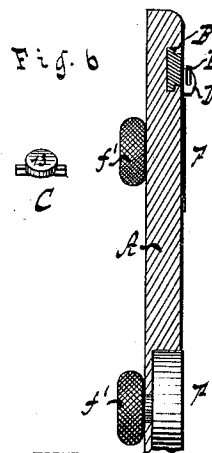
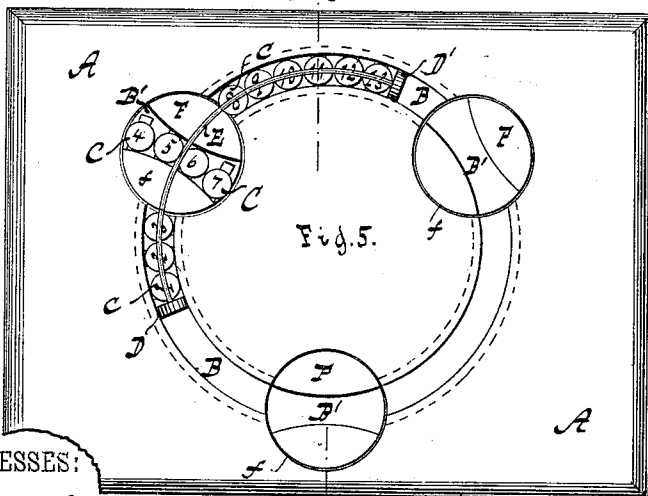
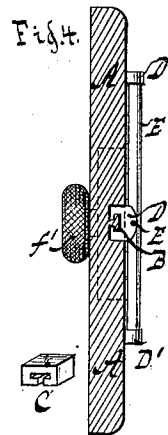
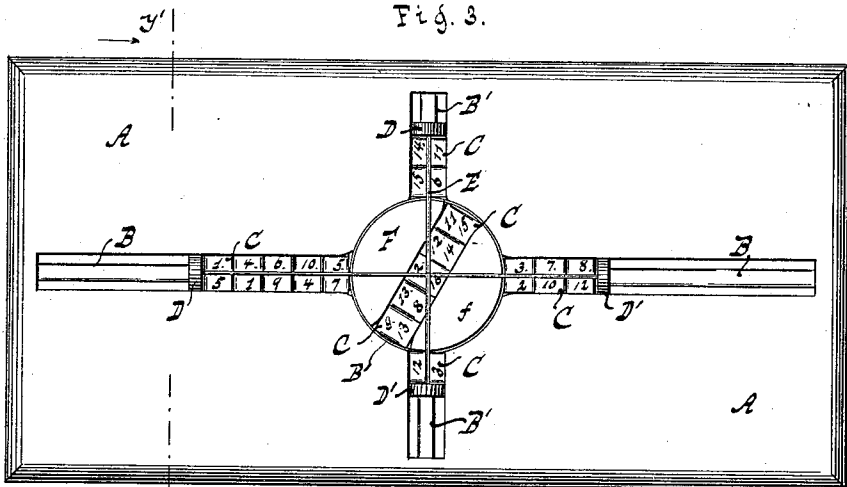
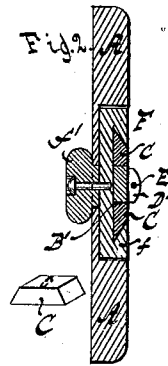
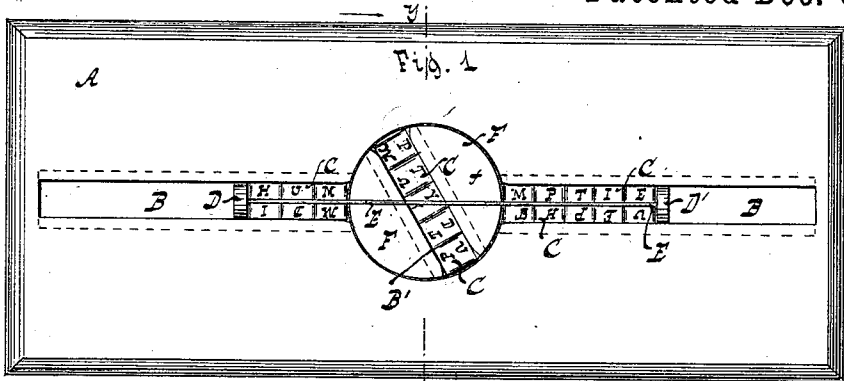


(No Model.)

# P. PROTHEROE. PUZZLE.

No. 332,211.

