United States Patent [19]

Eckmayr

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[54] **BALL DISPENSING DEVICE**

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[52] **U.S. Cl.** **221/265**; 222/370

[51] **Int. Cl.**[2] **G07F 11/24**

[58] **Field of Search** ..... 194/9 T; 221/265, 277, 221/311, 200, 203; 222/370

[56] **References Cited**

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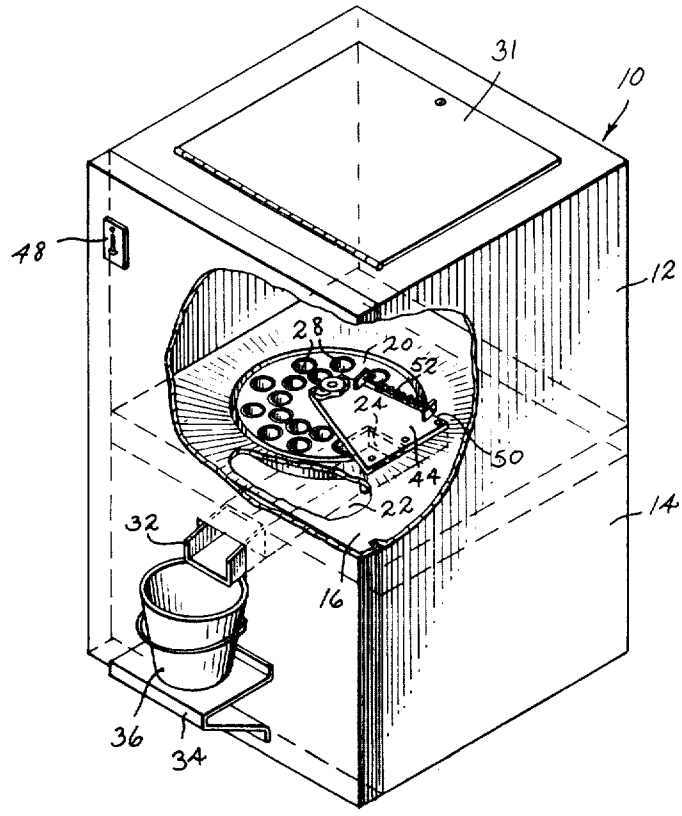
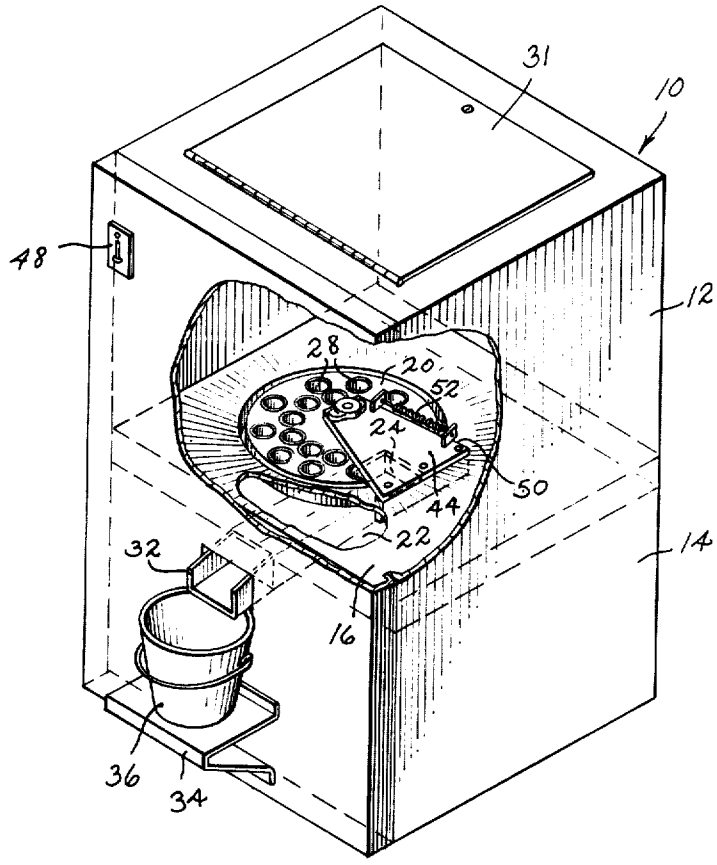
Assistant Examiner—Larry H. Martin
Attorney, Agent, or Firm—Oltsch & Knoblock

[57] **ABSTRACT**

A ball dispensing device which includes a hopper having a turntable in the bottom thereof. The turntable includes a plurality of vertically oriented cylindrical openings with each opening being large enough to accommodate a single ball only with clearance. A lower wall extends under the turntable and covers the bottom thereof except for a discharge opening formed within the wall. A cover plate overlies a sectorial part of the turntable so that balls housed within the hopper fall into the cylindrical openings in the table and are carried by the table over the lower wall, under the cover plate and over the discharge opening where the balls fall through the discharge opening and into a suitable dispenser. A flexible deflector is carried by the cover plate for the purpose of deflecting the balls carried upon the turntable from the leading edge of the cover plate during rotation of the table.

