

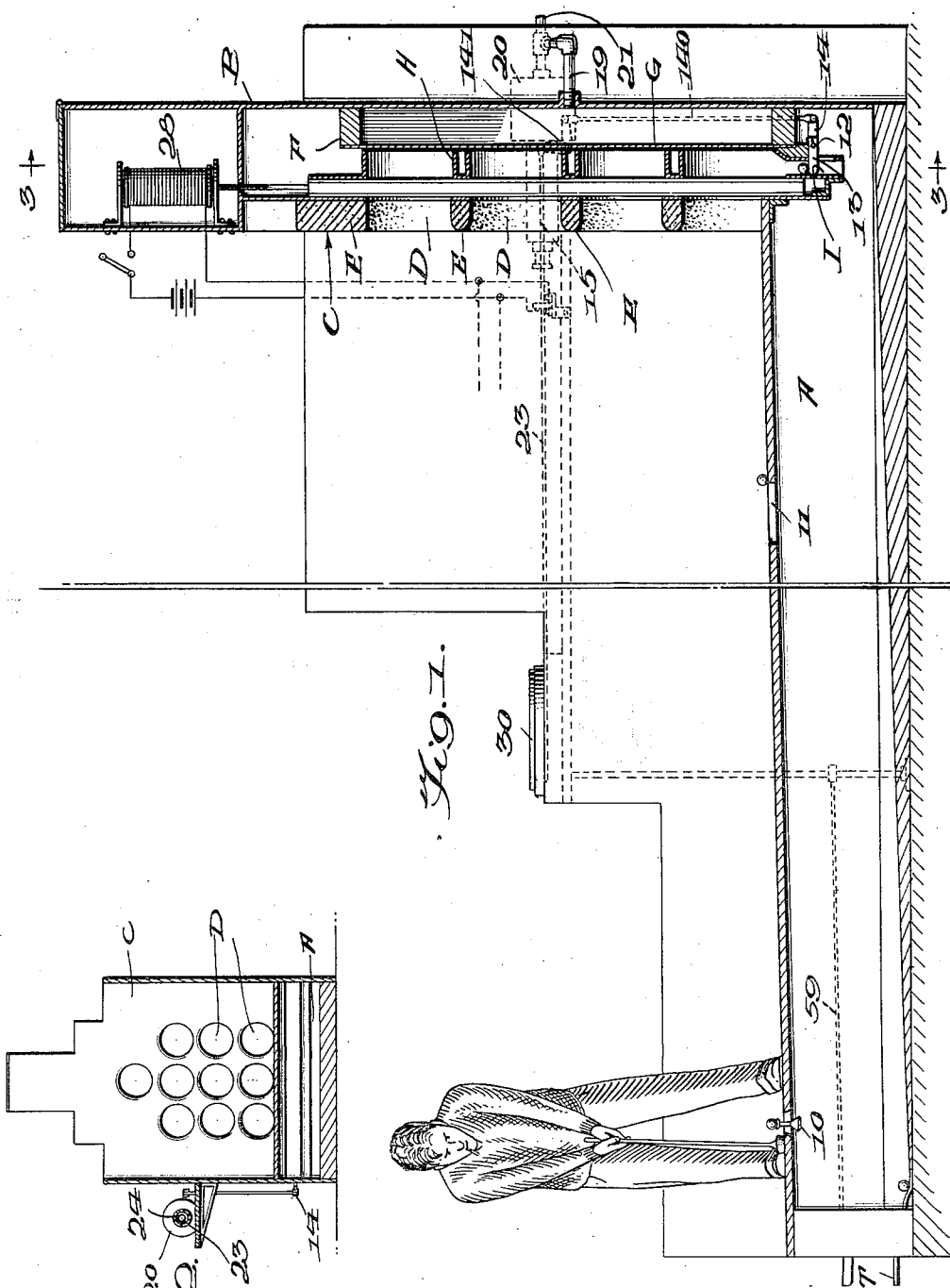
Sept. 15, 1936.

