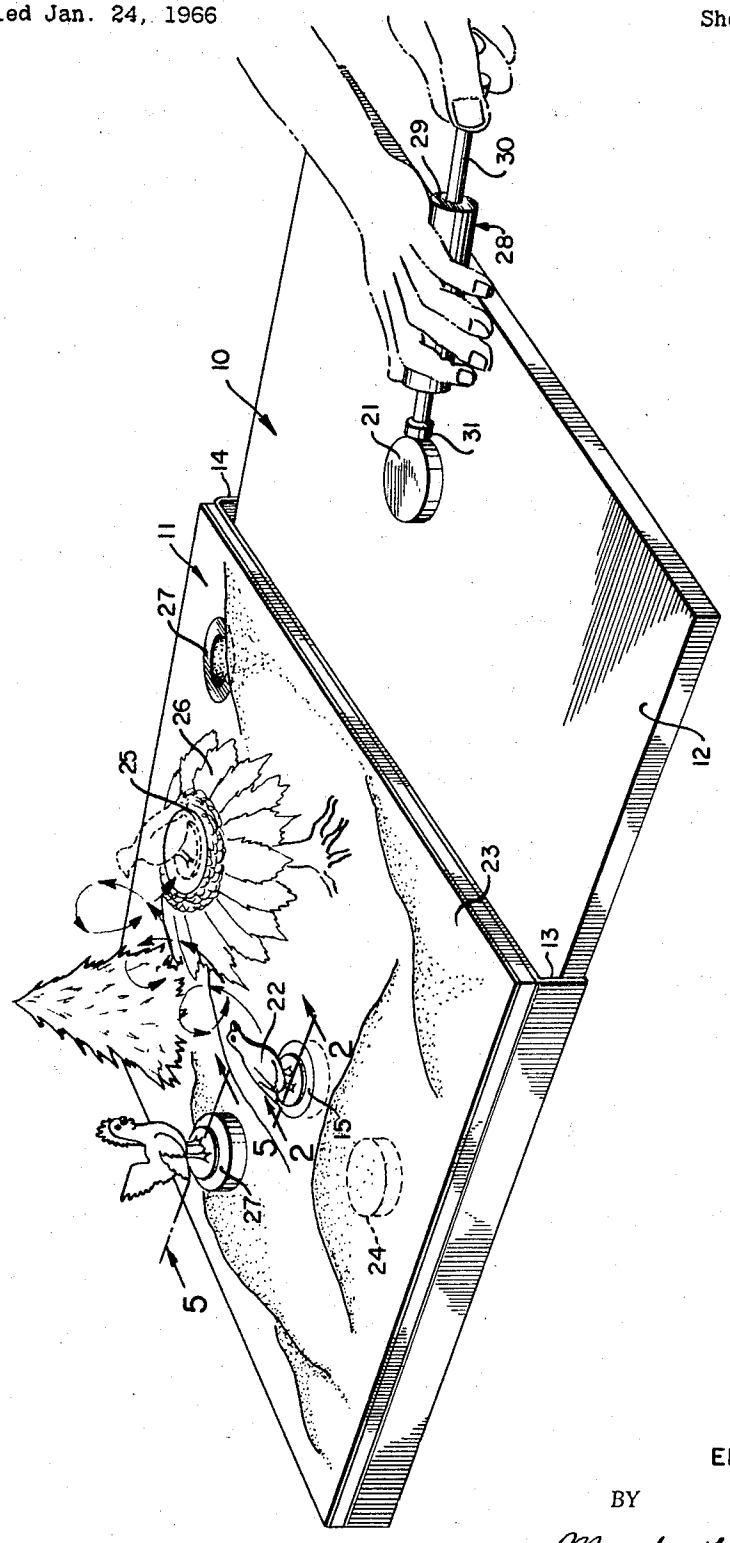
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FIG. 1



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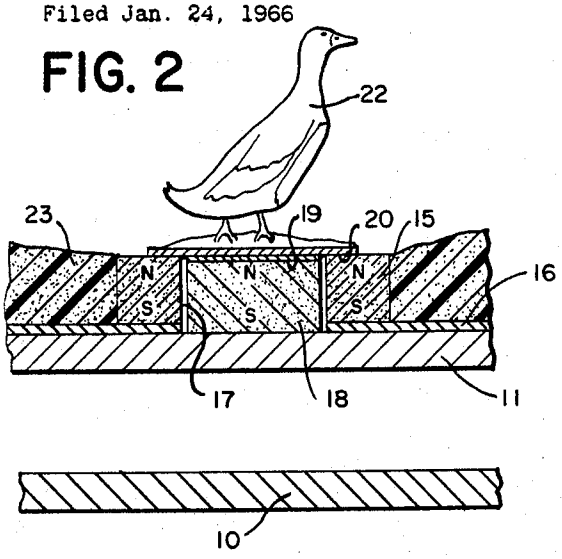
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FIG. 2



