J. M. CLARK, 3D.

TARGET PRACTICE APPARATUS.

APPLICATION FILED DEC. 7, 1909.

971,828.

Patented Oct. 4, 1910.

2 SHEETS—SHEET 1.

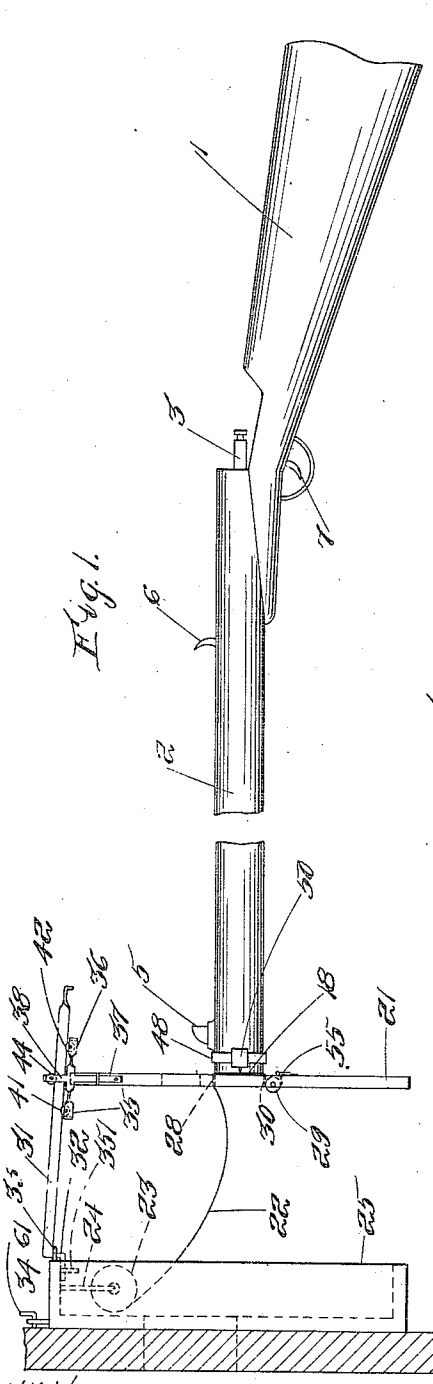

Fig. 1.

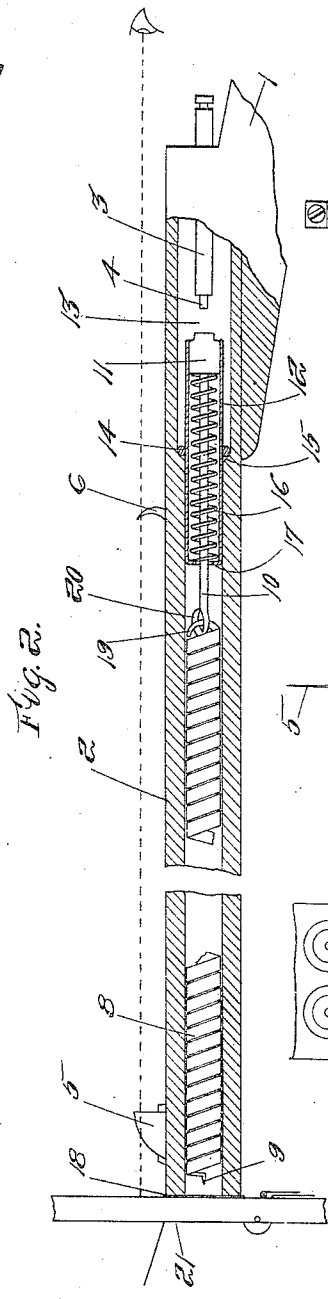

Fig. 2.

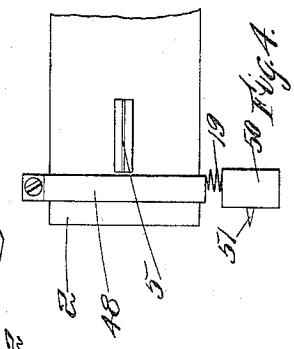

Fig. 4.

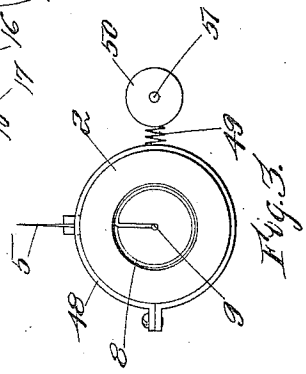

Fig. 5.

