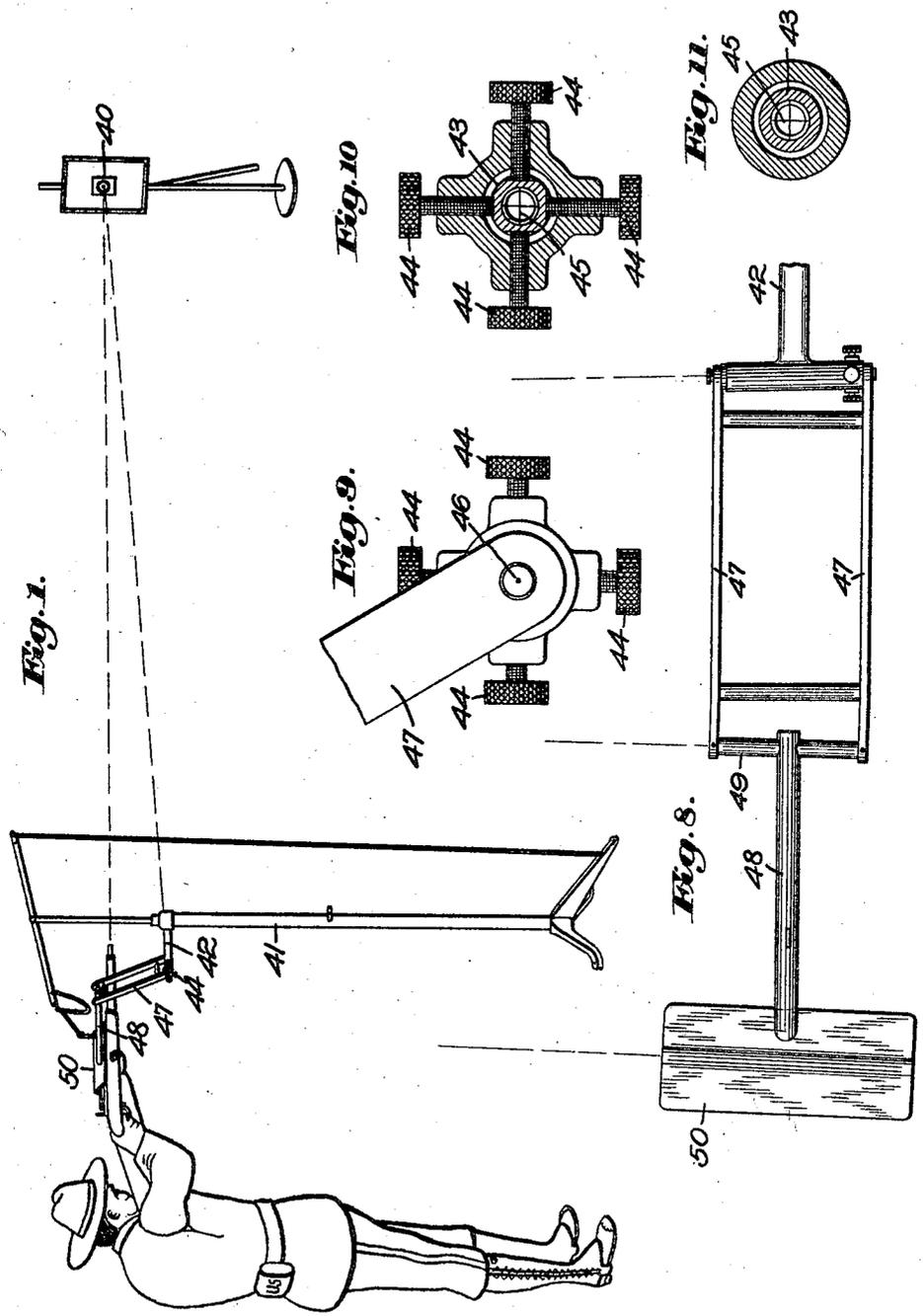


H. H. CUMMINGS.
 TARGET PRACTICE APPARATUS.
 APPLICATION FILED MAR. 22, 1917.

1,323,841.

Patented Dec. 2, 1919.
 4 SHEETS—SHEET 1.



