Sept. 19, 1961 D. SIMON 3,000,537

GOLF BALL DISPENSING APPARATUS

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FIG. 2

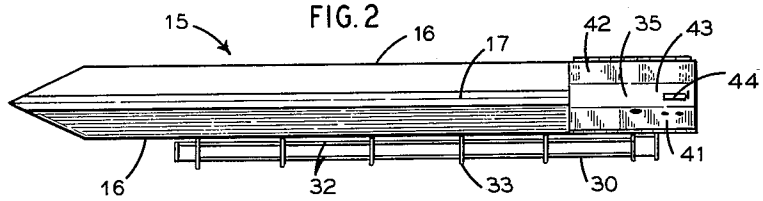


FIG. 1

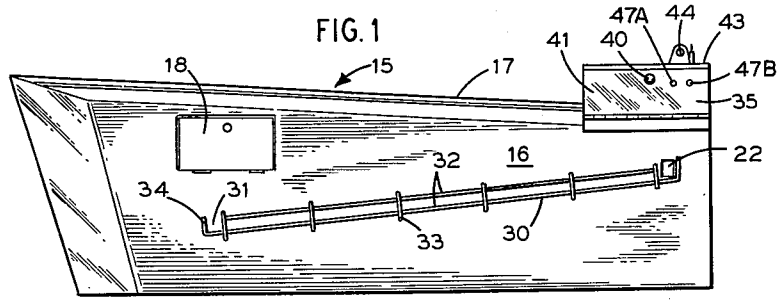


FIG. 5

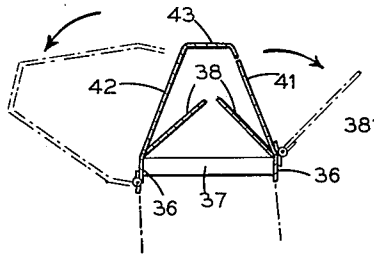


FIG. 3

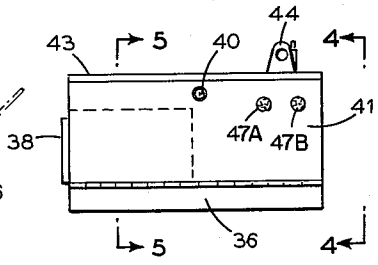


FIG. 4

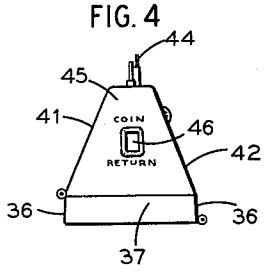
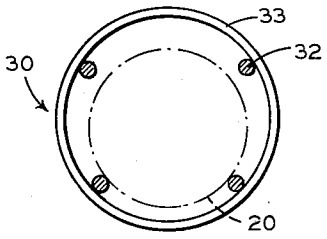