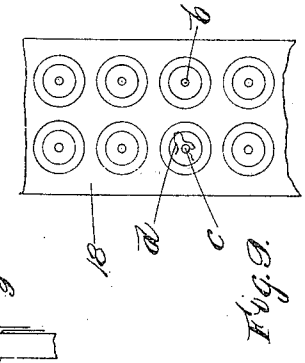

Fig. 6.

Witnesses:

John H. Parker

R. Wallace.

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2 SHEETS—SHEET 2.

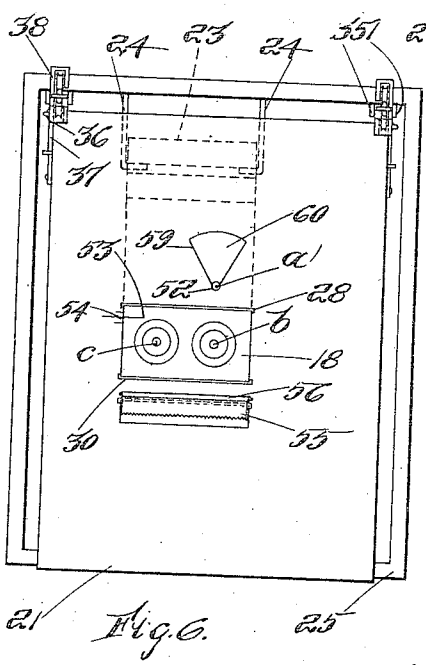

Fig. 6.

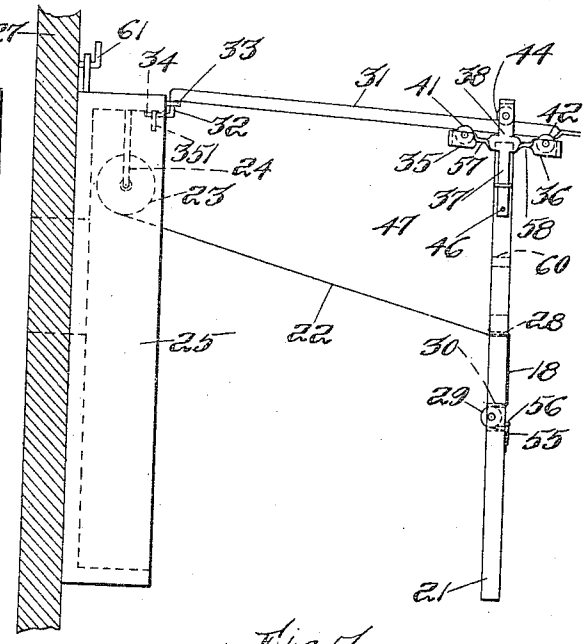

Fig. 7.

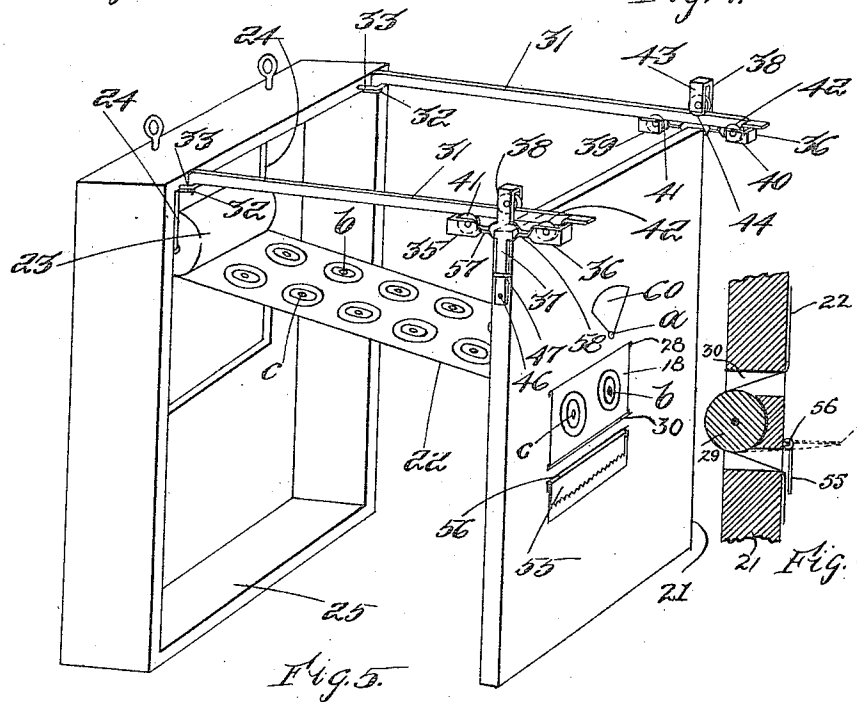

Fig. 5.

