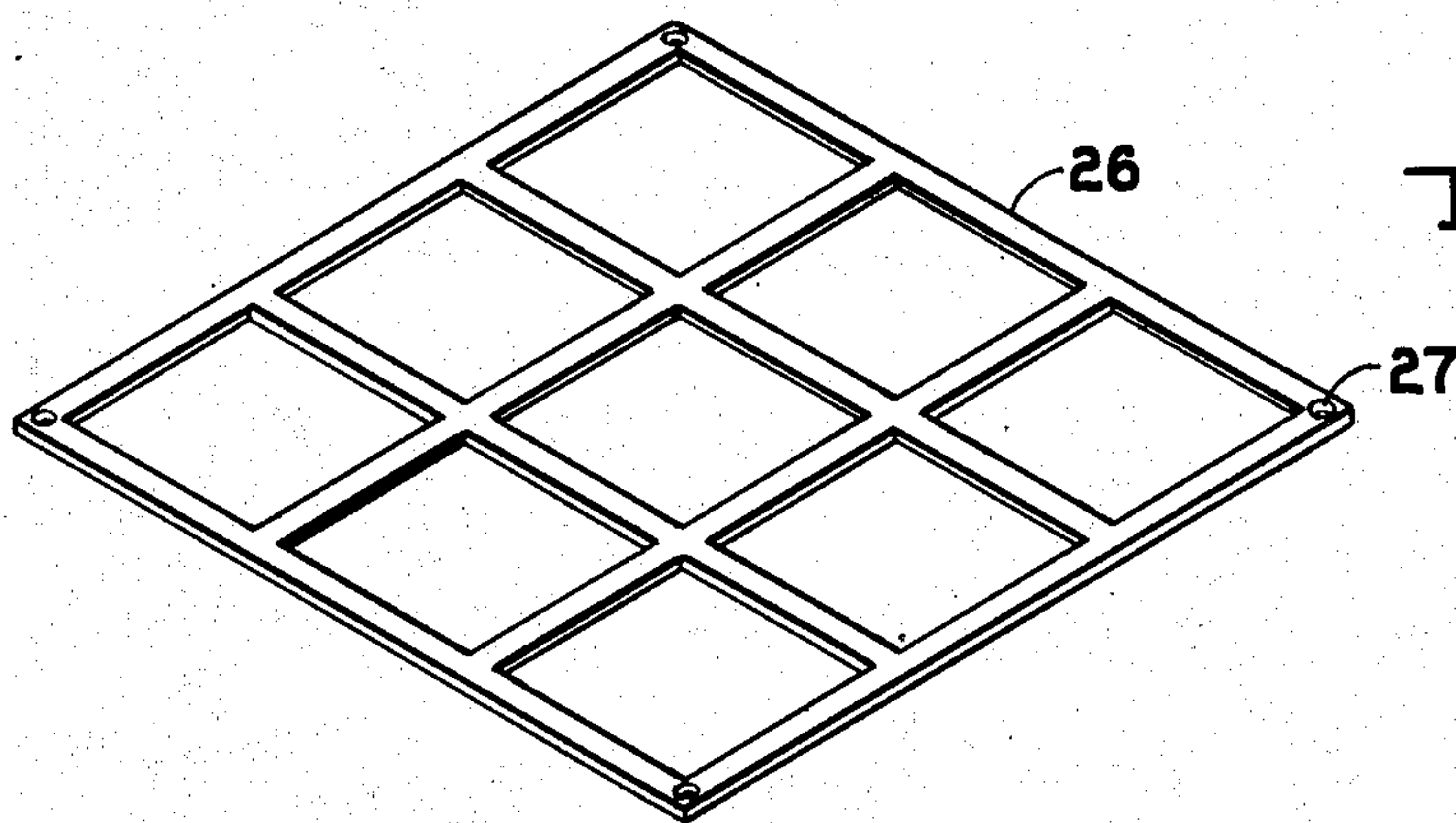


Fig-8

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ROTARY BLOCK GAME APPARATUS

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10 Claims. (Cl. 273—130)

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The present invention relates broadly to a rotatable block apparatus, and in its specific phases to a game apparatus.

