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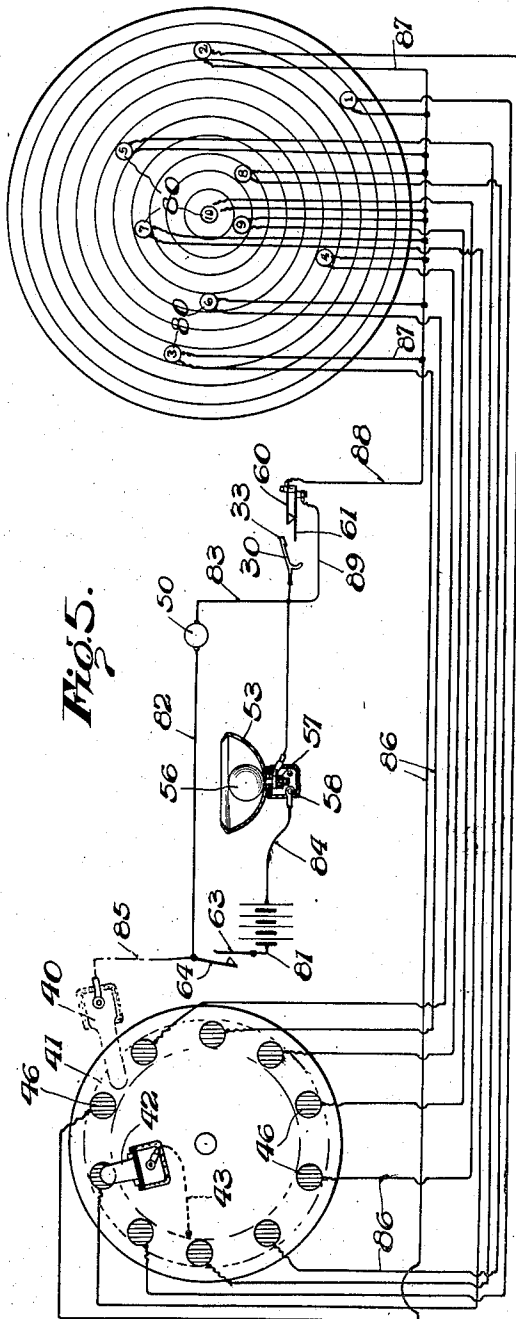
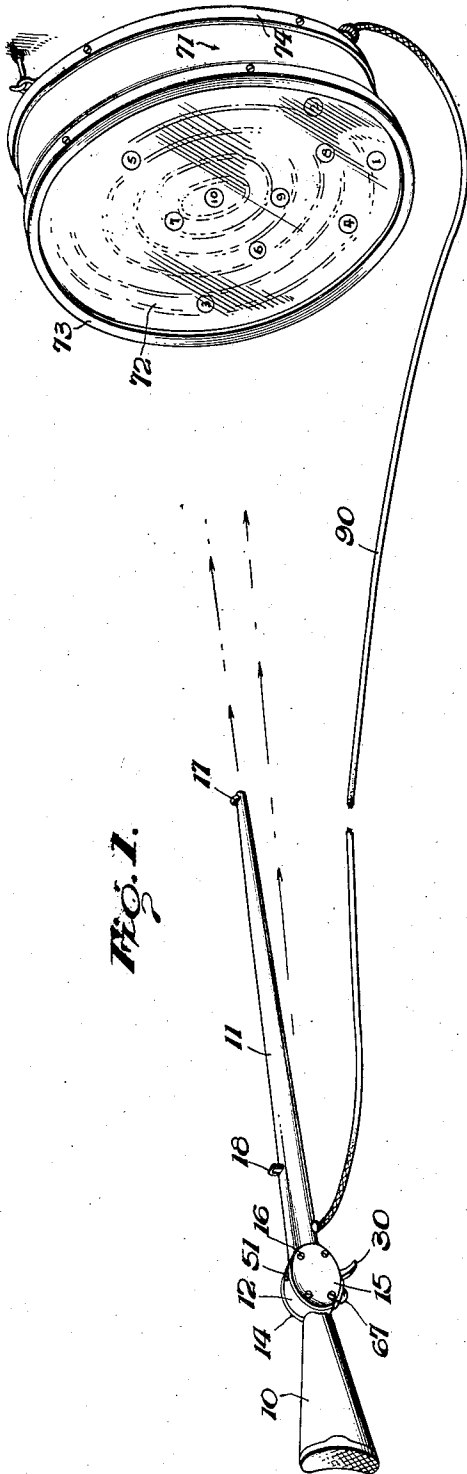
W. L. DYSART ET AL

