

Nov. 1, 1938.

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2,135,182

GAME APPARATUS

Filed July 12, 1935

4 Sheets-Sheet 1

Fig. 1.

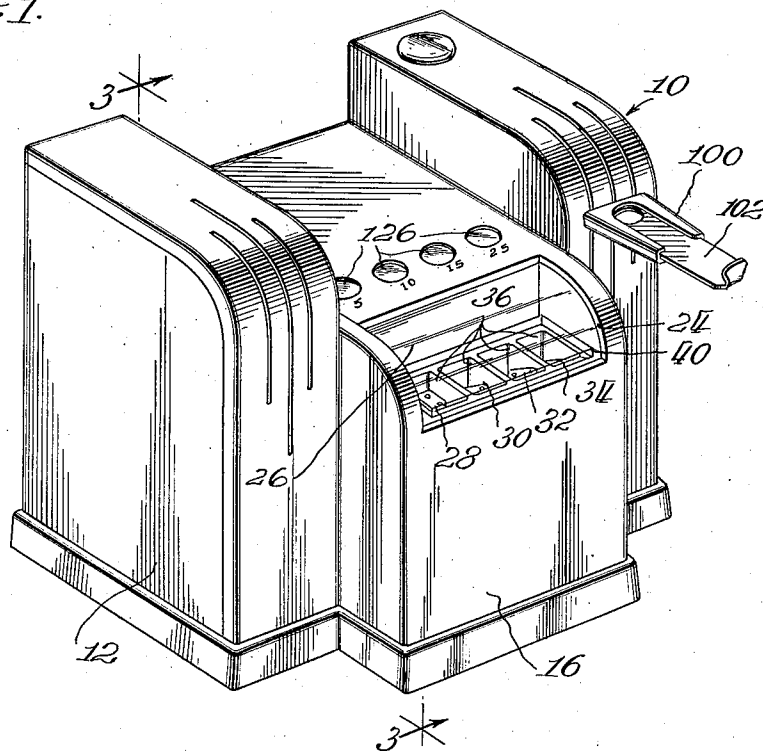
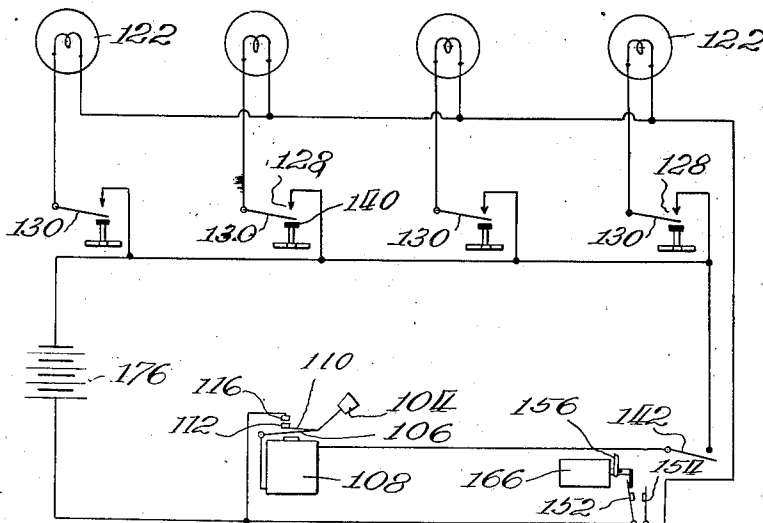


Fig. 2.



