Sept. 2, 1958 J. J. WEINBLATT 2,850,284

TARGET APPARATUS WITH SIMULATED PROJECTOR

Filed April 19, 1957

Fig. 1.

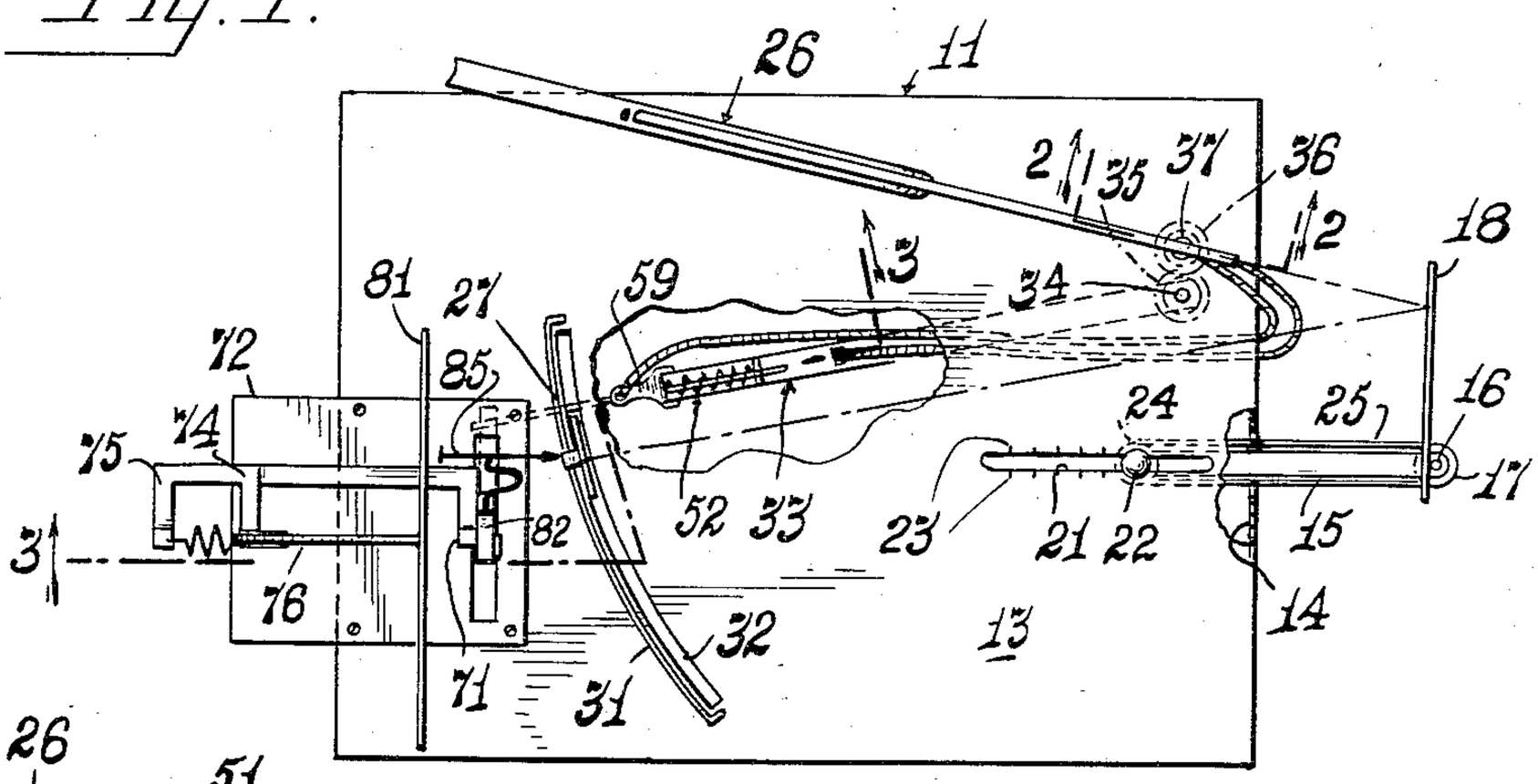

Fig. 2.