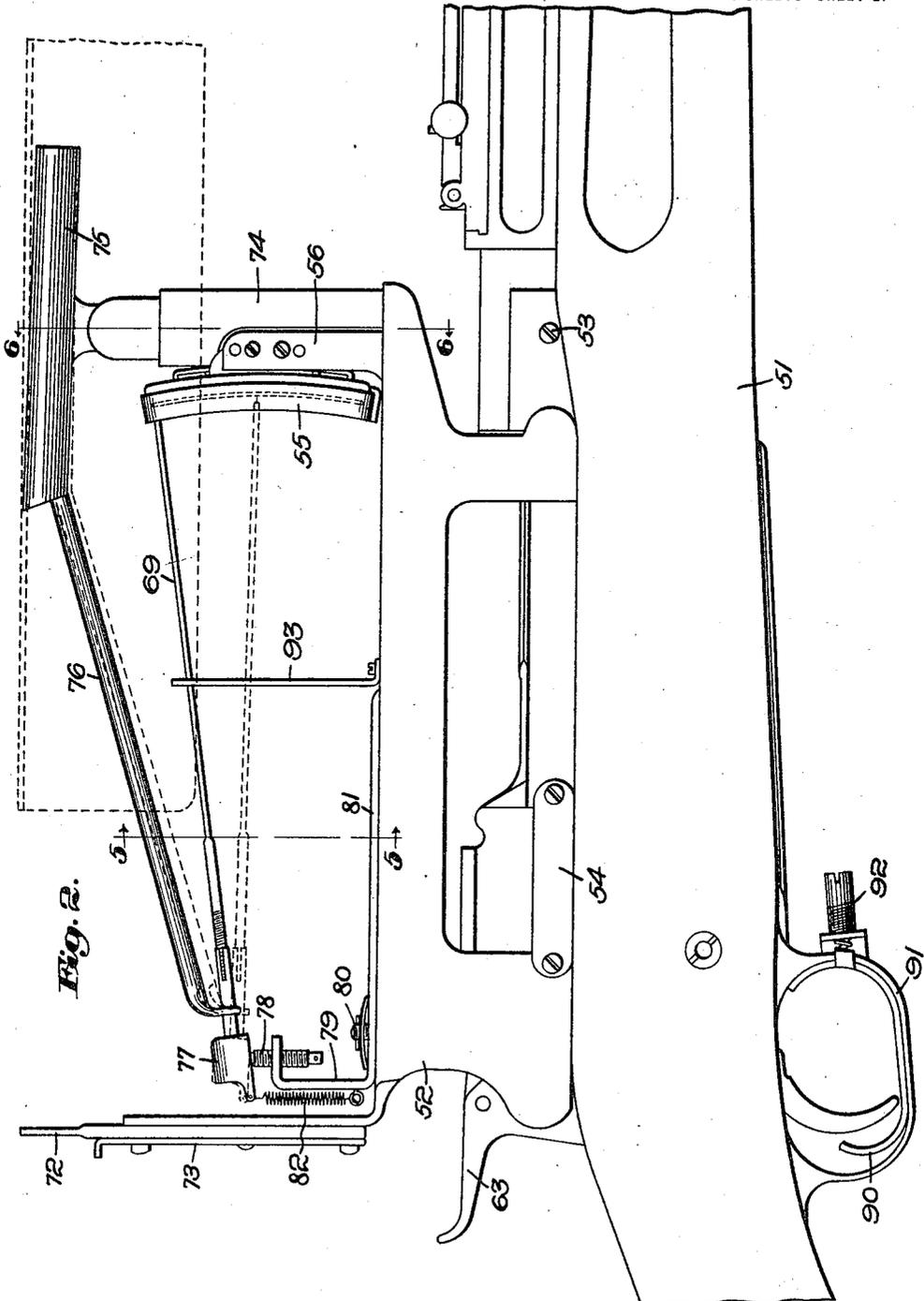
Inventor:
 Henry H. Cummings.