Games played with building blocks have proven to be exceptionally entertaining and instructive to small children, but of little interest to adults. On the other hand, games of high skill have been fascinating to adults, but of no interest to children due to the difficulty and mental concentration involved. Perhaps the reason why these particular games have been so interesting to the respective groups is that there is a natural desire to accomplish some end, and that, in turn, is enhanced when there are physical elements to move plus the requirement of skill in doing so. Another game which has proved to be fascinating to both adults and children, and which has physical elements, is the one which is variously known as "naughts and crosses," or "tick-tack-toe," or "criss-cross." This game is played with a pencil and paper wherein double cross lines are drawn on the paper and then the players, by alternate plays, try respectively to get three "naughts" or three "crosses" in a line, a thing which wins the game. This procedure is commonly carried on until the paper or pencil is used up, although it is sometimes detrimentally played on wall surfaces, table cloths, or the like. It was a recognition of these amusement features of the two types of games which led to the conception and development of the idea of combining same and playing the game of "criss-cross" with a mechanical apparatus having fixed location rotatable blocks, each of which exhibits a "naught," a "cross," and a "blank."

Accordingly, among the objects of the present invention is the provision of a simple and interesting mechanical apparatus, the parts of which are anchored in place to prevent loss, and adapted for use in playing the game of "criss-cross" without the use of a pencil and paper, or other equipment.

Another object is to provide an apparatus with rotatable blocks wherein a tap on the edge of one face of a block will rotate same to bring another face up.

Another object is to provide means for causing the blocks, when rotated, to stop with their upper face substantially horizontal.

Another object is to provide a rotatable block "criss-cross" game which has a scoring means.

A further object is to provide a game structure which is simple, compact, and economical to manufacture,

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A further object is to provide triangular blocks with parallel ends, said ends having triangular openings therein for the axles of said blocks, said openings having the points of same facing the sides of the block, with the axles substantially smaller than said openings.

A further object is to have either a common axle for each cross row of blocks, or individual mountings for each block.

A further object is to provide modified construction triangular blocks with parallel ends, said ends having triangular trunnions with the points of same facing the sides of the block, the frame for receiving these blocks having substantially flat bottom vertical slots so that said trunnions may rest on same with the upper face of the blocks substantially parallel with the top face of the frame, said blocks being rotatable so that any one of the sides may become the top face.

A still further object is to construct the apparatus so as to facilitate clearing same ready to start a new game.

Still further objects and advantages will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain means for carrying out the invention, such disclosed means illustrating, however, but several of various ways in which the principle of the invention may be used.

In the annexed drawings:

Figure 1 shows a perspective view of one preferred form of the present invention.

Figure 2 is a vertical section view taken at line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 shows a perspective view of a modified form of the present apparatus.

Figure 4 shows a blank from which the triangular block may be formed.

Figure 5 shows an enlarged perspective view of one of the triangular blocks formed from the blank shown in Figure 4.

Figure 6 shows a fragmentary top view of one corner of a modified assembly wherein unit axles in the frame are provided for the blocks.

Figure 7 shows a perspective view of the frame portion of a modified form of the present invention.

Figure 8 shows a perspective view of a perforated cover member adapted for use on the upper

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face of the frame member illustrated in Figure 7.

Figure 9 shows a perspective view of a block with trunnions adapted for use with the frame and cover members illustrated in Figures 7 and 8.

Referring more particularly to the drawing, Figure 1 shows a preferred form of the invention which utilizes a frame 1 having partitions 2 and a set of nine pivotally mounted blocks 3. A scoring device may be provided at each end of the assembly, and one convenient form of this includes a rod 4 mounted on extending ears 5 which are a continuation of the sides of frame 1. Strung on this rod 4 are a plurality of bead-like members 6, which only partially fill out the space between ears 5. In order that two players may individually score the number of games which they have won, one of these scoring devices may be mounted on each end of the assembly, as is shown in Figure 2.