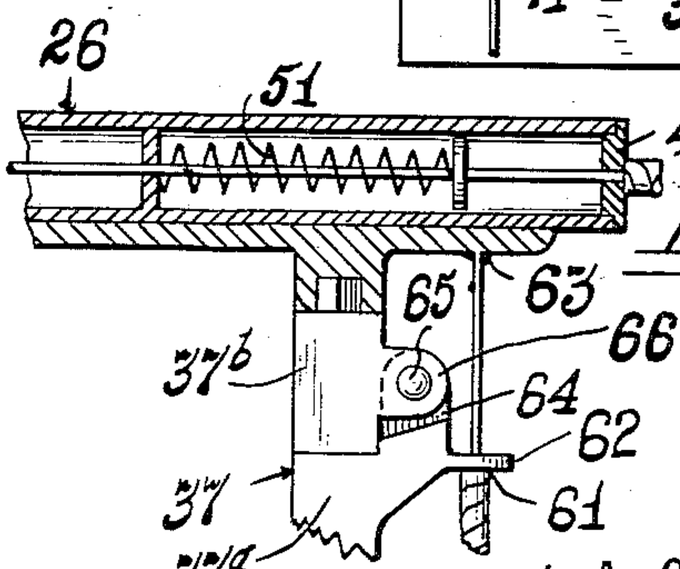

Fig. 4

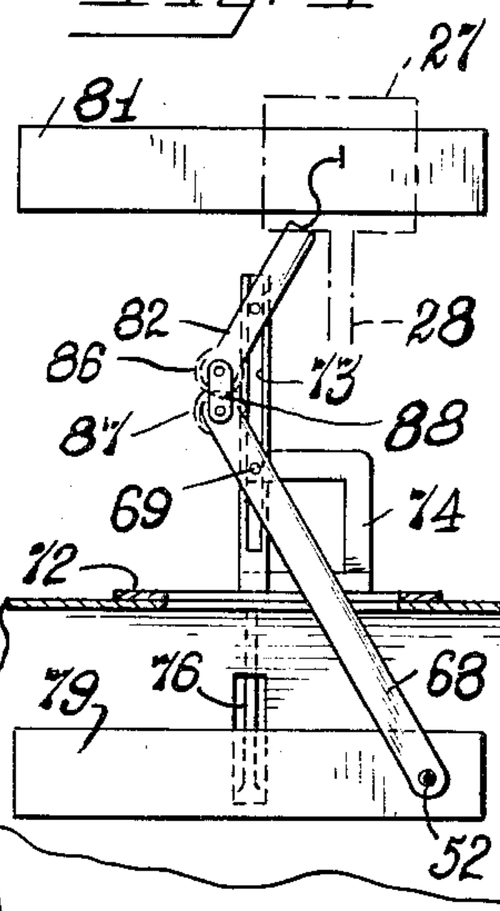

Fig. 3.

INVENTOR.
Jerome Weinblatt
BY
Atty

United States Patent Office

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TARGET APPARATUS WITH SIMULATED PROJECTOR

Jerome J. Weinblatt, New York, N. Y.

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9 Claims. (Cl. 273—101.2)

The invention relates to target apparatus and more particularly to improvements in a rugged target apparatus that is compactly arranged and structurally designed to provide accurate visual indicating means for scoring the aim of the operator.

The apparatus herein disclosed embodies novel improvements over the apparatus shown and described in my copending application Serial No. 594,957, filed June 29, 1956. It may be described generally as including a shallow hollow base structure, or at least a horizontally arranged wall, mounting thereon a universally adjustable target rifle or like aiming device. Such aiming device is mechanically connected, in a novel manner, with novel mechanism located within the base or beneath the wall, that is actuated upon "firing" of the aiming device and is aimed in accordance with aiming of said aiming device so as to cause a target supported above the base or wall to be impinged, pierced or struck when the aim is true.