FIG. 6



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FIG. 7

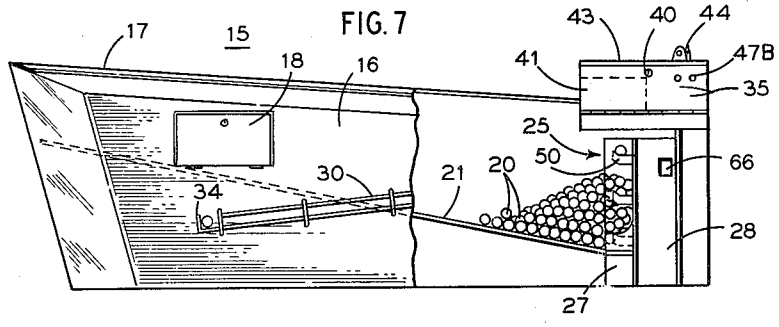


FIG. 8

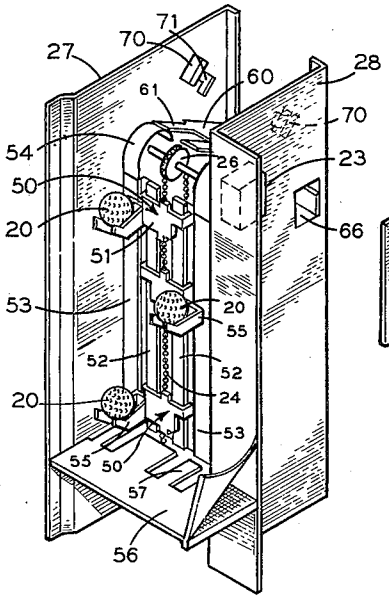


FIG. 10

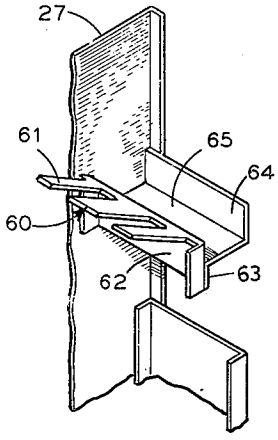


FIG. 9

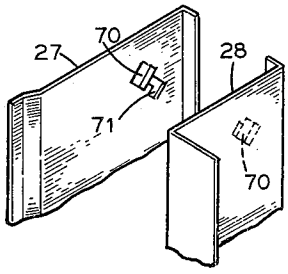
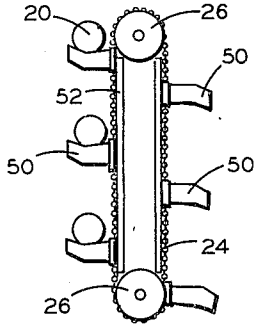


FIG. 11



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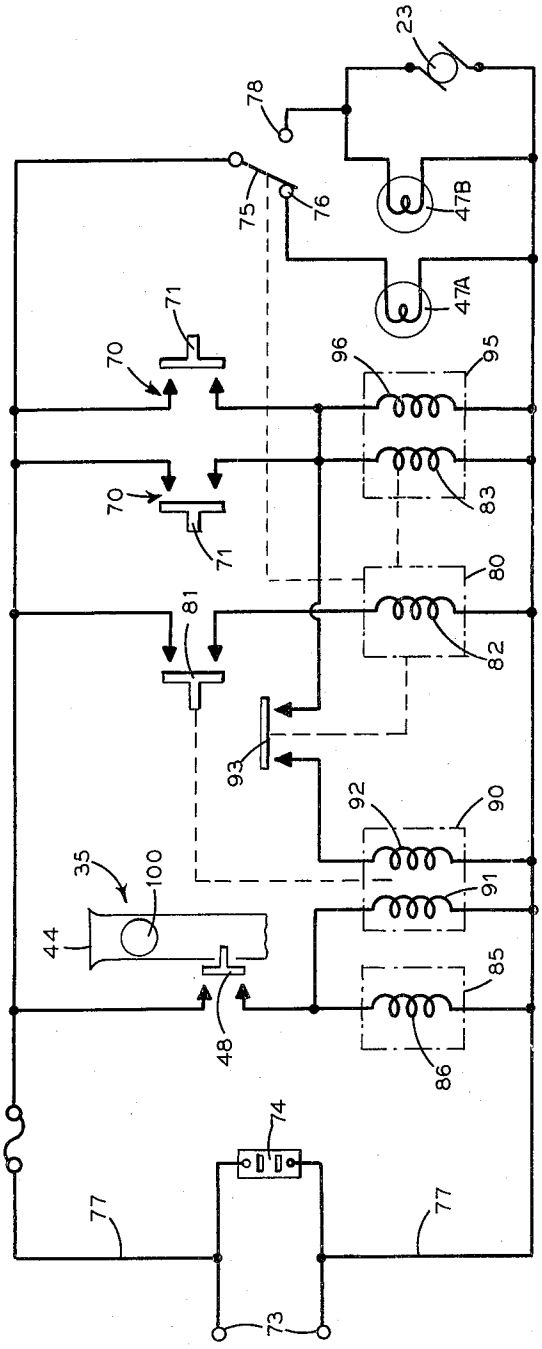
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GOLF BALL DISPENSING APPARATUS

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FIG. 12



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GOLF BALL DISPENSING APPARATUS

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10 Claims. (Cl. 221—7)

This invention relates to dispensing apparatus and, more particularly, to novel coin-controlled apparatus for deliverying a pre-set number of golf balls to a patron of a driving range or the like.