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TARGET APPARATUS

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2 Sheets-Sheet 1



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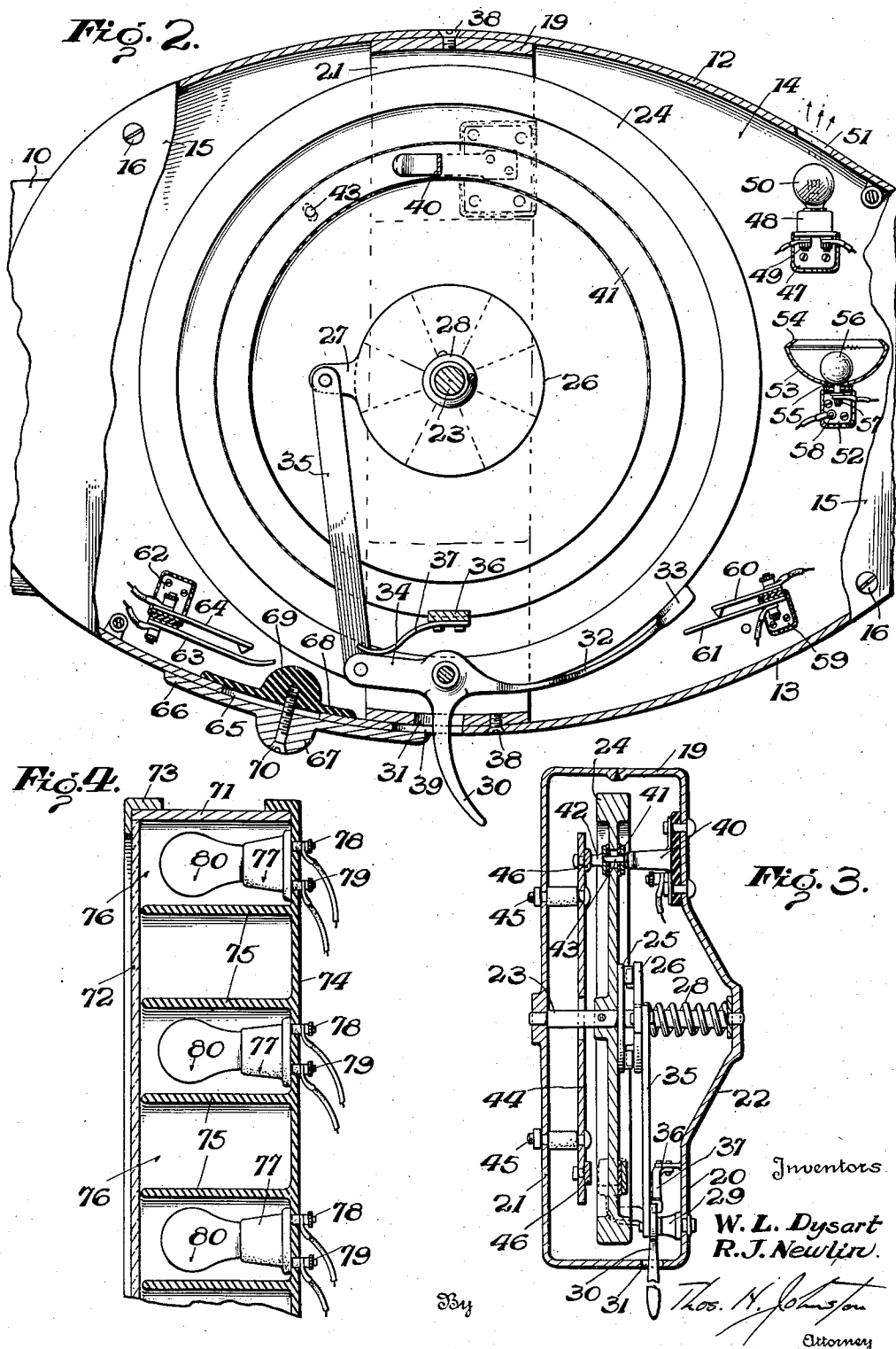
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,140,671

TARGET APPARATUS

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9 Claims. (Cl. 273—138)

This invention relates to an improved target apparatus particularly intended for use as an amusement device.