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2,054,079

PRACTICE DEVICE FOR GOLF AND OTHER GAMES

Original Filed April 25, 1933 6 Sheets-Sheet 1



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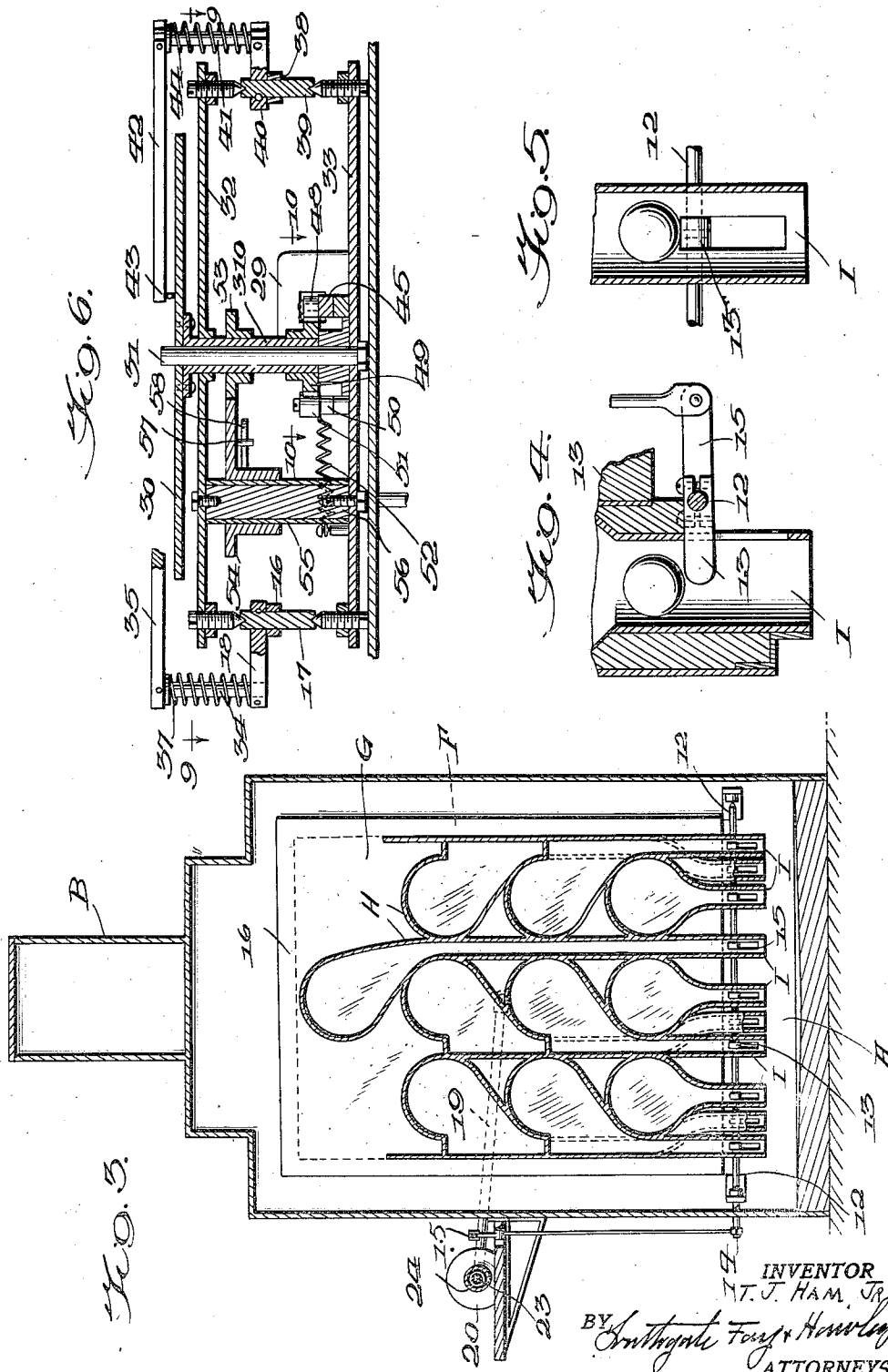
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PRACTICE DEVICE FOR GOLF AND OTHER GAMES