Many golfers practice driving at driving ranges where, for a fixed fee, the golfer receives a pre-set number of balls to drive. Originally, a bucket of balls was furnished to a patron by an attendant but, with the sharp increase in labor costs, there is a demand for automatic apparatus for delivering balls to the patron responsive to insertion of a coin. However, the automatic devices so far proposed have been unsatisfactory from the standpoints of first cost, maintenance, and simplicity of operation.

In accordance with the present invention, a simple and inexpensive golf ball dispenser is provided including a housing having a side door for charging a supply of balls onto a gravity chute extending toward an end of the housing. When a coin is inserted in a coin control device, a motor is energized to drive an endless chain carrying two sets of buckets for picking up golf balls from the chute, the buckets riding along support rails. At the upper end of the conveyor, the balls are dumped by the buckets onto gravity feed chutes leading to a transversely extending gravity trough.

As each ball is discharged from a bucket, it operates a switch connected to a counter, so that the motor circuit is opened when a pre-set number of balls have been discharged into the trough. The trough delivers the balls through a side opening in the housing into a cage-type track comprising plural wires or rods secured to circumferentially spaced locations on the inner peripheries of wire or rod rings having diameters in excess of that of the golf balls. This track is a gravity feed track on a side wall of the housing and delivers the balls against a stop where the patron may pick up one ball at a time.

For an understanding of the invention principles, reference is made to the following description of a typical embodiment thereof as illustrated in the accompanying drawing. In the drawing:

FIGS. 1 and 2 are side elevation and top plan views, respectively, of the dispensing apparatus of the invention;

FIG. 3 is a side elevation view of the coin control;

FIG. 4 is an end elevation view of the coin control at line 4—4 of FIG. 3;

FIG. 5 is a sectional view of the coin control on the line 5—5 of FIG. 4;

FIG. 6 is a transverse sectional view of the ball delivery track;

FIG. 7 is a view, similar to FIG. 1, partly broken away to illustrate internals of the apparatus;

FIG. 8 is a perspective view of the conveyor;

FIG. 9 is a perspective view of the counter switches;

FIG. 10 is a perspective view of the gravity feed chutes and troughs;

FIG. 11 is a somewhat schematic side elevation view of the conveyor; and

FIG. 12 is a schematic wiring diagram of the apparatus.

Referring to FIGS. 1, 2 and 7, the golf ball dispensing apparatus includes a housing **15** having side walls **16** and a peaked top wall **17**. One side wall **16** has a door **18** therein by means of which golf balls **20** may be charged into the apparatus and onto the upper front end of a rearwardly and downwardly sloping chute **21** (FIG. 7). The balls **20** at the lower end of chute **21** are picked up by buckets on an endless conveyor **25** from which the balls are discharged onto a chute or slide which delivers the balls laterally of housing **15** for discharge through an opening **22** in wall **16**. The balls discharged through opening **22** fall onto a track **30** mounted on side wall **16** and sloping forwardly and downwardly. The patron picks balls **20** one at a time from a holding space **31** at the lower end of track **30**.

Delivery of balls **20** to the patron is controlled by a coin device **35** shown in FIGS. 1 to 5 and 7. Coin device **35** includes side wall sections **36** and end wall section **37** hinged to one side wall **16** and overlapping the side walls **16** and rear end wall of housing **15**. Internal partitions **38** in device **35** seat on peaked top wall **17** of housing **15**. A side wall **41** of device **35** is hinged to the upper edge of one wall of section **36**, and a combined side and top wall **42** is integral with the other side wall section **36**. Elements **41** and **42** are normally locked to each other by a lock **40**.

The top wall portion **43** of element **42** carries coin insertion means **44**, and rear wall **45** of device **35** has a coin return **46**. Side wall **41** carries indicating lamps **47**.

