May 26, 1942. H. ZIEMMERMAN 2,284,242

ONE-PIECE FOLDABLE GAME BOARD

Filed March 18, 1940

Fig. 1.

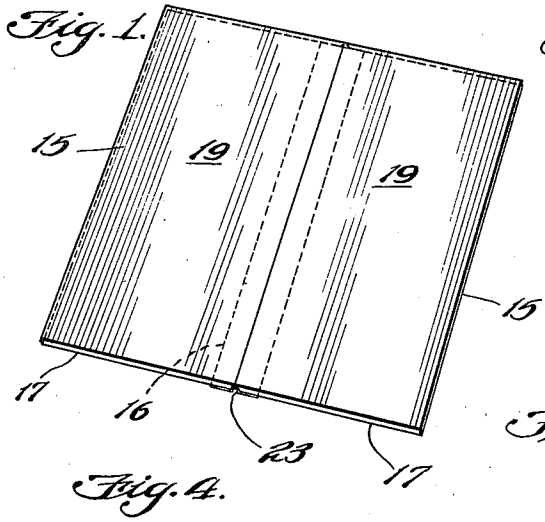


Fig. 2.

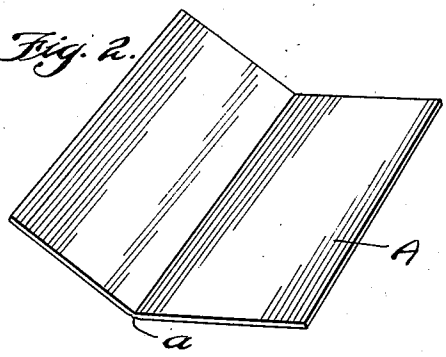


Fig. 3.

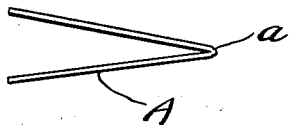


Fig. 4.

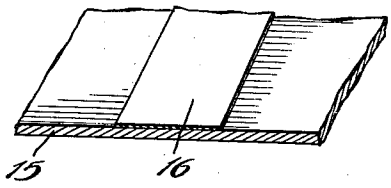


Fig. 5.

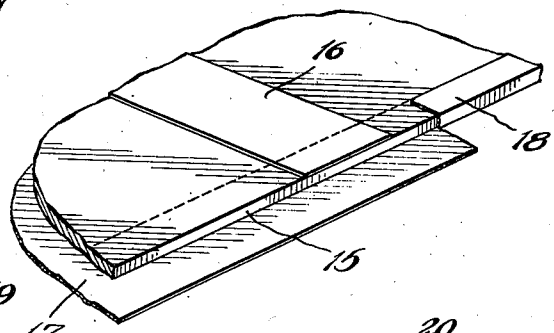


Fig. 6.

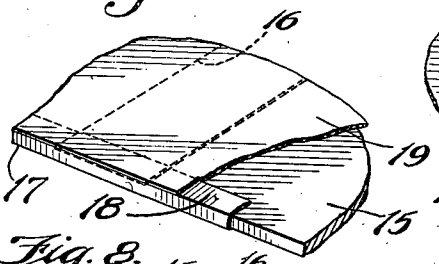


Fig. 7.

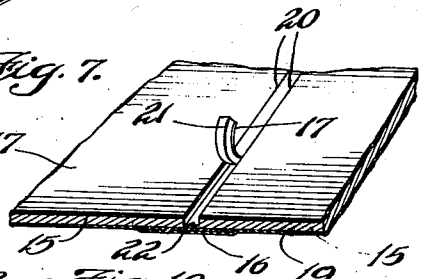


Fig. 8.

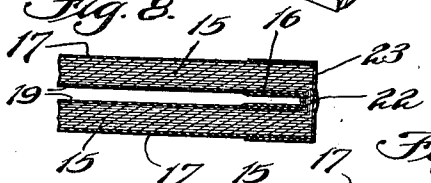


Fig. 9.

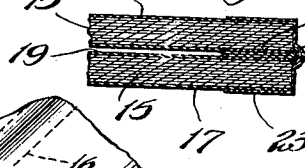


Fig. 10.

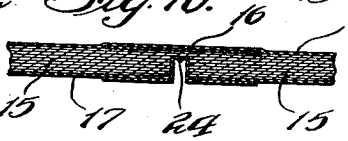
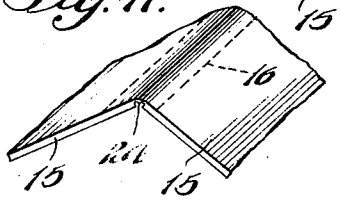


Fig. 11.



INVENTOR:
Henry Ziemmerman
BY
Kent W. Wonnell
ATTORNEY.

