

[54] **PROJECTING AND CATCHING
APPARATUS AND PROJECTILE FOR
USE THEREWITH**

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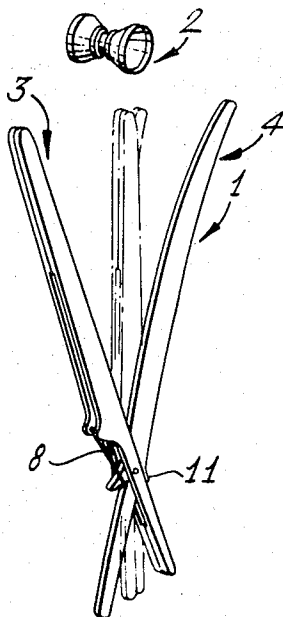
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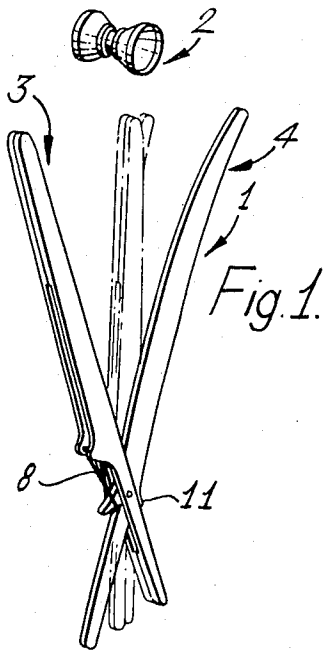
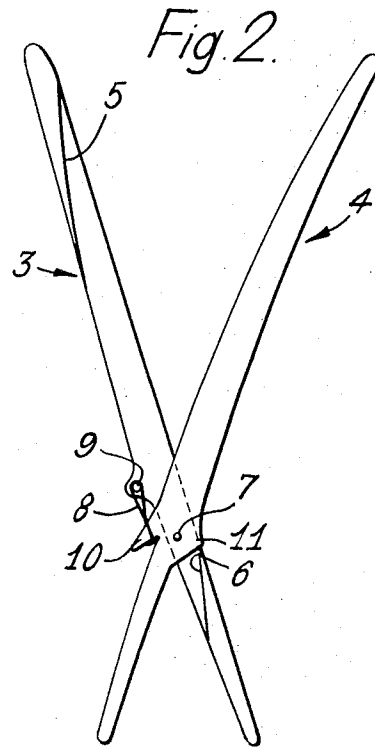
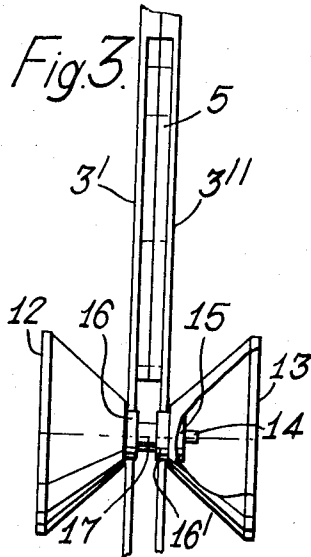
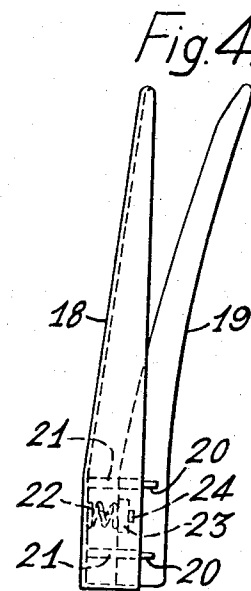
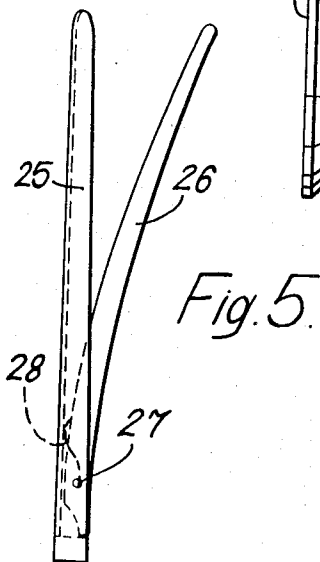
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[57] **ABSTRACT**

The specification describes apparatus for playing a game of skill. The apparatus comprises a playing piece and a hand-held ejector device comprising a pair of arms which have facing divergent tracks whereby the playing piece is upwardly ejected by cam action when the ejector device is closed onto the playing piece by the player. The playing piece is designed to be caught by the ejector device and again upwardly ejected and so on repeatedly according to the player's skill.

4 Claims, 5 Drawing Figures





PROJECTING AND CATCHING APPARATUS AND PROJECTILE FOR USE THEREWITH

This invention relates to apparatus for playing a game of skill.