When a coin of the proper denomination is inserted in device **35**, a motor **23** is energized to drive conveyor **25**. As best seen in FIGS. 8 and 11, conveyor **25** comprises an endless chain **24** trained over sprockets **26**, the upper one of which is drivingly connected to motor **23**. The shafts of sprockets **26** are rotatably mounted in spaced partitions **27**, **28** within casing **15**.

At spaced intervals along its length, chain **24** has "buckets" **50** secured thereto. Each bucket **50** includes a channel section **51** embracing parallel vertical rails **52**. Forked carriers **55** form part of buckets **50**, arranged alternately on opposite sides of chain **24**, and carriers **55** ride along vertical guide surfaces **53** having curved upper ends **54**.

The balls on chute **21** roll onto a platform **56** having fingers **57** extending into the forks **55**, the forks **55** straddling these fingers as buckets **50** begin their upward movement. Thereby, the buckets **50**, particularly carriers **55**, pick up balls **20** from fingers **57**.

At the upper end of conveyor **25**, and as the carriers **55** begin their downward movement, the carriers straddle fingers **61** of a sloping transfer surface **60** mounted between partitions **27**, **28**. Transfer surface **60** has a depending vertical wall **62** (FIG. 10) secured to a flange **63** of a transversely extending trough **65** having a rear wall **64**. The balls **20** are thus dumped onto ramp **60** and roll by gravity into trough **65**.

As each ball **20** rolls down ramp **60**, it "kicks" the operator **71** of a switch **70**, one of which is mounted on each partition **27**, **28** as best seen in FIGS. 8 and 9. Switches **70** are connected to a counter shown schematically (in FIG. 12) and, after the switches have been "kicked" or impulsed a pre-set number of times, motor **23** is deenergized. This results in delivery of the same pre-set number of balls **20** to track **30**.

Trough **65** extends through an opening **66** in partition **28**, where it connects to a second trough, which may be integral with trough **65**, leading to opening **22**.

The track **30**, receiving balls **20** at opening **22**, has a shape which may be termed an "open" tube. Thus, track **30** comprises elongated rods **32** extending through rings **33** (FIG. 6), having a diameter greater than that of balls **20**. Rods **32** are welded or brazed to circumferentially spaced points on the coaxial rings **33**. Thus, balls **20** are "caged" in track **30**. An abutment or stop **34** at the lower end of track **30** retains the balls in position for removal through withdrawal space **31**.

Referring to the wiring diagram of FIG. 12, the apparatus is energized from terminals **73** connected to a suitable A.C. source, and a convenience outlet **74** may be connected across these terminals. Before insertion of a coin, the arm **75** of a micro switch operated by a stepper **80**

is engaged with a contact 76, connecting a green lamp 47A across conductors 77. Lamp 47A bears the legend "Deposit Quarters Only."

The apparatus may be set to operate with any predetermined number of coins, for example four (4) coins. As each coin 100 is dropped into a coin chute 44 of device 35, it momentarily closes a switch 48. Each closure of switch 48 impulses the coil 86 of a coin meter 85 and the stepping coil 91 of an accumulator 90 having a re-set coil 92. After a pre-set number of coin engendered impulses, accumulator 90 closes switch 81 to energize re-set coil 82 of stepper 80. Stepper 80 is re-set to zero to close switch 93 to energize re-set coil 92 of the accumulator (on closure of a switch 70), and to transfer switch arm 75 to engage contact 78.

Motor 23 and red lamp 47B are thus energized. Conveyor 25 starts, to lift the balls and deposit them onto ramp 65. Each time a ball trips a switch 70, a coil 96 of a ball count meter 95 is impulsed and a stepper counter coil 83 is impulsed. When the predetermined number of balls has thus been "counted," stepper 80 transfers switch arm 25 to engage contact 76, deenergizing motor 23 and red lamp 47B, and lighting green lamp 47A.

