

(No Model.)

W. CHURCHILL.  
PUZZLE.

No. 507,215.

Patented Oct. 24, 1893.

FIG. 1.

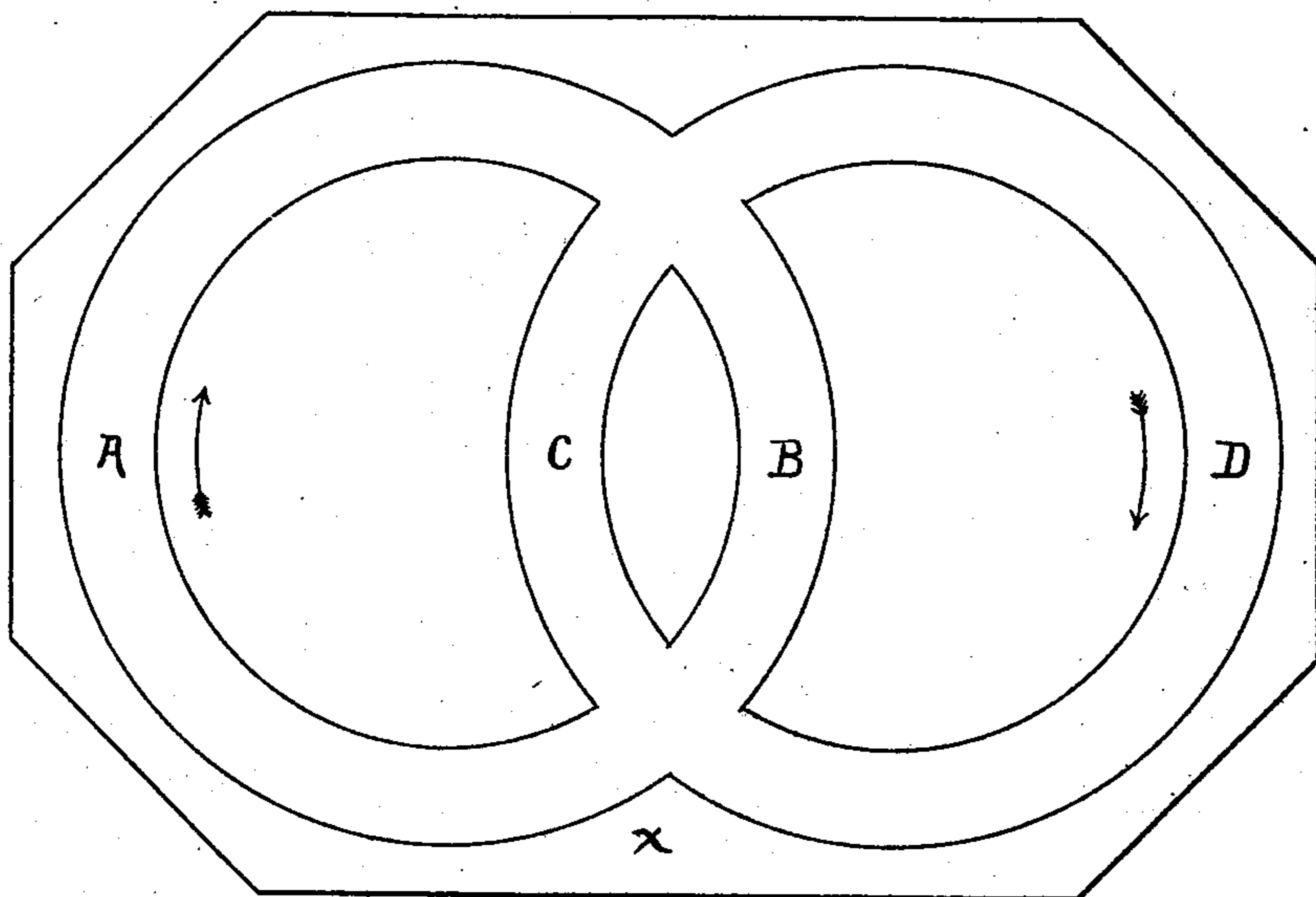