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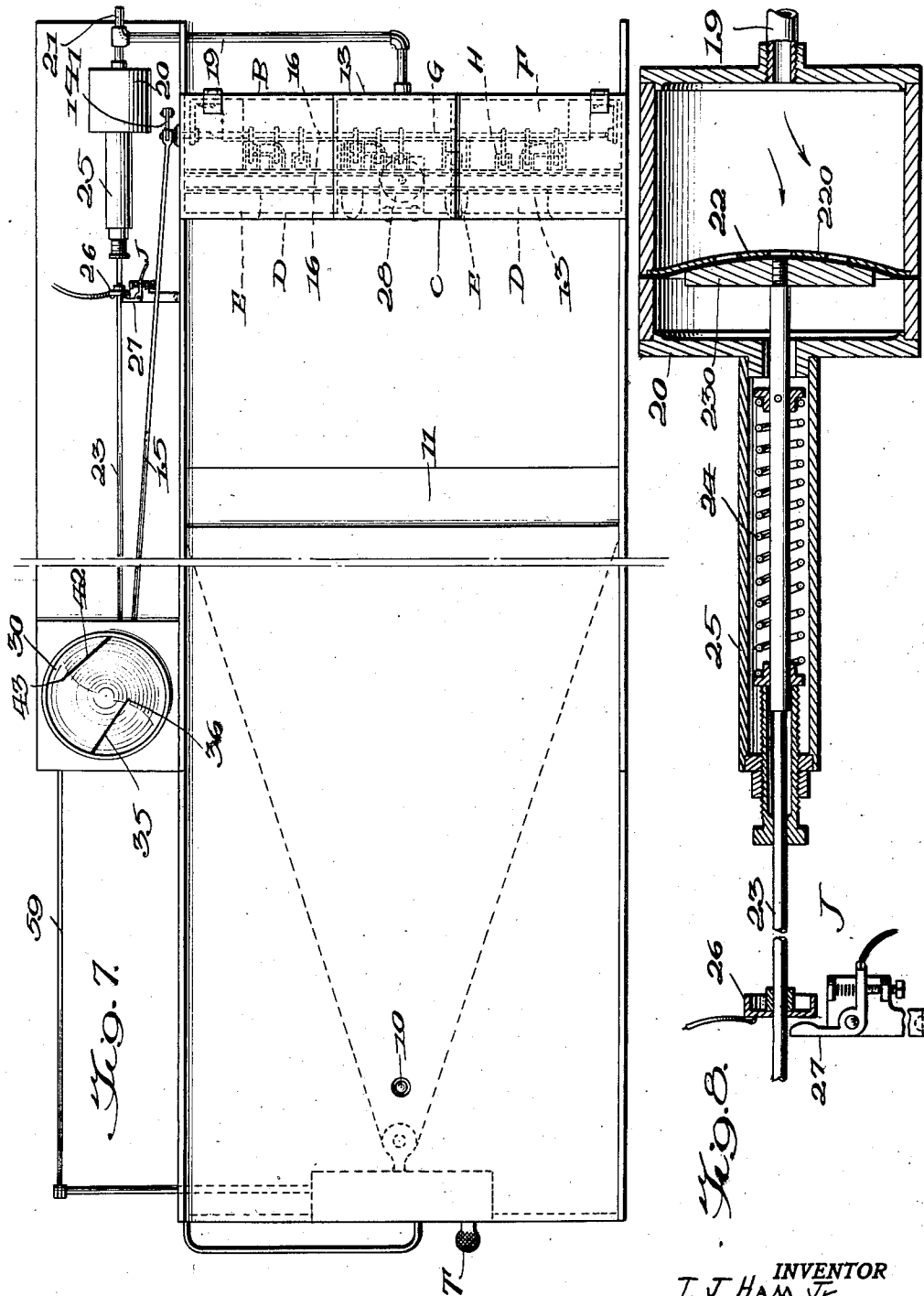
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PRACTICE DEVICE FOR GOLF AND OTHER GAMES

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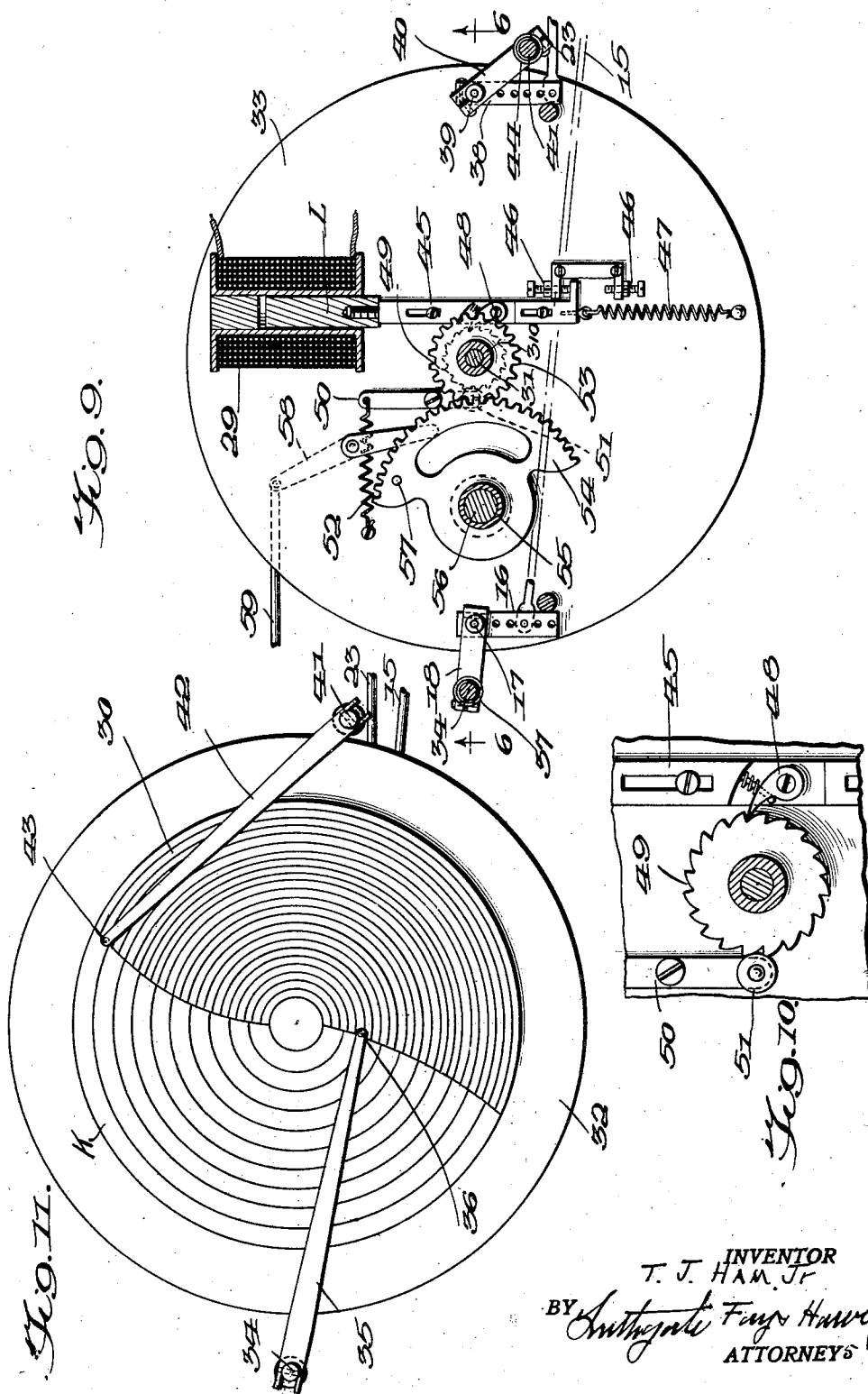
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PRACTICE DEVICE FOR GOLF AND OTHER GAMES

