C. L. RIDGWAY.

PUZZLE.

APPLICATION FILED MAR. 11, 1914.

1,101,567. Patented June 30, 1914.

Fig. 1.

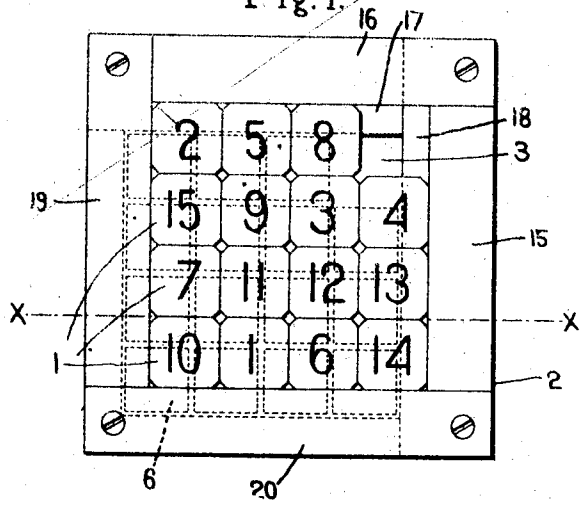


Fig. 3.

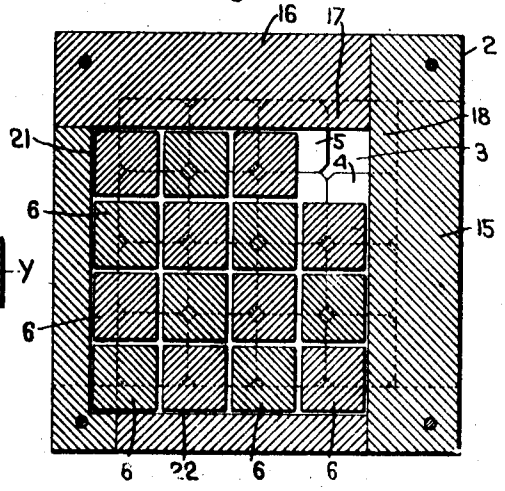


Fig. 2.

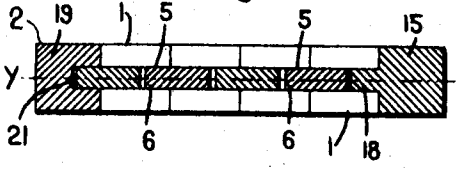


Fig. 4.

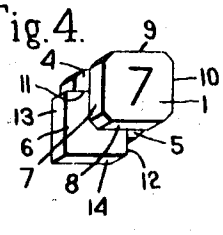
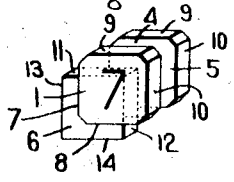


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

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PUZZLE.

1,101,567. Specification of Letters Patent. Patented June 30, 1914.

Application filed March 11, 1914. Serial No. 824,073.

To all whom it may concern:

Be it known that I, CHARLES L. RIDGWAY, a citizen of the United States, residing at Winthrop, county of Suffolk, State of Massachusetts, have invented an Improvement in Puzzles, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to puzzles of that type which comprise a holder in which a plurality of blocks are received for movement relative to each other, the purpose of the puzzle being to effect a predetermined arrangement of the blocks by shifting them in the frame.

The object of the invention is to provide a novel construction of puzzle in which the blocks are made non-removable from the holder so as to obviate the possibility of any person cheating in solving the puzzle by removing a block and replacing it into the desired position.

My improvement is applicable to various puzzles of this general type comprising a frame with blocks movable therein, but it has particular advantages in a puzzle of the well-known "15" type, and I have chosen to illustrate the invention as it might be embodied in a puzzle of this latter type.

The well known "15" puzzle comprises a box or holder having fifteen consecutively-numbered blocks therein, the holder having capacity to receive sixteen blocks, so that there is always a vacant space corresponding to one block. This permits the position of the blocks to be shifted the distance of one block at a time, and the solution of the puzzle consists in shifting the blocks relative to each other in the frame so that they are finally positioned with the numbers thereon arranged in consecutive order. In applying my invention to a puzzle of this type I so form the blocks and the frame that the blocks are non-removable from the frame, and in doing this I make the blocks so that each block has an interlocking engagement either with an adjacent block, or with the frame, or both, such interlocking engagement, however, permitting a free movement of the blocks relative to each other.

In illustrating the invention I have shown a puzzle in which the blocks are numbered to constitute an ordinary "15" puzzle, but I wish to state that the impression or design appearing on the face of the blocks can be varied without departing from the invention. For instance, instead of having each of the blocks numbered to constitute a "15" puzzle, the assembled blocks may have a picture or a map thereon arranged so that a certain portion of the picture occupies the face of each block, in which case the solution of the puzzle is to so arrange the various blocks relative to each other as to correctly represent the picture.

Referring now to the drawings wherein I have illustrated a selected embodiment of the invention from which the principle of the invention will be understood, Figure 1 is a front view of a puzzle embodying my invention; Fig. 2 is a section on the line x—x, Fig. 1; Fig. 3 is a section on the line y—y, Fig. 2. Figs. 4 and 5 are perspective views from different angles of one of the blocks.

