April 1, 1952 R. M. SCHRINER ET AL 2,591,303

MECHANICAL PUZZLE

Filed May 11, 1948

Fig. 1.

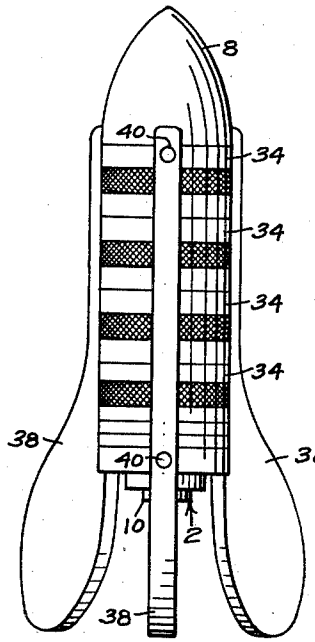


Fig. 6.

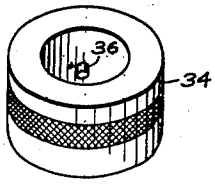


Fig. 12.

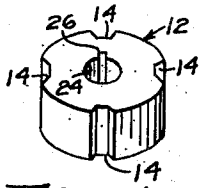


Fig. 3.

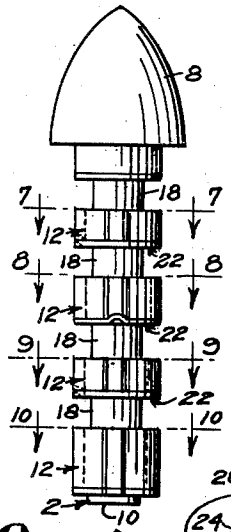


Fig. 2.

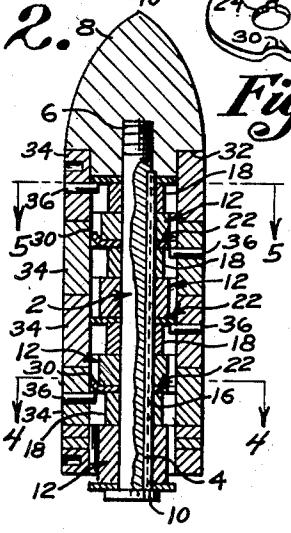


Fig. 11.

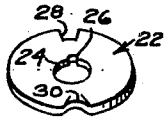


Fig. 4.

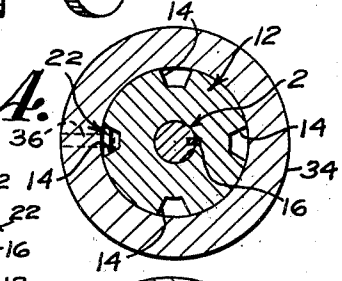


Fig. 7.

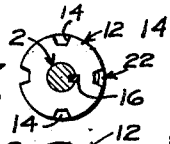


Fig. 8.

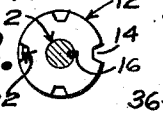


Fig. 9.



Fig. 10.

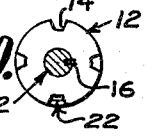
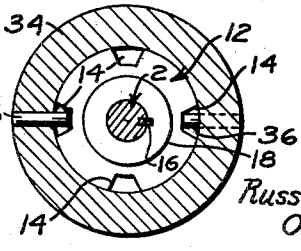


Fig. 5.



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UNITED STATES PATENT OFFICE

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MECHANICAL PUZZLE

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3 Claims. (Cl. 273—156)

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Our present invention relates to an improved mechanical puzzle of the type involving series of cylindrical casing sections rotatable with relation to each other and formed with a central removable shaft which may be removed solving the puzzle only when the hidden grooves in the shaft are aligned either separately or simultaneously with interior pins in the sections.

In our present disclosure we have shaped the puzzle to simulate a bomb with a nose comprising the means for manually rotating the shaft, and the cylinder sections being confined within the vanes of the bomb.

In the accompanying drawings we have illustrated one complete example of the physical embodiment of our invention according to the best mode we have thus far devised, but it will be understood that various changes and alterations may be made in the exemplified structure within the scope of the appended claims.

In the drawings:

Fig. 1 is an elevational view of the puzzle of our invention assembled.

Fig. 2 is a vertical sectional view.

Fig. 3 is an elevational view of the removable shaft.

Figs. 4 and 5 are horizontal sectional views of the puzzle at lines 4—4 and 5—5 of Fig. 2.