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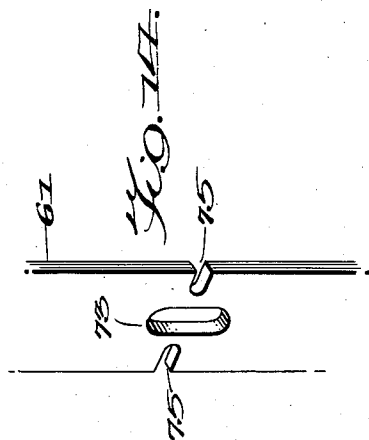
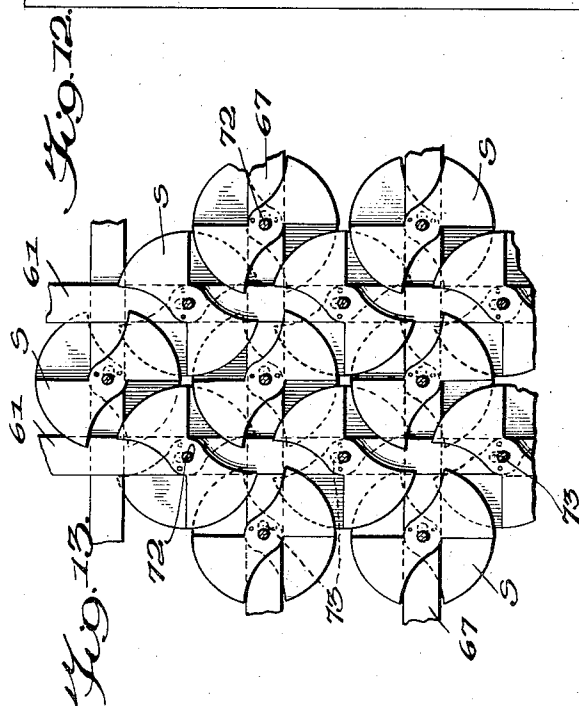
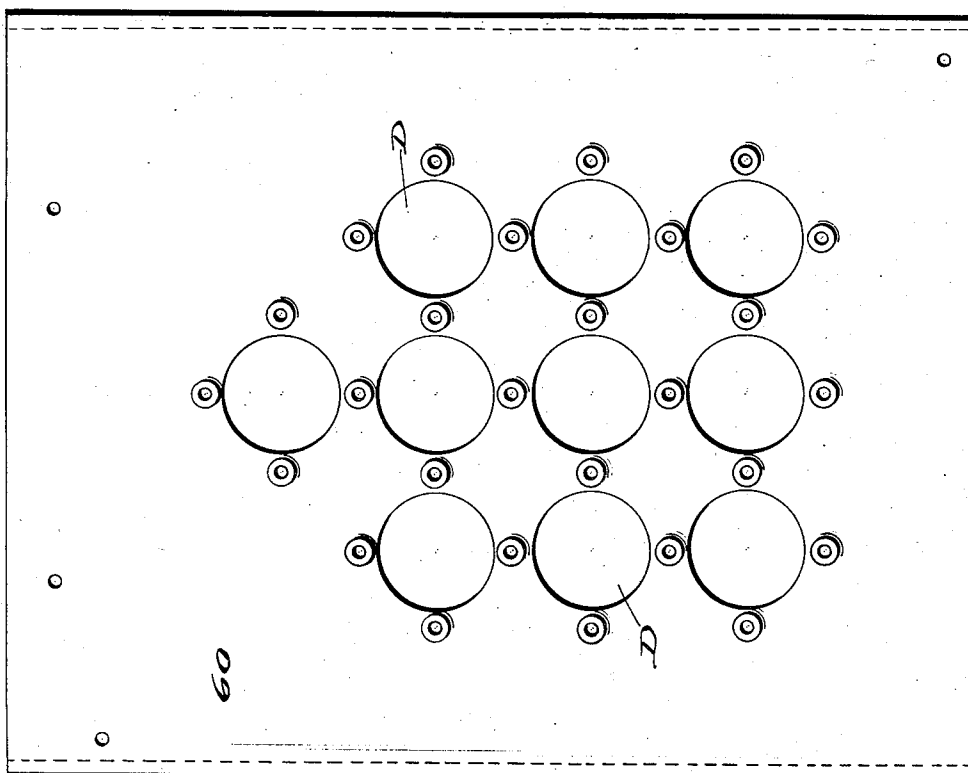
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PRACTICE DEVICE FOR GOLF AND OTHER GAMES