The movable blocks of the puzzle are shown at 1, and 2 designates generally the frame in which the blocks are movably mounted. As stated above, the principal object of the invention is to provide a puzzle of this type in which the blocks are non-movable from the frame while being capable of movement freely in any direction in the frame. In the illustrated embodiment of the invention the frame 2 is a rectangular frame provided with a rectangular opening which is of a size to receive one more block than is actually employed. In the illustrated embodiment of the invention there are fifteen blocks and the opening in the frame is made of a size to receive sixteen blocks, thus leaving one vacant space, as shown at 3. In order to make the blocks non-removable, I provide each block with a tongue adapted to be received in a groove formed in either another block, or in the side of the frame, and two sides of the frame are also provided

with ribs or tongues to enter the grooves of certain blocks, while the other two sides of the frame are provided with grooves to receive the tongues of other blocks.

The preferred construction of block is shown in Figs. 4 and 5, and it is formed with a groove 4 in the edge 9 and another groove 5 in the adjacent edge 10, and is also provided with a tongue or rib 6 which projects partially from the edge 7 and partially from the edge 8. Both the grooves 4, 5 and the tongue 6 are situated centrally of the block and are in the same plane, and as a result, the edge 11 of the tongue 6 terminates between the edges 8 and 9 of the block and in line with the bottom of the groove 4, while the edge 12 of the tongue 6 terminates between the edges 7 and 10 of the block and in line with the bottom of the groove 5. The tongue 6 is of such a shape that its edges 13 and 14 are a slightly less distance from the edges 7 and 8 of the block than the depth of the grooves 4 and 5.

The inner faces of the sides 15 and 16 of the frame are provided with ribs 17 and 18 which extend the length thereof and which are adapted to be received in either the grooves 4 or 5 of the blocks, while the sides 19 and 20 of the frame are provided on their inner faces with grooves 21 and 22 adapted to receive the tongues 6. When the blocks are assembled in the frame the tongue 16 of each block occupies either a portion of the grooves 4 and 5 of another block, or a portion of the groove 4 of another block and a portion of the groove 21 of the frame. Similarly, the ribs 17 and 18 of the frame occupy the grooves 4 and 5 of the blocks adjacent to the sides 16 and 15 of the frame. It will be understood, of course, that there is always one vacant space 3 in the frame and because of the tongue-and-groove construction above described any block adjacent the vacant space in the frame can be readily moved into the vacant space, and in doing so the tongue of the block slides through the grooves of adjacent blocks or through the grooves 21, 22 of the frame. Moreover, because of the tongue-and-groove construction all the blocks including those which engage the frame and also the blocks in the center of the opening in the frame are interlocked with each other and are incapable of being removed from the frame, while at the same time capable of being freely moved as necessary in the solution of the puzzle.

In this construction both faces of the blocks are exposed so that it is possible to employ one design on one face of the block and another design on the opposite face. Therefore, two different puzzles can be united in the one construction. It will also be noted that the device comprises a frame having an opening, the opposite sides of which are a greater distance apart than the diameter of the blocks, that is, the diametrical dimension of said opening in either direction is equal to the combined diameters of a plurality of blocks, and that the blocks are made non-removable from the opening by the interlocking connection between the blocks and that between the blocks and frame.

It is not essential to my invention that the blocks should be all of one size as it would be possible to embody the invention in a puzzle where the blocks vary in size; nor is the particular shape of the blocks an important feature. Moreover various modifications in the construction may be adopted without departing from the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a puzzle, the combination with a frame having an opening, of a plurality of blocks occupying said opening and movable therein relative to each other, but non-removable from the frame, the distance between opposite sides of said opening being equal to the combined diameters of a plurality of the blocks and the blocks having an interlocking connection with each other.

2. In a puzzle, the combination with a frame having a rectangular opening therein, of a plurality of blocks occupying said opening and movable therein, but non-removable from the frame, each of the diametrical dimensions of said opening being equal to the combined diametrical dimensions of a plurality of blocks.

3. In a puzzle, the combination with a frame having an opening therein, of a plurality of blocks received in said opening capable of movement relative to each other therein, said blocks having a slidable interlocking connection both with each other and with the frame.

4. In a puzzle, the combination with a frame having an opening therein, of a plurality of blocks received in said opening and capable of movement relative to each other therein, said blocks having a slidable tongue-and-groove connection both with each other and with the frame whereby the blocks are non-removable from the frame.

5. In a puzzle, the combination with a frame having an opening, two adjacent sides of which are provided with tongues, and the other two sides of which are provided with grooves, of a plurality of blocks occupying said opening, said blocks being formed with tongues and grooves on their edges, the tongues of each block operating in the grooves of adjacent blocks and of the frame.

6. In a puzzle, the combination with a frame having a rectangular opening, two sides of which are provided with tongues,

and the other two sides of which are provided with grooves, of a plurality of blocks occupying said opening and movable therein, each block having grooves on two adjacent sides and tongues on the other two sides, the tongue of each block occupying grooves of adjacent blocks or of the frame.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES L. RIDGWAY.

Witnesses:

BERTHA F. HEUSER,

THOMAS J. DRUMMOND.