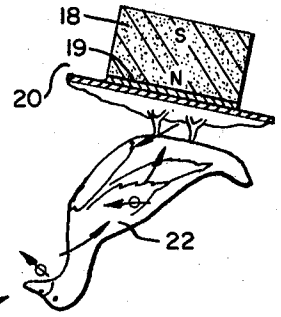
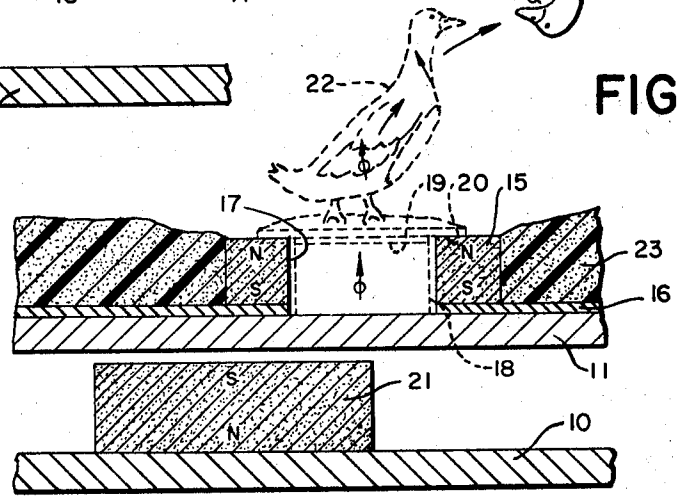


FIG. 3



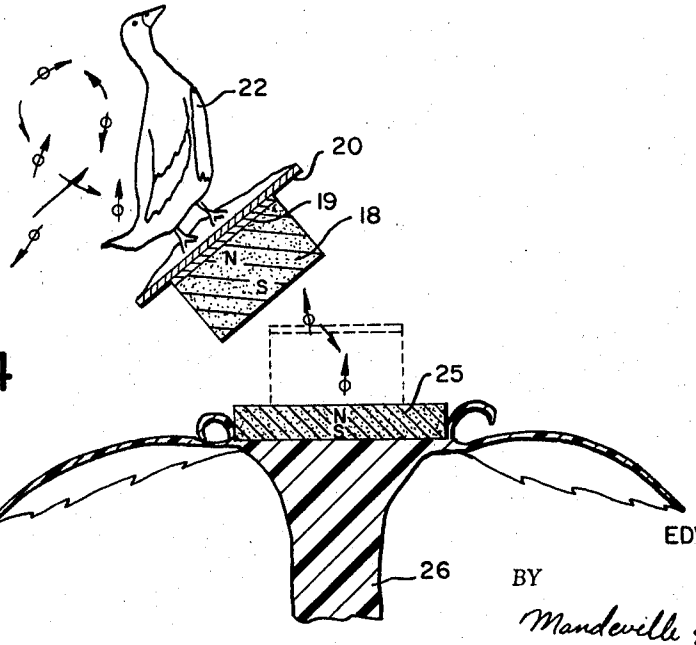


FIG. 4

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FIG. 5

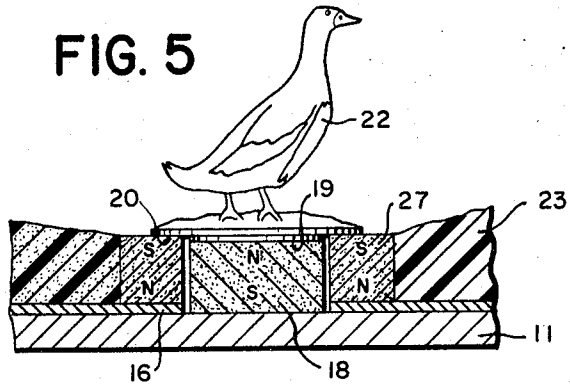
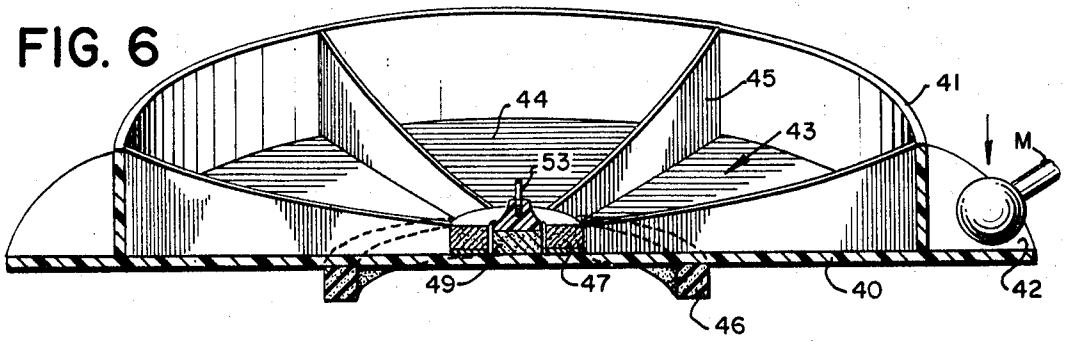


FIG. 6



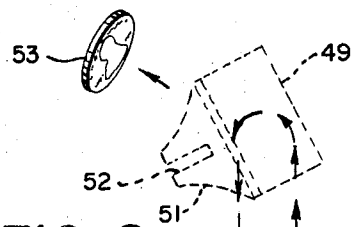


FIG. 7

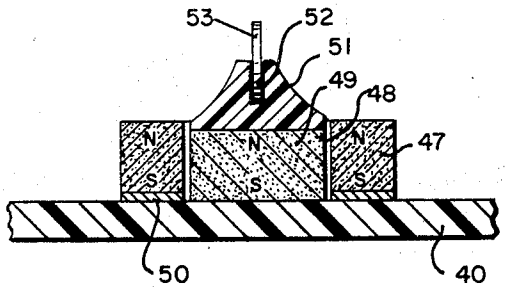
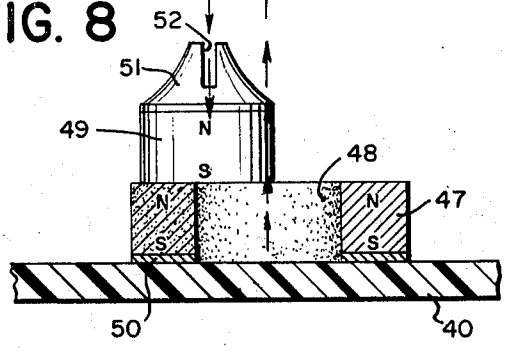