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PRACTICE DEVICE FOR GOLF AND OTHER GAMES

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UNITED STATES PATENT OFFICE

2,054,079

PRACTICE DEVICE FOR GOLF AND
OTHER GAMES

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20 Claims. (Cl. 273—32)

The object of this invention is to provide a new and improved golf practice device, by which the direction and force of a driven golf ball may be indicated and recorded.

To this end, the device comprises an apertured target provided with novel automatically operating shutter mechanism for preventing the ball bounding back through the target.

Troughs or chutes are connected to the target apertures, and an indicating mechanism is provided to show through which aperture the ball has passed.

Pneumatically operating mechanism is also provided for indicating the force or velocity of the ball after it passes through one of said apertures.

The invention further consists in certain improved details and combinations hereinafter described and particularized in the appended claims.

One preferred form of the device is illustrated in the accompanying six sheets of drawings, in which:—

Fig. 1 is a sectional elevation of the apparatus;

Fig. 2 is a front view on a reduced scale of the face of the target;

Fig. 3 is a section on the line 3—3 of Fig. 1 illustrating the chute or trough mechanism;

Figs. 4 and 5 are cross sectional elevations on an enlarged scale illustrating the mechanism at the ends of the troughs;

Fig. 6 is an enlarged sectional elevation of the recording and indicating mechanism;

Fig. 7 is a plan view of the device;

Fig. 8 is a sectional elevation on an enlarged scale illustrating part of the pneumatically operated apparatus for indicating and recording the force or velocity of the ball;

Fig. 9 is a cross sectional plan view illustrating the mechanism or gearing for operating the disc or turntable on which the recording sheet is mounted;

Fig. 10 is a detail view on an enlarged scale of part of the gearing shown in Fig. 9;

Fig. 11 is a plan view of the disc and recording sheet;

Fig. 12 is a front elevation of one of the plates between which the automatically operating shutter mechanism is arranged;

Fig. 13 is a front elevation showing some of the shutters moved to position to close the target apertures;

Fig. 14 is a detail of one of the operating bars for the shutters;

Fig. 15 is a sectional elevation illustrating the

way the shutter mechanism is arranged between the two plates;

Fig. 16 is a front elevation of the complete shutter mechanism; and

Fig. 17 is an enlarged elevation of a pair of shutters as they are moved to close a target aperture.

The invention will be best understood by a detail description of the drawings.

Referring to the drawings and in detail A designates a hollow base or box on top of which the player stands. The same is slightly inclined and is provided with a tee 10 for holding the ball and is provided with a slot 11 through which a ball drops if it is not driven through one of the apertures in the target and has bounded back therefrom.

I contemplate arranging a coin operating mechanism at the end of the base so that by depositing a coin, a treadle T can be operated to release the golf balls.

B is an upright frame, the front face C of which forms a target which is provided with a number of apertures D, as shown in Figure 2. These apertures are arranged so that the height and lateral position of the golf shot may be indicated. Padding E is arranged around the apertures to prevent a violent return of a ball not driven into an aperture.

A rectangular frame F is secured to the back of the upright frame B and the same is covered or faced with a flexible diaphragm G against which a ball driven through the apertures D impacts. Curved partitions H are arranged in front of the diaphragm G as shown in Fig. 3, so that chute or trough I is formed back of each aperture, whereby a ball driven into any particular aperture drops down through its particular chute.

A shaft 12 is journaled in the frame B and the same is provided with levers 13 extending through slots in the bottom of the chutes whereby a ball dropping down in a particular chute will operate the particular lever 13 in said chute.

The levers are set in different angular positions, so that the shaft 12 will be oscillated by the balls different distances, corresponding to the angular positions of the levers.