3 Claims, 5 Drawing Figures

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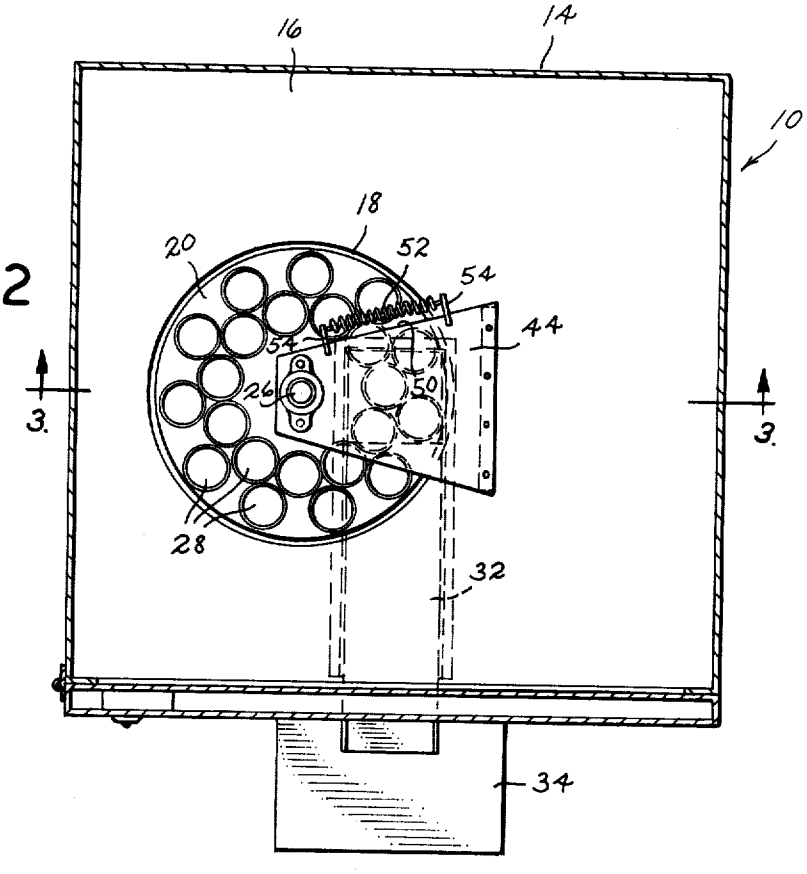
34