An object of the invention is to provide a target apparatus which, while being confined to relative simplicity, structurally, will nevertheless require some degree of skill for its operation although, however, the factor of skill alone will not wholly determine results, so that the operation of the apparatus will possess a lasting interest as well as prove diverting.

A further object of the invention is to provide an apparatus wherein the aiming device employed will be constructed to simulate a firearm, such as a rifle, and wherein the rifle will embody a rotor operable by a trigger for separately energizing at random a number of scattered lamps on the target for indicating the score of the shot.

Still another object of the invention is to provide an apparatus wherein the rifle must be aimed in a level position in order that any one of the lamps of the target may be energized, thus requiring some skill on the part of the operator in aiming, and wherein a pilot light on the rifle will, when the rifle is aimed level, be energized for indicating that the trigger may then be pulled.

A further object of the invention is to provide an apparatus wherein the frame of the firearm employed will embody a housing, and wherein by removing the side plates of said housing, all of the essential mechanism employed on the firearm will be exposed and rendered accessible.

Another object of the invention, in connection with the foregoing, is to provide an apparatus wherein the rotor employed, along with the trigger for actuating the same, will be mounted as a unit within the housing of the firearm, and wherein, when the removable side plates of said housing are displaced, said unit may be bodily removed from the housing.

And a still further object of the invention is to provide an apparatus well adapted for home use as well as adapted for more elaborate installation at places of amusement.

Other and incidental objects of the invention will appear during the course of the following description and in the accompanying drawings, wherein we have illustrated what we at present believe to be a preferred embodiment of our invention from among various other forms, arrangements, combinations and constructions, of which the invention is capable within the spirit and scope thereof.

Figure 1 is a perspective view of our improved apparatus.

Figure 2 is an enlarged fragmentary elevation of the housing of the firearm employed, one of the removable side plates of the housing being broken away and parts being shown in section.

Figure 3 is an enlarged detail section through the rotor unit employed.

Figure 4 is a detail section through the target.

Figure 5 is a diagrammatic view of the circuits employed.

In carrying the invention into effect, we employ an aiming device which, as seen in Figure 1 of the drawings, is preferably constructed to simulate a firearm. In the present instance, we have shown a rifle embodying a stock 10 and barrel 11, and rigidly connecting the two is a more or less ovate housing having, as better seen in Figure 2, top and bottom walls 12 and 13 extending between the stock and barrel. Normally closing the housing are removable side plates 14 and 15, and detachably securing said plates in position are tie bolts 16 extending between the plates near the corners thereof. Mounted on the barrel are approved front and rear sights 17 and 18 respectively.

Removably fitting snugly between the top and bottom walls 12 and 13 of the rifle housing and enclosed by the side plates 14 and 15 is a rotor unit, shown in detail in Figure 3 of the drawings. This unit embodies a rectangular frame 19 having sides 20 and 21, and formed in the side 20 of the frame is a bowed portion 22. Preferably, the frame is formed of a suitable resilient metal strip bent to the desired shape and welded or otherwise secured together at its ends.

Journaled between the sides 20 and 21 of the frame 19 at the bowed portion 22 is a shaft 23 and fixed to said shaft is a rotor 24 preferably in the form of a weighted fly wheel so that when the rotor is set into motion, it will continue to revolve of its own momentum for a short interval of time. Formed on or otherwise secure to the rotor at one side thereof are ratchet teeth 25 and journaled on the shaft to coact with said teeth is a ratchet disk 26 having, as best seen in Figure 2, a short lever 27. Interposed between said disk and the bowed portion 22 of the side 20 of the frame 19 is a spring 28 surrounding the shaft and urging the disk to coact with the ratchet teeth 25.