Apparatus according to the invention comprises a playing piece and a hand-held ejector device for repeatedly upwardly ejecting and catching said piece, said ejector device comprising a pair of interconnected arms adapted to be repeatedly moved together by the player, said arms having facing divergent tracks which cause ejection of the playing piece by cam action when the arms are closed with the piece between them.

The tracks of the opposed arms are preferably relatively disposed so that as the arms close against the playing piece they do not exert on it a couple in any plane normal to the plane of such closing movement, and the playing piece preferably comprises balanced head portions joined by an axle portion of smaller cross section for engagement by said arms.

In preferred embodiments of the invention the ejector device causes the playing piece, as it is ejected, to rotate about an axis of symmetry of the playing piece, such axis being normal to the plane of closing movement of the arms. This is achieved by forming the ejector device and playing piece so that the opposed arms of the ejector device engage axle portions of the playing piece which are of different diameters. For example one arm may have twin parallel tracks and the other arm may have a single track which is located in a plane mid-way between said twin tracks and which engages a medial portion of the axle of the playing piece such medial portion having a diameter smaller than the abrest portions of the axle which are engaged by said twin tracks. Assuming that the playing piece is balanced about its axle and the arms do not exert on the playing piece a couple in any plane normal to the closing movement of the arms, the playing piece spins in dynamic equilibrium during its ascent and its subsequent descent under gravity.

Preferably the playing piece comprises mutually balanced head portions and an intervening axle of a length only slightly in excess of the thickness of the ejector arms or the thicker of them so that abutment of the head portions against the ejector device prevents substantial axial movement of the playing piece during its ejection. The head portions preferably have surfaces of conical, conoidal, part spherical or like form at their facing sides to make the playing piece self-centering on the ejector device when the playing piece is caught.

The playing piece is preferably made of plastics material.

The ejector device may comprise two arms interconnected at one end portion for bodily closing movement in parallel against the action of a biasing means which keeps the arms normally in open position. Alternatively, and preferably, the arms of the ejector device are pivotally interconnected. Said arms may for example be pivotally connected at or near one end and designed to be gripped in one hand at a position between the pivot and the divergent tracks which engage the playing piece. Alternatively and preferably the arms are pivoted in crossing relationship, i.e., scissor-wise, to provide handle portions on one side of the pivot and track portions on the other. The handle portions are preferably shorter than the track-bearing portions of the arms.

It is an advantage for the inner profile of at least one of the arms, over its track portion, to have a slight convex curvature towards the other arm.

The ejector arms may be normally held in open position by spring means, e.g., a blade or helical spring, or a piece of elastically extensible material.

The ejector device is preferably made of plastics.

Certain embodiments of the invention are illustrated by way of example in the accompanying drawings in which:

FIG. 1 shows the ejector device and playing piece of one embodiment of the invention;

FIG. 2 is a front elevation of the ejector device, partly in cross-section;

FIG. 3 is a detail view showing the playing piece of the apparatus shown in FIG. 1 (such playing piece being partly broken away in the drawing), and the way in which such piece is engaged by one arm of the ejector device;

FIG. 4 is an elevation of an alternative form of ejector device; and

FIG. 5 is an elevation of a third form of ejector device.

The apparatus which is the subject of FIGS. 1 to 3 comprises an ejector device 1 and a playing piece 2.

The ejector device comprises two arms 3, 4 pivoted together in crossing relationship. The arms 3 and 4 are plastics mouldings. Arm 3 comprises two moulded plies 3', 3'' secured together in facing relationship; the two plies have end portions of greater thickness than their medial portions so that the two plies define a slot which extends over the greater part of the length of the arm and the plies are secured together with the arm 4 between them, such arm 4 traversing the said slot. The ends of the slot in arm 3 are shown in FIG. 2 and are designated 5 and 6. The arm 4 comprises a single ply and has integral co-axial pivot pins such as 7 projecting from opposite faces thereof and these pins are received in recesses of slightly larger diameter formed in the inner faces of the constituent plies of arm 3. The assembled arms are therefore freely pivotable about the axis of pins 7 from the open position shown in full lines in FIG. 1 to the closed position suggested in broken lines. The arms are urged into open position by an elastic band 8 which passes around a pin 9 extending between the two plies of arm 3 and is anchored at its two ends to a hook portion 10 on arm 4. The limiting open position of the arms is determined by abutment of a nose portion 11 on arm 4 against the end 6 of the slot in arm 3 through which the arm 4 extends.

The playing piece 2 is formed in two moulded sections 12, 13, each comprising a hollow conical head portion. Section 12 has an integral axle pin 14 which extends through the hub portion of section 13 and is retained by a spring washer 15 which holds the two sections together. The axle of the playing piece, which is exposed between the two head portions, comprises two end portions 16, 16', integral with the head portions 12, 13 respectively, and a central portion 17 of smaller diameter formed by part of the axle pin of the section 12.

FIG. 3 shows the playing piece 1 in engagement with the twin tracks formed by the inner edges of the two plies 3, 3' composing the arm 3. It will be seen that the thickness of the arm 3 is only slightly less than the distance between the head portions of the playing piece.