The apparatus includes an adjustable target image reflector located in front of the aiming device and said device is so mounted that its position may be varied horizontally and vertically while aiming. Any change in the position of the aiming device is transmitted to the target-striking mechanism through novel mechanical interconnecting means. The target-striking mechanism is "cocked" or set automatically in conjunction with the "cocking" of the target rifle or aiming device and said mechanism is released upon actuation of the aiming device. The target disclosed herein is adjustable on the base or wall very easily and simply so as to permit it to be repositioned manually, quickly and with a minimum of effort.

It is an object of the present invention to provide novel mechanism operably connected with an aiming device, and responsive to "firing" of said device, for causing visual impact against or physical displacement of a target, only if the aim is true.

Another object is to provide novel mechanism operably connecting the aiming device with a target striker.

Another object is to provide a novel mounting for a target striker which is characterized by the inclusion of novel means responsive to movement of an aiming device for causing corresponding movement of a striker.

Another object is to provide a novel apparatus of the character described which is not expensive to construct and assemble, is positive and automatic in its operation and simple to use.

With these and other objects in view, the invention resides in certain novel features of construction, combination and arrangement of parts as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings, which form a part of this application and in which:

Fig. 1 is a plan view of a target apparatus embodying features of the present invention and showing a portion of its top wall broken away.

Fig. 2 is an enlarged sectional detail view of the

mounted end of the aiming device, showing parts in elevation and taken substantially on line 2—2 of Fig. 1.

Fig. 3 is an enlarged longitudinal vertical sectional view of the front end portion of the target displacement mechanism, taken substantially on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary vertical sectional view taken substantially on line 4—4 of Fig. 3.

Referring now to the structure as disclosed in the accompanying drawings, the target apparatus preferably includes a shallow substantially rectangular mounting base 11 having a bottom wall 12, a top wall 13 and connecting marginal walls 14. A bracket 15 extending outwardly through one of the walls 14 is suitably formed at its outermost end to provide a vertical bearing for an upstanding post 16 having a pulley 17 secured firmly to its lower end. The post 16 constitutes a support for target image mirror means 18.

The horizontally disposed top wall 13 of the base 11 has a slot 21 therein coinciding with the longitudinal axis of the bracket 15 and a knob 22, carried on the innermost end of said bracket, operates in said slot to facilitate sliding of the bracket longitudinally inwardly and outwardly relative to the base for positioning the mirror means 18. Calibration markings 23 may be placed adjacent either or both longitudinal edges of the slot 21 to facilitate accurate positioning of the mirror means. The knob carries, within the base 11, a pulley 24 having a belt 25 trained therearound, which belt is trained also over the pulley 17. Rotation of the knob 22 will impart rotation to the standard or post 16 so as to position the mirror means at a required angle for purposes to become apparent presently. The mirror means 18 is located in front of a target rifle 26, or other aiming device, and its purpose is to reflect an image of a target, such as the target 27 shown in Fig. 1. The target is mounted on the top wall of the base adjacent the end opposed to the end mounting the mirror means 18. Preferably the target includes a standard 28 (Fig. 3) having an offset flange 29 on its back face adapted to be engaged over a rail 31 mounted on the base so as to hold the target in a vertical position with its lower extremity depending through an arcuate guide slot 32.

When the target apparatus is in use, the aiming device 26 is aimed at an image of the target 27 in the mirror means 18. When the operator believes that his aim is true, and that the image has been properly sighted, he "fires" the aiming device. Such "firing" sets in motion novel striker-actuating mechanism mounted on and within the base and to be described presently, which, if the aim is true, operates to impinge or displace the target 27.

The striker-actuating mechanism is partly contained in and partly mounted on or otherwise operably associated with a tubular body 33 pivotally mounted at one of its ends on a vertical axis 34 within the base 11. Referring particularly to Fig. 1 there is a pinion 35 mounted on the mechanism axis 34, which pinion is meshed at all times with a similar pinion 36 carried firmly on the lower end of a post 37 that extends upwardly through and is journalled in the top wall 13 of the base. Referring to Fig. 2, the post carries on its upper end, the forward end of the aiming device 26. When the aiming device 26 is swung in a horizontal arc while aiming at an image in the mirror means 18, the striker-actuating mechanism is likewise swung through a horizontal arc but in an opposite direction about its axis 34 through meshed pinions 35—36. The free forward end of said actuating mechanism may be supported, as at 38 (Fig. 3) on an arcuate track 39.