Fixed to the lower end portion of the side 20 of the frame 19 is a bracket 29 upon which is pivoted a trigger 30 freely received through a slot 31 in the lower end of the frame and extend-

ing forwardly from the upper end of the trigger is a brake arm 32 offset to project beneath the rotor 24 and provided with a preferably composition shoe 33 to coact with the rotor at its periphery. Extending rearwardly from the upper end of the trigger 30 is a lever 34 and pivotally connecting said lever with the lever 27 of the ratchet disk 26 is a link 35. Fixed to the side 20 of the frame 19 above the bracket 29 is a lug 36 and fixed to said lug is a spring 37 bearing against the free end of the lever 34 at its upper edge.

As will now be seen, when the trigger is pulled rearwardly, the brake shoe 33 will be swung away from the rotor 24 while the link 35 will be moved upwardly for rotating the disk 26 and, as will be understood, turning the rotor, and by pulling sharply on the trigger, the rotor may, as will be perceived, be caused to spin. Upon the release of the trigger, the spring 37 will return the trigger and urge the brake shoe 33 into frictional engagement with the rotor so that the spinning of the rotor will be soon checked and the rotor again brought to rest. Engaged with the ends of the frame 19, as seen in Figure 2, are screws 38 extending through the top and bottom walls 12 and 13 of the rifle housing for detachably securing the rotor unit in position and formed in the bottom wall 13 of said housing is a slot 39 opening through one edge of said wall so that the unit may be slidably removed from the housing.

Fixed to the upper end portion of the side 20 of the frame 19 is a spring contact brush 40 suitably insulated from the frame and appropriately fixed to the adjacent side of the rotor 24 but suitably insulated therefrom is a contact ring 41 yieldably engaged by said brush. Mounted upon the rotor at its opposite side is a spring contact brush 42, suitably insulated from the rotor, and extending freely through a suitable opening in the rotor is a pin 43 electrically connecting said brush with the ring 41. Mounted in spaced parallel relation to the rotor is a disk 44 of suitable insulating material, and detachably connecting said disk with the side 21 of the frame 19 are spaced bolts 45, the disk being apertured centrally to freely accommodate the shaft 23 therethrough. Mounted upon said disk is a circular series of spaced contacts 46 engageable by the free end of the brush 42. Thus, when the rotor 24 is turned, the brush 42 will successively ride over said contacts.

Suitably mounted upon the side plate 14 of the rifle housing is an angle bracket 47 insulated from said plate and fixed to said bracket is a lamp socket 48 having spaced terminals 49. Removably engaged in the socket is a pilot lamp 50 and formed in the top wall 12 of the housing above said lamp is an opening 51 so that when the lamp is energized, the light will shine through said opening.

Appropriately fixed to the side plate 14 of the rifle housing below the bracket 47 is a metal angle bracket 52 which is suitably insulated from said plate and welded or otherwise fixed to said bracket is a substantially hemispherical metal bowl 53 provided at its upper margin with an in-turned flange 54. Formed in the bowl at the bottom thereof is an opening 55 and freely movable in the bowl is a metal contact ball 56 which will be retained in the bowl by the flange 54. If desired, the bowl may be suitably covered to prevent displacement of the ball. Extending through the bracket 52 but insulated therefrom is a terminal 57, the head of which is disposed in the opening 55 of the bowl and is engaged by

the ball 56 when resting in said opening, and fixed to the bracket 52 is a terminal 58 in circuit with the bowl.

As will now be seen, when the rifle is aimed in a level position, the ball 56 will come to rest in the opening 55 of the bowl 53 and make contact with the terminal 57 for closing a circuit through the bowl to the terminal 58. On the contrary, should the rifle not be aimed in a level position, the ball will rest within the bowl away from the opening 55 so that the circuit between said terminals will be broken. A leveling device for the rifle is thus provided and, as will be perceived, some skill will be required in the aiming of the rifle in order that it may be held in a level position.

Suitably fixed to the side plate 14 of the rifle housing forwardly of the brake arm 32 is an angle bracket 59 preferably insulated from said plate and mounted upon said bracket is a circuit breaker comprising insulated but normally engaged spring contacts 60 and 61, the latter of which projects at its free end beneath the brake shoe 33. Accordingly, when the trigger 30 is pulled and the arm 32 is swung downwardly, the shoe 33 will engage the free end of the contact 61 and flex said contact out of engagement with the contact 60 to break a circuit therethrough.