Frame 1 with its sides, ends, and partitions may be stamped from a single piece of sheet metal, or it may be made as a composite assembly from either metal, wood, metal and wood, plastic, or the like. Where the frame assembly is made from one piece of sheet metal, as is more particularly illustrated in Figures 1 and 2, the joints are preferably fastened together, for instance by spot welding or soldering. Openings in the frame for the blocks 3 are preferably made by diagonally cross slitting the opening area from corner to corner, following which the four triangular tongues 7 are bent down as shown more particularly in Figure 2, the end tongues being bent slightly beyond perpendicular to the top face of the frame to provide ample clearance for blocks 3 during the rotation. The side tongues 7, on the other hand, are preferably bent to perpendicular position and perforated for three rods 8, 9, and 10, on which blocks 3 are pivotally mounted for a purpose to be hereinafter described in detail. In order to space the ends of each of the blocks 3 from the adjacent tongues 7, spacing washers 22 may be used. These washers are preferably of a thickness substantially taking up the space between blocks 3 and tongues 7 while allowing the blocks to freely rotate.

A blank 11, as shown in Figure 4, is used to form an individual block. This blank has a plain center panel 12, on one edge of which is a "zero" panel 13, while on the opposite edge is attached an "X" panel 14. Attached to the other pair of edges of the center panel are a pair of isosceles triangle shaped end panels 15 and 16, the side edges of which are of the same length as the side edges of the "zero" and "X" panels. The outlines of the center panel are shown by dashed lines which are the bending lines about which the four attached panels are bent downward to form the assembly shown in Figure 5. For inexpensive constructions, the adjacent edges of the panels, after bending to form the block, would be left unattached, although in the more expensive toys, those edges would be welded, soldered, or otherwise fastened together. The "X" and the "zero" on the inexpensive construction blocks would be painted thereon, while in the more expensive toys, they would be embossed and then painted. The use of embossing is shown in Figures 1 and 5, while the plain painting is illustrated in Figure 3.

End panels 15 and 16 are provided with isosceles triangle perforations 17, the apexes of which are respectively directed at the corresponding faces of the finished block, as shown clearly in Figure 5.

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These triangular perforations, which form the hub of the block, are made of a size sufficient to facilitate mounting on rods 8, 9 and 10, as shown in Figure 2, so that when the block 3 is rotated, the triangular perforation will shift from apex to apex thereof on the rod, and, since each apex is above the center of gravity of the block, the latter will come to rest each time with its uppermost face substantially horizontal.

The assembly shown in Figure 3 has wooden partitions 2a which become part of the frame 1a to which is fastened an outer continuous sheet metal strip 18 by means of screws or tacks 19. The sheet metal strip 18 will protect the blocks 3 from accidental injury under normal conditions of use, and, at the same time, makes possible a very simple construction of both wood and metal.

The use of rods 8, 9, and 10, as shown in Figure 2, may be avoided by following the construction shown in Figure 6. Here the pivot portion of each of the side tongues 7a is perforated on three sides of a prechosen location rectangular area and half way down the fourth side, following which, each is folded and bent as shown to form the pivot 20 on which blocks 3 can rotate. The slope of this tongue is preferably the same as the slope of triangular openings 17 when assembled, but is not limited to same since other slope angles may be satisfactorily used to permit the top face of the blocks to come to rest in substantially horizontal position. It should be noted in this connection that in Figure 6 on the right-hand tongue 7a, there has been indicated by dashed lines where integral pivot 20 is to be bent and by solid lines where it is to be sheared, while the left-hand tongue 7a shows this integral pivot 20 sheared and bent to finished position. While the top and bottom tongues have been bent down into place, the edges of pivot carrying tongues 7a are shown with dashed lines 21, thus indicating where these tongues are to be bent to form the downward depending tongue construction generally illustrated in Figure 2. All of these tongues are part of the sheet of metal which is used to form frame 1b with its sloping sides as illustrated in Figure 6.

