(No Model.)

F. E. CLARK & G. WEXLER.

PUZZLE.

No. 444,239. Patented Jan. 6, 1891.

Fig. 1.

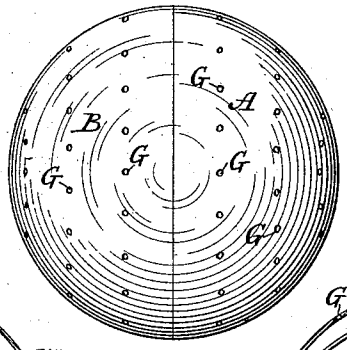


Fig. 2.

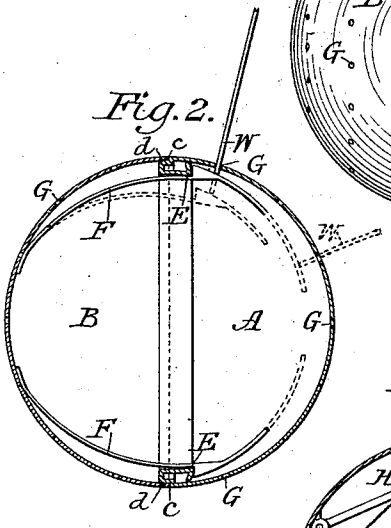


Fig. 3.

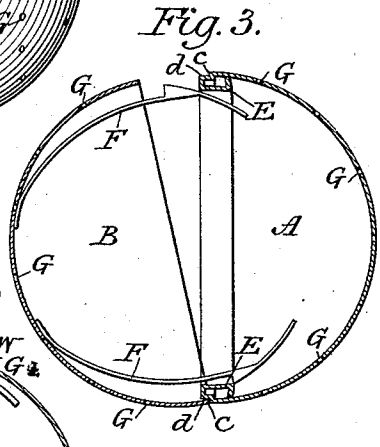


Fig. 4.

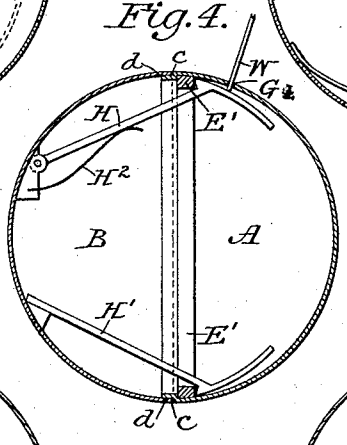


Fig. 5.

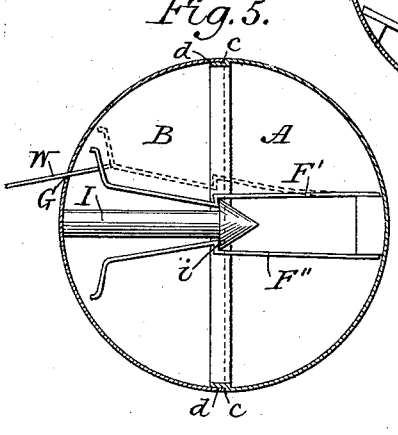
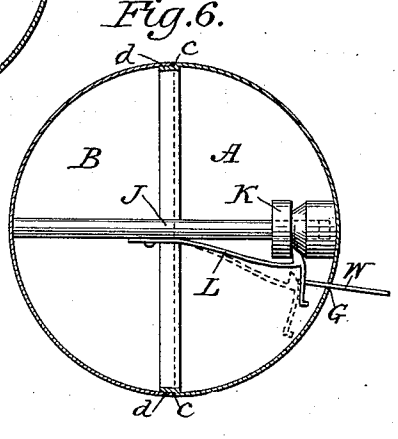


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANCIS E. CLARK, OF NEW YORK, AND GEORGE WEXLER, OF BROOKLYN, NEW YORK.

PUZZLE.

SPECIFICATION forming part of Letters Patent No. 444,239, dated January 6, 1891.

Application filed January 29, 1890. Serial No. 338,511. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS E. CLARK, of the city, county, and State of New York, and GEORGE WEXLER, of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Puzzles; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Our invention has for its object to provide a neat simple puzzle which will call into play the perceptive and inventive faculties and the exercise of mechanical ingenuity for its solution.

It consists in a ball constructed, substantially as hereinafter described and claimed, of two semi-spherical shells fitted to rotate independently one upon the other, and to be automatically locked together without interference with their rotation by means of springs projecting from within the one shell into engagement with an endless annular offset within the other, in such position as to admit of being carried by said rotation into register with a single aperture in the shell, whereby a loose independent pin or key may be introduced through the aperture to reach the spring and effect its disengagement to unlock the shells. Hence in the solution of the puzzle it becomes necessary, first, to select the particular aperture which will register with the springs; second, to provide a loose pin or key adapted to enter the aperture; third, to rotate the one shell upon the other until the proper spring is brought into registry with said aperture, and, finally, to insert the pin to actuate the spring.