The shaft 12 is provided with an arm 14 which connects by link 140 and bell crank 141 and link 15 to an arm 16 secured on a shaft 17 carrying an arm 18 arranged to operate an indicator on a recording sheet, as hereinafter described.

It will be seen that the space in back of the flexible diaphragm G forms a pneumatic chamber. This chamber is connected by piping 19 to

a cylinder 20, as shown in detail in Figs. 7 and 8. The piping is provided with a nipple 21 so that the air inside of the pneumatic chamber and cylinder can be kept under pressure above atmospheric pressure.

The cylinder 20 is provided with a flexible diaphragm 22 which normally rests against a concave or dish-shaped perforated plate 220. The diaphragm 22 is engaged by a plate or disc 230, the right hand face of which is convexed, as illustrated in Fig. 8. A rod 23 is connected to and extends from the plate 230 to operate a recording arm or marker 43, as hereinafter described. It will be noted that as the right hand position of the plate and rod 23 is thus normally determined, the initial or zero position of the recording arm or marker 43 will be fixed. The diaphragm 22 is pressed to the right, as shown in Fig. 8, by a spring 24 housed in a tube 25 connected to the cylinder 20. As the cylinder 20 is relatively small with relation to the air space or pneumatic chamber back of the flexible diaphragm G, it will be noted that a very small movement or pressure against diaphragm G will impart a considerable pressure on and movement to the diaphragm 22 and rod 23 and that this movement will measure the velocity or impact of the ball as it passes through one of the target apertures and strikes the diaphragm G.

An electric switch J is arranged as shown in Fig. 8 so as to be closed as the diaphragm 22 is momentarily snapped to the left. This switch J consists of a tappet 26 arranged on the rod 23 and set in position to strike a bell crank lever 27, when moved to the left.

Wires extending from a suitable source of electricity are connected to the tappet 26 and to the lever 27. These wires are connected to a solenoid 28, which operates the shutter mechanism hereinafter described, and are also connected by a shunt circuit to a solenoid 29, which turns the disc or turntable 30, on which the recording sheet K is placed.

The gearing for operating the recording mechanism is shown in detail in Figs. 6 and 9 to 11 inclusive. The turntable 30 is secured on a shaft 31 carrying a bushing 310 journaled in plates 32 and 33 forming the supporting parts as shown in Fig. 6. The shaft 17 previously referred to is arranged on pivots in said plates or discs 32 and 33. The arm 18 previously referred to carries a stud 34, to the end of which is pivoted a recording arm 35 having a pencil or marker 36 at its end, a spring 37 being arranged to press the pencil lightly on the recording sheet K placed on the turntable 30.

The rod 23 extending from the pneumatic cylinder 20 is connected to an arm 38 secured on a shaft 39 carrying an arm 40 which carries a stud 41 having a recording arm 42 pivoted thereto. The recording arm carries a pencil or marker 43 bearing on the sheet K placed on turntable 30, a spring 44 holding pencil 43 lightly in contact with the recording sheet K. These parts 38 to 44 are similar to the construction of the parts 16 to 18 and 34 to 37, previously described.

As movement of the rod 23 to the left is determined by the force or inertia of the golf ball, the markings on the sheet K from the pencil or marker 43 will be measured markings indicating the force of the golf ball.

The turntable 30 is rotated or ratcheted a slight distance every time after a golf ball passes through the target.

As a golf ball passes through the target, the

switch J is closed as previously described and the solenoid 29 is energized. The armature L of this solenoid is arranged to move horizontally and a slide 45 is connected thereto as shown in Fig. 9, the movement of the slider being determined by adjustable stops 46—46. A spring 47 is connected normally to pull the armature L out of the solenoid. The slider 45 carries a spring pressed pawl 48 which is set to engage a ratchet wheel 49 secured on the bushing 310. The stops 46—46 are adjusted so that the pawl will move clear of the ratchet wheel when the solenoid 29 is deenergized. A lever 50 is pivoted in position so that a roller 51 on its end will engage the ratchet wheel, the roller being held in engagement therewith by a spring 52, the roller thus holding the ratchet wheel in its adjusted position. A gear 53 is secured on the bushing 310 and is engaged by a segmental gear 54 which is arranged on a bushing 55 turning on a shaft 56 secured between the plates 32 and 33. A stud or pin 57 is secured to the segmental gear 54. A lever 58 is pivoted in position to strike on the pin 57 and connections 59 extend from the lever 58 to the operating treadle T, so that when the treadle T is depressed to release the balls for another practice round, the turntable 30 is set to initial position and ready for a new record sheet.

The shutter mechanism which catches or traps the balls back of the target face C will now be described and to follow this description reference should be had to the fifth and sixth sheets of the drawings, Figures 12 to 17, inclusive.