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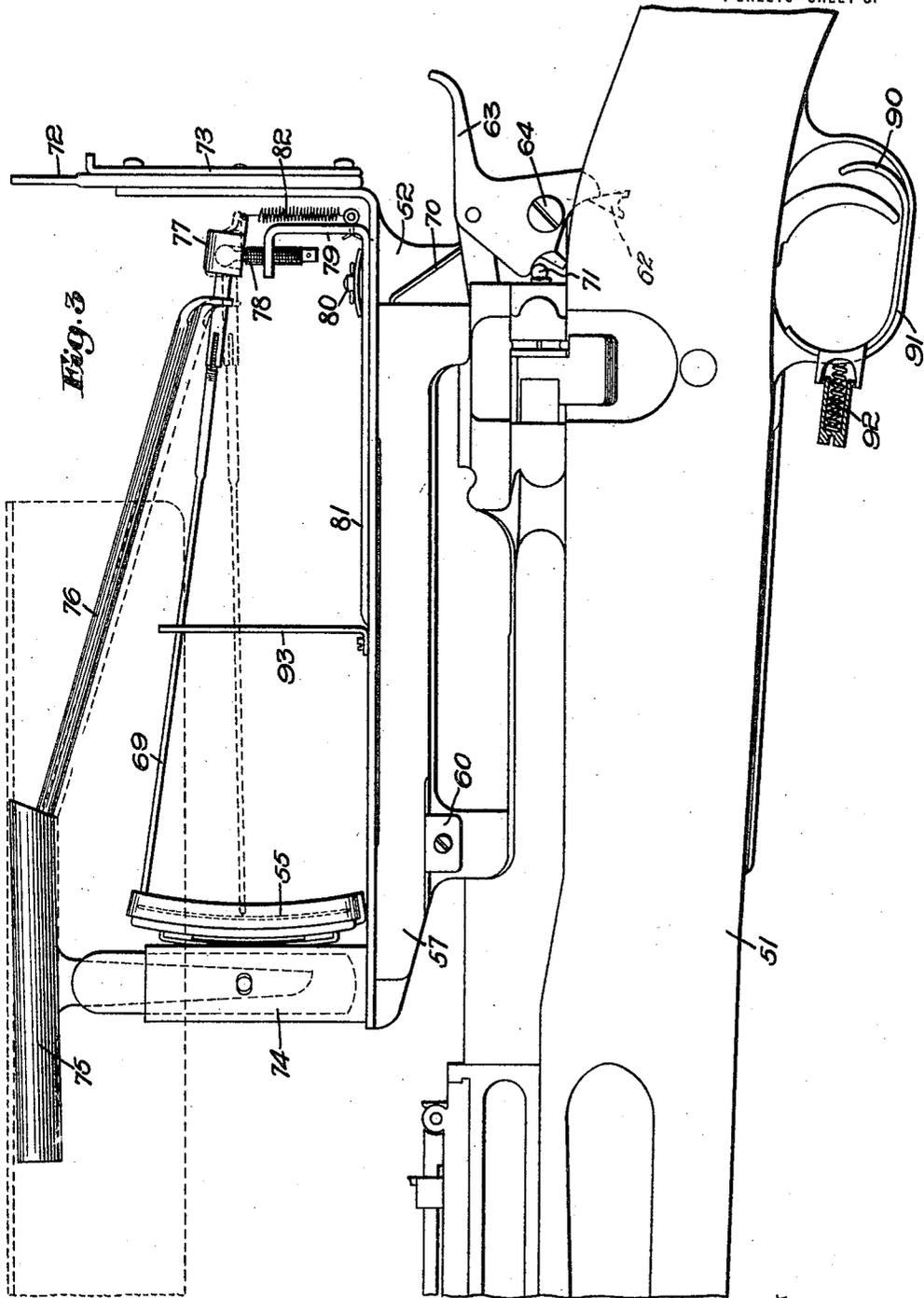