FIG. 8



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3,425,694

MAGNETIC GAME APPARATUS OR THE LIKE

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Filed Jan. 24, 1966, Ser. No. 522,451
U.S. Cl. 273—101 22 Claims
Int. Cl. A63f 9/14; A63h 33/26

ABSTRACT OF THE DISCLOSURE

The invention is directed to a game apparatus employing a novel magnetic principle. A first magnetic element is held in a semi-stable position by a force applied thereto in one direction. When a second magnetic element subsequently influences the first, in a direction opposite to the force which maintains the semi-stable relationship, the first magnetic element becomes unstable and is catapulted out of its semi-stable position. In a most advantageous form, the movable magnetic element is received within a magnetic ring and retained by repelling magnetic forces. When a third magnetic member is brought into influencing position, slightly separating the first two magnetic elements, the movable magnetic element is sharply ejected from its semi-stable seat, and can be projected through a substantial distance. A wide variety of unusual effects may be achieved.

The present invention relates to a game apparatus or the like, and is directed more specifically to a novel and improved game apparatus or like facility which incorporates and utilizes a novel and advantageous principle of magnetic inter-action to effect movement and manipulation of selected components of the apparatus.

While the invention is perhaps most advantageously embodied in a game apparatus, typically involving elements of both skill and chance, it will be shown herein that the basic principles of the invention may be applied and utilized in a virtually endless variety of ways, including but not limited to game apparatus.

In accordance with a fundamental aspect of the invention, a movable magnetic component or element is provided in association with a means, advantageously a second and relatively immovable magnet, adapted for maintaining the movable magnetic element in a semi-stable initial position. Additional means are provided for effecting unstabilization of the initially semi-stable movable magnetic element, in a manner to cause its partial or complete ejection, or projection, away from the semi-stabilizing element. Advantageously, the unstabilized magnetic element is thereafter subjected to further magnetic influence of a nature and to an extent such that the movable element is repelled and/or attracted by magnetic influence to a new and typically stable position.

By proper relating of the various operative components of the apparatus of the invention, the movable magnetic element may be caused to be unstabilized in such a manner as to result in its ejection from a semi-stable initial position in an almost explosive manner. By applying appropriate magnetic influences to the thus ejected element, the element may be caused to move to a predetermined target location, at which the movable element assumes a stabilized condition, either by the action of gravity or by reason of attractive magnetic influences or both.

In one particularly advantageous specific form of the invention, unstabilizing of the initially semi-stable movable magnetic element is effected by projecting an unstabilizing magnet with controlled direction and velocity past the semi-stable movable magnet. By proper control of the unstabilizing magnet, the movable magnetic element is caused to become unstabilized and is ejected from its semi-stable initial position. Thereafter, the continued magnetic influence of the controlled, unstabilizing magnet acts upon the movable magnetic element, advantageously with a repelling magnetic influence, to impart desired further motion to the unstabilized element. By adroit control over the direction and velocity of the unstabilizing magnet, significant control may be exercised over the direction and extent of the projected movement of the semi-stable movable magnetic element. Advantageously, one or more magnetic target elements may be provided in predetermined disposition to the initial position of the semi-stable movable magnet, such that, by proper control of the direction and velocity of the unstabilizing magnet, the movable magnetic element may be directed toward and into the attractive magnetic influence of a selected magnetic target element.

In another specifically advantageous form of the invention, the semi-stable movable magnetic element is provided with projectile carrier means and is arranged such that, when an unstabilizing influence is applied, the semi-stable magnetic element is initially ejected out of its semi-stable position and then drawn back, advantageously by or under the augmenting influence of attractive magnetic forces, to a stable final position. In the process, a projectile element, initially received in the carrier, is catapulted completely away from the carrier, with direction and velocity determined by the manner of the carrier's eruptive movement from its semi-stable position.

The basic inventive principle of disrupting and unstabilizing an initially semi-stable movable magnetic element may be applied in an extraordinary variety of ways, as will appear, to bring about controlled movement from one point to another of the movable magnetic element. The eruptive movement of the ejected magnetic element may be utilized to project, by catapulting or similar procedure, an additional element which may, but need not, be entirely non-magnetic. The eruptive movement of the semi-stable magnetic element, achieved in accordance with the invention, may be used also to trigger other events, such as by causing a simulated demolition of a vehicle, vessel, building structure, etc., in response to manipulated unstabilization of the movable magnetic element.

For a better understanding of the invention and a fuller appreciation of its many ramifications, reference should be made to the following detailed description and to the accompanying drawings, in which:

FIG. 1 is a perspective view of a specifically novel and advantageous form of game apparatus incorporating the principles of the invention;

FIG. 2 is an enlarged, fragmentary, cross-sectional view, as taken generally along line 2—2 of FIG. 1;

FIG. 3 is a cross-sectional view similar to FIG. 2 illustrating the mode of actuation of the elements of the invention to effect unstabilization and eruptive ejection of a movable magnetic element, and illustrating a typical path of movement of the element following its initial ejection;

FIG. 4 is an enlarged, fragmentary, cross-sectional view similar to FIG. 3, illustrating the manner in which the ejected magnetic element of FIG. 3 may be attracted to and stabilized by a magnetic target element;

FIG. 5 is an enlarged, fragmentary, cross-sectional view taken generally along line 5—5 of FIG.1, illustrating an element of the game apparatus in a stabilized or storage position;

FIG. 6 is a longitudinal, cross-sectional view of a second form of game apparatus incorporating basic principles of the invention;

FIG. 7 is an enlarged, cross-sectional view of a portion of the apparatus shown in FIG. 6; and

FIG. 8 is a cross-sectional view similar to FIG. 7, illustrating the manner in which the game apparatus of FIG. 6 is actuated.

