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W. A. HIBBERD

2,125,565

TARGET APPARATUS

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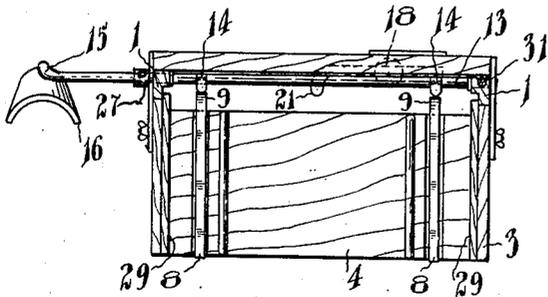


Fig. 1.

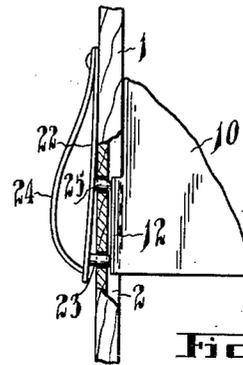


Fig. 4.

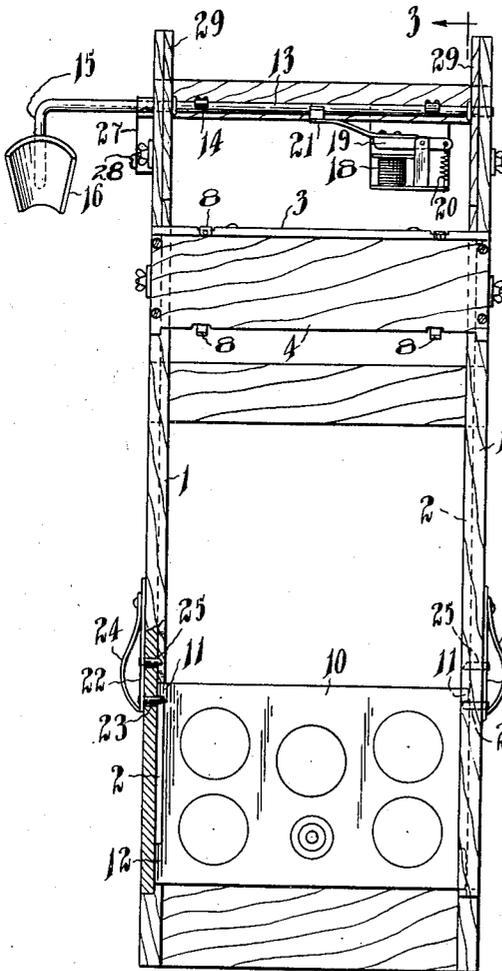


Fig. 2.

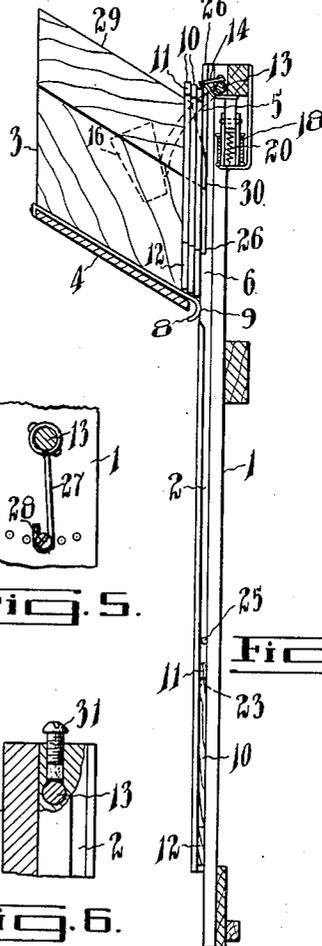


Fig. 3.

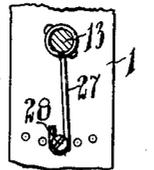


Fig. 5.

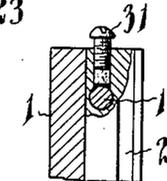


Fig. 6.

Inventor

W. A. Hibberd

by J. Edw. Mayba

ATTY

UNITED STATES PATENT OFFICE

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TARGET APPARATUS

William Archibald Hibberd, Toronto, Ontario,
Canada

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8 Claims. (Cl. 273-102)

My object in the present invention is to devise means controllable from the firing position for feeding targets one-by-one from a magazine to a position for use.

I attain my object by means of a construction which may be briefly described as follows: A substantially vertical chute is provided down which target units are slidable to a position for use. This position is determined by a spring catch carried by the chute which engages a shoulder on the target. Release means is provided whereby a following target releases a positioned target and travels down to take its place.