Patented May 26, 1942 2,284,242

UNITED STATES PATENT OFFICE

2,284,242

ONE-PIECE FOLDABLE GAME BOARD

Henry Ziemmerman, Chicago, Ill., assignor to Chicago Cardboard Company, Chicago, Ill., a corporation of Illinois

Application March 18, 1940, Serial No. 324,513

6 Claims. (Cl. 273—136)

This invention relates to a foldable game board made of one piece of stiff material like cardboard, adapted to be opened in flat extended position without bulging or buckling in either open or closed position.

An important object of the invention is in the provision of a foldable game board made of a single piece of material and in constructing and providing a joint along the fold line which prevents bulging or buckling of the board either in folded or extended position, relieving the joint of pressure and wear in either position and also in the operation of opening or closing the board.

A further object of the invention is in the method of making a foldable game board out of a single piece of flat cardboard by making a double cut in one face of the material, raking out the material between the cuts, and applying tapes to both sides of the board at the sides of the joint made by the cut so that the board will fold upon a hinge thus made without tension or pressure upon the hinge itself so that the board will lie flat when opened and will also fold flatly when closed.

Other and further objects of the invention will appear hereinafter, the preferred construction of the board and the method of making it being illustrated in the accompanying drawing, in which

Fig. 1 is a perspective of an open game board of the type to which the present invention is applied;

Fig. 2 is a perspective and Fig. 3 an end view illustrating faults of the ordinary types of foldable game boards;

Fig. 4 is a detail perspective illustrating the first step in applying a tape to one side of a cardboard strip;

Fig. 5 illustrates the next step of applying a paper back to the cardboard, turning the edges over upon the taped side;

Fig. 6 illustrates the next step of mounting a face sheet over the turned-over edges of the back and the tape;

Fig. 7 illustrates the next step of making a pair of parallel cuts close together in the back of the board opposite the tape and raking out the material between the cuts;

Fig. 8 is a sectional view illustrating the application of the back or binding tape to the edges of the raked joint with the board sections in spaced-apart condition;

Fig. 9 illustrates the flattened or compressed condition of the board sections at the joint when pressure is applied thereto;

Fig. 10 is an enlarged view of the board in open position at the joint; and

Fig. 11 is a small perspective illustrating the possibility of opening this game board at an angle of more than one-hundred eighty degrees, or beyond the flat condition to insure that it will lie flatly and also to show that it does not require the board or the hinge to be under strain or tension to maintain it in flat open position.

Folding game boards have heretofore been made of a single piece of cardboard by cutting or scoring them on one or both sides along the fold line but such boards are objectionable for the reason that if cut partially through on one or both sides they tend to break through when folded back and forth several times. If a single score is used without reinforcement tape the uncut fibres break when folded and cause a bulge when opened. It will not lie flat and because of no reinforcement will soon break apart due to the folding and unfolding. If a tape or reinforcement is applied to a single score the tape increases the bulge when the board is opened flat because it tends to take its position inside of the score, causing unsatisfactory opening, Fig. 2, or closing, Fig. 3.

In game boards which are made of two pieces it is necessary to cut the pieces accurately to size, to turn the edges of the back sheets over each of the pieces separately, to space these pieces accurately apart and to apply a tape thereto, then to cover the tape and the overlapping edges of the back sheet with a cover sheet, and then to apply a back or binder tape if desired, or a backing may be applied to a single sheet, the edges turned, and centrally cut to form two pieces. Thus extreme accuracy and registration of the parts is necessary, the connected board parts may not be exactly alike or they may be warped or curved in opposite directions, and the sheets are spaced apart and connected only by the tapes and the face sheet.

The present invention overcomes all of these objections by providing a structure in which two or more folding parts of the board have a hinge which is made partly of the material of the board itself by providing parallel scores close together along the back defining the fold line, raking out the material of the board between the cuts to provide space for reinforcing tape which gathers therein when the board is opened to lie flat, and in applying tapes and covering sheets thereto as shown and described. The result is an improved method, an improved joint, and an improved board, which will lie flatly in either folded or

unfolded position, will not bulge or buckle at the joint, and will last longer and wear better than the joints and game boards heretofore made and used.

Referring now more particularly to the drawing, this invention comprises a flat sheet of cardboard **15** of several plies or thicknesses to make it comparatively stiff and unbending. The game boards may be formed from sheets of this material cut to size or cut from a larger sheet which will accommodate more than one game, or from a roll of material to which a paper or fabric tape **16** is adhesively secured along the center of one face, and if the cardboard comes from a roll of material the tape and the board are cut off to the proper length.

The next step is to apply a backing sheet **17** of paper or other suitable sheet material adhesively secured to the side of the board opposite the tape **16**, the edges **18** of the sheet overlapping the edges and the face of the board and also extending over the ends of the tape **16**.

A face or cover sheet **19** is then applied over the entire front face of the board covering the tape **16** and the overlapped edges **18** of the back sheet **17**. Thus a board of the full size desired is covered front and back with a hinging tape secured in place on the face of the board underlying the cover sheet. The face of the cover sheet is usually printed, lithographed or otherwise decorated to provide some feature of a game for which the board is used and by attaching the back sheet a suitable outer surface is provided and the sections of the board do not tend to warp.