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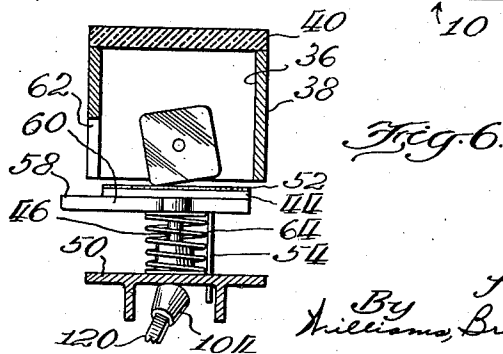
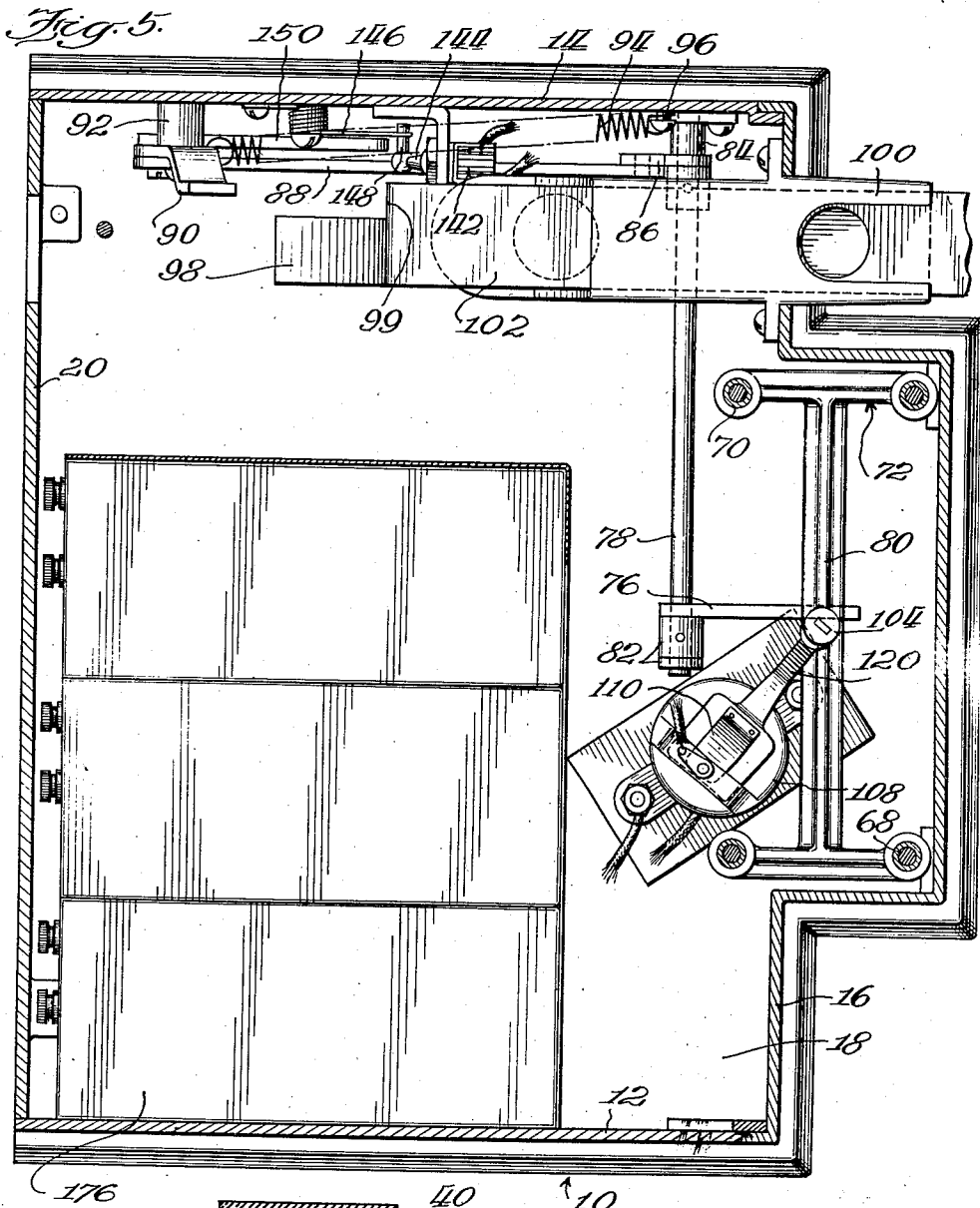
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GAME APPARATUS

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4 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

2,135,182

## GAME APPARATUS

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Application July 12, 1935, Serial No. 30,977

15 Claims. (Cl. 273-145)

My invention relates, generally, to game apparatus, and more particularly to a novel apparatus for shaking dice and indicating the results.

A further object is to provide a novel form of dice, the positions of which may be mechanically sensed.

A further object is to provide an improved form of electromagnetically operated dice shaking mechanism.