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 4 SHEETS—SHEET 4.

Fig. 4.

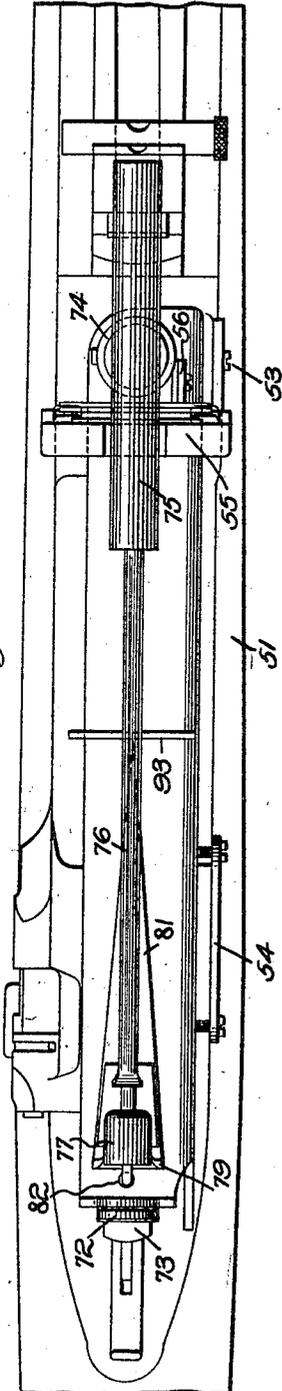


Fig. 5.

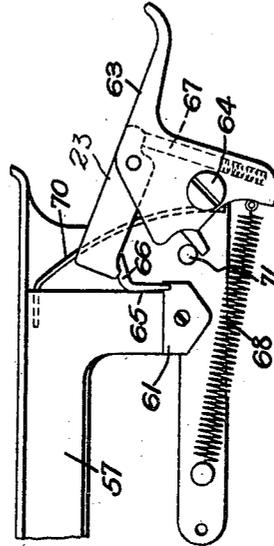


Fig. 6.

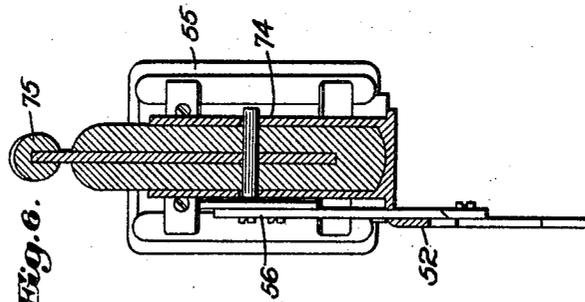
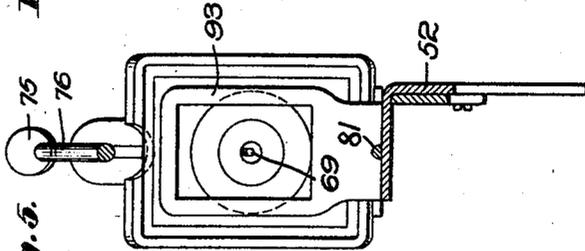


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY H. CUMMINGS, OF BOSTON, MASSACHUSETTS.

TARGET-PRACTICE APPARATUS.

1,323,841.

Specification of Letters Patent.

Patented Dec. 2, 1919.

Application filed March 22, 1917. Serial No. 156,755.

To all whom it may concern:

Be it known that I, HENRY H. CUMMINGS, a citizen of the United States, having a place of business at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Target-Practice Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts:

My invention pertains to improvements in target practice apparatus, and is particularly concerned with target practice apparatus employing a device or devices to be aimed and so associated with other means as to enable a marksman, through their use to acquire skill and proficiency without the use of ammunition and without the necessity for an extended space within which to conduct the practice.

Among the objects of my invention are to provide target practice apparatus which, in use, more nearly approaches conditions prevailing where ammunition and long range are provided, and which if desired permits the use of a standard military rifle by the application of simple devices readily removed, which do not interfere in any way with the use of the rifle with ammunition, when so desired.

In the drawings I have shown, for illustrative purposes, one embodiment of a preferred construction of my invention.

In the drawings:—

Figure 1 is a perspective, showing an illustrative use of that embodiment of my invention, selected for descriptive purposes.

Fig. 2 is a side elevation of a military rifle in which the preferred mechanism has been attached for scoring and making a record of the aim of the marksman without the use of ammunition.

Fig. 3 is a side elevation of the opposite side of the rifle equipped with the cooperative parts shown in Fig. 2.