Referring now to the drawing, and initially to FIGS. 1–5 thereof, the reference numerals **10**, **11** designate generally a base plate and a field plate forming principal structural elements of a game apparatus incorporating basic features of the invention. As indicated in FIG. 1, the field plate **11** is somewhat smaller in size than the base plate **10**, providing for an exposed marginal area **12** of the base plate. The field plate **11** is spaced above the upper surface of the base plate **10**, as by means of suitable supporting legs **13**, **14**. As will be made apparent, a suitably smooth floor or table surface could function adequately as a base plate in many instances. However, in the interest of providing a self-contained apparatus and in the interest of providing a base having desirably smooth and uniform surface characteristics, it generally is more advantageous to provide a self-contained base plate element **10**, in the form of a smooth board or a sheet of metal or glass, for example.

In accordance with the invention, there is mounted on the upper surface of the field plate **11** a magnetic element **15**, which is shown to be secured in fixed relation to the field plate **11** through an intermediate spacing sheet **16**. In one advantageous form of the invention, the secured magnetic element **15** is in the form of an annulus, being provided with a central opening **17** which typically may be on the order of one-half of the outside diameter of the magnet. Advantageously, the annular opening **17** extends through the spacer material **16** to the field plate **11**, the latter desirably being of a non-magnetic material, such as aluminum or composition board.

As shown in FIG. 2, there is arranged to be received within the annular fixed magnet **15** a movable magnetic element **18**, which is advantageously of generally cylindrical form and is adapted to be received quite closely but with clearance within the cylindrical opening **17**. In accordance with one aspect of the invention, the movable magnetic element **18** has associated therewith locating or positioning means, illustrated herein to be in the form of a spacer disc **19** and a flange **20**, both advantageously being formed of non-magnetic materials. The spacer disc **19** may be of a size and shape to correspond to the cross-section of the movable magnetic element **18**, whereas the flange element **20** is somewhat larger, to extend over the top surface of the fixed magnetic element **15**.

Most advantageously, the magnetic elements **15**, **18** are formed of a material, such as barium ferrite, which is characterized by its high magnetic force per unit of size, its low specific gravity, and its high resistance to demagnetization. In an illustrative form of the invention, the magnetic elements **15**, **18** may be of the same axial length, although the movable magnetic element is arranged to be offset somewhat below the fixed magnetic element **15**, by reason of the interposition of the spacing sheet **16** below the fixed magnetic element **15** and the spacer disc **19** above the movable magnetic element **18**.

In accordance with a significant aspect of the invention, the respective fixed and movable magnetic elements **15**, **18** are axially polarized; that is, their principal magnetic poles are adjacent the axial ends of the elements, rather than adjacent the side wall portions thereof. Further, the orientation of the magnetic elements is such that, when the elements are initially arranged substantially in the disposition illustrated in FIG. 2, the principal magnetic poles of the movable element **18** will be adjacent like magnetic poles of the fixed element **15**, such that the movable magnetic element is influenced largely by repelling magnetic forces. By reason of the the spacers **16**, **19**, offsetting the movable magnetic element somewhat below the element **15**, the net or resultant repelling influences acting upon the movable magnetic element **18** are directed slightly downward. As will be appreciated by reference to FIG. 2, however, the extent of offset of the movable magnetic element below the fixed magnetic element is limited by the flange **20** and/or by the upper surface of the field plate **11** to a level just slightly below the "dead center" position of the movable magnetic element. This arrangement is such that, while the magnetic repelling influences acting upon the movable magnet have a net downward component, such downward component is quite small. In this position, as illustrated in FIG. 2, the magnetic element **18** is in a semi-stable condition, in that a slight upward influence thereon will cause the movable element to rise through its "dead center" position, into a position to be repelled further in an upward direction.

In accordance with a basic principle of the invention, the movable magnetic element **18** is dislodged from its semi-stable position by the introduction of an unstabilizing influence. In one particularly advantageous form of the invention, illustrated in FIGS. 1–5, the unstabilizing influence is in the form of a third magnetic element desirably arranged to be slidably supported on the base plate **10** and to be controllably moved into and out of influencing relation to the movable magnetic element **18**. The unstabilizing magnetic element, designated by the numeral **21**, advantageously has a significant magnetic mass, desirably to have a greater magnetic influence on the movable magnetic element **18** than does the fixed magnetic element **15**, at least under certain circumstances. As shown in FIG. 3, the unstabilizing magnetic element **21**, advantageously may be of generally cylindrical form and is axially polarized, is so magnetically oriented as to have an essentially repelling magnetic influence on a movable magnetic element **18** supported in its semi-stable position as reflected in FIG. 2. Accordingly, by directing the magnetic element **21** into the proximity of the movable magnetic element **18**, as by sliding the former along the top surface of the base plate **10** to a point generally underlying the latter, the movable magnetic element **18** is subjected to an upward repelling influence which readily overcomes the semi-stable downward repelling influence of the fixed magnetic element **15**. This brings about a chain of events which is not fully understood but may possibly be explainable as follows: After being repellingly influenced in an upward direction by the unstabilizing magnet **21**, the movable magnet **18** rises through its "dead center" position. Thereafter, the magnet **18** is briefly under the upward repelling influences of both the unstabilizing magnet **21** and the fixed magnet **15**. After a short additional upward movement of the magnetic element **18**, however, unlike poles of the magnetic elements **15**, **18** are substantially aligned, such that the fixed magnet **15** exerts an attractive and downwardly directed influence upon the upwardly moving magnet **18**. By reason of the upward momentum of the movable magnet **18**, however, complemented significantly by the continued upward repelling influence of the magnet **21**, the movable magnet **18** continues to be directed upward, passing through the primary attracting influence of the fixed magnet **15**. The arrangement is such that the movable magnetic element **18** is eruptively projected out of its semi-stable "seat" as illustrated in FIG. 2. Depending upon the magnitude and direction of the various magnetic repelling forces and momentums at work on the movable magnetic element **18**, it may be projected through a substantial distance, well out of the further significant influence of the fixed magnetic element **15**.