The striker-actuating mechanism is operably connected with any suitable operating means such as for example a conventional type trigger in the aiming device 26. Also, the striker-actuating mechanism, or at least a portion

thereof, is adjustable in a vertical plane to compensate for vertical variations in the aim of the aiming device.

Referring now particularly to Fig. 3, the tubular body **33** is provided with a top wall opening **41** to receive a sheathed cable **42**, the sheath of which is connected firmly to a tongue **43**. The cable **42** extends through the tongue **43** and carries adjacent its end a collar **44** having a radial arm **45** extending upwardly through a wall slot **46**. A spring **47**, connected at one end to the cable **42** and at its other end to an anchor pin **48**, normally tends to pull the cable forwardly in the body **33**. The other end of the cable **42** is threaded into the barrel of the aiming device **26** (Fig. 2) and its sheath is anchored to an end plug **49**. The cable **42** extends into the barrel and is connected to the aiming device actuating trigger or other mechanism in such manner that when the rifle is "cocked," the cable **42** is drawn into the barrel against the tension of a spring **51** therein. At the same time the other cable end (Fig. 3) including the collar **44** is pulled into the position substantially as shown in Fig. 3.

As illustrated in Fig. 3, the radial arm **45** terminates in a plunger **52**, integral therewith, which extends freely through a large opening **53** in an upstanding wall **54** on the top face of the tubular body **33** and through a vertical slot **55** in an upstanding front wall extension **56**. Vertically slidable relative to the extension **56** is a plate **57** which has a hole therein to receive and guide the free end of the plunger **52**. The upper end of the slide plate **57** is connected to a cable **58** which has its sheath anchored to a forwardly directed overhang **59** integral with the vertical wall **54**. The other end of said sheath is anchored, at **61** (Fig. 2) to a flange **62** on the post **37**, whereas the corresponding end of the cable **58** is anchored firmly to the aiming device **26** as at **63**.

The post **37** is sectional and it includes a section **37***a* having a hinge element **64** connected by a pin **65** to a complemental hinge element **66** on a post section **37***b* mounting the aiming device. Rocking of the device through a vertical arc about the horizontal axis **65** pulls or slacks the cable **58** thus raising or lowering the slide plate **57** with or against assistance of a spring **66** and correspondingly raise or lower the elevation of the guided free end of the plunger **52**.

It should be quite apparent at this time that moving said aiming device through a vertical and/or a horizontal arc about its support post **37**, results in corresponding movement of the striker-actuating mechanism and particularly of the plunger **52**. Also obvious is the fact that when the aiming device is actuated, as when "firing," the plunger **52** is released and is pulled forwardly by its spring **47**. Recoil mechanism for the plunger **52** is provided by means of a spring **52***a* fitted thereover.

The free extremity of the plunger **52** is slidably engaged in a guide opening **67** in the lower extremity of a bar **68** which is pivotally mounted, on a horizontal axis **69**, to a vertical standard **71**. The standard **71** is carried on a base plate **72** secured to the top face of the wall **13** rearwardly of the target **27**. The standard **71** has a slot **73** in one of its faces in which the axis of the bar **68** is mounted for sliding. The base plate **72** also carries rearwardly of the standard **71**, an upstanding post **74** formed with a horizontal portion **75** at its upper extremity. The post **74** mounts a cradle **76** for rotation in a vertical plane about a horizontal axis **77** and said cradle normally is urged in a clockwise direction to maintain the position substantially as illustrated in Fig. 3, by a spring **78** connected at one end to the cradle and at its other end to the horizontal portion **75**. The lower extremity of the cradle extends freely into the base **11** and it carries on its lower end, a plate **79** that is of sufficient width and length as to lie in the path of the plunger **52** irrespective of its position of vertical or arcuate adjustment. The upper extremity of the cradle carries a similar plate **81** for a purpose to become apparent presently.