Appropriately fixed to the side plate 14 of the rifle housing in the rear of the trigger 30 is an angle bracket 62 preferably insulated from said plate and mounted upon said bracket are insulated spring contacts 63 and 64 normally spaced apart at their free ends. Formed in the bottom wall 13 of the rifle housing rearwardly of the trigger is a slot 65 and overlying said slot externally of the housing is a stop plate 66 carrying a knob 67. Overlying the slot within the housing is a plate 68 carrying a knob 69 and connecting the plates 66 and 68 with the wall 13 to provide a slide is a screw 70 which is freely received through the slot 65. The knob 69 is of insulating material and, when the slide is shifted rearwardly, is adapted to engage the contact 63 and flex said contact into engagement with the contact 64 for closing a circuit through said contacts. Conversely, when the slide is shifted forwardly, as shown in Figure 2, the plate 66 will be moved into the path of the trigger to block movement thereof and render the rifle inoperative while the knob 69 will be moved forwardly away from the contact 63, when said contact will spring away from the contact 64 to break the circuit therethrough. A safety switch is thus provided while the switch slide also forms a safety stop for the trigger adapted to prevent the operation thereof.

In conjunction with the rifle, as described in the foregoing, we provide a target embodying a preferably cylindrical casing 71 closed at its forward side, as best seen in Figure 4, by a front pane 72 secured by a rim 73. Closing the casing at its rear side is a back plate 74 and fixed to said plate is a plurality of spaced concentric rings forming partitions 75 within the casing. These partitions divide the space within the casing into concentric compartments 76 and mounted upon the back plate 74, one within each of said compartments, is a plurality of scattered lamp sockets 77 having corresponding terminals 78 and opposite corresponding terminals 79. Removably engaged in said sockets are lamps 80 and, as brought out in Figure 1, the front pane 72 of the target is preferably provided with ap-

appropriate numbers indicating the score-value of the respective lamps.

The rifle is electrically connected with the target and in Figure 5 of the drawings we have shown the circuits employed. Leading from a battery or other source of current is a wire 81 connected to the safety switch contact 53 and leading from the switch contact 64 to one of the terminals 49 of the pilot lamp 50 is a wire 82. Connecting the other terminal of the pilot lamp with the terminal 57 of the leveling device is a wire 83 and leading from the terminal 58 of said device back to the battery is a wire 84.

As will be seen, when the safety slide is moved rearwardly to dispose the plate 66 out of the path of the trigger 30 so that the trigger may be operated, and the contacts 63 and 64 of the safety switch are closed, a circuit will be closed through the pilot lamp 50 to the leveling device. Accordingly, when the rifle is aimed level, the ball 56 of the leveling device will, as previously described, complete the circuit so that the pilot lamp will be energized. Therefore, as soon as a light appears through the opening 51 of the rifle housing, the operator will be apprised of the fact that he has succeeded in perfecting a level aim, when the trigger may be pulled.

Leading from the switch contact 64 to the brush 40 is a wire 85 and connecting the several contacts 46 with the lamp terminals 78, respectively, of the target are wires 86. Wires 87 connect the respective lamp terminals 79 with a return wire 88 common thereto and the wire 88 is connected to the contact 60 while the contact 61 is connected with the wire 83 by a wire 89.

As will now be understood, current will, when the switch contacts 63 and 64 are closed, flow from the battery through the wire 85 to the brush 40 and thence through the ring 41 of the rotor 24 and through the pin 43 to the rotor brush 42. Should the brush 42 be, at the time, standing on any one of the contacts 46, current will therefore flow through one of the wires 86 to energize a corresponding one of the lamps 80 and return through the wires 87 and 88, circuit breaker contacts 60 and 61, and wires 88, 89, 83 and 84 to the battery, assuming, of course, that the rifle is being aimed level.