FIG. 2

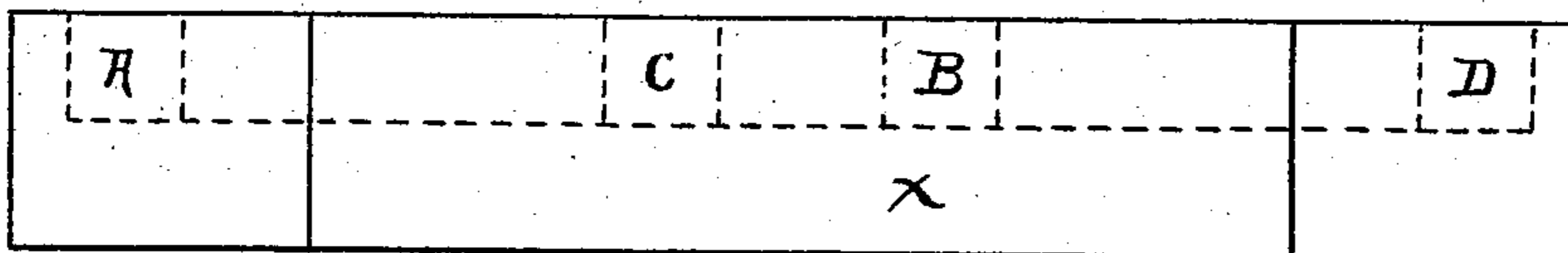
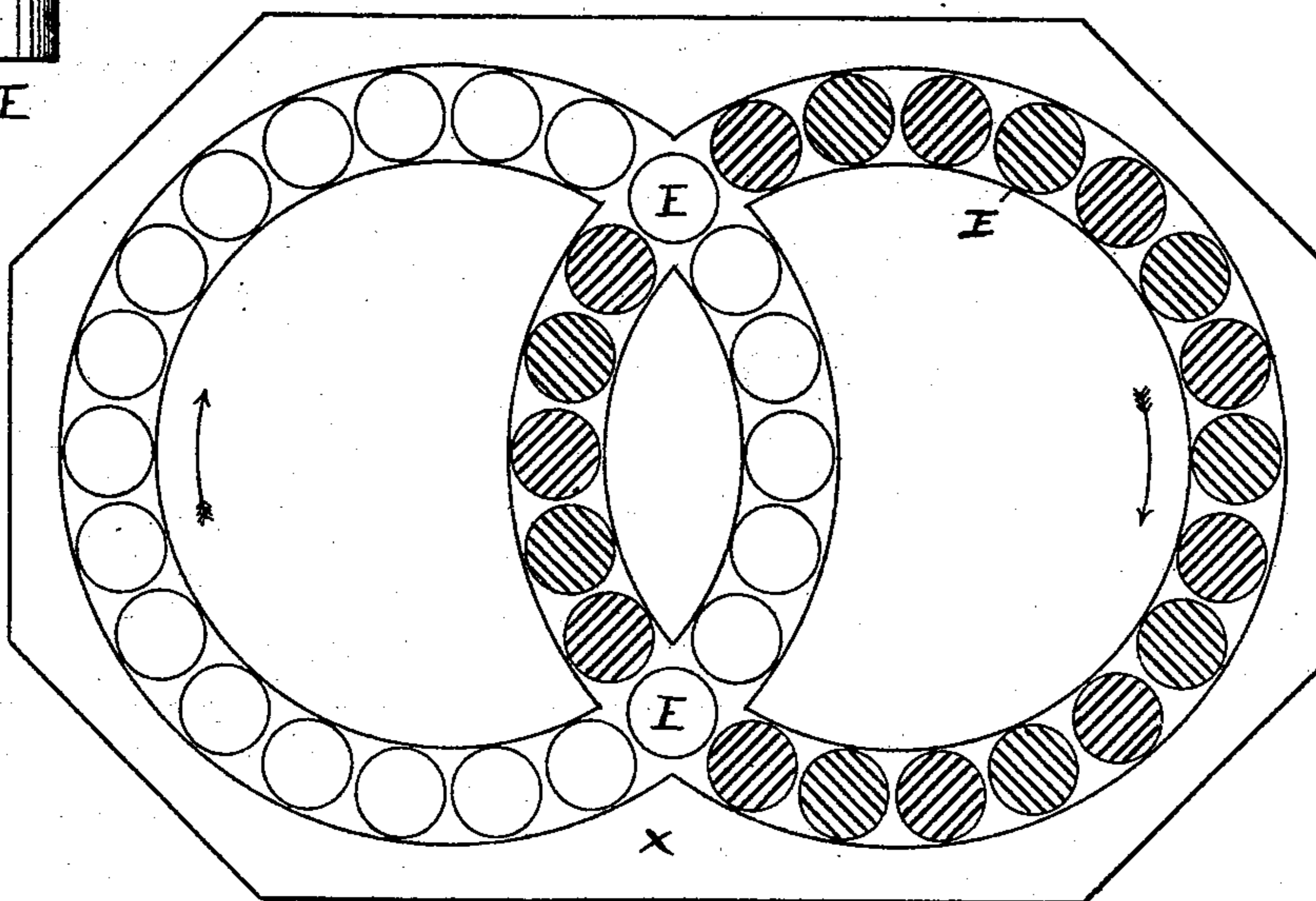


FIG. 4.