In one advantageous form of the invention, the movable magnetic element **18** may have an object of some kind secured thereto, such as a bird or animal, as illustrated at **22** in FIGS. 1–5. The placement of the object **22** may impart a rotating force coupled to the overall unit, to the extent that the upward repelling forces acting upon the movable magnetic element **18** are offset from

the center of gravity of the element combined with its supported object **22**. This relationship may impart or augment a spinning or flipping action to the object as it is eruptively ejected from its seat, which is generally attractive and desirable.

In the game apparatus illustrated in FIGS. 1–5, it is generally contemplated that the unstabilizing magnetic element **21** will be projected slidingly along the base plate **10**, to travel underneath the semi-stable magnetic element **18**, with predetermined direction and velocity and in predetermined alignment with the movable magnetic element (the factor of alignment being included in the term "direction" as used herein in this context). The combined factors of speed and direction of travel of the unstabilizing magnetic element **21** significantly affect the eruptive ejection of the magnetic element **18**, inasmuch as the effective magnetic mass of the element **21** is such that it continues to have significant repelling influence on the movable magnet **18**, after its initial upward movement out of the cylindrical seat formed by the fixed magnet **15**. Thus, as shown in FIG. 3, for example, the unstabilizing magnetic element **21** is shown to be sliding along the base plate **10** in a right-to-left direction, directly underneath the magnetic element **15**. As the magnetic element **21** closely approaches the movable magnetic element **18** from the right, the semi-stable relationship of the magnetic element **18** is disrupted, causing the magnet to be eruptively ejected from the magnet **15**. Thereafter, the unstabilizing magnetic element **21** continues to travel to the left and continues to exert repelling influences on the magnetic element **18**. If the speed of right-to-left travel of the magnetic element **21** is properly coordinated with the initial upward eruptive movement of the magnetic element **18**, the principal magnetic influence of the element **21** upon the element **18** will be upward and to the right, as the element **18** clears above the fixed magnetic element **15**. As a result, the movable magnetic element **18** and its affixed object **22** will tend to move upward and to the right, as shown in FIG. 3, with a desirable flipping action.

As will be understood, the repelling influence of the unstabilizing magnetic element **21** is relatively brief, but is sufficient to impart a significant impulse of energy to the movable magnet **18** and its object **22**, projecting the latter well out of the influence of the fixed magnetic element **15**. At this stage, the magnetic element and its object may be permitted to fall by gravity back to the field plate **11**, which may be covered by a suitable material **23**, representative of barnyard terrain, for example, or other surfacing appropriate to the nature of the objects **22** and of the game apparatus in general. More desirably, however, it is advantageous to provide one or more magnetic target elements **24**, **25**, which may be suitably concealed and are arranged to exert an essentially attracting influence upon the lower pole face of the movable magnetic element **18**. The arrangement is such that, when the movable magnetic element **18** is projected to a point somewhere in the vicinity of the magnetic target elements **24**, **25**, the attractive influence of unlike magnetic poles becomes effectively and predominantly operative upon the movable magnetic element **18**, to draw the element and its object **22** to the target. Desirably, the magnetic target elements are disposed in such a way that the object **22** ultimately lands and is stabilized in the same upright orientation in which it was initially placed.

An especially advantageous game feature, introducing an element of substantial skill and dexterity, is the provision of a magnetic target element **25** which is not only spaced laterally from the semi-stable magnetic seat or "jumping pit," like the target element **24**, but is disposed well above the semi-stable seat, as in a simulated tree or other structure **26** shown in FIGS. 1 and 4. By proper direction, alignment and velocity of the unstabilizing magnetic element **21**, the movable magnetic element and its attached object may be caused to be eruptively projected and flipped upward and in a controlled lateral direction, to a point at which the attractive influence of the magnetic target element **25** becomes effective and draws the magnetic element **18** to its stabilized target position.

As will be appreciated, a variety of magnetic targets may be provided, which may be arranged to require various degrees of skill and dexterity to reach.

In a typical game apparatus of the general type illustrated in FIGS. 1–5, a plurality of movable magnetic elements **18** may be provided for utilization with a single semi-stable seat, as provided by the magnetic element **15**, but more than one such seat or jumping pit may, of course, be provided, if desired. A variety of different objects may be associated with the individual movable magnetic elements **18**, if desired, so that the controlled ejection or projection of each of the objects will require different manipulative operations of the magnetic unstabilizing element **21**.

If desired, one or more stable seats or storage pits may be provided about the field board **11**, by means of annular magnetic elements **27** corresponding generally in size and shape to the magnetic element **15** but reversed as to polarity, as shown in FIG. 5. The arrangement is such that the various movable pieces, or extra movable pieces of the game apparatus may be securely stored in stable magnetic seats when not in use.