Two upright plates 60—60 are secured in position back of the apertured target C. A framework consisting of four upright bars 61—61 tied together by upper and lower cross pieces 62—62, is hung on levers or links 63—63 pivoted between the plates by links 64—64. A rod or drawbar 65 is connected to the armature of the solenoid 28 and has operating connections to the ends of the levers 63, which operating connections may comprise pins extending into notches in the ends of the levers 63—63. A spring 66 is arranged to pull the bar 65 normally downwards.

A series of horizontal bars 67—67 is connected together by upright pieces 68—68.

A bell crank lever 69 is pivoted to the upper left hand part of the uprights, Fig. 16, and the horizontal end of the same is forked or slotted to engage a pin or connection from the bar 62. The vertical lower end of this lever 69 is also forked or slotted to engage a pin on the left hand upright 68. A bell crank lever 71 is pivoted in the lower right hand corner of the structure, as illustrated in Fig. 16. The horizontal end of this lever 71 is forked and engages a pin on the lower cross piece 62 and the upper end of the same is forked and engages a pin on the right hand upright 68.

Shutters S—S are loosely arranged on shafts or axles 72 secured between the plates 60—60. The upright bars 61—61 are slotted at 73, as shown in Fig. 14, so that the axles 72 are passed freely through said bars 61. The horizontal bars 67 are similarly slotted, as shown in reduced scale in Figure 16.

The shutters are provided with studs 74, which fit in notches 75—75 cut in the cross bars 67 and upright bars 61. In operation when the solenoid 28 is energized, the upright bars 61—61 will be moved upwardly and simultaneously, and the horizontal bars 67—67 will be moved sideways by the link work and connections previously described. While these movements are small, they will be

enough to turn each shutter approximately ninety degrees.

The shutters are shaped something like the profile of an hour glass. The shutters operated by the upright bars 61—61 normally stand vertically, and the shutters operated by the horizontal bars 67—67 normally stand horizontally, as illustrated in Fig. 16, so that the target apertures are normally open.

When the solenoid 28 is energized the draw bar 65 is pulled up very forcibly and very quickly and the shutters turned about fifty degrees to momentarily close the apertures D in the target C. The shutters S—S and their operating connections are made out of very light metal so that this action takes place very easily and smoothly.

When the solenoid 28 is deenergized the spring 62 restores the shutters to normal position.

Thus an improved practice device is provided.

In operation, when the player drives a ball through an aperture D in the target C, the impact of the ball on the flexible diaphragm G closes the switch J so that the electric current will energize the solenoids 28 and 29, whereby the recording disc and sheet will be turned a notch and the energy with which the ball strikes the diaphragm G will be recorded, and the shutters S—S momentarily closed to prevent the ball from bounding back through the target C.

After the ball has impacted with the diaphragm G, it drops through its particular chute or trough I, and through the connections previously described operate the recording arm 35 and pencil 36 to record on the sheet through which aperture D the ball has passed. Thus a record is instantly made of the direction and force of the driven golf ball.

While the device herein shown and described has been referred to as a golf practice device, by proper proportioning the same can be well adapted for use as a practice device for tennis or as a practice device for throwing base balls, and such use is within the scope of my invention, as expressed in the claims.

The details and arrangement herein shown and described may be greatly varied by a skilled mechanic without departing from the scope of my invention as expressed in the following claims.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. A practice device for golf and other games, comprising a target having a plurality of apertures therethrough, and shutter mechanism comprising a plurality of shutters interconnected for simultaneous operation for preventing the ball bounding back through any of the apertures in the target.

2. A practice device for golf and other games, comprising an apertured target, shutters for preventing the return of the ball through the target, mechanism for closing the shutters, and a device for receiving the impact of the ball connected to control the operation of said mechanism.

3. A practice device for golf and other games, comprising an apertured target, and shutter mechanism for preventing the ball bounding back through the target consisting of normally, horizontally and vertically arranged shutters, and means for turning the shutters momentarily to close said apertures.

4. A practice device for golf and other games, comprising an apertured target, shutters for preventing the return of the ball through the target, mechanism for closing the shutters, a diaphragm

for receiving the impact of the ball, and connections and operating means extending from the diaphragm connected to control the operation of the shutter closing mechanism.

5. A practice device for golf and other games, comprising an apertured target, shutter mechanism for preventing the ball bounding back through the target consisting of pivoted shutters horizontally and vertically arranged, and means for turning the shutters momentarily to close said apertures.

6. A practice device for golf and other games, comprising an apertured target, shutter mechanism for preventing the ball bounding back through the target consisting of horizontally and vertically arranged pivoted shutters, horizontally and vertically arranged bars connected to said shutters, and means for moving said bars momentarily to close the shutters.

7. A practice device for golf and other games, comprising an apertured target, shutter mechanism comprising a plurality of shutters interconnected for simultaneous operation, for preventing the ball bounding back through any of the apertures in the target, chutes or troughs connected to said apertures, mechanism operated by the balls dropping down said chutes, and a recording mechanism connected to indicate through which aperture the ball has passed.