Fig. 8.

Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES M. CLARK, 3RD, OF PROVIDENCE, RHODE ISLAND.

TARGET-PRACTICE APPARATUS.

971,828. Specification of Letters Patent. Patented Oct. 4, 1910.

Application filed December 7, 1909. Serial No. 531,795.

To all whom it may concern:

Be it known that I, JAMES M. CLARK, 3rd, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Target-Practice Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to an improvement in target practice apparatus for small fire-arms.

The object of the invention is to provide a practice apparatus in which a permanent or self-recording record may be made of any wabbling or vibrating movement of the muzzle of the gun during the aiming so that the instructor and the pupil can both by study of the record observe the unsteadiness of the hand or the various movements of the muzzle of the gun in aiming, also an improved target and holder, and an improved mechanism for actuating the needle.

In carrying out this invention there is provided a target and a fire arm equipped with mechanism which can be operated by a trigger as in an ordinary fire arm, the mechanism which is actuated by the firing mechanism of the fire arm including a pointed needle which has a limited range of movement and which is adapted to pierce the target when driven forward and is provided with recoil mechanism which draws the needle back into the barrel of the gun after the firing, the target being so constructed that it is adapted to be maintained in contact with the end of the barrel of the fire arm during the entire aiming the barrel being equipped with a recording instrument which will record upon the target the lateral or vibratory movements of the muzzle of the barrel while it is pressed against the target.

The invention will be fully understood from the following description taken in connection with the accompanying drawings, and the novel features are pointed out and clearly defined in the claims at the close of the specification.

In the drawings,—Figure 1 is a side elevation of a fire arm and target attachment illustrating the invention. Fig. 2 is a longitudinal section, partly broken away, showing the inside construction of the fire arm. Fig. 3 is an end view, and Fig. 4 is a plan, showing the muzzle end of the fire arm with the marking attachment. Fig. 5 is a perspective view of the target portion of the invention. Fig. 6 is an end view and Fig. 7 is a side view of the target and holder. Fig. 8 is an enlarged vertical sectional view through the target block or holder, partly broken away, showing the means for severing the used up target from the strip. Fig. 9 is a view of a portion of a target strip.

The apparatus is adapted to be used with a rifle of any ordinary breech-loading type.

In the drawings 1 represents the stock and 2 the barrel of a rifle of ordinary construction having a firing bolt 3 and firing pin 4, a foresight 5 and rearsight 6. The gun may be equipped with mechanism of well known construction controlled by a trigger 7 to actuate the firing bolt. Fitting loosely within the barrel of the gun so as to be slidable therein is a spring 8, preferably made of flat steel wire wound close and terminating at its forward end in a needle 9 central with the axis of the barrel and preferably made integral with the spring. With the normal adjustment of the parts the needle will extend nearly to the front end of the barrel, but preferably about an eighth of an inch back of the muzzle. The spring 8 is of somewhat less length than the barrel, the rear end of the spring being connected with a rod 10 to the rear end of which is secured a piston head or movable plug 11. The means shown for connecting the rod 10 with the spring 8 is to form the rear end of the spring with a hook 19 and to form the forward end of the rod 10 with an eye or loop 20 with which the hook 19 engages. The purpose of making the connection in this way is to permit the spring 8 to be detached from the rod 10 for convenience in assembling and removing the parts. A tube 12, which is partly within the chamber 13 of the gun and extends for some distance into the barrel, has a sliding fit within the barrel and is formed with a ring 14 around its periphery which is adapted to bear against the shoulder 15 at the inner end of the cartridge chamber to limit the forward movement of the tube 12. The block 11, to which the rear end of the rod 10 is fastened, has a sliding fit within the tube 12, said tube 12 being crimped over at its rear end to prevent the plug from being pushed rearwardly