For convenience of forming the particular assembly shown in Figures 1 and 2, the blocks 3 may be mounted on rods 8, 9, and 10, before one or both of the side panels which carry ears 5 are bent down to the final assembled position shown, and in which position, they may be fastened, for instance, by interlocking, welding, brazing, or soldering. Rods 4 with bead-like members 6 would also be installed in place before the sides are bent and anchored in final position. In the cheaper constructions, the interlocking, welding, brazing, or soldering of the side members to the members 23 may be omitted, and if desired, the outer ends of rods 4 may be bent down to hold the sides in assembled position. This construction, however, is not very rigid, and it is preferable to positively anchor the side members having tongues 5, to end members 23. A still better construction involves the use of a bottom panel 24, Figure 2, with up-turned edges 25, which may be soldered or otherwise fastened to the side and end members of frame 1. The smooth bottom thus provided may be safely laid on the finest furniture without danger of scratching same, and if desired, a piece of felt or the like may be glued to the bottom face of panel 24 so as to minimize slippage when used on tables, or the like.

While the present invention readily lends itself

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to production from sheet metal, or sheet metal and wood, it is also adapted to molding from plastic material as well as die casting from metal. Frame 1c shown in Figure 7 is particularly adapted for construction by the latter procedures. For improved appearance the edges of frame 1c are preferably flared out slightly at the bottom, and a top grill 26, Figure 8, provided for the assembly. The corners of this grill may be provided with openings 27 which are preferably countersunk for flat head screws 32 which are adapted, in final assembly, to engage threaded openings 28 in the top face of the frame 1c.

Frame 1c is provided with partitions 2c, and two of these partitions are provided with flat bottomed parallel bearing slots 31 while the corresponding side walls have parallel slots 31c. The slotted partitions 2c may be used alone without the cross joining plain partitions where partition warpage is minor and cross support for grill 26 is not required, but for a high quality assembly it is best to have the partitions extend between blocks 3c in both directions.

The block 3c, Figure 9, is particularly designed for use with frame 1c and is symmetrically provided on both ends with triangular trunnions 29 and spacers 30 which hold block 3c spaced slightly from the walls or partitions carrying the supporting slots. These blocks may be provided with markings as described in connection with block 3, or other insignia may be used as desired for playing other games, such as picture puzzles, and the showing is intended to diagrammatically illustrate these variations. Blocks 3c may be cast of plastic with the trunnions in place, or same may be made of wood, metal, or other suitable material and the trunnions added later. Where the blocks 3c are to be used for playing the game of "criss-cross," the trunnions are preferably offset slightly toward the blank face for a purpose to be hereinafter described.

With a triangular block 3c the trunnions will preferably be in the form of isosceles triangles with the points of the triangle pointing toward the adjacent faces of the block. When the blocks are placed in the frame with the latter in horizontal position and the trunnions in the slots, one of the faces of the trunnion will rest on the bottom face of the corresponding slot which in turn will permit the upper face of the block to assume a plane parallel with the top face of the frame. When all of the blocks are in place in frame 1c, grill 26 is mounted thereon and anchored in place in conventional manner. This grill, in turn, holds blocks 3c in fixed location while permitting same to rotate.

While the game has been illustrated with nine rotatable blocks particularly adapted for playing the game of "criss-cross," it is to be understood that the apparatus is not limited to nine blocks, but that more or less blocks may be used, and the showing is to be considered as diagrammatically illustrating variations of this nature. It is further to be noted that while triangular blocks with triangular perforations 17 have been used to explain the principle of constructing the rotatable blocks 3, the latter are not limited to specific triangular shape, since, for instance, a square block will operate in like manner, wherein the perforations for the axle rod are square and the points of the perforation directed toward the respective faces of the block. With this in mind, it is to be considered that the blocks 3 illustrated in place in Figures 1 and 3, diagrammatically represent the various equivalent forms

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of blocks usable in accordance with the present invention.

To play the game, the blocks are all turned so that the center or blank panels 12 are up. In this case, the under face of all the triangular blocks at one end of the assembly will be "zero," while all of the faces of the blocks at the other side, carry an "X." The player at the end of the game assembly having the "zero" on the under face, may make the first play by deciding which block he wishes to play, and then, by tapping the adjacent edge of that block, it will rotate so that the next face will turn up and that face will carry an "X." This block, for instance, is the one shown at the lower right-hand corner of the assembly shown in Figure 1. The other player then takes his turn and taps the adjacent edge of the block which he wishes to play, and this block, in turn, rotates so that the adjacent face is up and that face will carry a "zero." Such block, for instance, may be the one shown at the lower left-hand edge of the assembly illustrated in Figure 1. The playing is then continued in rotation until either a stalemate is reached, or one of the players gets three of his marks in line, and wins. The blocks are then turned back to the blank faces and a new game is started in a like manner.