Further assuming, under the conditions just previously indicated, that the trigger 30 of the rifle is pulled, the contact 61 of the circuit breaker will, as previously described, be moved away from the contact 60. Thus, the return side of the circuit just previously traced will be broken for all of the lamps 80, so that flickering of the lamps while the rotor 24 turns and the brush 42 rides over the contacts 46 will be prevented. Upon the release of the trigger, however, the rotor 24 will, as also previously described, be stopped, while the contacts 60 and 61 of the circuit breaker will again engage. Accordingly, when the brush 42 comes to rest upon one of the contacts 46, a corresponding lamp 80 in the target will be energized. The score-value number of the lamp so energized will, of course, indicate the score made on the shot and, in competitive shooting, the person having the highest aggregate score will be considered the winner. As brought out in Figure 1, the circuit wires 86, 87 and 88 are preferably bunched in a cable 90 which extends between the target and rifle and if so desired, suitable detachable connections for the ends of the cable may be provided.

Having thus described our invention we claim:

1. A target apparatus including a simulated

firearm having a trigger, a simulated target having a lamp thereon, said target being located within range of the firearm when the latter is aimed level at the target, means operable by the trigger for closing a circuit through the lamp, and a leveling device on the firearm for completing said circuit when the firearm is aimed level.

2. A target apparatus including a simulated firearm having a trigger, a simulated target having a lamp thereon, said target being located within range of the firearm when the latter is aimed level at the target, means operable by the trigger for closing a circuit through the lamp, a leveling device on the firearm for completing said circuit when the firearm is aimed level, and means operable by the trigger for breaking said circuit when the trigger is actuated.

3. A target apparatus including a simulated firearm having a trigger, a simulated target having a lamp thereon, said target being located within range of the firearm when the latter is aimed level at the target, means operable by the trigger for closing a circuit through the lamp, a leveling device on the firearm for completing said circuit when the firearm is aimed level, and a safety switch interposed in said circuit and including an element for blocking the actuation of the trigger when the switch is open.

4. A target apparatus including a simulated firearm having a trigger, a simulated target having a lamp thereon, said target being located within range of the firearm when the latter is aimed level at the target, means operable by the trigger for closing a circuit through the lamp, a leveling device on the firearm for completing said circuit when the firearm is aimed level, and a pilot lamp shunted across said leveling device.

5. In a target apparatus, a simulated firearm including a housing, and a rotor unit mounted in the housing and bodily removable therefrom, said unit including a frame, a shaft journaled thereon, a weighted flywheel carried by the shaft, a series of spaced insulated contacts carried by the frame, a brush on the flywheel engageable with said contacts successively, a trigger carried by the frame, and means operable by the trigger for spinning the flywheel.

6. In a target apparatus, a simulated firearm including a housing, and a rotor unit mounted in the housing and bodily removable therefrom, said unit including a frame, a shaft journaled thereon, a weighted flywheel carried by the shaft, a series of spaced insulated contacts carried by the frame, a brush on the flywheel engageable with said contacts successively, a trigger carried by the frame, means operable by the trigger for spinning the flywheel, a brake arm carried by the trigger and engageable with the flywheel for stopping the flywheel when the trigger is released, and a spring acting on the trigger and urging said arm to coast with the flywheel.

7. A target apparatus including a simulated firearm having a trigger, a simulated target in range of the firearm when aimed level thereat and having a plurality of lamps thereon, a weighted flywheel rotatable by the trigger and adapted to spin of its own momentum for closing a circuit through any one of said lamps at random when the flywheel comes to rest, and a leveling device on the firearm for completing said circuit when the firearm is aimed level.

8. A target apparatus including a simulated firearm having a trigger, a simulated target in range of the firearm when aimed level thereat and having a plurality of lamps thereon, a

- weighted flywheel rotatable by the trigger and adapted to spin of its own momentum for closing a circuit through any one of said lamps at random when the flywheel comes to rest, a leveling device on the firearm for completing said circuit when the firearm is aimed level, and a brake engageable with the flywheel when the trigger is released for checking the spinning of the flywheel and bringing the flywheel to rest quickly.
- 10 9. A target apparatus including a simulated firearm having a trigger, a simulated target in range of the firearm when aimed level thereat and having a plurality of lamps thereon, a

weighted flywheel rotatable by the trigger and adapted to spin of its own momentum for closing a circuit through any one of said lamps at random when the flywheel comes to rest, a leveling device on the firearm for completing said circuit 5 when the firearm is aimed level, a brake arm engageable with the flywheel when the trigger is released for checking the spinning of the flywheel and bringing the flywheel to rest quickly, and means operable by said brake arm for breaking 10 said circuit when the trigger is actuated.

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