Also mounted on the standard **71** for vertical sliding and pivotal movement is a striker-carrier **82**. This carrier comprises a length of material journalled at **83** between its ends and which carries a spring steel wire extension **84** on its upper end. A target striker **85** is secured to the free upper end of the wire extension.

The lower extremity of the striker-carrier **82** and the upper end of the bar **68** are each formed with meshing gear segments **86** and **87** respectively, which are bridged by a link connection **88**. This toothed and linked connection permits coordinated adjustment of the striker **83** when the plunger **52** is adjusted. In other words, movement vertically of the plunger **52** will slide both the bar and the striker-carrier **68** and **82** in the vertical mounting slot **73**. Similarly when the plunger **52** is moved through a horizontal arc, the bar **68** is moved about its pivot **69** and, because of the meshed gear segments **86** and **87**, the striker-carrier **82** is also adjusted about its pivot, thus moving the striker in response to adjustment of the aiming device. As best illustrated in Fig. 4, the striker will remain in the path of the upper cradle plate **81** so that when the cradle is rocked about its pivot **77** by impingement of the plunger **52** with the lower plate **79**, the upper plate **81** will strike the striker and thrust it in the direction of the target so as to pierce or otherwise mark the same.

As many possible embodiments may be made in the invention, and as many changes might be made in the embodiment above set forth, it is to be understood that all matters hereinbefore set forth or shown in the accompanying drawings are to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to be secured by Letters Patent is:

1. In an apparatus of the character described, a horizontal wall having a guideway therein, a target mounted for manual positioning along said guideway, a striker arranged adjacent to the target, striker-actuating mechanism pivotally mounted at one end within the base, a plunger carried by said mechanism, a vertically adjustable guide on the plunger-carrying end of said mechanism, said plunger projecting through said guide, an aiming device pivotally mounted on said base, mirror means to reflect an image of said target toward said aiming device, means operably connecting the aiming device and the pivoted end of the striker-actuating mechanism for swinging said mechanism in a horizontal arc in one direction when the aiming device is swung in a horizontal arc in an opposite direction while aiming it at the image to point the plunger in the general direction of but below the plane of the target, means operable to raise and lower the adjustable guide to vary the effective elevation of the plunger independently of the mechanism when the aiming device is tilted in a vertical plane, actuating means in the aiming device operably connected with the plunger to actuate the plunger, means connecting the striker with the plunger for raising and lowering the striker and for moving it in a vertical arc in response to adjustment of the plunger, and means engageable by the plunger when actuated to impinge the striker and thrust it against the target.

2. In an apparatus of the character described, a hollow base including a top wall having a guideway, a target mounted for manual positioning along said guideway, striker means arranged rearwardly of said target, elongated striker-actuating mechanism pivotally mounted at one end within the base, a plunger at the other end of said mechanism, mirror means on the base to reflect an image of said target, said mirror means being rotatably and slidably adjustable, a pivotally and tiltably mounted aiming device, gear means operably connecting the aiming device and the striker-actuating mechanism for swinging said mechanism in a horizontal arc about its pivot in one direction when the aiming device is swung in a horizontal arc in an opposite direction to point the plunger in a predetermined direction, means operable to

raise and lower the effective elevation of the plunger relative to the striker-actuating mechanism when the aiming device is tilted in a vertical plane, actuating means including a cable connecting said actuating means with the striker-actuating mechanism operable to actuate the plunger, and articulated means operably connecting the striker means and plunger for causing the striker means to move vertically and in a horizontal arc in response to corresponding movement of the plunger.