Fig. 1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26
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28
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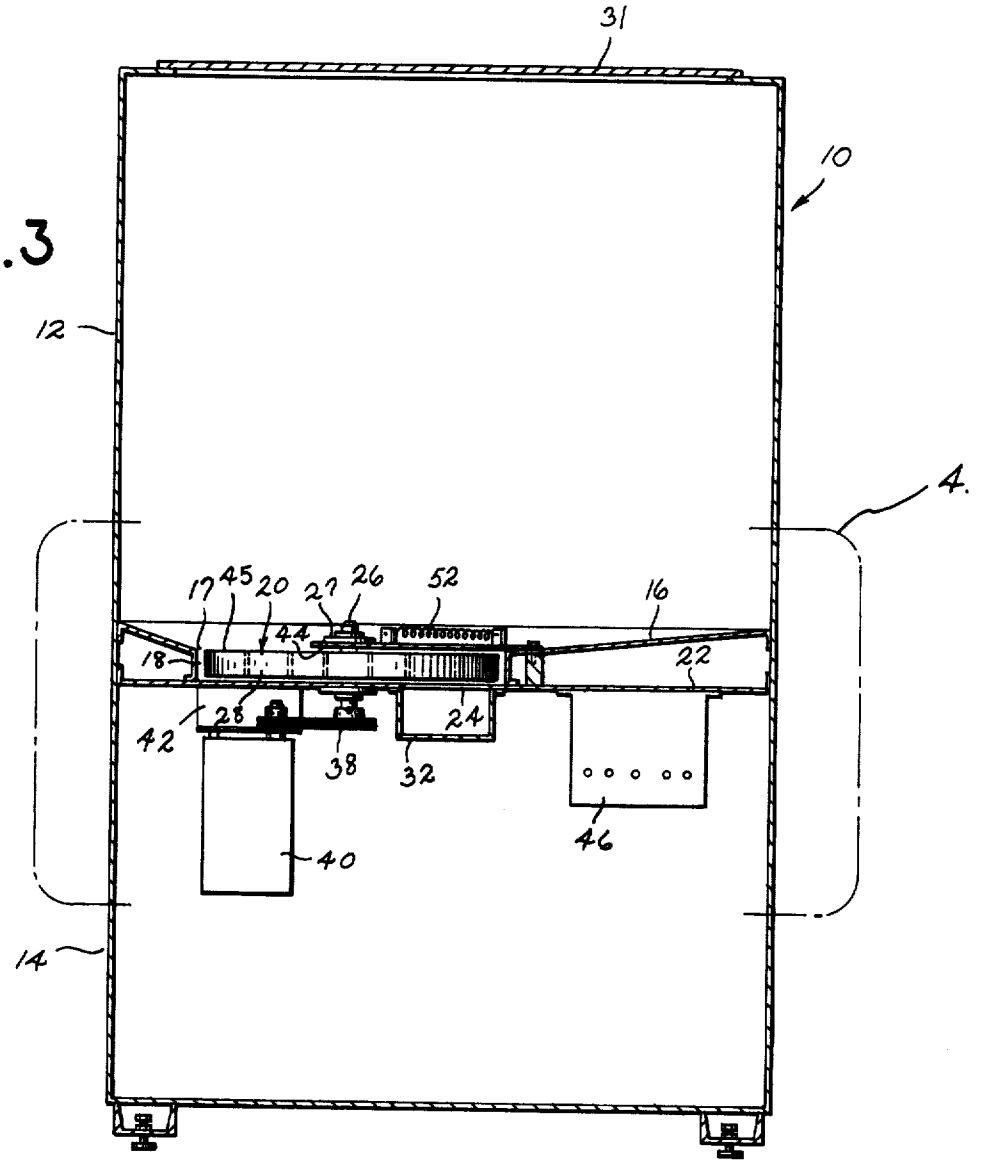
34

Fig. 2

Fig.3


31
10
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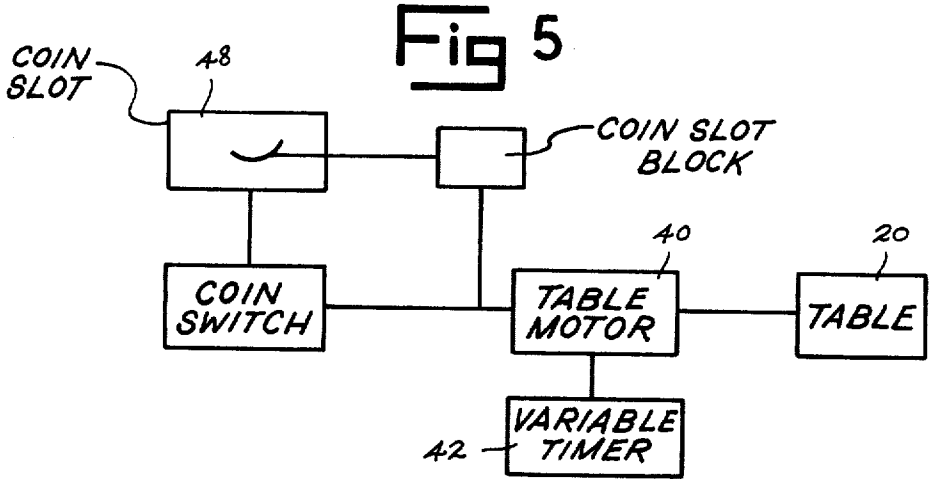
14

