No. 627,127. Patented June 20, 1899.

R. S. MAYHEW.

PUZZLE.

(Application filed Apr. 3, 1899.)

(No Model.)

Fig. 1,

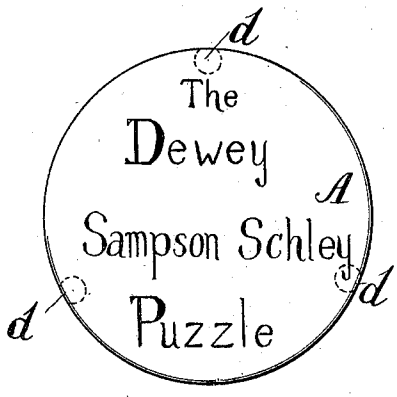


Fig. 2,

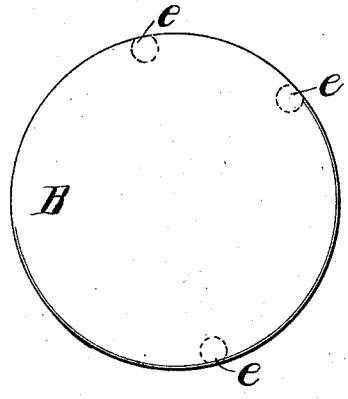


Fig. 3,

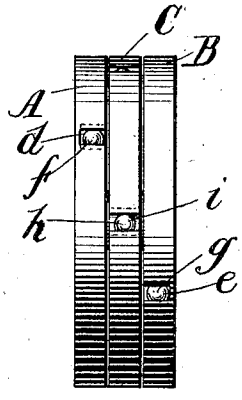
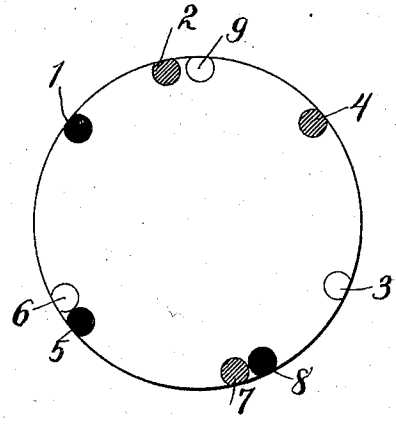


Fig. 4,



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PUZZLE.

SPECIFICATION forming part of Letters Patent No. 627,127, dated June 20, 1899.

Application filed April 3, 1899. Serial No. 711,498. (No model.)

To all whom it may concern:

Be it known that I, RALPH S. MAYHEW, a citizen of the United States, and a resident of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Puzzles, of which the following is a specification.

My invention relates to that species of puzzles which may be properly designated as "mechanical" puzzles, since it involves a mechanical contrivance on the proper or a given predetermined manipulation of which depends the solution of the puzzle.

As an arbitrary or fancy name for my new puzzle I have adopted the appellation "The Dewey, Sampson, Schley Puzzle," which cognomen has some appropriateness, since the puzzle device involves a revoluble disk or cylinder with peripherally-arranged openings therein remotely after the fashion of the turret of a war-ship and a series of metallic spheres, which may be said to represent cannon-balls.

My invention consists, essentially, in a puzzle device comprising two concentrically-arranged disks (or cylinders of comparatively great diameter and short axis) that have fixed positions relatively and one intermediately-located similarly-sized concentrically-arranged disk which about fills the space between the first-named two disks and is free to rotate between them, all three of said disks being provided with receptacles for the accommodation of small balls, which while they may be translated from one to another of said receptacles in the three disks cannot escape or be removed from the receptacled disks, all as will be hereinafter more fully explained and as will be most particularly pointed out in the claim of this specification.

To enable those skilled in the art to which my invention relates to make and use my new puzzle, I will now proceed to more fully describe the construction and operation of the latter, referring by letters to the accompanying drawings, which form part of this specification and in which I have shown my invention carried out in precisely that form in which I have so far practiced it, though various modifications may be made in the contrivance shown and described, which so long as they embody the principle of construction and mode of operation peculiar to the novel contrivance shown will of course involve my invention.

In the drawings, Figure 1 is an elevation of the puzzle, looking at the face thereof. Fig. 2 is a view looking at the opposite side. Fig. 3 is an edge view of the contrivance. Fig. 4 is a diagrammatical view which will be specially referred to hereinafter in giving the solution of the puzzle.

In the several views the same part will be found always designated by the same reference-letter.

A, B, and C are three circular disks, which are preferably of about the same thickness, which are of the same diameter, and which are arranged, as shown, concentrically.

The disk A, the exposed flat surface of which I call the "face" of the puzzle and which bears the name hereinbefore mentioned, and the disk B are permanently located together in an immovable manner relatively by any suitable connecting-pin or stud arranged or located axially of the two disks, while the disk C is mounted revolubly on said stud or connecting-pin, all in such manner, as shown, that while the three combined disks A B C form practically a short cylinder the central portion (or the disk C) is free to rotate about an imaginary axis common to the three disks.

