

Jan. 15, 1935.

H. J. VANDER HEIDE

1,987,951

PUZZLE

Original Filed March 25, 1933 2 Sheets-Sheet 1

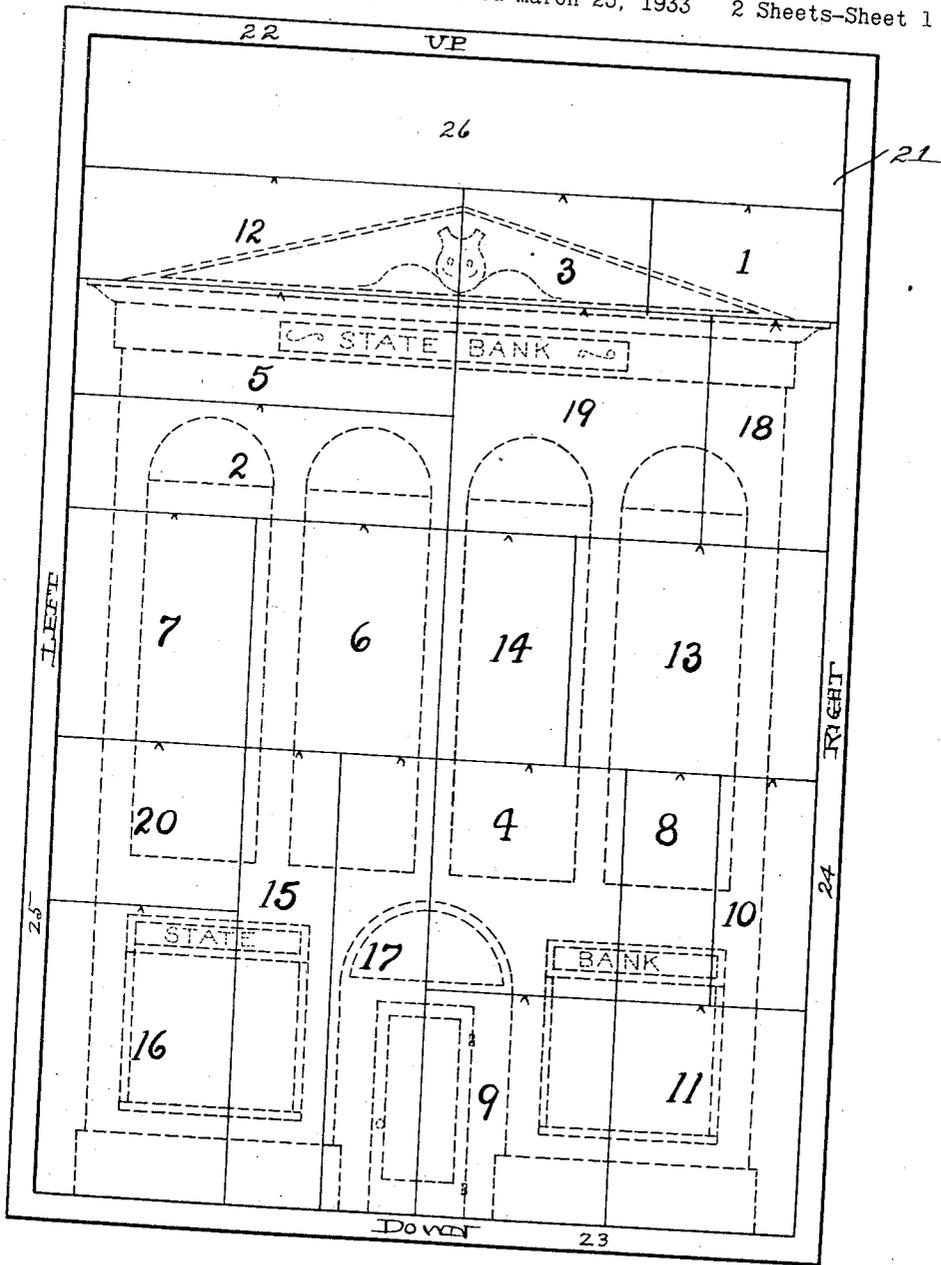


Fig. 1.