Fig. 4 is a plan of the parts shown in Figs. 2 and 3.

Fig. 5 is a section partially in elevation on the lines 5—5 of Fig. 2.

Fig. 6 is a section partially in elevation on the line 6—6 of Fig. 2.

Fig. 7 shows a detail of the hammer of the target practice apparatus with its cooperating parts which are hereinafter more specifically referred to.

Fig. 8 is a top plan view, partially broken

away, showing the operation of the devices cooperating with the gun and attached parts for correlating the position of the registering device with the registering target in the same manner as the projectile, had one been fired, would have registered on the objective target.

Figs. 9, 10 and 11 show details of mechanism shown in Fig. 8 and are hereinafter more specifically referred to.

In the illustrative embodiment of the preferred construction of my invention shown in the drawings, (Fig. 1) I have shown an objective target 40, and a standard 41, located at a definite predetermined distance from the objective target 40. The standard 41 is preferably provided with a projecting arm 42, carrying at its outer end an alinable main fulcrum 43 which is adjustable by adjusting screws 44 (Fig. 10).

The adjustable main fulcrum is preferably tubular and provided with the cross hairs 45, for alinement with a small hole 46 in one end thereof (Fig. 9).

The alinable main fulcrum 43 preferably carries yoke members 47 and 48, hinged to the fulcrum element 49. Attached to the yoke member 48 I preferably provide a scoring needle controller guide 50.

The scoring needle controller guide 50, the yoke fulcrum 49 and the alinable main fulcrum 43 are relatively positioned and alined so that the axis of the alinable main fulcrum 43, the axis of the yoke fulcrum 49 and the sights of the gun, when in proper relation to the scoring needle controller guide, all converge at a point located at the same distance from the standard 41, as the objective target is located.

It will be understood that where a mirror is used, as shown in my Patent 739,778, issued to me September 22, 1903, a reflected objective target will be only one-half the distance to the point of convergence above referred to.

I will now describe the gun and preferred form of recording and synchronizing mechanism selected as illustrative of my invention. Referring to Fig. 2, I have shown the breech portion of a standard military rifle 51, from which the breech bolt has been withdrawn, and to which a frame member 52 has been attached by a locating screw 53, extending through and fitting a hole which is present in all U. S. standard army rifles, the screw 53 passing through the breech

bolt guide into a tapped hole in a projection from the frame member 52. I have also provided a clamp 54 engaging the rear portion of the breech bolt guide of the gun. The screw 53 and the clamp 54 hold the frame member 52 rigid and insure a predetermined relation between the frame member 52 and the parts carried thereby and sights on the gun barrel. I prefer that the score registering target move relative to the score registering needle when the trigger is pulled, and to this end I have provided the target container 55, carried by an arm 56, projecting upwardly through a slot in the upper surface of the frame element 52 from the target slide 57, which is rectilinearly reciprocable between the lower side of the upper portion of the frame element 52 and guides 60 and 61, best shown in Figs. 3 and 7 respectively.

In Fig. 3 I have indicated the sear 62 of the gun, which is retracted when the trigger of the gun is pulled. I have further shown the hammer element 63 pivoted on the screw 64, which is secured to the frame element 52. The illustrative hammer element 63 is cocked by being pushed forward by the thumb. It is held in a cocked position so long as the sear 62 engages the sear engaging portion of the hammer 63. Attached to the hammer 63 I have shown a cam wiper 23, adapted, when the gun is cocked by pushing forward the hammer 63, to engage the front surface 65 of the cam 66. The rear end of the cam wiper 23 is preferably pushed upwardly by a spring pressed bolt 67, so that the forward end of the cam wiper has a tendency to move in a downward direction. Assuming that the parts are in uncocked position as shown in Fig. 7, the cocking of the hammer 63 causes the cam wiper 23 to ride over the cam 66 without pulling back the scoring target slide 57. The cocking of the hammer 63 exerts a tension on the hammer spring 68 which tends to pull the lower end of the hammer 63 forward and hence to move rearwardly the upper end of the hammer 63 and the cam wiper 23. As soon as the sear releases the hammer the cam wiper 23, acting on the surface 55 of the cam 66, draws back the target slide 57, thereby pulling the target back against the scoring needle 69 and causing a slight indentation in the face of the target to be made by the point of the scoring needle 69. After the target slide 57 has been pulled back sufficiently to register the shot, the cam wiper 23 rides over the top of the cam 66, thereby permitting the spring 70 (Fig. 7) to return the target to its initial position, thereby releasing the point of the scoring needle.