In the accompanying drawings, Figure 1 is an exterior view of our improved puzzle-ball in elevation; Fig. 2, a diametric section of same when closed, taken at right angles to its division-line, showing the opening-key inserted, its operation being illustrated by dotted lines. Fig. 3 is a similar view illustrating the same with the automatic spring-catches released and the ball partly opened. Figs. 4, 5, and 6 are similar sectional views of the puzzle, illustrating various modifications in the form and arrangement of the automatic spring devices by which the two divisions of the sphere are confined when united.

The ball is preferably constructed in a perfectly spherical shape of two semi-spherical sections on divisions A B, of thin sheet metal, papier-maché, hard rubber or other suitable material, the rim of the one section being formed with a slight annular offset *c*, and a circumferential flange *d* about its rim adapted to fit closely within the counterpart rim of the opposite section, so that the one shall have a firm seat or bearing within the other when the two are united and yet leave exteriorly but a single close seam in view. Within one of the sections A, thus made to fit neatly and closely together, an annular offset E is formed to extend continuously around its entire inner periphery near to its rim. This offset E may be formed by doubling in the rim of the section and folding it in upon itself, as shown in Figs. 2 and 3, and in such case the infolded rim may also be made to form the offset *c* and flange *d* required to receive the rim of the opposite section and form the required joint between the sections; or, the offset may consist of a separate piece E′ of metal soldered or otherwise secured within the rim of one of the sections, as shown in Fig. 4.

Within the opposite section or division B of the ball are secured two springs F F, which may be made of either round or flat spring metal, to extend in opposite directions in the same diametric plane, preferably at right angles with the joint between the two sections, and whose free ends are bent and adapted to spring apart and thereby engage the circumferential offset E at any point thereof. Thus whenever the two sections A and B are fitted and closed together the two springs F F will engage the offset E at diametrically-opposite points, and thereby firmly lock and hold the sections together so that they will remain inseparable until one or other of the springs is disengaged from its hold upon the offset, and since the offset is continuous the springs will thus engage it and will retain their hold irrespective of an independent revolution of the two divisions when united. To permit of a

disengagement of either spring so as to separate the two sections and open the ball, one or more minute apertures G are pierced in the shell or wall of that section A into which the free ends of the springs project when the ball is closed, in position to permit of the insertion against the free end of either spring, when it is brought into registry with the hole, of a loose independent steel rod or pin W to serve as a key, by means whereof the end of the spring F may be forced inward far enough to free it from the offset E, as shown in dotted lines, Fig. 2, and thereby permit the ball to be opened by drawing the sections apart, as shown in Fig. 3, when the lower edges will slip one within the other and free the spring at that point.

A number of minute apertures G may be pierced in the shell, so as to render it difficult to determine which of them will properly register with the spring to permit the key-pin W to reach it, and thereby render the problem—how to open the ball—very difficult of solution to the uninitiated.

Instead of employing a spring-plate F directly as a catch to engage the offset, two hooked levers, as H H′, may be employed, the one lever H being pivoted at its inner end and actuated by a spring H^2 and the other rigidly secured, as shown in Fig. 4; or the springs, as F′ F″, may be made to clasp between them a pin or block I, formed with a collar or an offset *i*, and which is made to project for the purpose from the opposite section of the ball, as shown in Fig. 5; or, again, a pin or post J may be fitted to project interiorly from the one section B of the ball into a socket K, fitted to receive it in the opposite section, and to be caught and secured by means of a spring L, carried by the post J and adapted to engage a recess encircling the socket-piece, as shown in Fig. 6. In each and all of these modifications the spring-catch is released by the insertion of an independent push-pin W through an aperture in the shell of the ball, as shown in Figs. 2, 4, 5, and 6.

The two sections of the ball are made entirely loose and independent of each other to admit of a free revolution of the one about the axis of the other upon the bearing formed by the flanged joint between them, and the spring-catches are so adjusted as to permit of this independent revolution of the two sections without thereby freeing them after they are locked together, so that the registry of the appropriate key-hole with one of the spring-catches, to permit of the disengagement of the catch by means of a rod or pin inserted through the key-hole, may be produced or prevented by turning the sections one upon the other.

We claim as our invention—

1. The puzzle, substantially as described, consisting of the two independent rotatable shells, one of which is perforated, in combination with a spring-catch projecting from within the one shell to engage and lock automatically with an uninterrupted annular seat or offset within the opposite shell in manner to admit of being carried, when thus locked, into registry with the perforation in said opposite shell, substantially as and for the purpose herein set forth.

2. The divided hollow spherical shell having its wall pierced with one or more perforations and its divisions rotatable one upon the other when locked, in combination with the spring-catches fixed within the one division in position to engage and lock automatically with the interior of the opposite division and to admit, when locked, of being brought by the rotation of either division into registry with one of said perforations for disengagement by the insertion of a loose key through the perforation, substantially in the manner and for the purpose herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANCIS E. CLARK.
GEORGE WEXLER.

Witnesses:
A. N. JESBERA,
E. M. WATSON.