Patented Dec. 8, 1885.



WITNESSES:

*A. Fisher du Faunfr.*  
*William Miller*

INVENTOR

*Pryse Protheroe.*  
BY  
*Van Santwood & Hauff*  
his ATTORNEYS

# UNITED STATES PATENT OFFICE.

PRYSE PROTHEROE, OF SURBITON, COUNTY OF SURREY, ENGLAND.

## PUZZLE.

SPECIFICATION forming part of Letters Patent No. 332,211, dated December 8, 1885.

Application filed September 18, 1885. Serial No. 177,477. (No model.)

*To all whom it may concern:*

Be it known that I, PRYSE PROTHEROE, a subject of the Queen of England, residing at Surbiton, in the county of Surrey, England, have invented new and useful Improvements in Puzzles, of which the following is a specification.

My invention relates to improvements in puzzles in which the definite arrangement of movable parts or blocks, each having a character—such as a letter or numeral—for identification, is indiscriminately broken up or disturbed, so that the relative positions of the parts to their proper and original positions are unknown to the operator, the task being then for the person to arrange the characterized parts or blocks into their original positions, while the construction and arrangement of the operating parts of the puzzle confine the possible movements to certain definite limits.

My invention consists, essentially, in a device embodying in its construction a base having a groove or track, in which is confined a train consisting of a certain number of blocks, each being properly marked with a distinguishing letter or figure, and these blocks can slide along the length of the track or groove, but cannot be lifted up or removed therefrom in anyway except by means to be hereinafter described. The blocks are also held together to form a continuous train by followers engaging the groove or track and situated at each end of the train, said followers being held together by a rod secured to the same end, extending over or to one side of the blocks composing the train, whereby the blocks are held closely side by side and caused to slide when actuated as one continuous train. To mix up or transfer the blocks forming the train, I employ a circular disk capable of rotation, which disk I shall hereinafter term the "turn-table." This turn-table is provided with a groove or track, which extends diametrically across the same, and which is adapted to receive, when in the proper position, a definite number of the blocks and retain the same in its rotation, while at the same time it blocks up the path of the train while switching the blocks, but does not interfere with the motion of the train when the grooves

or tracks coincide, so that the train can be made to cause the delivery of the blocks from and upon the turn-table. It is evident that by means of this turn-table, with the co-operation of the train, any definite number of the blocks can be transferred to any part of the train at will, the problem being to return the blocks to their original positions by the aid of the said turn-table after the said blocks have been indiscriminately mixed by the previous use of the turn-table.

The specific construction and arrangement of the above-mentioned parts are more fully pointed out in the following specification and claims and illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of my puzzle, showing the turn-table partially rotated. Fig. 2 is a transverse cross-section of the same in the plane  $y y$ , Fig. 1. Fig. 3 represents a plan view of a modification of the puzzle, in which a second groove or track, which crosses the first track, is added to the example shown in Fig. 1. Fig. 4 is a transverse section thereof in the plane  $y' y'$ , Fig. 3. Fig. 5 is a plan view of a modification, which is constructed with a circular groove or track, and is provided with several turn-tables for switching the blocks.

Similar letters indicate corresponding parts.

In the drawings, referring at present more especially to Figs. 1 and 2, the letter A designates the base of the puzzle, constructed preferably of wood and with a flat face; but it can also be made of card-board, glass, or other suitable material, or in any other form. In this base A is formed a groove or track, B, extending rectilinearly across the said plate to the proper length, and into this groove or track are fitted blocks C, which are adapted to slide in the said groove or track in one continuous train, and for this purpose the said blocks are held together, as shown in this example, by followers D D', which latter bear against the ends of the train, and are rigidly connected with each other by a rod, E.

F is the turn-table, situated in the center of the groove or track, and it consists of a circular disk,  $f$ , having therein a groove or track, B', which extends diametrically across the same, and when this turn-table is in the proper

position the grooves B B' coincide, and the blocks A can be moved along the grooves or tracks in a continuous train. To effect the rotation of the disk *f*, a button or knob, *f'*, Figs. 2, 4, and 6, is attached to the bottom of the disk, the said knob being then on the under side of the base A. The knob is turned as convenient by the operator; but other means for effecting the rotation of the disk which would suggest themselves can be employed.

In order that the blocks B may not be lifted out or removed from the groove except by the turn-table F, the groove is made of a wedge-shaped cross-section or some other of the numerous cross-sections which will effect this purpose, and the blocks B are shaped to conform to the groove. In the example shown in Fig. 1 I have employed thirteen blocks, each being characterized by two of the letters found in the words "Humpty Dumptie," one set of letters being upright while the other set is reversed. However, it is only necessary to use one character on each block, two being used so that one series of letters will always be upright, and also to render the problem more complex and interesting.