After the application of both cover sheets the back of the board is provided with cuts or scores **20** extending parallel close together through the back sheet **17** and nearly through the board **15** and centrally with respect to the tape **16** applied to the opposite face of the board. The material **21** between the sides of the cuts or scores and the paper **17** adhering thereto is then removed by raking or otherwise removing it from the groove formed thereby, leaving a thin neck **22** of material covering the two sections of board **15** on opposite sides of the groove. This groove should not be too wide, and it should not be too deep or the scoring knife or cutter will tend to weaken the remaining neck of material and even to perforate the tape **16** and thus damage the board.

The grooved board thus produced is then bent over oppositely from the groove as shown in Fig. 8, the adjacent board sections at the joint being then spaced slighly apart by the neck **22** and bulging or rounding outward slightly therefrom, depending upon the amount or thickness of the material of the neck itself. When folded in this position a binding or backing tape **23** is applied lengthwise of the board over the rounded neck portion **22**, the adjacent ends of the board sections formed by the cuts **20** and overlapping the back faces of the board at the joint. Thus a complete hinge is formed consisting of the face cover sheet **19**, the inner tape **16**, the neck **22** and the outer or binding tape **23**.

Pressure is then applied to the folded board at the joint either by sticking a number of boards together or by applying positive pressure thereto, compressing the reduced neck portion **22**, bulging it slightly outward and pressing the adjacent inner faces of the board sections together as shown in Fig. 9. This compressing action causes the outer binding tape **23** to form a thin rounded rib **24** extending at the joint and depending for its size upon the length and thickness of the connecting neck **22**.

The board is thus completely assembled, formed and completed and may be opened and closed freely without tension in the hinge, lying flat at the joint and not tending to buckle or bulge either when folded or extended. When unfolded or extended the rib **24** made by the outer tape is located within the groove at the under or back side of the board so that it does not affect the position of the board on any plain surface.

This provision of a groove at one side of the hinge of a board makes it possible to extend or unfold the board at an angle greater than one hundred-eighty degrees as indicated in Fig. 11. This construction has the advantage that the board is not under tension nor pressure either when folded or unfolded and even if extended more than in flat condition the hinge at the face of the board is not easily broken, thus affording long life and considerable wear and tear without disrupting the hinge.

Although described as a game board this same construction may be utilized for any hinged joint in cardboard or similar material and one or more of such joints may be made on the same or opposite faces of sheet material for producing a joint of this kind. The method and number of operations in producing a board are thus simplified and reduced, resulting in an improved joint or hinge which can be produced more quickly and easily than the structures made prior to this time.

I claim:

1. A foldable game board comprising a single sheet of cardboard or similar material with a hinge of the material itself, having a reduced neck at the fold line at one side of the board, the other side having a groove defined by parallel cuts extending partially through the material from which the material between the cuts has been removed to the depth thereof, and a binding and backing adhesive tape applied along the exposed edges of the cuts, groove and reduced neck when the board is folded in closed position.

2. A foldable game board structure comprising a single sheet of cardboard or similar material with a hinge of the material itself, having a reduced neck at the fold line at one side of the board, the other side having a groove defined by parallel cuts extending partially through the material from which the material between the cuts has been removed to the depth thereof, the hinge comprising an adhesive binding tape affixed to the face of the board overlapping the ends of the neck, and another binding and backing tape is adhesively affixed to the back of the board against the cut edges of the groove and the rear side of the neck at the bottom thereof.

3. A foldable game board comprising a single sheet of semi-rigid material such as cardboard, having a hinge comprising a groove extending more than half way through the material from one face of the board substantially as wide as the thickness thereof, leaving a thin neck of the material, and a binding and strengthening tape affixed to both sides of the board and adhering to the neck structure.

4. A foldable game board comprising a single sheet of material having a hinge structure comprising a groove in one face extending nearly to but short of the other face, leaving a thin neck of material connecting adjacent board sections, a strengthening tape adhesively applied

to the face of the board over the neck portion, the neck portion being bulged outwardly at the hinge when the board sections are compressed together, and an adhesive binding tape applied over the foldled and compressed back edge of the hinge adhering to the sides and bottom of the groove and also to the backs of the board sections adjacent the groove.

5. A structure in accordance with claim 4 in which a backing sheet is applied to the board with edges overlapping the front after the first tape is applied thereto, a cover sheet is applied over the first and the edges of the back sheet, and the back binding tape is applied over the board sections and the back cover sheet at the edges of the groove, the groove being made after the back cover sheet is supplied thereto.

6. A foldable structure comprising a single sheet of semi-rigid material such as cardboard, having one or more hinge joints formed of the material itself upon which the parts may be folded and extended, each hinge comprising a reduced neck of material defined by parallel scores extending partially through from the face of the material from which the material therebetween has been removed to the depth of the scores, and a binding and strengthening tape affixed to both sides of the board and adhering to the neck structure.

HENRY ZIEMMERMAN.