

No. 636,109.

Patented Oct. 31, 1899.

H. A. BOWERS.  
PUZZLE.

(Application filed Aug. 16, 1899.)

(No Model.)

Fig. 1.

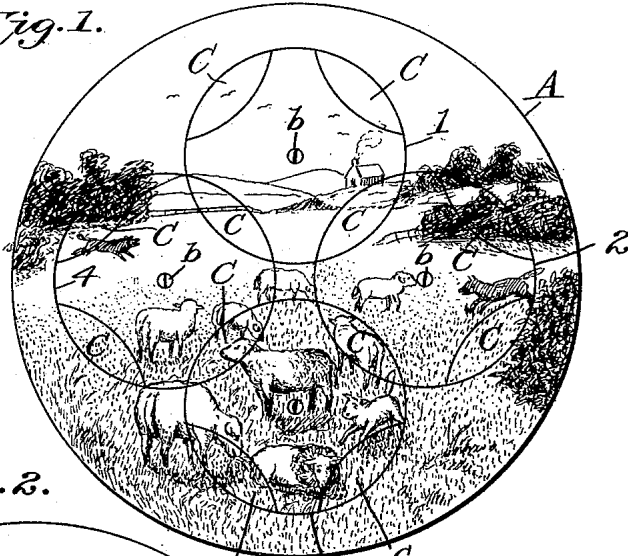


Fig. 2.

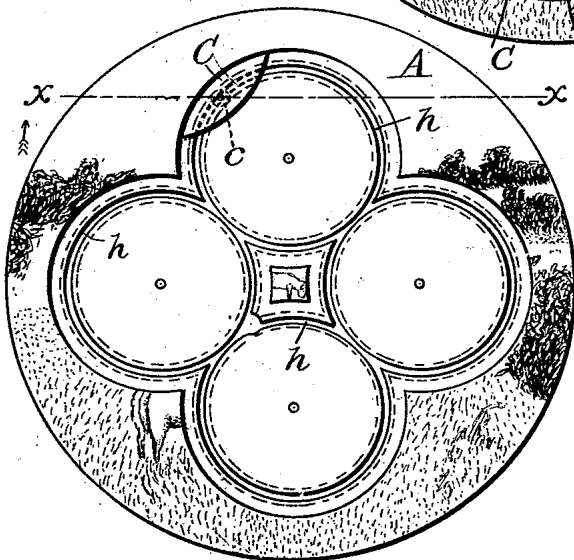


Fig. 4.

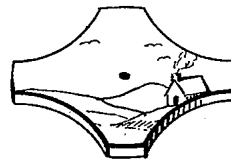


Fig. 5.

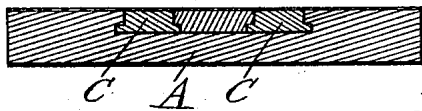
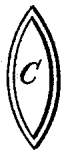


Fig. 6.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## PUZZLE.

SPECIFICATION forming part of Letters Patent No. 636,109, dated October 31, 1899.

Application filed August 16, 1899. Serial No. 727,387. (No model.)

*To all whom it may concern:*

Be it known that I, HIESTER AZARUS BOWERS, a citizen of the United States, and a resident of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Puzzles; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a plan view of my puzzle. Fig. 2 is a similar view with all movable parts with the exception of one segmental or lenticular piece C removed. Fig. 3 is a section on the line *xx*, Fig. 2. Fig. 4 is a perspective view of one of the pivoted disks having the lenticular pieces cut therefrom. Fig. 5 is a sectional view illustrating the securing of the pieces C by rabbets. Fig. 6 is a plan view of one of the rabbeted pieces C.