To define the limits of movement of the hammer 63, I preferably provide a hammer limiting pin 71, which limits the movement

of the hammer on both its cocking and discharging movements.

I will now describe the mechanism carried by the frame element 52 for synchronizing the relation of the scoring needle 69 with the target carried by the scoring target container 55.

To the forward end of the frame element 52 I have attached a scoring needle controller support 74 carrying the scoring needle controller 75 which is preferably T-shaped as shown, and provided with a connection with the scoring needle controller support which permits limited rotary movement of the scoring needle controller relative to the scoring needle controller support, and which permits a slight rocking of the scoring needle controller lengthwise of the gun.

Projecting rearwardly from the scoring needle controller, and preferably rigidly attached thereto, I provide a scoring needle controller arm 76, provided at its rear end with an aperture through which the scoring needle 69 passes. The scoring needle 69 is provided at its rear end with a scoring needle socket 77 engaging the top of the scoring needle fulcrum screw 78, which is carried by the bracket 79, carried by the frame element 52. The bracket 79 is preferably pivoted at 80 and provided with a forwardly extending base 81, constituting a preferred form of lateral synchronizer for the needle.

The scoring needle spring 82 is preferably connected to the bracket 79 and to a projection from the scoring needle socket and tends to keep the scoring needle 69 in the upper portion of the target and the scoring needle controller 75 tipped forward as shown in full lines in Fig. 3.

Any suitable provision may be made for adjusting the mechanism relative to the sights of the gun, but I prefer to provide a gun synchronizer typified by the detachable upstanding element 72 which is preferably of malleable metal, so that it can be drawn out, if necessary, or filed until the top of the element 72 is exactly the same distance from the line of sight of the gun that the center portion of the scoring needle controller 75 is located from the line of sight of the gun. Thus, in adjusting the scoring apparatus the synchronizer 72 and the scoring needle controller are held in contact with the scoring needle controller guide, the alinable fulcrum 43 being alined with the objective target and the sights of the gun being alined with the objective target. The screw 78 and the lateral synchronizer 81 are then adjusted so that the scoring needle coincides with the scoring target. After this adjustment the gun synchronizer 72 may be removed, or, if it is not removed, the gun should be held during practice shots with the synchronizer

out of contact with the scoring needle controller guide, as shown in Fig. 3.

The operation of the invention is as follows:

5 An objective target 40 is placed at a predetermined distance, for example 75 feet from the standard 41. The standard is then turned until the alineable main fulcrum 43 points in the general direction of the target.
 10 The adjusting screws 44 are then adjusted until the cross hairs of the alinable main fulcrum 43 cut the bull's eye of the objective target. The scoring needle controller guide will then be so positioned, relative to the bull's-
 15 eye of the objective target 40, that when the scoring needle controller 75 is in contact with the groove on the upper side of the scoring needle controller guide 50, and the sights of the gun are exactly alined with the bull's-eye
 20 of the objective target, the scoring needle will be exactly in alinement with the bull's-eye of the scoring target. This will be true whether the scoring needle controller guide be held by a tall marksman at a relatively
 25 high, or by a short marksman at a relatively low position relative to the alinable main fulcrum.

A marksman first cocks the gun by pushing the hammer 63 forward, thereby catching
 30 the cam wiper 23 on the surface 65 of the cam 66. The marksman then raises the gun until the top of the scoring needle controller 75 is in contact with and lifts the scoring needle controller guide 50. He then
 35 sights the gun over its regular sights at the objective target, and in due course pulls the trigger, thereby pulling down the sear 62 and permitting the hammer spring 68 to pull the top of the hammer backward, thereby
 40 pulling back the scoring target slide 57 and the scoring target, and causing the scoring needle to register the shot on the scoring target. During the firing operation the marksman cannot see the scoring target because the
 45 frame 52 is interposed between his eye and the scoring target.