10 A further object is to provide means for indicating when predetermined faces of a plurality of dice come up.

Other objects will appear from the following description, reference being had to the accompanying drawings, in which:

Fig. 1 is a perspective view of the complete apparatus;

Fig. 2 is a wiring diagram showing the circuits for controlling the indicators;

20 Fig. 3 is a vertical sectional view taken on the plane represented at 3-3 in Fig. 1;

Fig. 4 is a fragmentary horizontal sectional view taken on the line 4-4 of Fig. 8;

25 Fig. 5 is a sectional view taken on the broken line 5-5 of Fig. 3;

Fig. 6 is a fragmentary vertical sectional view showing a die being shaken;

Fig. 7 is a fragmentary vertical sectional view showing a die and the contact controlled thereby;

30 Fig. 8 is a view similar to Fig. 7 showing the die in a different position; and

Fig. 9 is a vertical sectional view taken on the line 9-9 of Fig. 3.

35 The apparatus of my invention comprises, generally, a coin controlled machine in which a plurality of dice are automatically shaken when a coin is inserted to operate the machine. The machine is so constructed that the player can control the length of time that the dice are shaken by means of the coin slide, and means are provided in the machine automatically to indicate by electric light signal or other suitable means when the dice come to rest in positions to show certain predetermined combinations of 40 numbers.

50 The machine comprises, generally, a casing 10 which may be, except for its rear wall, an integral die casting or may be made in sectional die castings, as illustrated in Fig. 5, wherein side walls 12 and 14 are permanently secured to the front wall and top 16 and to a base casting 18. The rear wall 20 is preferably removably secured to the other walls of the casing as by screws 22 (Fig. 3). The front wall 16 is provided with a window 55 opening 24 which is covered by a curved sheet of

glass 26, suitably secured in place. A plurality of dice 28, 30, 32 and 34 are observable through the window 26, each die being confined in a separate compartment 36 (Fig. 4) formed in a die casting 38. A plate 40 of glass is secured over the tops of the compartments 36 by means of a pair of clips 42. While in the machine illustrated there are four dice and four compartments therefor, it will be understood that my invention may be employed using a greater or lesser number of dice.

Each of the dice is supported by a platform 44 secured at the upper end of a pin 46, the latter being vertically slidable in a sleeve 48 secured in a cradle casting 50. The platform 44 has a layer 52 of sound deadening material cemented thereto. Each of the platforms 44 is provided with a downwardly extending guide pin 54 which projects through a hole 56 formed in the cradle casting 50. Each of the platforms 44 has a rearwardly projecting finger 58. The finger 58 is formed as an extension of a rib 60 formed integrally with the platform 44 and extends through a slot 62 formed in the wall of the compartment die casting 38. A coil spring 64 is positioned between the cradle 50 and each of the ribs 60 of the platforms 44, tending normally to raise the platform. Upward movement of the platform relative to the cradle is, however, limited by a cross pin 66 projecting transversely through the lower end of the platform supporting pin 46, the ends of the transverse pin 66 abutting the lower end of the guide sleeve 48 to accomplish this purpose.

35 The compartment casting 38 is supported by a plurality of stanchions 68 which are threaded in the base casting 18, as indicated in Fig. 9. Each of the stanchions 68 has a sleeve 70 freely slidable thereon, the sleeves being rigidly secured near their lower ends to an elevating frame 72. The cradle 50 rests upon the upper ends of the sleeves 70, suitable washers 74 being interposed between the cradle and the ends of the sleeves.

40 The elevating frame is adapted to be raised by an arm 76 secured to a shaft 78, the arm engaging the central portion of a cross-piece 80 forming part of the elevating frame 72. The shaft 78 is suitably journaled in bearings 82 and 84 and at its extremity opposite the arm 76 has an arm 86 rigidly secured thereto. A link 88 has one end pivotally connected to the arm 86 and its other end pivotally connected to the lower end of a lever 90 which is pivoted at 92. The upper end of the lever 90 is normally held in the position in which it is shown in Fig. 3 by a relatively strong 55

tension coil spring 94, one end of which is secured to the lever and the other end of which is suitably anchored to the side wall 14 of the casing by a screw 96. The lever 90 is adapted to be swung counterclockwise by means of a shoulder 99 on an actuating bar 98 forming part of a coin slide mechanism 100 which may be of any suitable well known construction and which is, therefore, not illustrated in detail. It will be understood, however, that the coin slide mechanism includes a slide 102 which has an aperture to receive the coin and which is manually pushed inwardly, thereby to move the bar 98 rearwardly (to the left, Fig. 3) a sufficient distance to swing the lever 90 from the position in which it is shown in full lines in Fig. 3 to the position indicated in dotted lines in said figure.