The game apparatus of FIGS. 1–5 advantageously may incorporate a novel form of recoil device, shown in FIG. 1, which enables the unbalancing magnetic element **21** to be projected with controlled velocity and direction into the clearance space between the top of the base plate **10** and the underside of the field plate **11**. Most advantageously, the recoil device, generally designated by the reference numeral **28**, includes a barrel **29** forming a hand grip, a plunger **30**, and a suitable spring (not shown) acting between the barrel **29** and the plunger **30** to urge the plunger in a forward direction relative to the barrel. In accordance with the invention, the plunger **30** is provided with a head **31** at its forward end, which is formed of magnetized or magnetizable material, such that the magnetic element **21** will be attracted to the plunger head **31** and held in contact therewith by a relatively small magnetic force. In this respect, it will be understood that the magnetic characteristics of the plunger head **31**, in relation to its size and other influencing parameters, is such that the magnetic force by which the element **21** is attached or attracted to the plunger head **31** is significantly less than the escape force imparted to the magnetic element **21** upon forward recoil of the plunger **30** after being drawn back against its spring. With the arrangement described, the magnetic element **21** may be conveniently manipulated for proper alignment, prior to projecting it along the base plate **10**, by engaging an edge of the magnet with the plunger head **31** and thereafter appropriately manipulating and aligning the recoil device in the desired manner, with the magnetic element **21** automatically being carried along by the plunger head **31**.

In the form of the invention illustrated in FIGS. 6–8, mechanical means are provided for disrupting the semi-stable relationship of a pair of magnetic elements, in place of the unstabilizing magnetic element **21** utilized in the game apparatus of FIGS. 1–5.

In the illustrative game apparatus of FIGS. 6–8, the reference numeral **40** designates a field plate typically formed of plastic, aluminum, or other non-magnetic material having a degree of resilience, and illustrated to be of generally circular form. A circular wall **41** extends upward from the field plate **40**, dividing the plate into a flange portion **42** and an internal field area **43**. In turn, the field area **43** is divided into a desired plurality of field sections **44** by a corresponding plurality of radially disposed divider panels **45**.

For reasons to be further explained, the field plate **40**

advantageously is supported on an annular base **46**, advantageously formed of a material such as sponge rubber having desirable shock-absorbing and damping characteristics. As shown in FIG. 6, the annular base **46** is concentrically disposed with respect to the circular base plate **40**, and the diameter of the base is such that the base plate is supported in a relatively stable manner, advantageously well inside of the flange **42**.

Mounted at the center of the base plate **40** is a fixed magnetic element **47** of annular form which receives in its center aperture **48** a movable magnetic element **49** of generally cylindrical form. The nature of the magnetic elements **47**, **49** is generally similar to that of the magnetic elements **15**, **19** of the FIGS. 1–5 apparatus, in that the elements advantageously are formed of a material such as barium ferrite and are axially polarized. In the illustrated arrangement, the respective magnetic elements **47**, **49** are of substantially equal length, and the fixed element **47** is spaced slightly above the surface of the field plate **40** by means of an annular spacer element **50**. The arrangement is such that the movable magnetic element **49** can be inserted in the opening **48** to a position just slightly below that of the relatively fixed magnetic element **47**. As shown in FIG. 7, the respective magnetic elements are arranged to have their like poles generally opposite each other, such that a semi-stable, essentially repelling relationship is established when the movable magnetic element **49** is fully inserted in the opening **48**. As previously described, the movable magnetic element **49** is held in place, as illustrated in FIG. 7, in a semi-stable manner with a slight downward component of force.

In accordance with the operative principles of the invention, as embodied in the game apparatus of FIGS. 6–8, the semi-stable relationship of the magnetic elements **47**, **49** may be disturbed and unstabilized by mechanical means, such as by means of a mallet M striking the upper surface of the flange **42**. The shock thus imparted to the field plate **40**, perhaps augmented by an upward thrust of the plate exerted in its center region in response to downward thrust of the flange area, exerts an upward impulse on the movable magnetic element **49**, sufficient to overcome the semi-stable initial relationship of the element. The movable magnetic element **49** thus moves upwardly through a slight distance, sufficient to cause the magnetic repelling forces to act upwardly and thereupon forcibly and eruptively ejecting the movable magnetic element in an upward direction, substantially as indicated in FIG. 8.

In the game apparatus of FIGS. 6–8, since the initial upward thrust or unbalancing impulse imparted to the movable magnetic element **49** is derived in a mechanical, rather than a magnetic, manner, there is no sustaining magnetic force upon the movable element **49** to eject it completely beyond the influence of the relatively fixed, annular magnetic element **47**. Accordingly, as the movable magnetic element **49** clears the top of the fixed element **47**, it tends to be attracted back toward the magnet by the forces of gravity and by the attractive magnetic influences exered between the unlike magnetic poles at the upper axial end of the fixed magnet **47** and the lower axial end of the movable magnet **49**. Thus, as illustrated in FIG. 8, the movable magnetic element **49** initially "jumps" out of the pit or socket formed by the magnetic element does not return to a position within the opening toward the element **47**, by gravity, augmented by magnetic attraction. As will be understood, the movable magnetic element does not return to a position within the opening **48** of the fixed magnetic element. Rather, the magnetic pole at the lower axial end of the movable element **49** tends to seek out an unlike pole area along an edge portion of the annular element **47**, usually coming to rest in a stable manner substantially as illustrated in FIG. 8, but sometimes being carried by the momentum of its ejection over into one of the field sections **44**.