out of the tube. Inclosed within the tube is a spiral spring 16 which surrounds the rod 10, the rear end of the said spring being fast to or abutting against the inner end of the plug 11, and the forward end of the spring 16 abutting against the crimped inner end 17 of the tube 12. The spring 16 is preferably lighter and more open than the spring 8. When the trigger is pulled and the hammer strikes the firing bolt 3, the bolt is driven forward until the pin strikes the plug 11, the force of which is imparted to the small rod 10 driving it forward a short distance and thereby forcing the spring 8 forward sufficiently to cause the needle 9 to protrude from the barrel a sufficient distance to puncture the target 18 if the target 18 is in contact with the muzzle end of the barrel. Not only will the spring 8 be driven forward a distance as great as the movement of the rod 10, but also the effect of the sharp blow of the firing pin upon the plug 11 is to cause the closely wound spring 8 to expand somewhat, so that the forward end of the spring 8 will move forward a distance equal to the movement of the rod 10 plus the expansion of spring 8. It is not necessary for the movement to be great. If the rod 10 moves forward one eighth of an inch the expansion of the spring might be one-sixteenth of an inch so that the needle will have a total movement of three-sixteenths of an inch. The distances above given are merely for illustration, and I do not intend to be limited thereby. When the plug 11 is driven forward it compresses the spring 16 which, after the hammer is cocked again, so that the firing pin may be retracted, will expand and carry the plug 11 back to the rear end of the tube 12, thereby also retracting the spring 8. The spring 8 has sufficient resiliency in itself to cushion the blow of the needle 9 and also to recoil sufficiently to withdraw the needle 9 from the target after it is first punctured before the firing pin 4 is moved back from the plug 11 to permit the plug and the rod 10 to move back with the recoil of the spring 16.

The target 18 is attached to a target holder or block 21 which is mounted in such a way that if the gun is held with the muzzle against the target there will be a constant yielding pressure of the target against the end of the gun such that it may yield to a forward push of the barrel of the gun but at the same time will be maintained in contact with the end of the barrel of the gun even while yielding to the pressure by the barrel.

The targets which are preferably to be used are paper targets 18 formed in series on a strip of paper 22 so that when one target is used up, it may be torn off of the strip and the strip drawn down into a position to expose another target. The preferred method of arranging the target strip is to have it wound in the form of a roll 23 from which it can be reeled off onto the front face of the target holder 21 as will now be more particularly described. The roll 23 is journaled upon hangers 24 which are suspended from the top of a box 25 which is hung upon hooks 61 projecting from a suitable frame or fixed support 27. The target strip is threaded through a slit 28 in the target holder; thence is carried down over the front face of the target holder; thence back through the slot 30 and around again through the holder to the front over a roller 29 journaled in the holder so that the target will be held taut. The distance between the slit 28 and the slot 30 is sufficient for the exposure of a single target sheet 18. When it is desired to pull down the strip to remove the old target sheet and expose a new one, the strip 22 can be pulled forward to unroll a sufficient length from the reel and then by pulling down on the lower end it can be drawn down sufficiently to expose the new target sheet upon the face of the holder. In order that the used up target sheet may be severed from the strip I provide a tearing plate 55 hinged at 56 so that normally the tearing plate will hang down as shown in Fig. 8. The target strip runs down between the tearing plate and the target holder. The tearing plate can be turned up on its hinge to a position at right angles to the holder. When it is desired to tear off the target the strip is drawn out and pulled up to turn up the tearing plate to a horizontal position and then by a quick lateral turn the paper target can be torn on the edge of the plate. Preferably the tearing plate is formed with teeth.

As already stated the target holder is hung in such manner as to exert a forward pressure against the muzzle of the gun. The manner of hanging the target holder as shown in the drawings is as follows: Secured to the upper edge of the box 25 at opposite corners are two forwardly extending bars or rails 31 which slope downwardly to their forward ends. Preferably these rails 31 are detachably connected with the box as for instance being formed at their rear ends with downwardly extending angle-hooks 32 which pass through staples or eyes 33 secured to the front edge of the box, said angle-hooks having rearwardly extending horizontal portions 34 which are hemmed in on either side by studs 351 so as to prevent swaying movement of the bars 31. The target holder 21 is suspended from two carriages which are adapted to travel respectively upon the two rails 31. Each carriage is constructed as follows: The body of the carriage is in the form of a cross having the two lateral arms 35, 36, and the vertical downwardly extending portion 37 and the vertical upwardly extending portion 38.

The two lateral arms 35, 36 have their ends reversely turned forming ears 39 and 40 respectively between which and their respective arms 35, 36, are journaled the rollers 41, 42 which are adapted to bear against the under side of the rail 31 and the upwardly extending portion 38 is reversely turned forming an ear 43 between which and the upright portion 38 is journaled a roller 44 which is adapted to ride upon the upper side of the rail 31, so that as the carriage travels over the rail 31, the rollers 41 and 42 will engage the under side of the rail and the roller 44 will engage the upper side of the rail. The lower end of the rail 31 is flattened out laterally as shown in Fig. 5 or otherwise formed with a stop which prevents the carriage from rolling off the forward end of the rail. The lateral arms 35, 36 are twisted to flatten them to form spring necks 57, 58 so that the cross may have a yielding movement if a sudden unusual pressure is brought against the target holder, otherwise it might break if rigid. On the downwardly extending leg 37 of each carriage is secured the target holder 21, preferably in a detachable manner. The means shown consists of a pin 46 which passes through a hole in the leg 37 near the lower end thereof and enters a pin hole in the side of the target holder 21. A staple 47 inserted in the edge of the target holder above the pin 46 and projecting slightly beyond the edge of the holder, forms a loop through which the downwardly extending leg is passed before the pin 46 is inserted so as to form a guard or steadying means. Thus the target holder can be readily attached to or detached from the two carriages. On account of the downward incline of the rails 31 the carriages and the target holder carried thereby will be normally retained in the position shown in Fig. 7 at the outermost end of the rails at some distance from the box 25.