Fig 5


COIN SLOT
48
COIN SLOT BLOCK
40
20
COIN SWITCH
TABLE MOTOR
TABLE
VARIABLE TIMER
42

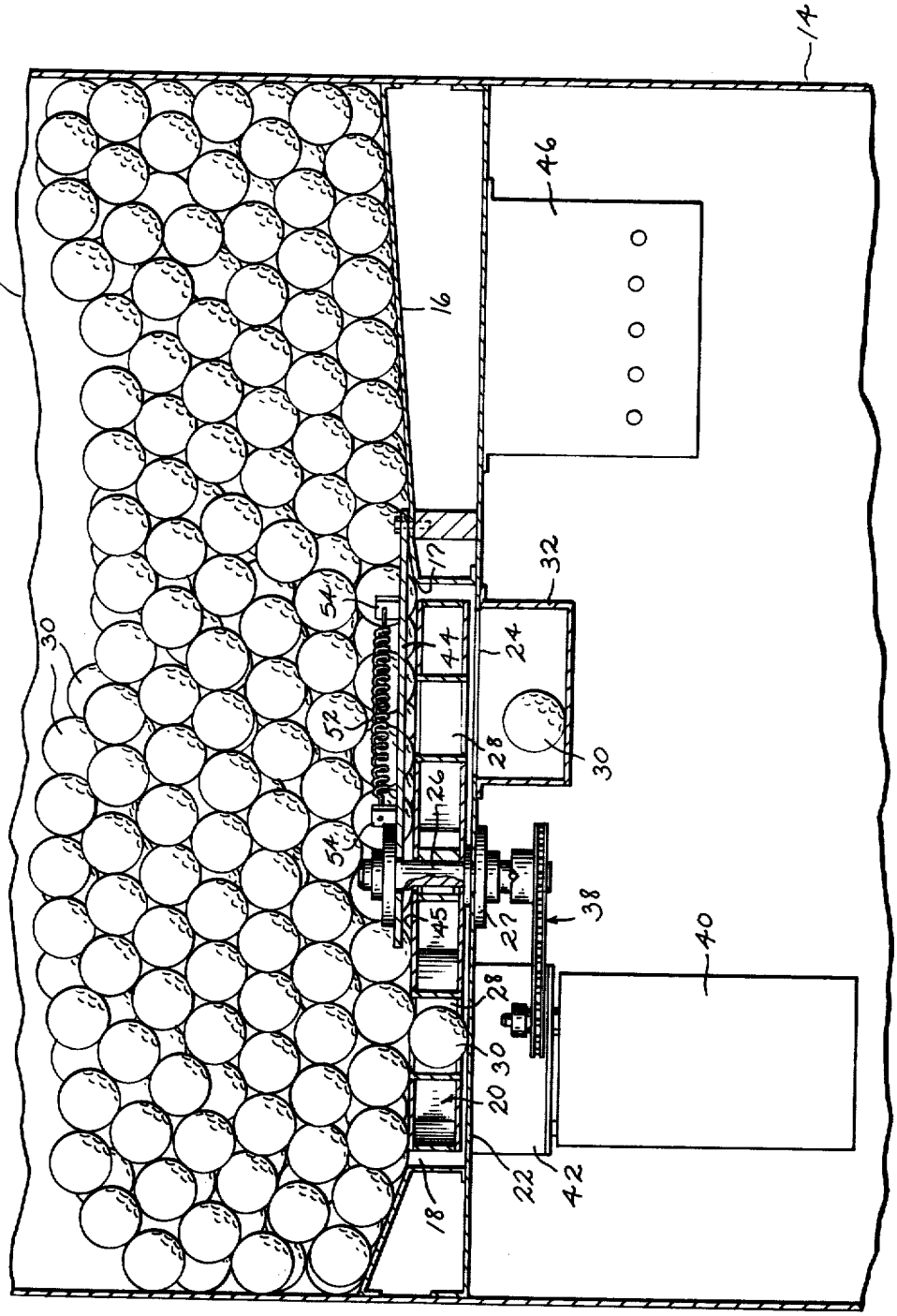


Fig. 4

BALL DISPENSING DEVICE

SUMMARY OF THE INVENTION

This invention relates to a ball dispenser and will have particular but not limited application to a device for the purpose of dispensing golf balls.