In accordance with the invention, the game apparatus of FIGS. 6–8 may incorporate a catapult device with the movable magnetic element **49**, enabling a projectile object to be projected free of the movable magnetic element and well beyond the area of the fixed annular magnetic element **47**. To this end, the illustrated apparatus of FIGS. 6–8 includes a carrier element **51**, advantageously of plastic or other non-magnetic material, which is secured to the top end of the movable magnetic element **49**. The carrier **51** of the illustrated apparatus is provided with a slot **52** arranged to receive a disc-like projectile **53**, such as a coin, for example. The disc **53** likewise advantageouly is formed of a non-magnetic material so as to be free of influence by either of the magnetic elements **47**, **49**.

In a typical utilization of the game apparatus of FIGS. 6–8, the movable magnetic element **49** is seated in a semi-stable manner within the opening **48** of the fixed magnetic element **47**, and a coin or similar non-magnetic disc projectile is inserted in the carrier slot **52**. Thereafter, the plate flange **42** is struck sharply with the mallet M, causing the movable magnetic element **49** to be eruptively ejected from its pit and then forcibly returned through gravity and magnetic attraction. The projectile **53**, not being subject to the magnetic return attraction, continues in free flight until returned by gravity.

Because of the lateral motion of the movable magnetic element **49** involved in its return to a point on the upper edge of the fixed magnet **47**, and because of a certain degree of yawing motion usually imparted to the movable magnet during its ejection, the projectile **53** may be cast off in a variety of directions to come to rest in one of the field sections **44**. To some degree, the flight direction of the projectile **53** is a function of chance. However, a significant measure of control is afforded by the initial rotational orientation of the carrier slot **52**, for example, the precise point at which the plate flange **42** is struck by the mallet M, the force of the mallet, etc., such that the skill of the operator can influence the final result.

As can be readily appreciated from the foregoing specific illustrative examples, the fundamental principles of the invention may be applied in a wide variety of ways. In its most basic aspect, the invention includes a movable magnetic element initially held by suitable means in a semi-stable position from which it may be eruptively ejected upon being unstabilized. The basic facility also includes means for magnetically influencing the motion of the movable magnetic element after such eruptive ejection. In the last-described form of the invention, the influencing means and the means for retaining the movable magnet in a semi-stable initial condition comprise a single magnetic element. In the first described form of the invention, the movable magnetic element is principally influenced, after its eruptive ejection, by one or more magnetic target elements and by the presence of an unbalancing magnetic element which was responsible in the first instance for the eruptive ejection. The use of a magnetic element for triggering the eruptive ejection of the movable magnetic element is particularly advantageous because of the control afforded over the direction and extent of the ejection of the movable magnet.

As will be readily appreciated, the basic principles of the invention may be applied in virtually endless ways to game apparatus involving elements of skill and/or chance. However, the invention is by no means limited to game apparatus, and can be incorporated in various ways in toys, for example, as well as in mechanism of more serious purpose.

Although illustrative examples of the invention have been described as incorporating permanent magnetic elements throughout, it is possible, as will be appreciated, to utilize appropriately polarized electromagnetic elements in certain cases.

It will be understood that the specific forms of the invention herein illustrated and described are intended to be representative only, as certain changes may be

made therein without departing from the clear teachings of the disclosure. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.

I claim:

1. A magnetic game apparatus or the like comprising:
(a) first and second magnetic elements movable one with respect to the other,
(b) means forming a reference surface,
(c) means for retaining said first and second magnetic elements in an initial semi-stable magnetically repelling relationship,
(d) said first magnetic element being urged in a first direction by said magnetically repelling relationship and thereby held against said reference surface,
(e) unstabilizing means for disrupting and rendering unstable said semi-stable relationship to dislodge said first magnetic element from said reference surface, and
(f) means for exerting a repelling magnetic influence on said first magnetic element, after disruption of said semi-stable relationship, in a direction generally opposite to said first direction, whereby said first and second magnetic elements are at least temporarily separated by magnetic force.

2. The magnetic game apparatus or the like of claim 1, further characterized by:
(a) one of said magnetic elements comprising an axially polarized apertured element,
(b) the other of said magnetic elements comprising an axially polarized element receivable axially within the apertured element, and
(c) said second magnetic element being fixed, the first movable.

3. The magnetic game apparatus or the like of claim 2, further characterized by:
(a) said unstabilizing means comprising a third magnetic element movable into repelling influence with respect to said first element.

4. The magnetic game apparatus or the like of claim 2, further characterized by:
(a) said unstabilizing means comprising means for mechanically dislodging said first magnetic element from its semi-stable position to an unstable position,
(b) said first and second magnetic elements being in repelling relation when in said unstable position, whereby said first magnetic element is at least temporarily projected away from said second magnetic element.

5. The magnetic game apparatus or the like of claim 1, further characterized by:
(a) said second magnetic element being relatively fixed and said first magnetic element being relatively movable,
(b) said unstabilizing means comprising means for moving said first magnetic element from its semi-stable position, seated against said reference surface by said magnetically repelling relationship, into an unstable position, in which said magnetic elements are separated by reason of their magnetically repelling relation.

6. The magnetic game apparatus or the like of claim 5, further characterized by:
(a) said unstabilizing means comprising a third magnetic element movable into repelling relation to said first magnetic element,
(b) said third magnetic element being operative to move said first magnetic element into said unstable repelling position and to exert a further repelling force on said first magnetic element.

7. The magnetic game apparatus or the like of claim 6, further including:
(a) support means for said first and second magnetic elements, and
(b) a supporting plate for said third magnetic element accommodating movement of said third magnetic element generally beneath said first magnetic element.

8. The magnetic game apparatus or the like of claim 7, further including:
(a) means for projecting said third magnetic means along said plate with controlled direction and velocity.