Witness:  
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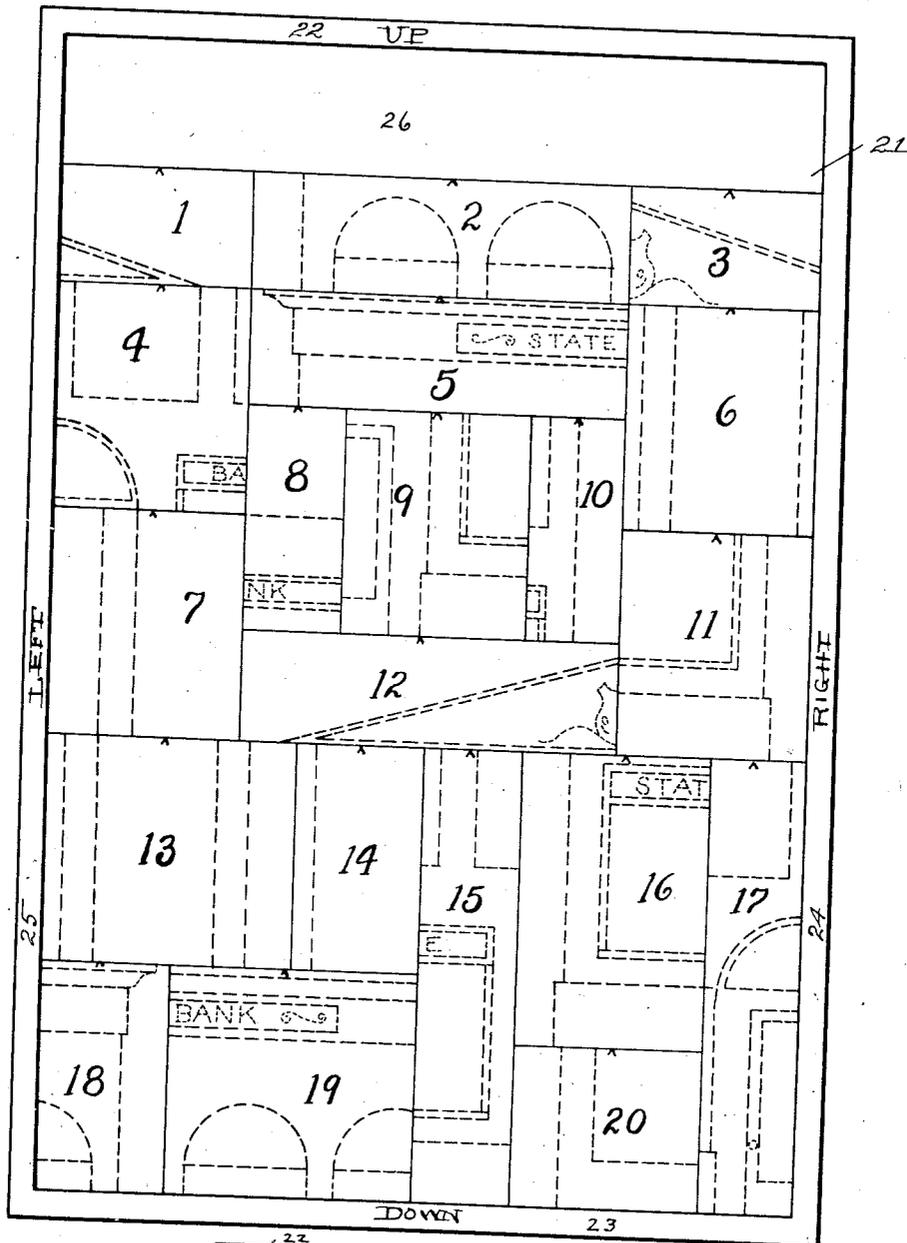


Fig. 3.

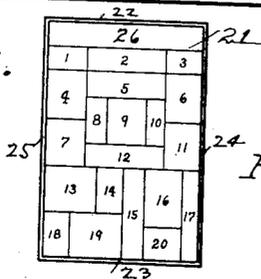


Fig. 2.

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# UNITED STATES PATENT OFFICE

1,987,951

## PUZZLE

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Continuation of application Serial No. 662,668,  
March 25, 1933. This application June 8, 1934,  
Serial No. 729,671

5 Claims. (Cl. 273—132)

This application is a continuation of my co-pending application Serial No. 662,668, filed March 25, 1933, in the United States Patent Office.

The invention relates to puzzles, and more particularly to sliding piece puzzles.