In each of the disks A and B, near its periphery, is a series of pocket-like recesses, each of which extends from the innermost side of the disk to within a short distance of its outer surface, and each of which "opens out," so to speak, through the peripheral surface of the disk, as shown, (see Fig. 3,) in order that a small ball when in one of said recesses or receptacles will be loosely confined therein against escapement therefrom in a direction radial of the disk. This structural feature will be clearly seen at Fig. 3, where *d* and *e* are two of the said receptacles (one in the disk A and the other in B) and *f* and *g* are two of the series of three shot or small metallic balls which make part of the puzzle device. At Fig. 3 will also be clearly seen the character of the housings or pocket-like receptacles *i* of the middle revoluble

disk C in that one of which there seen I have shown confined the third one, *h*, of the series of balls.

The housing or receptacle *i*, it will be observed, while it (like the recesses of the two disks A and B) retains the ball *h* against escapement therefrom in a radial direction would permit its escape laterally (in either direction) were it not for the presence of the inner and contiguous faces or sides of the two disks A and B, and hence it will be understood that whenever the revoluble disk C may be turned into a position such that its pocket *i* will register with either that one *d* of disk A or the one *e* of disk B the ball in either of said last-named receptacles (in register with which recess *i* may be set) will be free to roll into said recess *i* and thence back into the receptacle of the other disk, and upon this peculiar construction and capacity of the two kinds of housings in respectively the two relatively stationary disks A and B on the one hand and the revoluble central disk C on the other hand depends the manipulation of the said revoluble disk and the management of the balls *f*, *g*, and *h* in the operations of the device and the solution of the puzzle.

The peculiar arbitrary location or arrangement circumferentially of the receptacles of the two outer disks A and B will be seen by reference, respectively, to Figs. 1 and 2, in which it will be seen that while those of disk A are placed approximately equidistant circumferentially of the disk those of B are separated by spaces widely different from each other.

The differently-formed receptacles of the revoluble disk C are arranged circumferentially of the disk quite differently from those of either of the other disks, and the precise or peculiar arrangements of these receptacles of the three disks are, it will be understood, essential to the puzzle device or contrivance, and therefore in some diagrammatical views of the drawings, to which I will presently refer, I have shown exactly how the receptacles of the several disks are arranged circumferentially of their respective disks and also the relative arrangement of the receptacles of the two disks that always remain in the same relative position, and as the drawings are made on the scale of the working puzzle as I have so far made and used the latter by following the drawings the operative contrivance will be produced correct in structure.

Of course the contrivance shown and described may be made of any suitable and desirable material or materials, though I have so far made the three disks of wood and used leaden shot for the balls shown.

The scheme of the puzzle is to take it in hand with all three of the balls located in the receptacles of one or the other of the outer (relatively stationary) disks A or B and to effectuate the translation under certain conditions of manipulation of all the balls to the receptacles of the other outer disk—as, for instance, to transfer all the balls from disk A to disk B, or vice versa—and the conditions of manipulation or the regulations of the scheme, which are to be contained in the "Directions" accompanying the puzzle, preferably printed on the outer face of disk B, are these: Transfer the balls from one outer disk to the other in three moves of the middle disk, each move being one turning movement of the cental disk, preceded and followed by a complete stop to allow a ball to pass to or from the disk; but two balls must never, however, be in the central disk at the same time.

I will now explain by reference especially to the diagrammatical view hereinbefore alluded to the solution or accomplishment of the puzzle.

In the "diagram" of the drawings the face of the puzzle (or disk A) is supposed to be downmost and the uppermost disk B to contain all three of the balls in its receptacles. I have denoted the locations of the receptacles of the upper disk by approximately circular spaces that are section-lined, those belonging to the central (revoluble) disk by similarly-shaped spaces made black and those belonging to the lowermost disk by spaces left white. Now to do the puzzle, first move the central disk until its receptacle marked 1 registers with the receptacle marked 2 of the upper disk, whereupon the ball in 2 will descend into receptacle 1. Then turn central disk until 1 registers with 3 of the lowermost disk, whereupon a ball will drop from 1 to 3 and at the same time a ball will pass from 4 into 5, since the circumferential space from 1 to 5 of central disk is equal to that from 3 of lowermost disk to 4 of uppermost disk. The first "move" will then have been completed. Then turn central disk until receptacle 5 registers with 6 of the lower disk, thus allowing the ball in 5 to pass thence into 6, and at the same time the ball in pocket 7 of the upper disk will pass into the housing 8 of the central disk, since the space circumferentially between 5 and 8 of the central disk equals that between 7 and 6 of the lower disk, and now the second move will have been completed. To complete the third move, turn the central disk until its pocket 8 registers with 9 of lower disk, this allowing the ball in 8 to pass into pocket 9, when the translation of all three balls from the upper to the lower disk will have been effectuated and the puzzle solved.

During the operations just described two balls, it will be borne in mind, are never allowed to be in the central housings at the same time.

Having now so fully described my invention that those skilled in the art to which it relates can understand and practice it either in the precise form in which I have shown it carried out or under some modification, what I claim as new, and desire to secure by Letters Patent, is—

A puzzle device comprising two relatively stationary parts; one, intermediately and concentrically arranged revoluble part, each of said three parts having ball-receptacles, substantially as specified; and a series of balls which are confined within the series of receptacles of the said relatively stationary and movable parts of the device; but transferable from the receptacles of one part to those of another; all substantially as hereinbefore set forth.

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

RALPH S. MAYHEW.

Witnesses:
EDWIN SEGER,
SIDNEY MANN.