8. A practice device for golf and other games, comprising an apertured target, shutter mechanism comprising a plurality of shutters interconnected for simultaneous operation, for preventing the ball bounding back through the target, chutes or troughs connected to said apertures, mechanism operated by the balls dropping down said chutes, and a recording mechanism connected to indicate through which aperture the ball has passed, and means to indicate the force with which the ball strikes the target.

9. A practice device for golf and other games, comprising an air chamber having a flexible diaphragm against which the balls are driven, a pneumatic cylinder connected to the air chamber, pneumatically actuated means within said cylinder, a device for indicating the force with which the ball strikes the diaphragm, and connections from said means for operating said device.

10. A practice device for golf and other games, comprising an air chamber having a flexible diaphragm against which the balls are driven, a cylinder pneumatically connected to said air chamber, a switch operated by connections extending from said cylinder, electric connections from said switch to a solenoid or magnet, and a recording device operated by said solenoid or magnet.

11. A practice device for golf and other games, comprising an apertured target, a shutter mechanism for preventing the ball bounding back from the target, an air chamber having a flexible diaphragm against which the balls are driven, an electric switch, a pneumatic connection from said air chamber connected to operate said switch, and a magnet or solenoid connected to operate the shutter mechanism.

12. A practice device for golf and other games, comprising an apertured target, troughs or chutes extending from said apertures, a recording device for indicating through which aperture the ball has passed, and connections thereto from said chutes, a flexible diaphragm against which the balls are driven, and pneumatic connections therefrom for indicating on the same recording device the force or inertia of the ball.

13. A practice device for golf and other games,

comprising an apertured target, shutter mechanism for preventing the ball bounding back through the target, troughs or chutes extending from said apertures, a recording device for indicating through which aperture the ball has passed, connections thereto from said chutes, a flexible diaphragm against which the balls are driven, and pneumatic connections therefrom for indicating on the same recording device the force or inertia of the ball.

14. A practice device for golf and other games, comprising an apertured target, chutes or troughs extending from said apertures, a recording mechanism, connections from said chutes whereby a record will be made on said recording device to indicate through which aperture the ball was driven, a shutter mechanism for preventing the ball bounding back through the target, and an air chamber having a flexible diaphragm for receiving the impact of the ball, and pneumatic connections extending therefrom to said recording device for indicating the force or inertia of the driven balls on the same recording device.

15. A practice device for golf and other games, comprising an apertured target, shutter mechanism for preventing balls bounding back through the target, chutes extending from the apertures, a recording device, connections from the chutes to the recording device to indicate direction of flight of a driven ball, an air chamber having a flexible diaphragm for receiving the impact of the ball, pneumatic connections therefrom to the recording device to indicate velocity of a driven ball, an electric switch operated by said pneumatic mechanism, and magnets or solenoids connected to said switch for operating said shutter mechanisms and said recording device whereby a record will automatically be made of the direction and force with which the ball is driven.

16. A practice device for golf and other games, comprising an apertured target, a flexible diaphragm against which the balls passing through the target are driven, a recording device, and connections extending from said apertures and from said diaphragm to the recording device for indicating and recording respectively, both the direction and the force with which the ball is driven.

17. A practice device for golf and other games,

comprising an apertured target, a shutter slidable across an aperture in the target for preventing the balls rebounding through the target, a flexible diaphragm against which the balls passing through the target are driven, a recording device, and connections extending from said apertures and from said diaphragm to the recording device for indicating and recording respectively, both the direction and the force with which the ball is driven.

18. A practice device for golf and other games comprising an apertured target, a shutter mechanism including a plurality of shutter members cooperating, iris fashion, to close the apertures in the target upon passage of a ball through any aperture, thereby preventing the ball from rebounding through the target, a flexible diaphragm against which the ball passing through any aperture will be driven, a recording device and connections extending from said apertures and from said diaphragm to said device for indicating and recording at the device, respectively, both the direction and force with which the ball is driven.

19. A practice device for golf and other games comprising an apertured target, a shutter mechanism including a plurality of shutter members cooperating, iris fashion, to close the apertures in the target upon passage of a ball through any aperture, thereby preventing the ball from rebounding through the target, a flexible diaphragm against which the ball passing through any aperture will be driven, a recording device and connections extending from said apertures to said device for indicating and recording the direction in which the ball is driven.

20. A practice device for golf and other games comprising an apertured target, a shutter mechanism including a plurality of shutter members cooperating, iris fashion, to close the apertures in the target upon passage of a ball through any aperture, thereby preventing the ball from rebounding through the target, a flexible diaphragm against which the ball passing through any aperture will be driven, a recording device and connections extending from said diaphragm to said device for indicating and recording the velocity with which the ball is driven.

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