This invention is designed to provide a puzzle of novel and amusing character; and it consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates a puzzle-board or base. In laying out this puzzle four circles 1, 2, 3, and 4 are inscribed upon the surface of this base in such a manner that their centers are at the four corners of a square and each circle intersects or overlaps an equal portion of the two adjacent circles. The upper layer or thickness of the board or base is then cut through on the lines of these circles to thereby form four disks, each of which is provided with a suitable pivot *b* at its center, upon which it is arranged to turn. By reason of the intersecting arrangement of the circles in making the cuts above described there is formed in each disk four segmental pieces, which comprise those portions of the circles included between the arc intersections, and two of these pieces in each disk are common to that disk and also to adjacent disks. There are therefore ten of these pieces in all. When any two adjacent disks are turned to such position that these two segments are wholly

common to that disk and to the adjacent disks, that disk can be freely rotated upon its pivot, and it therefore follows that any one of the pieces C may by so turning the disk be made that piece which is common with that disk and either of the adjacent disks, and, further, that any one of said pieces when in this common position may be transferred entirely to either disk by a rotation of that disk. Thereby by manipulation of the disks any one of the pieces C may be moved so as to occupy any desired portion of any one of the four disks. This arrangement may be utilized for the purposes of a puzzle in various ways. In the drawings I have shown the surface of the board A as having a picture thereon, which by the cuts above described is dissected in numerous parts, each one of the pieces C having thereon a portion of this picture. It will be readily seen that by slightly manipulating the disks or some of them the parts of the picture may become very much transposed and confused, and the problem to be solved is to retranspose the same and restore the picture to its original condition by manipulation of the disks.

In lieu of the picture it is obvious that the surface of the board may be marked with various arrangements of figures disposed on the fixed and movable parts, in which case the problem is to effect certain predetermined combinations thereof.

The arc-bound segmental pieces C may be loose; but this is somewhat objectionable, owing to the fact that they are likely to fall out of place. I prefer, therefore, to form each piece with a depending headed stud *c*, which engages a guide-groove *h* in the lower layer of the base. These guide-grooves are formed in four intersecting circular paths corresponding to the circles on which the disks are cut and concentric therewith, but of correspondingly less diameter. Instead of these pins and grooves the sections C may be held and guided in other ways. In the drawings, for instance, I have shown them as having rabbeted edges, which engage the undercut edges of the adjacent parts.

It will be obvious that the particular arrangement which I have illustrated forms only one embodiment of my invention and that various modifications may be made by changing

the number and arrangement of the intersecting circles, preserving in all cases, however, the feature of movable segments common to two adjacent movable disks.

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

1. A puzzle having two or more circularly-movable disks each of which has a movable  
10 segmental portion or portions common to itself and to the adjacent disk or disks, substantially as specified.

2. A puzzle having a plurality of circularly-movable disks whose peripheries intersect,  
15 those portions of said disks included between the intersecting peripheral lines being separated or divided on said lines, substantially as specified.

3. A puzzle comprising a board or base, a  
20 portion of whose surface is formed into circularly-movable disks having intersecting peripheries, said disks being cut on the lines of intersection to form movable arc-bound segmental sections, substantially as specified.

4. A puzzle having a plurality of circularly-movable disks having segmental portions included between intersecting lines of said disks  
25 and movable from one disk to another by rotation of the disks, substantially as specified.

5. A puzzle having a plurality of circularly-movable disks, one portion of each disk also forming a portion of an adjacent disk and  
30 movable with either of such disks, substantially as specified.

6. A puzzle having a plurality of circularly-movable disks the periphery of each of which

intersects the periphery of an adjacent disk or disks, and having the intersecting segments movable from one disk to another, substantially as specified. 40

7. A puzzle comprising a suitable board or base having a pictured or printed surface, and dissected upon lines of intersecting circles, said dissected portions being circularly  
45 movable, substantially as specified.

8. A puzzle, comprising a suitable board or base having a pictured or printed surface; a portion of said base being subdivided to form circularly-movable disks having intersecting  
50 peripheries and movable segments included between the lines of intersection, substantially as specified.

9. The herein-described puzzle, comprising a dissected picture, portions of which are upon a fixed surface and other portions upon  
55 relatively-arranged circularly-movable disks having segmental portions transferable by circular movement from one disk to another, substantially as specified.

10. In a puzzle, a plurality of circularly-movable disks, having intersecting peripheries and movable segments between them intersecting lines common to adjacent disks, together with guides for the said segments, substantially as specified. 60

In testimony whereof I affix my signature in presence of two witnesses. 65

HIESTER AZARUS BOWERS.

Witnesses:

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C. H. SCHAEFFER.