In order to simplify the clearing of the game back to blanks to start over, it is preferable to shift the triangular opening 17, or trunnions 29, just slightly toward the blank face of the blocks which, in turn, will move it slightly away from the other two faces. This will shift the center of gravity and make it slightly lower in connection with the blocks when the blank faces are up. With this type of construction, when it is desired to clear the game, the assembly is picked up and the whole given a quick rotation in the air so as to cause the blocks to rotate due to this off-center mounting. Under these conditions, when the blocks come to rest, the most of them will stop with blank faces up, another quick rotation of the assembly will substantially clear all of the blocks to blank face up, and this together with individual turning of any remaining "X" or "zero" blocks will place the game in condition for playing once more.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the apparatus herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A game apparatus of the class described, which comprises the combination of a frame member, a multiplicity of substantially parallelly ended blocks having at least three substantially flat side faces, a supporting means carried by said frame member and on which said blocks are mounted in position for reversible rotary movement accompanied by a slight upward movement of each block during its rotation from a position of rest with a face substantially horizontal when the top of said frame is horizontal, and a pivot means for each of said blocks, said pivot means of each block being of a non-round shape to cooperate with, rest on, and engage said supporting means in manner causing said slight upward movement when said block is rotated from a position of rest on said supporting means.

2. A game apparatus of the class described, which comprises the combination of a frame member with partitions, a multiplicity of sub-

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stantially parallelly ended blocks having at least three substantially flat side faces, supporting means carried by said frame and on which said blocks are mounted in position for free reversible rotary movement within the partitioned spaces of said frame, and pivot means for each of said blocks, said pivot means of said blocks resting on and fitting said supporting means while holding said blocks with their upper faces substantially horizontal when they are at rest and the upper face of said frame is horizontal.

3. A game apparatus of the class described, comprising a cross partitioned frame member, a multiplicity of substantially parallelly ended blocks of approximately the same size, said blocks having at least three substantially flat side faces, block supporting means carried by said frame, and pivot means including the end portion of each block for joining at least one end of each of said blocks to said block supporting means of said partitioned frame member for reversible rotation thereon in substantially fixed location at least partially within the corresponding partitioned spaces of said frame, said end portion of the pivot means of said block being substantially centrally located on the end of same but with the pivotal axis of same slightly displaced toward one of the side faces thereof, said pivot means also resting on said block supporting means of said frame with the uppermost side face of said block normally substantially horizontal when the upper face of said frame is substantially horizontal.

4. A game apparatus of the class described, which comprises a frame member, a multiplicity of substantially parallelly ended blocks, each of which has at least three substantially flat side faces, said blocks being in parallel rows, said frame member including means between said rows of blocks for separating same while leaving them free to be rotated either clockwise or anti-clockwise, the ends of each of said blocks having pivot means for use in rotatably mounting same, and supporting means on said block separating means, said supporting means being of a shape adapted to cooperate with said pivot means of said blocks so as to leave same free to be rotated while facilitating their automatically taking a position with their upper faces substantially in a common horizontal plane when the top of said frame is substantially horizontal.

5. A game apparatus of the class described, which comprises a frame member, a multiplicity of substantially like size parallelly ended blocks, each of which has three substantially flat side faces, said blocks being in parallel rows within said frame member, said frame member including means between the adjacent parallel ends of the blocks in said rows for separating same while leaving them free to be rotated either clockwise or anti-clockwise, the parallel ends of each of said blocks having substantially uniform size triangular pivot means symmetrically located relative to each other for use in supporting each of said parallelly ended blocks on said frame member, means on said row separating means of said frame member adapted to cooperate with said triangular pivot means in supporting each of said blocks, the points of each of said triangular pivot means facing the side edges of the end member of the block in position such that the base of the triangular means opposite any point of same is substantially parallel with the edge of said block at which the point is directed, said triangular pivot means of

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each of said blocks in cooperation with said supporting means on said row separating means of said frame leaving said blocks free, regardless of their starting position, so that they will rotate to and normally take a position with their upper faces substantially in a common horizontal plane when the top of said frame is substantially horizontal.