The described apparatus comprises a simple and inexpensive arrangement for delivering a pre-set number of balls 20 to space 31 each time a coin is inserted in device 35.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. Coin-controlled apparatus operable, responsive to insertion of a coin, to deliver a pre-set number of golf balls to a patron of a driving range or the like, said apparatus comprising, in combination, a relatively elongated ramp; an upwardly extending endless conveyor at the lower end of said ramp; buckets on said conveyor arranged to lift individual balls from said ramp; a driving motor for said conveyor having an energizing circuit; means operable responsive to insertion of a coin in the apparatus, to close said energizing circuit; gravity feed delivery means receiving balls from the upper end of said conveyor and extending to a ball delivery station longitudinally adjacent the upper end of said ramp; and counting means operable by balls travelling along said delivery means and effective to open the energizing circuit of said motor after a pre-set number of operations by such balls.

2. Coin-controlled apparatus operable, responsive to insertion of a coin, to deliver a pre-set number of golf balls to a patron of a driving range or the like, said apparatus comprising, in combination, a relatively elongated ramp extending longitudinally of the apparatus; an upwardly extending endless conveyor at the lower end of said ramp; buckets on said conveyor arranged to lift individual balls from said ramp; a driving motor for said conveyor having an energizing circuit; means operable, responsive to insertion of a coin in the apparatus, to close said energizing circuit; gravity feed delivery means receiving balls from the upper end of said conveyor and extending transversely and longitudinally of the apparatus to a ball delivery station longitudinally adjacent the upper end of said ramp; and counting means operable by balls travelling along said delivery means and effective to open the energizing circuit of said motor after a pre-set number of operations by such balls.

3. Coin-controlled apparatus operable, responsive to insertion of a coin, to deliver a pre-set number of golf balls to a patron of a driving range or the like, said apparatus comprising, in combination, a relatively elongated housing including opposite side walls interconnected by a top wall; a relatively elongated ramp within said housing extending downwardly toward the rear end thereof; a ball charging opening in one side wall at the upper end of said ramp; an upwardly extending endless conveyor at the lower end of said ramp within said housing; buckets on said conveyor arranged to lift individual balls from said ramp; a driving motor for said conveyor having an energizing circuit; means operable, responsive to insertion of a coin in the apparatus, to close said energizing circuit; gravity feed delivery means receiving balls from the upper end of said conveyor and extending to a ball delivery station, said delivery means including a trough extending laterally of said housing, adjacent the descending run of said conveyor, to an opening in said one side wall, and a track extending downwardly and forwardly along the outer surface of said one side wall to said delivery station; and counting means operable by balls travelling along said delivery means and effective to open the energizing circuit of said motor after a pre-set number of operations by such balls.

4. Golf ball delivery apparatus as claimed in claim 3 in which said buckets comprise outwardly projecting forked carriers, and the lower end of said ramp has finger means extending into the fork of said carriers.

5. Golf ball delivery apparatus as claimed in claim 3 in which said buckets comprise outwardly projecting forked carriers each mounted on a channel shape shoe secured to said conveyor; and guide rail means adjacent the ascending run of said carrier embraced by said shoes.

6. Golf ball delivery apparatus as claimed in claim 5 in which successive carriers are offset laterally in opposed directions from the associated shoes to provide two laterally spaced series of carriers; and lower end of said ramp has a pair of laterally spaced fingers each extending into the forks of a different series of carriers.

7. Golf ball delivery apparatus as claimed in claim 6 including a second ramp at the upper end of said conveyor extending rearwardly and downwardly into said trough, and having a pair of laterally spaced fingers each extending into the forks of a different series of carriers.

8. Golf ball delivery apparatus as claimed in claim 7 in which said counting means includes a pair of laterally spaced switches disposed above said second ramp and having operators tripped by balls passing down said second ramp.

9. Golf ball delivery apparatus as claimed in claim 3 in which said track comprises an elongated tubular cage.

10. Golf ball delivery apparatus as claimed in claim 3 in which said track comprises an elongated tubular cage including a plurality of elongated rods secured to circumferential spaced portions of a plurality of longitudinally spaced rings; and an abutment at the lower end of said track.

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