It will be seen that when the bar 98 of the coin slide mechanism is in the position shown in full lines, the spring 94 will, through the lever 90, link 88, arm 86, shaft 78, and arm 76, raise the elevating frame 72 to its uppermost position, with the cradle 50 in engagement with the lower surface of the compartment casting 38.

When the coin slide is pushed inwardly the bar 98 will engage the lever 90 and swing the latter counterclockwise and, through the train of linkage previously described, swing the arm 76 clockwise (Fig. 3) and permit the elevating frame and cradle 50 to move downwardly (by gravity) to a position in which the cradle engages a hammer 104 which is formed as a part of an armature 106 of an electromagnet 108.

The armature 106 is suitably mounted for rocking movement upon the electromagnet 108 and has a spring contact arm 110 secured thereto, the arm carrying a contact 112. Suitably supported by a frame 114 is a contact 116 which is insulated from the frame 114 and cooperable with the contact 112. The armature 106 is normally rocking to pull it away from the core of the electromagnet 108 by a tension coil spring 118, one end of which is secured to the hammer arm 120 of the armature and the other end of which is suitably anchored to the shell of the electromagnet 108. It will thus be apparent that when current is supplied to the electromagnet 108 through the contacts 112, 116, the hammer 104 will be rapidly rocked or vibrated, and when the cradle 50 is in its lowered position the hammer will strike the cradle and vibrate the latter.

The means for clearly indicating the positions of the various dice comprises a plurality of lamps 122 mounted in sockets 124 and provided with lenses 126 located immediately adjacent the window 26. Illumination of each of the lamps 122 is controlled by a pair of contacts 128, 130, mounted in a suitable support 132. The position of the upper contact member 128 may be varied by means of an adjusting screw 134 threaded in the support 132 and provided with a lock nut 136. The lower contact member 130 is adapted to be moved into contact with the upper contact member by means of a pin 138 which has a head 140 of insulating material. Each of the pins 138 is suitably guided for vertical movement and has its lower end resting upon the projecting finger 58 of one of the platforms 44.

The dice 28, 30, 32 and 34 are not exact cubes. As indicated in Figs. 7 and 8, the die is shown as being of slightly less thickness between the faces numbered 2 and 5 than between the faces numbered 3 and 4 and between the faces numbered 1 and 6.

When the die comes up with the face numbered

either 2 or 5, the spring 64 will raise the platform 44 higher than when one of the other faces comes up, and when thus raised to its higher position the platform 44 will raise the pin 138 a sufficient distance to close the contacts 128, 130.

The supply of current to the electromagnet 108 is controlled by a switch 142 having an actuating arm 144. A grasshopper spring 146 engages the arm 144 of the switch and normally holds the switch open. The arm of the switch is provided with a sidewardly projecting pin 148 which is adapted to be engaged by an arm 150 rigidly secured to the lever 90. Thus when the lever 90 is swung to its dotted line position the arm 150 will engage the pin 148 and close the switch 142.

The supply of current to the lamps 122 is controlled by a pair of contacts 152, 154 which are normally open. Upon the operation of the apparatus a depending arm 156, secured to the link 88, engages a pin 158 secured to the stem 160 of a dash pot piston 162 and moves the stem 160 to the right (Fig. 3), thus retracting an actuator 164 from contact with the spring arm of contact 152 and permitting the contacts 152, 154 to engage and complete the circuit to the lamps. The piston 162 is preferably in the form of a cup leather and is slidable in a dash pot cylinder 166, the piston being normally urged to the left (Fig. 3) by a compression coil spring 168. A vent 170 is provided in the closed end of the cylinder 166, the passage of air through the vent being controlled by a needle valve 172 which may be locked in adjusted position by a nut 174.

The source of current for operating the apparatus is indicated in Fig. 5 as a battery of dry cells 176.