A magazine for targets is positioned adjacent the top of the chute and is provided with inclines down which targets may slide in an upright position and means are provided for feeding targets one-by-one to the chute. In one form of the invention the feed is actuatable by the impact of a bullet on a movable part. In another form electro-magnetic means is employed to secure remote control or a cord led to the firing point.

The invention is hereinafter more fully described and is illustrated in the accompanying drawing in which

Fig. 1 is a plan view of the apparatus;

Fig. 2 a front elevation partly broken away;

Fig. 3 a vertical section on the line 3-3 in Fig. 2;

Fig. 4 a detail, partly in section, showing the target catch and release means in the release position;

Fig. 5 a detail in side elevation of part of the mechanism for feeding targets from the magazine; and

Fig. 6 a detail of the rock shaft braking means.

In the drawing like numerals of reference indicate corresponding parts in the different figures.

Referring to the drawing, 1 is a chute having an open front and having grooves 2 formed in its sides. This chute has a magazine 3 secured to its upper end. This magazine is formed with an inclined bottom 4 and is provided at each side at its upper part with an inclined guide 29 having its guiding surface parallel to the bottom 4. The front walls of the grooves at the magazine are cut away to form the gaps 5 and 6, and at each side the guide 29 is formed with an inclined end entering the upper gap 5 as shown more particularly in Fig. 3 and for a purpose which will hereinafter appear.

Between the gaps 5 and 6 sufficient of the front of each side of the chute is left to form a stop 26

against which a target may rest in readiness to enter the chute.

The targets 10 are preferably made of thin boards to which paper targets may be applied. Each target is formed with a projection 11 at the upper end of each side and a projection 12 at the lower end of each side, these projections being adapted to run in the grooves 2.

When the targets are placed in the magazine 3 the upper projections 11 will ride down the inclined guides 29 at opposite sides of the magazine while the lower edges of the target will move over the inclined bottom of the magazine.

At the bottom of the magazine adjacent the chute are secured one or more springs 8 having curved ends 9 which are so positioned that they support the lower edge of a target which is in contact with the stops 26. The springs are so positioned and proportioned that, if downward pressure be applied to a target resting on the springs and in contact with the stops 26, the curved ends of the springs will be pushed to one side and will bear against the face of the target in which position they are ineffective to hold the target from downward movement in the chute 1. When downward pressure is applied to the top of the target it is evident that the lower projections 12 of the target will pass through the gaps 6 while the projections 11 will be guided through the gap 5 by the ends 30 of the inclined guides 29, which ends are curved or inclined as shown to effect this movement of the target.

Pressure is applied to the forward target in the magazine by means of the rock shaft 13 which is provided with the arms 14 which engage over the upper edge of the target. The rock shaft may be actuated in either of several ways. For instance, it may be provided with the operating rock arm 15 shown in Figs. 1 and 2 which is provided with the impact member 16 which is adapted to receive the impact of a bullet fired from the firing station, such impact being sufficient to rock the arm and move the shaft to cause the arms 14 to push down the adjacent target, or, if desired, a cable may be connected with the operating rock arm 15 and pulled from the firing station. This impact member is formed as a curved plate 16 forming a U-shaped trough which is inclined rearwardly and preferably has its lower edge struck on a curve of shorter radius than its upper. A bullet fired against this curved plate will be deflected downwardly while the curved sides of the plate prevent lateral splash. The impact of a bullet against this curved plate is sufficient to rock the shaft and to thus cause the rock

arms 14 to engage and rest down the upper edge of the target.

The target may also be pressed downwardly to feed it from the magazine by electro-magnetic means as shown in Figs. 1 and 2. In these figures an electro-magnet 18 is shown as provided with the armature 19 fulcrumed between its ends. A coil spring 20 secured to a stationary part and to one end of the armature tends to raise the armature. By completing the circuit of the electro-magnet the armature may be attracted and the hook arm 21 secured thereto pressed into engagement with the upper edge of the adjacent target. When the mechanically operated feed is employed, the rock shaft 13 is normally maintained in a position with the rock arms 14 raised by means of a bent spring 27 which is secured to the rock shaft and may be secured to the side of the chute in any desired position by means of the pin 28. Once the desired position of this pin is set, further adjustment is unnecessary.