The game is played by holding the lower handle portions of the arms 3,4 in one hand, placing the playing piece between the arms 3 and 4, while they are in open position, and squeezing the handle portions of the arms 3,4 together so that the arm tracks are forced against opposite sides of the playing piece axle and the playing piece is cammed abruptly upwardly along the ejector arms and is ejected in free flight. The twin tracks formed by the plies 3',3'' of arm 3 engage the axle portions 16,16' as shown in FIG. 4 while the single track formed by the inner edge of arm 3 engages the smaller diameter central portion 17 of the playing piece axle. As the arm 3 engages the playing piece at positions which are more distant from its axis than the position at which the playing piece is engaged by arm 4, the arm 3 has a mechanical advantage over arm 4 in exerting a turning moment on the playing piece and as the playing piece is ejected it rolls along the arm 4 while making sliding contact with arm 3. The ejected playing piece is thus in rapid rotary motion which promotes its flight stability. As the playing piece descends under gravity, the player seeks to catch it between the open arms of the ejector device so that the playing piece can again be ejected and this requires considerable skill.

An alternative form of ejector device is illustrated in FIG. 4. This ejector device comprises two arms 18,19 the former of which is hollow so that the arm 19 can nest into it as shown. The arm 19 has parallel ribs 20 on its opposed faces and these ribs are received in grooves 21 in the internal side faces of arm 18. The arms are shown in their open position into which they are urged by a helical compression spring 22 which bears at one end against the interior of arm 18 and at the other end against the inner edge of arm 19. The fully open position of the arms is determined by abutment of stops 23 on the sides of arm 19 against stops 24 on the internal side faces of arm 18. The arms are closed by squeezing their lower portions together in the hand, against the action of spring 22. The device can eject a playing piece such as piece 2 (FIG. 1) in much the same way as the ejector device 1 shown in the earlier figures.

The third form of ejector device shown in FIG. 5 comprises two arms 25,26, the former of which is hollow and receives within it the lower portion of arm 26. The arms are pivotable about the axis of pivot pins such as 27 which project from opposite sides of the arm 26 and into holes in the sides of arm 25. The arms are urged into their illustrated open position by a wire spring 28 which is anchored at one end to pivot pin 27 and at its other end bears against the arm 25. The arms are closed to cause ejection of a playing piece such as piece 1 by holding the device in one hand just above the point of pivotal connection of the arms and squeezing them together.

Apparatus according to the invention may comprise one ejector device or two or more of such devices can be provided to enable the game to be played by two or more players alternately catching and ejecting the playing piece.

What is claimed is:

1. Apparatus for playing a game, which apparatus comprises a radially symmetrical playing piece comprising opposed mutually balanced head portions and an intervening axle having portions of different diameters, and a hand-held ejector device for repeatedly upwardly ejecting and catching said playing piece, said ejector device comprising a pair of interconnected arms adapted to be repeatedly moved together by the player, said arms having facing divergent tracks which engage said playing piece axle and cause ejection of said playing piece by cam action when said arms are closed with said playing piece between them, said tracks belonging to different said arms being relatively disposed for engaging portions of said axle which are of different diameters.

2. Apparatus according to claim 1, wherein one arm of said ejector device has twin parallel tracks and the other arm of said ejector device has a single track located in a plane mid-way between said twin tracks, and wherein said playing piece axle has a medial portion having a smaller diameter than the end portions of such axle and wherein said single track engages said smaller diameter axle portion whereas said twin tracks engage said larger diameter end axle portions.

3. Apparatus for playing a game, said apparatus comprising a radially symmetrical playing piece and a hand-held ejector device for repeatedly upwardly ejecting and catching said playing piece, said ejector device comprising a pair of arms pivoted together at a pivot point in crossing relationship to provide handle portions on one side of said pivot and opposed tracks on the other side of said pivot, said opposed tracks diverging in a direction away from said pivot for causing ejection of said playing piece by cam action when said arms are closed with said playing piece between said opposed tracks, at least one of said arms having over the track portion thereof, an inner profile which is convexly curved towards the other of said arms, said ejector device also incorporating spring means which biases said arms into open position.

4. Apparatus for playing a game, which apparatus comprises a playing piece having mutually balanced head portions joined by an axle having two end portions and a central portion of smaller diameter than said end portions, and also comprises a hand-held ejector device for repeatedly upwardly ejecting and catching said playing piece, said ejector device comprising a pair of interconnected arms adapted to be repeatedly moved together by the player, said arms having facing divergent tracks which cause ejection of the playing piece by cam action when the arms are closed with the playing piece between them, one arm having twin parallel tracks which engage the said end axle portions and the other arm having a single track which engages the said central axle portion whereby as the playing piece is ejected the said one arm exerts on the playing piece a turning moment causing it to rotate while the central axle portion slides along said other arm.

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