The dispenser includes a hopper having sloping walls which terminate in a circular lower opening within the hopper. A circular turntable fits within the lower opening in the hopper. A lower horizontal end wall is located adjacently below the turntable, preferably spanning the lower opening in the hopper. This lower wall has a discharge opening formed therein. Means are provided for rotating the table about a vertical axis. The turntable has a plurality of upright cylindrical openings formed therein. Each cylindrical opening has a diametrical dimension which is sufficient to accommodate a single ball only with clearance and is positionable over and in alignment with the discharge opening in the lower end wall during rotation of the table. A rigid cover plate is mounted directly above the discharge opening in the end wall. The cover plate covers a part of the turntable and the cylindrical openings in this table part. Flexible deflector means is mounted adjacently ahead of the leading edge of the cover plate. The balls carried upon the rotating turntable contact the deflector means and are deflected away from the leading edge of the cover plate so as to prevent jamming of the dispenser and to facilitate the filling of the exposed cylindrical openings in the turntable. The turntable is rotated at a constant speed with the number of balls dispensed being directly related to the length or duration of rotation of the table.

Accordingly, it is an object of this invention to provide a ball dispenser which may be coin actuated and utilized to dispense golf, tennis or similar balls and which is of reliable operation.

It is another object of this invention to provide a ball dispenser which dispenses an accurate number of golf, tennis or similar balls.

It is another object of this invention to provide a ball dispenser which is of both accurate operation and simple maintenance.

Other objects of this invention will become apparent upon a reading of the invention's description.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of this invention has been chosen for purposes of illustration and description wherein:

FIG. 1 is a perspective view of the dispenser with portions thereof broken away for purposes of illustration.

FIG. 2 is a sectional view of the dispenser of FIG. 1 taken above the turntable component of the dispenser.

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2.

FIG. 4 is a detailed view of the turntable and related components of the dispenser enclosed within broken line 4 of FIG. 3 and shown with a plurality of golf balls within the dispenser hopper.

FIG. 5 is a schematic view of the operating components of the dispenser.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment illustrated is not intended to be exhaustive or to limit the invention to the precise

form disclosed. It is chosen and described in order to best explain the principles of the invention and its application and practical use to thereby enable others skilled in the art to best utilize the invention.

The dispenser shown in FIGS. 1–4 includes an outer housing **10**, which may be of a cabinet configuration, having an upper hopper part **12** and a lower support part **14** which rests upon a floor or the ground. Hopper part **12** includes a sloping wall **16** which has a circular opening **18** formed therein. A lower end wall **22** spans opening **18** in hopper part **12** and has a discharge opening **24** formed therein which communicates with opening **18**. A turntable **20** is located within opening **18** and is supported for rotational movement relative to housing **10** over lower wall **22** by a suitable shaft **26** and bearing arrangement **27**. The upper surface **45** of turntable **20** is preferably positioned at approximately the same level as the lower edge **17** of sloping wall **16** of hopper part **12**.

Turntable **20** has a plurality of vertically oriented cylindrical openings **28** formed therein. Each opening **28** preferably has a diameter which is only large enough to accommodate a single ball **30** with clearance. Openings **28** in turntable **20** are so arranged that upon rotation of the table the openings will be caused to pass over discharge opening **24** in lower end wall **22** to permit the ball carried within each opening to drop through the discharge opening. An inclined trough **32** or similar conduit extends from discharge opening **24** in lower end wall **22** through housing **10** at lower part **14** and terminates exteriorly of the housing preferably above a suitable platform **34**. A door **31** in the top of housing **10** allows balls **30** to be loaded into hopper part **12**.

A bucket **36** or similar depository means can be set upon platform **34** under the discharge end of trough **32** to catch the balls **30** as they drop through openings **28** in turntable **20** and discharge opening **24** in housing lower wall **22** during rotation of the table. A chain and sprocket combination **38** drive connects shaft **26** to a drive motor **40** housed within the lower part **14** of housing **10**. A timer **42** is electrically connected to motor **40**. Timer **42** serves to regulate the duration of operation of motor **40**. Motor **40** is a constant speed motor which causes turntable **20** to rotate at a selected speed, such as around 30 r.p.m.

A rigid cover plate **44** extends over a sectorial portion of turntable **20** and is positioned directly over discharge opening **24** in lower end wall **22** of hopper part **12**. Cover plate **44** is supported by lower wall **22** and serves to prevent balls **30**, except those balls carried within openings **28** in the turntable, from passing downwardly through the turntable as the openings **28** therein become aligned with discharge opening **24** in lower end wall **22**. Cover plate **44** is spaced sufficiently above the upper surface **45** of turntable **20** that balls **30** falling into the exposed or those openings **28** not covered by the cover plate will be pulled across wall **22**, under the plate and over discharge opening **24**.