To compensate for the amount by which the removal of the breech bolt has reduced the usual tension on the trigger, I preferably
 50 provide a trigger tension adjuster, typified by the spring 90, which is preferably attached to the trigger guard 91 of the gun by a hollow adjusting screw 92 having a spring therein which presses against the trigger
 55 guard 91. After the release of the hammer, and after the scoring target has been drawn back so that the scoring needle has registered, the cam wiper 23 rides over the top of the cam 66 thereby permitting scoring target to be returned to its initial position by
 60 the spring 70, and so freeing the point of the scoring needle.

Assuming that the aim of the marksman has been correct, the groove in the scoring
 65 needle controller guide will have been in

contact with the entire length of the scoring needle controller 75 and the latter will have been exactly parallel with the line of the sights of the gun. Under these conditions the scoring needle will have registered with
 70 the bull's-eye.

If, on the other hand, the gun be pointed too high, the needle controller will have been tipped forward at its front end, relative to
 75 line of the sights of the gun, thereby raising the scoring needle controller arm 76 and raising the scoring needle 69 to a point above the bull's-eye.

Similarly, if the gun were aimed too low, the scoring needle controller would be tipped
 80 toward the rear of the gun, thereby depressing the scoring needle controller and causing it to register below the bull's-eye.

If the gun is not correctly alined laterally with the bull's-eye of the objective target,
 85 the scoring needle controller will have been turned by the scoring needle controller guide out of lateral alinement with the line of the sights of the gun and will in turn have moved the scoring needle correspondingly
 90 to the right or left of the bull's-eye on the scoring target. The scoring needle limiting plate 93 serves to prevent such displacement of the scoring needle as to cause the latter to be moved outside of the edges of the tar-
 95 get container 55.

The principal advantages of the mechanism described over the usual forms of target practice apparatus adapted for use
 100 without ammunition, are the entire separability of the gun from the standard and associated parts; the similarity in weight and poise of the gun during target practice to its weight and poise when in use with ammunition; the accuracy of the scoring
 105 mechanism, the simplicity of parts and the ease of adjustment.

While I have shown and described one embodiment of the preferred form of my invention, it will be understood that
 110 changes, involving omission, substitution, alteration, or reversal of parts, and changes in method of operation may be made without departing from the scope of my invention, which is best defined in the following
 115 claims.

Claims:

1. Target practice apparatus comprising in combination a gun having a trigger and sights, an objective target and scoring mechanism for recording the relation of the line of said sights to said objective target without the use of ammunition, said scoring mechanism including means carried by the gun and cooperating means fixed relative to the target, said gun and means carried thereby being entirely free of and separable from said cooperating means fixed relative to the target.

2. Target practice apparatus comprising 120

in combination a gun having sights and a trigger; an objective target, and scoring means for indicating the relation of the line of said sights to the target, said scoring means including alined means having at all times a predetermined relation to the objective target, and cooperating means carried by said gun, said gun and said cooperating means being normally entirely separate and free from said alined means, except during the periods of aiming said gun and operation of said scoring means.

3. Target practice apparatus comprising in combination a gun having sights and a trigger; said gun carrying a scoring target, a scoring needle, and a scoring needle controller; and a scoring needle controller guide carried by a support fixed relative to the objective target, said controller guide being movable in all directions while remaining alined with the objective target.

4. Target practice apparatus comprising in combination a gun having sights and a trigger; said gun carrying a scoring target, a scoring needle, and a scoring needle controller; and a scoring needle controller guide carried by a support fixed relative to the objective target and entirely separate from said gun and the parts carried thereby.

5. Target practice apparatus comprising in combination a gun having sights and a trigger; scoring means, an objective target; and a fixed support having an alinable main fulcrum for alinement with said objective target, a controller guide for the scoring means carried by said alinable main fulcrum and movable in any direction in a plane substantially transverse to the axis of said fulcrum; while retaining a predetermined relation to the objective target.