6. A game apparatus having a substantially flat playing face, which comprises a frame member, a multiplicity of substantially parallelly ended blocks of approximately the same size and shape, said blocks having at least three substantially flat side faces, each of said faces being adapted to be moved to a position substantially parallel to the top face of said frame member, when the latter is substantially horizontal, and to form part of the playing face of the assembly, and means for free reversible-rotation pivotal mounting of each of said blocks on said frame member, the block carried part of said pivotal mounting means being of non-round cross-section and located substantially centrally of the parallel ends of each of said blocks but slightly displaced at both ends of each block uniformly toward one of the side faces thereof, the frame member carried part of said pivotal mounting means supporting said blocks through said block carried portion of said pivotal mounting means, said block carried and frame member carried parts of said pivotal mounting means for said blocks being of a shape and size interfitting and cooperating with each other so that said blocks will freely rotate and normally assume a position of rest with their upper faces substantially in a common horizontal plane when the top of said frame member is substantially horizontal.

7. A game apparatus of the class described, comprising in combination a frame member, a multiplicity of substantially parallelly ended isosceles triangle shape blocks, said blocks having end members with a relatively small triangular opening approximately at the center of each of same, the points of each of said triangular openings facing the edges of said end members in position such that the edge of the opening opposite the point is substantially parallel with the edge of the block at which the point is directed, said openings being substantially uniform in size, and a pair of support members for each of said blocks, said supporting members extending from the frame member into the end members of said blocks through said triangular openings therein, said support members being sufficiently smaller than said openings in the end members of said block so that the block can be freely rotated either clockwise or anti-clockwise on said support members.

8. A game apparatus of the class described, comprising the combination a frame member with partitions, a multiplicity of substantially parallelly ended isosceles triangle shape blocks, said blocks having triangular section trunnions coaxially mounted in parallelism approximately at the center of the ends thereof, the extending edges of said trunnions facing the edges of the end member of the block in position such that the face of the trunnion opposite said extending edge is substantially parallel with the edge of the block toward which the extending edge is directed, said frame and partitions having substantially flat bottomed slots of suitable size and location to receive said trunnions and permit said blocks to rotate in substantially fixed location, with their upper faces approximately

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flush with the top of the assembly when the latter is supported in substantially horizontal upright position, and means for holding said blocks in said frame while leaving them free to be rotated in either clockwise or anti-clockwise direction.

9. A game apparatus of the class described, comprising in combination a frame member, a multiplicity of substantially parallelly ended isosceles triangle shape blocks having their upper faces substantially in a common plane and flush with the top of said frame member when the latter is in horizontal position, said blocks having end members with a relatively small triangular opening approximately at the center of each of same, the points of each of said triangular openings facing the side edges of said end members in position such that the edge of the triangular opening opposite any point of same is substantially parallel with the edge of the block at which the point of the triangular opening is directed, said openings being substantially uniform in size, and a rod mounted on said frame member, said rod being smaller than said triangular openings in said end members and passing therethrough and supporting said block.

10. A game apparatus having freely reversible rotary blocks, comprising in combination a frame member, a multiplicity of substantially parallelly ended isosceles triangle shape blocks having their upper faces substantially in a common plane and flush with the top of said frame member when the latter is in horizontal position, said blocks being in parallel rows within said frame member and having end members

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with a relatively small triangular opening near the center of each of same but slightly displaced toward one of the side faces thereof, the points of each of said triangular openings facing the edges of said end members in position such that the edge of the triangular opening opposite any point of same is substantially parallel with the edge of the block at which the point of the triangular opening is directed, said openings being substantially uniform in size, coaxial and symmetrical, and a multiplicity of rods mounted on said frame member, each of said rods being smaller than said triangular openings in said end members and each rod passing through a block and supporting same.

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