A control box **46** is located within lower part **14** of housing **10**. Control box **46** includes suitable relays and other electrical components which serve to actuate motor **40** and timer **42**. An exteriorly located coin slot **48** (shown in FIG. 1) is operatively connected to a coin identifier and switch device, which can be any one of several commercially available constructions. The coin switch device is operatively associated with control box **46** and serves to actuate the coin slot block which pre-

vents coins from being inserted into coin slot **48** during the period of rotation of turntable **20** and during any period when the electricity or power to the dispenser has been cut off or terminated. The control relays within control box **46** can be programmed so that upon insertion of a selected amount of money into coin slot **48**, timer **42** and motor **40** will be actuated which causes turntable **20** to rotate at a constant speed for a selected period of time, thereby permitting a precise preselected number of balls **30** to be discharged through discharge opening **24**, into trough **32** and from there into bucket **36** positioned upon platform **34** located exteriorly of the dispenser. Thus, the discharge rate of balls **30** from the dispenser will be constant with the duration of operation of motor **40** regulating the number of balls being dispensed.

A deflector means, illustrated as a helical spring **52**, is provided to minimize the chance of a ball **30** becoming wedged between the upper surface **45** of turntable **20** when only partially located within an opening **28** therein and the leading edge **50** of cover plate **44** during rotation of the turntable. Spring **52** is connected at its opposite ends to bracket plates **54** which in turn are welded or otherwise secured to cover plate **44**. Spring **52** is positioned adjacently above and forwardly or ahead of leading edge **50** of the cover plate so as to contact balls **30** carried upon the turntable prior to engagement of the balls with the leading edge of the cover plate. Spring **52** upon contacting a ball **30** will cause the ball either to be cammed downwardly into an available opening **28** in the turntable or to be cammed above and over the cover plate away from its leading edge **50**. The need for spring **52** is most apparent when the ball load level within hopper part **12** of housing **10** is at a low level which permits the balls above the turntable to experience considerable vibratory movement during rotation of the turntable. The balls **30** carried within openings **28** in turntable **20** will be supported by lower wall **22** and will preferably project slightly above the upper surface **45** of the turntable. In this manner, those balls carried within the exposed openings **28** in turntable **20** as the table rotates will roll over lower wall **22** and experience rotative movement relative to the table. This rotative movement of balls **30** within openings **28** in the turntable inturn will impart movement to those balls adjacently above the table, thus causing agitation of the lower level of balls within the hopper part to prevent bridging of the balls within the dispenser.

It is to be understood that the invention is not to be limited to the details above given, but may be modified within the scope of the appended claims.

What I claim is:

1. A ball dispenser comprising a hopper having sloping walls terminating in a circular lower opening, said hopper adapted to receive a plurality of balls, a circular turntable fitting within said lower opening, a lower horizontal wall located adjacently below said table and under said lower opening, said lower wall having a discharge opening therein, means connecting said discharge opening to a depository through which balls in passing through the discharge opening from said hopper are guided to the depository, means for rotating said table about a vertical axis within said lower opening, said table having a plurality of upright cylindrical openings formed therein, each cylindrical opening having a diametrical dimension sufficient to accommodate a single ball only with clearance and being positionable over and in alignment with said discharge opening during rotation of said table, a rigid cover plate mounted adjacently above said table and overlying said discharge opening, said cover plate covering at all times a part of said table and those cylindrical openings in said table part, the remainder of said openings in said table not covered by said cover plate being exposed within said hopper to receive said balls, said cover plate having a leading edge located adjacent one side of said discharge opening and under which the cylindrical openings in said table pass during rotation of the table, means for actuating said table rotating means to cause the cylindrical openings in said table to pass first under said cover plate leading edge and then over said discharge opening whereby the balls carried within said openings will fall individually through said discharge opening, flexible deflector means mounted adjacently ahead of said cover plate leading edge and over said table for contacting those balls carried upon said table to cause said carried balls to be deflected away from said cover plate leading edge as said table is rotated wherein said deflecter means is carried by said cover plate and extends along the leading edge thereof and said deflector means is a helical spring, said spring generally paralleling said leading edge.

2. The ball dispenser of claim **1** wherein said table rotating means causes said table to rotate at a constant speed, said actuating means being operable for a selected period of time wherein said period of actuating means operation is directly proportional to the number of balls falling through said discharge opening.

3. The ball dispenser of claim **1** wherein said table includes an upper surface, said upper surface spaced from said lower wall a distance which is less than the diameter of a said ball whereby each ball when within a said cylindrical opening and contacting said lower wall will project above said upper surface to contact other of said balls within said hopper.

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