To dampen any vibrations of the rock shaft I prefer to provide a screw 31 threaded through a part of the clutch to bear against the shaft preferably through the medium of a friction shoe of wood or felt. See Fig. 6.

Once a target has been pressed down from the magazine into the upper end of the chute it will fall freely until its upper projections 11 engage the spring catches 22, which are provided with the pins 23 projecting through the sides of the chute. Each spring catch 22 is preferably provided with a bent reinforcing spring 24. Also connected with the springs 22 of the spring catches are the releasing pins 25 each formed with a bevelled inner end. These releasing pins are engageable by the lower projections 12 on a target to press back the catches 22, and thus allow the target, which has been previously positioned and held by these catches, to fall freely down to and through the bottom of the chute. The projections 12, it will be noted, are of sufficient length that they will span both the catches and the releasing pins 25, so that the following target which has operated the release pin is not caught by the spring catches until it has fallen low enough for its upper projections to engage these catches, which is its position for use.

The operation of the device is substantially as follows: A number of targets are placed in the magazine in which they will occupy a substantially vertical position with their upper projections riding down the inclined guides 29 while their lower edges ride or, at least, are prevented from swinging backwardly by the inclined bottom 4. The forward target occupies the position shown in Fig. 3 with its upper projection raised above the inclined guides 29 by the springs 8. The upper edge is substantially in contact with the rock arms 14 or the hook arm 21. When either of these is actuated the target moves bodily downward pressing down the springs 8. The projections on the target can then pass through the gaps 5 and 6, being aided in this movement by the inclined ends 30 of the guides 29. The springs 8 are pressed downward and allow the targets to pass freely into the grooves of the chute. As soon as the target is thus released from the magazine it falls by gravity and displaces the initially positioned target as hereinbefore described.

What I claim as my invention is:

1. Target apparatus comprising a plurality of target units; a substantially vertical chute down which the target units are slidable; a spring catch at one side of the chute, each target being formed

with a downwardly facing shoulder at one side near the top and engageable by the catch, and a lateral projection adjacent the bottom; and a catch releasing pin engaging the catch and having a bevelled end engageable by the side edge of the lateral projection of a following target to release the catch from engagement with the shoulder of a preceding target, the said edge being sufficiently long to hold the catch retracted till the lower edge of the following target has passed the catch.

2. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each provided with two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and having inclines down which a target may slide in an upright position till its projections engage the front walls of the grooves; and a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter.

3. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each provided with two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and having inclines down which a target may slide in an upright position till its projections engage the front walls of the grooves; a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter; and means engageable with the upper edge of the target to depress the target.

4. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each provided with two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and having inclines down which a target may slide in an upright position till its projections engage the front walls of the grooves; a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter; and inclined surfaces on the magazine engageable by the projections of a target and adapted to press the target towards the chute when the target is depressed against the action of the spring.

5. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each having two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and having upper

inclined surfaces down which the upper projections of a target may slide with the latter in an upright position till the projections engage the front walls of the grooves; and a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter.

6. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each having two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and having upper inclined surfaces down which the upper projections of a target may slide with the latter in an upright position till the projections engage the front walls of the grooves; a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter; inclined surfaces on the magazine engageable by the upper projections of a target and adapted to press the target towards the chute when the target is depressed against the action of the spring; and means engageable with the upper edge of the target to depress the target.

7. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each provided with two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and

having inclines down which the upper projections of the targets may slide and an inclined bottom over which the lower edges of the targets may slide with the targets in an upright position till the projections of the front target engage the front walls of the grooves; and a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter.

8. Target apparatus comprising a substantially vertical open-fronted chute formed with opposed grooved sides; a plurality of target units each provided with two projections at each side, one adjacent the top edge and the other adjacent the bottom edge, said projections being adapted to run in the grooves of the chute; a magazine positioned adjacent the top of the chute and having inclines down which a target may slide in an upright position till its projections engage the front walls of the grooves; a spring on which a part of the target rests, the front walls of the grooved sides of the chute having gaps formed therein through which the projections on the sides of the targets may pass to enter the grooves when the target is depressed against the action of the spring and slides by the latter; a spring catch at one side of the chute engageable by the lower edge of one of the upper projections of a target; and a catch releasing pin engaging the catch and having a bevelled end engageable by the side edge of the lower projection of a following target at the same side of the target as the catch to release the latter from engagement with an upper projection of a preceding target, the said side edge being sufficiently long to hold the catch retracted till the lower edge of the following target has passed the catch.

WILLIAM ARCHIBALD HIBBERD.