An important object of the invention is to provide a puzzle of the type indicated comprising a group of pieces each being provided on one face with a portion of a pictorial or other continuous design, adapted to be arranged in an initial relationship not exhibiting the design and to be rearranged by successively sliding the pieces to achieve a final relationship exhibiting the design.

Sliding piece puzzles of certain types are old and well known, but all the prior art sliding piece puzzles with which I am acquainted are subject to certain defects and deficiencies which my invention overcomes. The general nature of my improvements may be briefly explained as follows:

In all cases it is desirable to provide with the collection of pieces a board, generally the inside bottom of a container for the pieces, on which the pieces are arranged in initial position and on which they are successively moved to final position. To provide room for moving the pieces a portion of the area of the board must be left blank or originally unoccupied by any piece. In all sliding piece puzzles prior to my present invention the necessary unoccupied space is provided by removing one of the pieces, or by starting the play with less than enough pieces to make a completely rectangular figure. In some cases a central space is left unoccupied, in other cases a corner of the board is uncovered when the pieces are in initial and final positions. In both types of prior art puzzles the integrality or completely filled rectangular shape of the puzzle design when the pieces are in final position is destroyed, and for this reason these prior puzzles are not adapted to exhibit pictorial or other kinds of continuous designs. An object of my present invention is to provide a puzzle of the sliding block type which comprises a completely rectangular, fully filled, intact figure, made up of distinct pieces which cooperate to exhibit a continuous design. I attain this object by providing a playing board which has one dimension greater than the corresponding dimension of the assembled pieces, so that an originally and finally unoccupied band or space is provided for accommodating the pieces as they are moved. The length of the band or space is equal to one dimension of the group of pieces when arranged in initial or final relation, so that when so related the pieces comprise a complete, intact, rectangular

figure, and the design exhibited by the associated pieces is not marred by a notched outer corner or a hole in the center.

While it is not broadly new to have the playing board inscribed with markings to fix the initial placement of the pieces, no prior puzzle, so far as I am aware, includes markings on the pieces and on the board which not only fix the original location of the pieces on the board but also determine their orientation with respect to each other. I provide such markings in my puzzle, so that the pieces may easily be placed on the board correctly located with respect to each other and correctly faced, i. e., no piece will be "upside down" or turned sidewise. This feature is of peculiar importance and advantage in my puzzle because the pieces are not to be rotated or otherwise turned, but slid rectilinearly only, from initial to intermediate positions and final position. Obviously this feature adapts the puzzle the showing of a pictorial or other continuous design, since it is essential to the successful showing of such designs that the individual pieces all be properly oriented when in final position.

These and various other and more specific objects hereinafter appearing are attained by, and the invention finds preferable embodiment in, the structure and parts particularly described in the body of this specification and illustrated by the accompanying drawings, in which:—

Figure 1 is a face or top plan view of a puzzle showing the parts in predetermined final (or "solution") position;

Fig. 2 is a face or top plan view of the same showing the parts in an initial (or "problem") position; and

Fig. 3 is a top plan view (reduced) of the playing board of the puzzle, conveniently comprising the inside bottom of the receptacle in which the pieces are contained.

In the embodiment of the invention shown by these drawings, the rectangular playing board 21 has surrounding or peripheral upwardly-extending walls, 22 marked "up", 23 marked "down", 24 marked "right" and 25 marked "left", these marks being shown on the drawings to indicate the directions in which the pieces are to be moved on the board, as hereinafter explained.

Flat pieces of equal thickness but having top faces of different area and dimensions are arranged on the board within its peripheral walls, in an initial or "problem" position such as is illustrated in Fig. 2, and the puzzle or problem is to move the pieces in guided directions to the pre-

determined "solution" position shown in Fig. 1, without lifting any piece from the board.

In such solution position, a pictorial or other continuous design or figure, such for instance as the front of a bank building, is displayed as seen in Fig. 1, and in solving the puzzle, one attempts to shift the pieces from their Fig. 2 relationship, wherein the continuous design is not exhibited, to their final relationship, shown in Fig. 1, in which the design is exhibited.

In the illustrated embodiment of the invention twenty of these pieces are shown having rectangular top faces of several different areas and dimensions. These pieces are identified and distinguished by numerals 1 to 20 inclusive carried by the under surfaces of the pieces, although for clarity of illustration shown in the drawings as though appearing on the upper faces of the pieces, to assist in arranging them in their initial positions on the board, and the board as shown in Fig. 3 is divided into spaces numbered correspondingly with the pieces as the same are shown arranged in Fig. 2. Other marks, as the carets shown in Fig. 2, are also carried by the under surfaces of the pieces to indicate their proper orientation or position relative to the wall 22.