6. Target practice apparatus comprising in combination a gun, carrying a scoring target, a scoring needle, and a scoring needle controller; a cooperating fixed support having an alinable main fulcrum carrying cross hairs for alinement with an objective target, and a scoring needle controller guide carried by said alinable main fulcrum and movable in any direction in a plane substantially transverse to the axis of said main fulcrum.

7. Target practice apparatus comprising, in combination, a gun having a barrel and sights alined therewith, a scoring target and a scoring needle above the line of said sights and means for coordinating the line of said sights relative to the objective target and the relative position of said scoring target and scoring needle.

8. Target practice apparatus comprising, in combination, a control support, a scoring device control part carried thereby and movable into a plurality of positions while maintaining a predetermined alinement relative to the objective target, and an am-

munitionless gun device entirely separate from said control part and carrying a cooperating scoring device control part and a scoring target and scoring target marking device controlled one relative to the other by the relative engagement of said scoring device control parts.

9. A gun for use in target practice without ammunition, comprising scoring means and a hammer which is cocked by forward movement of the top thereof.

10. A gun for use in target practice without ammunition, comprising in combination scoring means, a hammer, a cam wiper connected to said hammer for movement thereby and a cam for imparting movement to said scoring means on movement of said cam wiper by said hammer.

11. A gun for use in target practice without ammunition comprising in combination scoring means, a hammer, a cam wiper connected to said hammer for movement thereby, and a cam for imparting movement to said scoring means by movement of said cam wiper in one direction only.

12. A gun for use in target practice without ammunition comprising in combination a scoring target, a slide connected thereto, a cam on said slide, hammer actuated means for imparting scoring movement to said slide in one direction, and spring controller means for imparting movement to said slide in the opposite direction.

13. A gun for use in target practice without ammunition comprising in combination a scoring target, a hammer cocked by forward movement of the top thereof, and means actuated by rearward movement of the top of said hammer for imparting scoring movement to said scoring target.

14. Target practice apparatus comprising, in combination, a control standard, a lever pivoted thereto about an axis alined with an objective target, a second lever pivoted to the first-named lever about an axis alined with the objective target scoring device controlling means carried by said second lever and alined with said objective target, a gun having a scoring device for cooperation with said scoring device controlling means, said scoring device controlling means being movable in all directions transverse to its axis while maintained in alinement with the objective target.

15. Target practice apparatus comprising, in combination, a gun having a front and a rear sight and scoring mechanism carried by said gun above the line of said sights and concealed from the eye of the marksman when it is alined with said sights.

16. A gun for use in target practice without ammunition comprising, in combination a scoring target, a scoring needle, and a scoring needle controller extending in the general direction of the barrel of said gun

and having provision for movement about an axis intersecting its axis substantially at right angles, and for movement about a second axis intersecting said first named axis substantially at right angles, but at a point located a considerable distance below the top of said scoring needle controller.

17. A gun for use in target practice without ammunition, having a trigger and provided with scoring means, including a frame carried by the breech of the gun, and having mounted thereon a scoring target, a scoring needle, a scoring needle controller, and scoring target moving means operable on pulling the trigger of said gun to move said target against the point of said scoring needle.

18. Target practice apparatus comprising in combination an objective target, a gun carrying scoring means, cooperating means cooperating with said scoring means and having a predetermined relation to said objective target, said gun and scoring means being unattached to said cooperating means.

19. Target practice apparatus comprising in combination a barrel, a trigger and scoring mechanism controlled by said trigger,

and above the line of said barrel, said scoring mechanism including a scoring target, a scoring needle, means for coordinating the line of the sights relative to the objective target and the position of the scoring needle relative to the scoring target and means controlled by said trigger for actuating relative moving together of said scoring target and said scoring needle.

20. Target practice apparatus comprising the combination of scoring mechanism for attachment to the breech of a gun on removal of the breech bolt thereof and controlled by the sear of said gun.

21. Target practice apparatus comprising, in combination a gun having a trigger and sights, an objective target, and scoring mechanism carried by the gun for recording the relation of the line of said sights to said objective target without the use of ammunition, scoring mechanism controlling means, said gun and means carried thereby being entirely free and separable from said scoring mechanism controlling means.

In testimony whereof, I have signed my name to this specification.

HENRY H. CUMMINGS.