As shown in Fig. 1, the blocks A have been arranged so that the upper series correctly represents the words previously referred to, the turn-table having been rotated through a short distance in the direction indicated by arrow 1 marked thereon, and carries with it several of the blocks, and, as here shown, it is made of such a diameter that five blocks neatly fit therein and allow it to be rotated. If the rotation of the turn-table is now continued until the groove therein coincides in direction with the groove B in the base, the block having thereon the letters "P M" will be carried next to the block having thereon letters "T M," block <sup>n</sup>, next to block <sup>m</sup>, &c., whereby the relative positions of the blocks are changed. Now, while the two grooves coincide the train can be moved, say, toward the right, so as to bring from one to five new blocks upon the turn-table, whereby one or all of the blocks previously upon the turn-table are delivered to the groove in the base on the opposite side of the turn-table, where they remain during the next following rotation of the turn-table. By thus indiscriminately operating the device the blocks can be thoroughly mixed, after which the problem consists in replacing the blocks in the proper positions to spell the words "Humpty Dumptie" by only operating the train and turn-table.

The extreme difficulty of said problem will be readily perceived when the number of possible combinations of these letters are observed. Instead of thirteen blocks, more or less can be used, the difficulty of solving the problem naturally increasing with the increase in the number of blocks.

In the modification shown in Figs. 3 and 4, a secondary groove or track, B<sup>2</sup>, is used, which crosses the groove or track B preferably at

right angles, and a differently-shaped cross-section of groove or track is employed. The turn-table F is situated at the juncture of the two tracks B B<sup>2</sup> in a position to be capable of receiving and discharging blocks from and to both tracks, whereby the blocks can be arranged so as render the task of rearranging them in their proper position more complex and arduous. It will also be observed that an additional set of followers, D\* D', is situated in the second track, and the turn-table is provided with only one track, so that one of the tracks in the plate is always blocked when the track in the turn-table coincides in direction with the remaining track.

In the modification shown in Figs. 5 and 6 the track or groove B is made circular or endless, and three turn-tables, F, are employed, the blocks being in this case circular, and other slight detail changes necessary to the change of track are introduced. It is evident that two trains of blocks can be arranged alongside of each other, with or without divisions between the said rows of trains. The ends of the grooves or tracks may be made so as to be permanently open or closed. If left open, the blocks can be arranged by sliding the same out of the groove or track.

In the examples shown in the drawings the tracks were all sunk below the surface of the base and table; but the tracks may be on an elevation above the plane of the base and turn-table, and other unimportant modifications of detail parts as would suggest themselves can be substituted without departing from the spirit of my invention.

It will be observed from Figs. 2, 4, and 6 that the disk *f* is sunk into the base, whereby the ends of the groove in the turn-table is closed up, which prevents the block in the same from leaving the track thereon until the two tracks B B' coincide in direction. However, other means for such a guard may be employed.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a puzzle, of a base-piece, a train of characterized blocks held upon and capable of moving in a definite path on said base, and a rotating device intersecting the said train and provided with means to receive at one side two or more of the blocks comprising the aforesaid train and to deliver at the other side one or more of said blocks, substantially as described.

2. The combination, in a puzzle, of a base provided with a track, a train of characterized blocks fitted to and movable along said track, and a turn-table having a track and intersecting the track of the base, substantially as described.

3. The combination, with the base A and the track thereof, of the blocks on the track, the followers and rods for holding the blocks together in line, and the turn-table, located in the length of the track, for receiving two or

more of the blocks from one side of the track to reverse the same and deliver the same from its opposite side, substantially as shown and described.

5 4. The combination of a base having a track, a train of characterized blocks movable along said track, a rotating disk having a diametrical track and intersecting the track of the base, and followers for moving the train of blocks,  
10 substantially as described.

15 5. The base A, provided with two or more intersecting tracks, blocks arranged in trains in the tracks, a turn-table situated at the intersection of the tracks and provided with a diametrical track, and means for holding the

blocks in trains, substantially as shown and described.

6. The combination of a base having a track and a circular recess intersecting the track, a train of characterized blocks movable along the track, and a turn-table having a track and located in said recess, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

PRYSE PROTHEROE. [L. S.]

Witnesses:

A. FABER DU FAUR, Jr.,

E. F. KASTENHUBER.