9. The magnetic game apparatus or the like of claim 8, further characterized by:
(a) said means for projecting comprising a recoil device,
(b) said recoil device including an element magnetically attractable to said third magnetic element with limited force, whereby to facilitate manipulation and guidance of said third magnetic element prior to the projecting thereof.

10. A magnetic game apparatus or the like, comprising:
(a) a movable first magnetic element,
(b) means exerting a magnetic force on said movable magnetic element in a first direction for retaining said movable magnetic element in an initial semi-stable relationship,
(c) an unstabilizing element operable to exert a force on said movable magnetic element in a second direction opposed to said first direction to disrupt and render unstable said semi-stable relationship, and
(d) means for exerting a magnetically repelling moving influence on said first magnetic element when said element is in its unstable relationship.

11. The magnetic game apparatus or the like of claim 10, further characterized by:
(a) said means for retaining comprising a second magnetic element, and
(b) said second magnetic element being relatively fixed.

12. The magnetic game apparatus or the like of claim 10, further characterized by:
(a) said unstabilizing means comprising a third magnetic element movable into influencing relationship with respect to one of said first or second magnetic elements.

13. A magnetic game apparatus or the like, comprising:
(a) a movable first magnetic element,
(b) means for retaining said movable magnetic element in an initial semi-stable relationship,
(c) an unstabilizing element operable to disrupt and render unstable said semi-stable relationship,
(d) means for exerting a magnetic moving influence on said first magnetic element when said element is in its unstable relationship,
(e) said means for exerting a magnetic moving influence comprising magnetic target means positioned in spaced relation to the means for retaining, and
(f) said magnetic target means being arranged for attracting influence on the unstabilized movable magnetic element.

14. The magnetic game apparatus or the like of claim 12, further characterized by:
(a) said means for exerting a moving magnetic influence comprising said third magnetic element.

15. A magnetic game apparatus or the like, comprising:
(a) a movable first magnetic element,
(b) means for retaining said movable magnetic element in an initial semi-stable relationship,
(c) an unstabilizing element operable to disrupt and render unstable said semi-stable relationship,
(d) means for exerting a magnetic moving influence on said first magnetic element when said element is in its unstable relationship,
(e) said means for retaining comprising a second magnetic element,
(f) one of said first and second magnetic elements being of apertured configuration and the other being received axially within the aperture,

(g) said first and second magnetic elements being axially polarized,

(h) means for relatively fixedly mounting the second of said elements with a predetermined one of its magnetic poles exposed outwardly,

(i) locating means enabling the movable first magnetic element to be applied axially within or about the second magnetic element to a predetermined point at which essentially repelling forces of said magnetic elements urge said first magnetic element inward,

(j) said unstabilizing element comprising means for selectively and controllably acting on one of said magnetic elements to move one axially relative to the other sufficiently to cause essentially repelling forces of said elements to urge said first magnetic element outward.

16. A game apparatus according to claim **15**, further including:

(a) means forming a non-magnetic base plate,

(b) said unstabilizing element comprising an axially polarized third magnetic element adopted for support by and movement across said base plate,

(c) a field plate supported above said base plate and spaced sufficiently therefrom to closely accommodate movements of said third magnetic element between said base and field plates,

(d) one or more second magnetic elements being mounted by said field plate and arranged to receive one or more first magnetic elements,

(e) any such first magnetic element being unstabilized and projected from its related second magnetic element by an essentially repelling magnetic influence of said third magnetic element upon its being moved adjacent such first magnetic element while travelling between said base and field plates.

17. The game apparatus of claim **16**, further including:

(a) one or more magnetic target elements mounted on said field plate and arranged to exert an essentially attracting influence on a projected first magnetic element,

(b) at least one of said magnetic target elements being spaced above the field plate.

18. The game apparatus of claim **17**, further characterized by:

(a) said base plate being so related to said field plate as to provide an exposed margin of base plate beyond an edge of the field plate, and

(b) means comprising a recoil device or the like arranged to be received on or adjacent said exposed margin and to engage said third magnetic element for forcible projection along said base plate.

19. A game apparatus according to claim **15**, further characterized by:

(a) said movable first magnetic element forming a carrier means,

(b) projectile means adapted to be received in said carrier,

(c) said projectile means being catapulted away from said carrier upon movement of said first magnetic element in response to unstabilization thereof.

20. A game apparatus according to claim **19**, further characterized by:

(a) said magnetic elements exerting an essentially attractive influence on each other after an initial movement in response to essentially repelling influences, whereby to cause said first magnetic element to return to said second magnetic element and to thereby be separated from said projectile means.

21. A game apparatus according to claim **20**, further characterized by:

(a) said apparatus including a field plate mounting said second magnetic element,

(b) said field plate being subdivided into compartmental units for the reception of said projectile means.

22. A game apparatus according to claim **21**, further characterized by:

(a) said second magnetic means being mounted in an interior region of said base plate,

(b) an annular base supporting said field plate in surrounding relation to said second magnetic element, and

(c) said unstabilizing means comprising means to strike downward on portions of said field plate outside of said annular base, whereby to impart momentary upward thrust to said magnetic elements.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,425,694 Dated February 4, 1969

Inventor(s) Edward O. Norris

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 33, "inter-action" should read --interaction-- Column 4, line 31, after "21" insert --which--. Column 7, line 59, "exered" should read --exerted--. Column 7, line 64, delete "does not return to a position within the opening" and insert --47, after which it is quickly and forcibly returned--. Column 8, line 12, "geouly" should read --geously--. Column 8, line 66, "mechanism" should read --mechanisms--.

SIGNED AND
SEALED
MAY 19 1970

(SEAL)
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