Suggested dimensions for the pieces may be given as follows: Pieces 2, 5 and 12 are seven-eighths of an inch wide by three inches long; pieces 1 and 3 are seven-eighths of an inch wide by one and one-half inch long; pieces 14 and 18 are one inch wide by one and three-fourths inch long; pieces 13 and 19 are one and three-fourths inch wide by two inches long; pieces 4, 6, 7, 9 and 11 are one and one-half inch wide by one and three-fourths inch long; pieces 8 and 10 are three-fourths of an inch wide by one and three-fourths inch long; pieces 15 and 17 are three-fourths of an inch wide by three and one-half inches long; piece 16 is one and one-half inch wide by two and one-fourth inches long; and piece 20 is one and one-fourth inch wide by one and one-half inch long.

The pieces are shown in Fig. 2 arranged in approximately contacting edge to edge relation forming a completely filled, fully rectangular block with three of its edges in approximately contacting relation with the walls 23, 24 and 25 respectively of the board and with its fourth edge spaced from the other wall 22 of the board to provide an elongated unoccupied space or band 26 wide enough—about one inch in the illustrated embodiment—to permit certain of the pieces to be slid along said space between wall 22 and the pieces adjacent thereto.

To solve the puzzle the pieces are slid rectilinearly on the board from their initial problem position shown in Fig. 2, and from various intermediate positions to which they may be moved, until the pieces are all in the final position shown in Fig. 1. A suggested mode of solving the puzzle comprises moving the pieces in the directions and in the order set forth in the following table, in which the pieces are identified by their numbers and the direction of their sliding movements is indicated as follows: movement toward wall 22 is indicated by the letter U; toward wall 23 by the letter D; toward wall 24 by the letter R; and toward wall 25 by the letter L: 2U, 2L, 1R, 1U, 5U, 5L, 1D, 1L, 3L, 3D, 6U, 6L, 11U, 3R, 3D, 1R, 1D, 8U, 9U, 10U, 1L, 3U, 3L, 11D, 6R, 6D, 5R, 5U, 2D, 2R, 4U, 4R, 7U, 8L, 9L, 10L, 1L, 3L, 12L, 11L, 6D, 2D, 5D, 4R, 7R, 8U, 9U, 10U, 1U, 3U, 12U, 11L, 6L, 2D, 5D, 7D, 4D, 10R, 9R, 8R, 1U, 3U, 12U, 11U, 6U, 2L, 5L, 7D, 4D, 6R, 11R, 5U,

2U, 7L, 4L, 11D, 6D, 8D, 9D, 10D, 12R, 3R, 1R, 5U, 2U, 7U, 4U, 11L, 6L, 8D, 8R, 10D, 10L, 15U, 17U, 20R, 16L, 16D, 20U, 16R, 14R, 13R, 19R, 18R, 11D, 6L, 6D, 7D, 4D, 2D, 5D, 12L, 1L, 3L, 9U, 9R, 8U, 8L, 10L, 10U, 15R, 4R, 4U, 13U, 14U, 18U, 19U, 11R, 6D, 6R, 7D, 13L, 14L, 18L, 19L, 11U, 16L, 20L, 15D, 17D, 9D, 4R, 8D, 10D, 12R, 3R, 1R, 5U, 2U, 14U, 14L, 13R, 13U, 19U, 19L, 18R, 18U, 6U, 6L, 16L, 20L, 15L, 17L, 9D, 4D, 11R, 11U, 18R, 19R, 13D, 14D, 8L, 10L, 11L, 19U, 18U, 13R, 14R, 8D, 10D, 11D, 2D, 5D, 12L, 1L, 3L, 19U, 18U, 13U, 14U, 11R, 10R, 8R, 6U, 6R, 7U, 20L, 16L, 15L, 17L, 9L, 4L, 11D, 10R, 8R, 8D, 10D, 14D, 13D, 19D, 18D, 3R, 3D, 1R, 1D.