The operation of the apparatus will now be described, referring particularly to the wiring diagram of Fig. 2. Upon inserting a coin or token in the coin slide mechanism 100, the bar 98 will swing the lever 90 counterclockwise and through the arm 150 close switch 142, thus enabling the circuit to the electromagnet 108 to be opened and closed by the contacts 112, 116. At the same time the piston 162 of the dash pot will be moved to the right, thus closing contacts 152, 154, whereupon one terminal of each of the lamps 122 will be connected to the battery 176.

As previously described, operation of the coin slide will also permit the elevating frame 72 to move downwardly to a position where the cradle 50 will be struck by the hammer 104, as indicated in Fig. 6. The cradle 50 will thus be violently vibrated, causing the dice to bounce up and down in their respective compartments 36. In doing so the dice will strike the walls of the casing and be so violently shaken that the position at which they ultimately come to rest will be purely a matter of chance. After the coin slide has been held in its innermost position the length of time deemed by the player sufficient satisfactorily to shake the dice, he will permit the return of the coin slide 102, whereupon the spring 94 will swing the lever 90 clockwise and thus through the removal of the arm 150 from the pin 148 of the switch arm 144, permit the grasshopper spring 146 to open the switch 142, deenergizing the electromagnet 108. Clockwise swinging movement of the lever 90 will also cause the arm 76 to raise the elevating frame 72 to its uppermost position, as shown in Fig. 9. At the same time the depending arm 156 will be moved away from the pin 158, thus permitting the spring 168 gradually to move the stem 160 of the dash pot to the left. The orifice controlled by the

needle valve 172 will be selectively maintained at such size that the dash pot will consume from a few seconds to a minute before the arm 160 will separate the contacts 152, 154.

As the cradle 50 is moved to its uppermost position each of the dice will be pressed upwardly against the lower surface of the glass plate 40 by its spring pressed platform 44 and, if the die is positioned such that its shorter dimension is vertical, the finger 58 associated with that die will, through its pin 138, close its contacts 128, 130.

As shown in Fig. 2, each pair of contacts 128, 130 controls the supply of current to one of the lamps 126. Thus, by glancing at the number of lamps illuminated, the player may in an instant determine how many dice have come to rest with their shortest dimension vertical. It will be understood that while the die shown in Figs. 7 and 8 has its shorter dimension between the faces numbered 2 and 5, the other dice may have their shorter dimension between different faces. Due to this fact, it would require considerable attention on the part of the player to determine how many of the dice were positioned with their shorter axes vertical if the lamps 122 and their controlling circuits were not provided.

After a predetermined time, controlled by the dash pot stem 160, the contacts 152, 154 will be separated, thus opening the circuit to the lamps 122 and conditioning the apparatus for a new cycle of operation.

While the contacts 128, 130 are herein illustrated as controlling lamps 122, it will be understood that these contacts may be utilized to control circuits to various other types of indicating, signalling, or actuating devices. Similarly, the circuits of which the contacts 128, 130 form a part may be so arranged that a lamp or other device is supplied with current only when a predetermined number or predetermined ones of said pairs of contacts 128, 130 are closed.

While I have shown and described a particular embodiment of my invention, it will be apparent that the invention is not limited to the specific construction shown but may be embodied in other forms, all coming within the spirit of my present invention.

What I claim and desire to secure by United States Letters Patent is:

1. In a game apparatus, the combination of an electromagnet having a coil and an armature, a pair of contacts in circuit with said coil and constructed and arranged to be closed when said armature is moved away from said coil, resilient means for moving said armature away from said coil to close said contacts, a hammer secured to said armature, a dice-carrying member, and manually controlled means for substantially simultaneously energizing said electromagnet and moving said member into the path of movement of said hammer, thereby to cause the latter to vibrate said member.

2. In a game apparatus, the combination of a member having a plurality of compartments, a glass cover for the tops of said compartments, a plurality of dice, one in each of said compartments, a resiliently mounted platform at the bottom of each of said compartments, a cradle for supporting said platforms, and manually operated means for moving said cradle upwardly to cause said platforms resiliently to press said dice against said cover.

3. In a game apparatus, the combination of a plurality of dice, a compartment for each of said

dice, a platform in each of said compartments, a support for said platforms, resilient means between said support and said platforms respectively, and means for striking said support repeatedly thereby to vibrate said platforms and shake said dice.