E

FIG. 3.



Witnesses.

*Chas. N. Starnick*  
*B. F. Johnson*

Inventor.

*Wm. Churchill*

# UNITED STATES PATENT OFFICE.

WILLIAM CHURCHILL, OF DETROIT, MICHIGAN.

## PUZZLE.

**SPECIFICATION** forming part of Letters Patent No. 507,215, dated October 24, 1893.

Application filed May 28, 1891. Renewed September 4, 1893. Serial No. 484,795. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CHURCHILL, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Puzzle, of which the following is a specification.

My invention relates to a puzzle in which circular grooves, turned in wood, or cast in metal or plaster, in which may be moved or transposed either spherical or cylindrical pieces subject to rules governing any one of the many problems possible, by simply varying the width and diameter of the grooves as well as the size and number of the movable pieces to be used; and the objects of my improvement are, first, to supply a simple device for amusement; second, thereby to cultivate the memory and mental ingenuity of the person using it. I attain these objects by the manufacture illustrated in the accompanying drawings, in which—

Figure 1 is a top view of a base of wood, or cast of metal or plaster, in which appear circular grooves crossing each other. Fig. 2 is a side view of the same the dotted lines indicating the depth of the grooves. Fig. 3 is a top view of the same showing movable pieces, white and black, in position the former color being represented by simple outline, the latter by cross hatching or shading. Fig. 4 is a side view of one of the cylindrical movable pieces.

Similar letters refer to similar parts throughout the several views.

In Fig. 1 *x* is any suitable base constructed with circular grooves A, B and C, D. These grooves may be of equal diameter but turned from different centers so as to cut across each other, and may be of such depth, width and diameter as to contain, in either of them, any required number of spherical, or, preferably, cylindrical movable pieces, the same as E in Figs. 3 and 4, of two or more colors, and of an equal or unequal number of each, as the problem to be solved may require. With such a base and with such movable pieces many different problems are possible; and, the puzzle may consist in placing the movable pieces as in Fig. 3 requiring all of one color to be transposed to the grooves occupied by the other, and vice versa, the rules being that no piece shall be lifted, and that all the pieces in either groove must be moved, in the direction indicated by the arrow, at once, un-

til transposition is effected, to effect this requiring three hundred and forty correct moves. Simpler problems, or still more difficult may be solved by removing one of the movable pieces thus creating a blank space; or by moving *seriatim* backward or forward in either circular groove subject to the rules of the problem given, all being possible or impossible according to the memory and mental ingenuity of the person attempting it. The cylindrical pieces I prefer to locate on their ends in said grooves rather than upon their peripheries so that they shall have a sliding instead of a rolling movement therein.

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

1. The puzzle herein described consisting of a base constructed with intersecting annular grooves described from different centers, and movable pieces located in said grooves the construction and arrangement being such that the movable pieces located at the points where any two of the said grooves intersect each other are common to both said intersecting grooves and are movable in either or both, and whereby any piece at any intersecting point may be moved out of one groove and directed into another at the will of the operator, substantially as described.

2. The puzzle herein described consisting of a base constructed with intersecting annular grooves described from different centers, and movable pieces located in and completely filling said grooves, the construction and arrangement being such that the movable pieces, located at the points where the said grooves intersect each other, are common to both said grooves and movable in either or both, substantially as set forth.

3. A puzzle consisting of a base provided with intersecting annular grooves, described from different centers, with movable cylindrical pieces, located upon one end in said grooves and guided thereby the construction and arrangement being such that the movable pieces located at the points where any two of said grooves intersect each other are common to both grooves and movable in either or both, substantially as described.

Detroit, May 8, 1891.

WM. CHURCHILL.

In presence of—

CHAS. N. STEENECK,  
B. F. JOHNSON.