3. In an apparatus of the character described, a base including a top wall having a guideway therein, a target mounted for adjustment along said guideway, a striker, striker-actuating mechanism pivotally mounted at an end within the base, a plunger on said mechanism, an aiming device movably mounted on said base, mirror means to reflect an image of said target toward the aiming device, means operably connecting the aiming device and the striker-actuating mechanism for swinging the striker-actuating mechanism in a horizontal arc about its pivot in one direction when the aiming device is swung in a horizontal arc in an opposite direction while aiming it at the image to point the plunger in a predetermined direction, means operable to raise and lower the effective elevation of the plunger independently of the striker-actuating mechanism when the aiming device is moved in a vertical plane actuating means in the aiming device, operably connected to the plunger and actuable to actuate the plunger when said means is actuated, and means in the path of the plunger operable by said plunger to project the striker in the direction of the target.

4. A target apparatus comprising, an aiming element representing a firearm, a target, a striker, striker actuating mechanism including a trip plunger associated with said aiming element and movable with the same within its aiming range, means movable in response to aiming movement of the trip plunger to move the striker and aim it at the target, a rocker arm having one end disposed for engagement by the trip plunger and its other end with the striker, and means pivotally mounting the arm between its ends for rocking movement in response to trip release of the plunger to actuate the striker and cause it to strike the target in a predetermined area if the aim is true.

5. In a target apparatus, a target, a releasable trip plunger, means to aim the trip plunger in a predetermined direction within the aiming range, a striker spaced from said trip plunger, and means operably connecting the striker and trip plunger for simultaneous aiming adjustment of the striker when the trip plunger is aimed, said means including a pair of arms one connected to the trip plunger and the other to the striker and each pivotally and slidably mounted and operably connected to each other for adjustment in unison.

6. In a target apparatus, a target, a releasable trip plunger, means to aim the trip plunger in a predetermined direction within the aiming range, a striker spaced from said trip plunger, means operably connecting the striker and trip plunger for simultaneous aiming adjustment of the striker when the trip plunger is aimed, said means including a pair of arms each pivotally and slidably mounted, and gear means operably connecting the arms for pivotal movement in opposite directions.

7. In an apparatus of the character described, a base, a target supported above said base, mirror means to

reflect an image of said target, a horizontally and vertically adjustable aiming device on said base adapted to be aimed at said image, a normally tensioned trip plunger in said base and operably connected to the aiming device for horizontal and vertical adjustment in response to adjustment of the aiming device, a standard on said base, a first arm pivotally and slidably mounted on said standard and operably connected with the trip plunger for adjustment therewith, a second arm pivotally and slidably mounted on said standard, means operably connecting the first arm with the second arm for adjustment of the second arm in response to adjustment of said first arm, a striker carried by and movable relative to said second arm adjacent to the target, means operable to move the trip plunger axially in one direction, and normally disengaged striker lever means engageable by the trip plunger when the latter moves in said one direction and operable thereby to project the striker in the direction of the target.

8. In an apparatus of the character described, a base, a target supported above said base, mirror means to reflect an image of said target, a horizontally and vertically adjustable aiming device on said base adapted to be aimed at said image, a normally tensioned trip plunger in said base and operably connected to the aiming device for horizontal and vertical adjustment in response to adjustment of the aiming device, a standard on said base, a first arm pivotally and slidably mounted on said standard and operably connected with the trip plunger for adjustment therewith, a second arm pivotally and slidably mounted on said standard and operably connected with the first arm for adjustment in response to adjustment of said first arm, a striker carried by said second arm adjacent to the target, means actuable to release the trip plunger, and normally disengaged means engageable by the trip plunger when the latter is released and operable to project the striker in the general direction of the target.

9. In an apparatus of the character described, a base, a target supported above said base, an aiming device, a trip plunger operably connected to the aiming device for adjustment in response to movement of the aiming device, a pivotally and slidably mounted first arm operably connected with the trip plunger for adjustment therewith, a pivotally and slidably mounted second arm, means operably connecting the first arm with the second arm for adjustment of the second arm in response to adjustment of the first arm, a striker carried by and movable relative to said second arm adjacent to the target, means operable to move the trip plunger axially in one direction, and normally disengaged means engageable by the trip plunger when the latter moves in said one direction and operable thereby to project the striker in the general direction of the target.

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