In these moves, each piece is slid as far as the space into which it is being slid permits, except that in the twenty second, ninety first, ninety third and two hundred and twelfth moves (identified as 3U, 8R, 10L and 3R respectively) the piece is slid only a distance equal to its dimension in the direction in which it is being slid. It will be seen from the above table and from the drawings that the said pieces are slid in directions parallel with the walls 22, 23, or 24, 25, and that in their sliding movements they are guided or laterally confined by the edges of the adjacent pieces on either side or by the edges of such pieces and the adjacent wall on the other side. It will also be seen that the elongated space or band 26 between the pieces and the wall 22 forms a passage for some of the movements of the pieces.

In the drawings the pieces are shown in absolute edgewise contact with each other and with the walls 23, 24 and 25; but in actual practice such contacts are of course approximate only, a slight separation of the parts being desirable to facilitate ready and non-frictional movements. However, the pieces are not to be turned on the board; so that in the initial and final positions of the pieces as shown in Figs. 2 and 1 and in all intermediate positions to and from which they may be moved, they are always in the position in which their edges having the caret marks are closest to and parallel with the wall 22 of the board.

The drawings illustrate one embodiment of my invention, and it is evident that other embodiments of this same invention in which other pieces having moves similarly guided or confined may be devised. Such other embodiments, to the extent that they incorporate the principles of the invention as pointed out by the appended claims, are to be deemed within the scope and purview thereof.

I claim:

1. A puzzle comprising a plurality of rectangular pieces each provided on a surface thereof with a portion of a pictorial design and all adapted when associated in a particular final relation to display a continuous and completely rectangular pictorial design, in combination with a rectangular playing board having one dimension sufficiently longer than the corresponding dimension of the plurality of pieces when associated to show the design to provide an initially and finally unoccupied space into which pieces may be slid during the course of their rearrangement from initial to final relation.

2. A puzzle comprising a plurality of rectangular pieces each provided on its top surface with a portion of a design and all adapted when associated in a particular relation to display a continuous rectangular design, a rectangular playing board having an upstanding marginal wall and

rectangular spaces each bearing a distinctive marking, and corresponding markings provided on the bottom surface of each of the pieces to serve as a guide in initially placing each piece on the proper space of the board and properly oriented with respect to the other pieces to adapt the pieces, when successively moved with relation to each other, to assume a final position exhibiting the continuous design, the area of the playing board within the confines of the marginal wall being sufficiently greater than the area of the pieces when assembled in initial position to permit the pieces to be moved to new relative positions by rectilinear sliding movements only.

3. A puzzle comprising a plurality of rectangular pieces each provided on its top surface with a portion of a design and all adapted when associated in a particular relation to display a continuous rectangular design, a playing board having one dimension longer than the corresponding dimension of the plurality of pieces when associated to show the design and having rectangular spaces each bearing a distinctive marking, corresponding markings provided on the bottom surface of each of the pieces to serve as a guide in initially placing each piece on the proper space of the board and properly oriented with respect to the other pieces to adapt the pieces, when successively moved with relation to each other, to assume a final position exhibiting the continuous design, the area of the board in excess of that of the pieces in their initial and final positions being devoid of markings and being wide enough to accommodate pieces being moved from initial to final position.

4. A puzzle comprising a plurality of rectangular pieces each provided on a surface thereof with

a portion of a pictorial design and all adapted when associated in a particular relation to display a continuous and completely rectangular pictorial design, in combination with a rectangular playing board having one dimension longer than the corresponding dimension of the plurality of pieces when associated to show the design, each and every piece comprising an element of a complete and intact rectangular body of pieces adapted to be moved, exclusively by sliding pieces into and out of the area of the board which is in excess of that of the body of pieces and into and out of spaces on the board vacated by moved pieces, to rearrange the pieces from an initial relationship not exhibiting the design to a final relationship exhibiting the design.

5. A puzzle comprising a plurality of rectangular pieces each provided on a surface thereof with a portion of a pictorial design and all adapted when associated in a particular relation to display a continuous and completely rectangular pictorial design, in combination with a rectangular playing board having one dimension longer than the corresponding dimension of the plurality of pieces when associated to show the design, each and every piece comprising an element of a complete and intact rectangular body of pieces adapted to be moved, exclusively by sliding pieces into and out of the area of the board which is in excess of that of the body of pieces and into and out of spaces on the board vacated by moved pieces, to rearrange the pieces from an initial relationship not exhibiting the design to a single possible final relationship exhibiting the design and employing all the pieces.

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