Fig. 6 is a perspective view of one cylindrical section.

Figs. 7, 8, 9 and 10 are sectional views at lines 7—7, 8—8, 9—9 and 10—10 of Fig. 3.

Fig. 11 is a perspective view of one of the washers through which the section's pins may pass when aligned.

Fig. 12 is a perspective view of one shaft section used in conjunction with a washer.

Referring now to the drawings wherein we have illustrated the present preferred form of our invention we employ a shaft 2 having a longitudinally extending key slot 4, and threaded at 6 at its upper end to receive the knob or nose 8. A disk 10 on the lower end of the shaft secures the part on the shaft.

On the shaft we employ a series of collars 12 having diametrically opposed vertical grooves 14, and keyed to the shaft 2 by keys 16. These collars are spaced by disks 18 of lesser diameter also keyed to the shaft and below each collar we provide a washer 22 having a central aperture 24 and a key groove 26, while diametrically opposite on the periphery of the washer we employ a notch 28 and a ridge 30 pressed from the washer. The ridge is seated in a selected groove 14 of the collar, and the notch will be aligned with the opposite groove.

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The nose 8 is recessed at 32 and we locate therein the uppermost of sections 34 of the sectional cylinder which is concentric of the shaft and the collars, and each section has a pin 36 which must be aligned with the notch 28 of each washer 22 in order to permit the removal of the shaft.

These sections are maintained in alignment by the exterior frame comprising the vanes 38 which are secured by pins 40 to the upper and lower sections 34.

With the puzzle assembled as shown, to solve and disassemble the puzzle, the nose and shaft may be rotated, rotating the collars, or the cylinder sections may be rotated, or both, until the pin of each section is aligned to the notch of the washer which permits the pin to pass through the groove 14 aligned with the notch. The pins may, of course, move with the other grooves but the shaft may be removed only when all of the pins are aligned with all of the notches of the washers.

Normally the exterior of the puzzle will be barren of any indications as to the proper positions of the sections although such may be added if desired, or code means may be employed. Also the location of the notches of the washers will be staggered as desired and shown, so that patience and trial and error will be the only means of solving the combination unless the positions can be fixed by the operator.

By the use of the shaft and key for the collars, spacers, and washers, and the sections of the cylinder, an inexpensive and easily manufactured puzzle may be presented, which together with its unique appearance, will readily be saleable in the retail trade to afford amusement and entertainment.

Having thus fully described our invention what we claim as new and desire to secure by Letters Patent is:

1. A puzzle comprising a centrally disposed shaft having a knob at one end and having spaced collars with longitudinally disposed grooves in the peripheral surfaces thereof fixedly mounted on the shaft, cylindrical sections concentric with the shaft rotatably mounted on said collars and having pins therein positioned in the spaces between the collars, said sections mounted for manual rotation to align the pins with the grooves of the said collars whereby the shaft, knob, and collars are removable from the cylindrical sections, and means retaining the said sections in assembled relation.

2. A puzzle comprising a centrally disposed shaft having a knob at one end and having spaced collars with longitudinally disposed grooves in the peripheral surfaces thereof fixedly mounted on the shaft, cylindrical sections concentric with the shaft rotatably mounted on said collars and having pins therein positioned in the spaces between the collars, said sections mounted for manual rotation to align the pins with the grooves of the said collars whereby the shaft, knob, and collars are removable from the cylindrical sections, washers positioned on the shaft between the collars having slots in the edges and having projections positioned to register with the grooves of the collars with the slots of the washers also in registering relation with the grooves of the collars.

3. A puzzle comprising a centrally disposed shaft having a knob at one end and having spaced collars with longitudinally disposed grooves in the peripheral surfaces thereof fixedly mounted thereon, cylindrical sections concentric with the shaft rotatably mounted on said collars and having pins therein positioned to extend into the spaces between the collars, said sections mounted for manual rotation to align the pins with the

grooves of the said collars whereby the shaft, knob, and collars are removable from the cylindrical sections, a plurality of spaced radially disposed longitudinally positioned vanes extended over the outer surfaces of the sections, a ring connected to the vanes at one end, of the puzzle and rotatably mounted on the knob, and a ring connected to the vanes at points spaced from the opposite ends of the vanes and positioned on a collar on the end of the shaft opposite to that on which the knob is positioned, the said sections being retained in assembled relation by the vanes and rings.

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