4. In a game apparatus, the combination of a plurality of dice, a cradle, a platform for each of said dice, resilient means mounted upon said cradle for supporting said platforms, electromagnetic means for vibrating said cradle, and means for moving said cradle away from said electromagnetic vibrating means and de-energizing the latter.

5. In a game apparatus, the combination of an electromagnet having a coil and an armature, a pair of contacts operable by said armature, a switch, a source of electrical energy, a circuit connecting said coil, contacts, switch, and source in series; resilient means for moving said armature away from said coil thereby to close said contacts, a hammer secured to said armature, a dice-carrying member, and manually operated means closing said switch and moving said member into the path of movement of said hammer, thereby to cause the latter to vibrate said member.

6. In a game apparatus, the combination of a member having a plurality of compartments, a glass cover for the tops of said compartments, a plurality of dice, one in each of said compartments, a resiliently mounted platform at the bottom of each of said compartments, a cradle for supporting said platforms, manually operated means for moving said cradle upwardly to cause said platforms resiliently to press said dice against said cover, and means controlled by said platforms for sensing the positions of said dice.

7. In a game apparatus, the combination of a member having a plurality of compartments, a glass cover for the tops of said compartments, a plurality of dice, one in each of said compartments, a resiliently mounted platform at the bottom of each of said compartments, a cradle for supporting said platforms, manually operated means for moving said cradle upwardly to cause said platforms resiliently to press said dice against said cover, and electrical contacts operated by said platforms.

8. In a game apparatus, the combination of a plurality of dice, each having one of its axial dimensions slightly different than another of its axial dimensions, means for shaking said dice, and means for mechanically sensing the positions at which the dice come to rest.

9. In a game apparatus, the combination of a plurality of dice, each having one of its axial dimensions slightly different than another of its axial dimensions, means for shaking said dice, and means for mechanically sensing the respective positions at which the dice come to rest, said means comprising a mechanism for caliper one of the axial dimensions of each of said dice.

10. In a game apparatus, the combination of a plurality of dice, each having one of its axial dimensions slightly different than another of its axial dimensions, means for shaking said dice, means for mechanically sensing the positions at which the dice come to rest, said means comprising a mechanism for caliper one of the axial dimensions of each of said dice, and electrical circuit means controlled by said mechanism.

11. In a game apparatus, the combination of a plurality of dice, each having one of its axial dimensions slightly different than another of its axial dimensions, means for shaking said dice,

means for mechanically sensing the positions at which the dice come to rest, said means comprising a mechanism for calipering one of the axial dimensions of each of said dice, and a pair  
5 of adjustable electrical contact elements arranged to be operated by said mechanism when a die comes to rest with a predetermined one of its axes extending in a vertical direction.

12. In a game apparatus, the combination of a  
10 plurality of dice, means for shaking said dice, a plurality of sensing means, one for each of said dice, electrical circuits controlled by said sensing means respectively, a switch common to said  
15 circuits, means for manually closing said switch, and delayed action means for opening said switch.

13. In a game apparatus, the combination of a  
20 plurality of dice, each of said dice having an over-all dimension in the direction of one of its axes of lesser magnitude than the corresponding dimension in the direction of another of its axes,  
means for shaking said dice, means for calipering one of the over-all dimensions of each of said dice, and electrical contact means controlled by said  
calipering means.

25 14. In a game apparatus, the combination of a

plurality of dice each having the over-all dimension in the direction of one of its axes of lesser magnitude than the corresponding dimension in the direction of another of its axes, means for  
5 shaking said dice, manually operated means for rendering said shaking means operative, and means operated by said manually operated means simultaneously to render said shaking means inoperative and to sense the positions in which the  
10 dice come to rest.

15. In a game apparatus, the combination of a  
15 plurality of dice, each having the over-all dimension in the direction of one of its axes of lesser magnitude than the corresponding dimension in the direction of another of its axes, means for shaking said dice, a manually operated slide,  
means operated by said slide when moved in one direction to energize said shaking means and  
20 when said slide is moved in the opposite direction to de-energize said shaking means, and means to caliper said dice in the positions at which they come to rest, said means being controlled by said  
slide upon its movement in said opposite direction.

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