Each target sheet 18 on the strip is formed with two bull's-eyes *b*, *c*, in horizontal alinement with each other together with concentric rings as usual in the case of targets, as shown in Figs. 5 and 9. A bull's-eye *a* is formed on the target holder in vertical alinement with the bull's-eye *b* a short distance above the bull's-eye *b*. The bull's eye *a* is stationary on the face of the target holder, and it may be formed by marking the bull's-eye directly on the target holder in some contrasting color, as for instance a black bull's-eye with a white or light colored back ground on the holder. The target strip can be drawn down and adjusted so that the distance between the bull's-eye *b* and the bull's-eye *a* can be adjusted for a coarse, medium or fine sight.

Means are provided to insure the proper adjustment of the target strip with relation to the bull's-eye *a*. The preferred means is to form each target sheet with a horizontal line 53 and to form on the target holder a number of parallel horizontal guide lines 54 so located that the target strip may be pulled down to bring the line 53 into registration with any one of the guide lines 54 according to the kind of sight that is being employed.

In order to provide for sighting at distant objects instead of at a spot connected with the target, the target holder is formed with a fan-shaped slot 59 having in its lower end a rounded notch 52 and in this slot 59 is fitted a removable section 60 on the lower end of which is formed the bull's-eye *a* previously mentioned. This removable section 60 is fitted into the slot in such manner that when near sighting is desired, the removable section will be allowed to remain fitted into its position in the target holder so that the marksman can sight at the bull's-eye *a* as previously described. When he desires to sight at a distant object, the removable section 60 will be removed and he will sight through the curved notch 52 in the bottom of the slot. The back wall of the box 25 and the wall of the support 27 are each formed with a hole through which the marksman can see the distant object when sighting through the notch 52. The removable section may be fitted to the slot 59 so closely that friction alone will retain it in position.

Attached to the side of the barrel is a marker 51 which, when the muzzle of the barrel is in contact with the target, will engage the target, and the purpose of the bull's-eye *c* is to record the markings to indicate the degree of wavering movement of the muzzle during the aiming. This marking mechanism which I have provided is as follows:—Clamped to the barrel of the gun near the muzzle is a ring 48 to which is secured by a spring connection 49, a block or other suitable holder 50 carrying a pencil or pin 51 which points forwardly in a line parallel with the axis of the needle 9. The forward end of the pencil 51 extends at least as far forward as the forward end of the barrel and preferably a bare trifle beyond, so that when the end of the barrel rests against the target the pencil 51 will also be in rubbing contact with the target and will describe lines upon the target corresponding with the wavering movements of the end of the barrel. The distance between the centers of the bull's eyes *b* and *c* is equal to the distance between the axial line of the point of the pencil and the axial line of the needle 9, so that if the gun is sighted accurately with the eye in line with the bull's-eye *a* and the point of the needle 9 in alinement with the bull's-eye *b* the point of the pencil 51 will be in alinement with the center of the bull's-eye *c* and the wavering in the holding of a gun will be indicated by the pencil,

shown for instance by the irregular line *d*. This pencil may be any suitable marking device which will leave a print or an impression for a mark of any kind upon the target and in using the term pencil I mean thereby any suitable marking instrument. The pencil holder 50 is spring seated, being shown as connected with the clamping ring 48 by a spring 49 so that the pencil will have a yielding pressure upon the target. The pencil 51 might normally project slightly farther forward than the end of the barrel so as to always insure a rubbing contact of the pencil with the target, the spring yielding sufficiently so that the pencil will be held under tension against the target when the muzzle end of the barrel is pressed against the target.

When the marksman is practicing aiming he will sight through the fore and rear sights at the bull's-eye *a*, or through the notch 52 at the distant object, holding the end of the muzzle against the target and when he thinks he has properly sighted the bull's-eye or distant object he will pull the trigger which will release the mechanism which actuates the firing bolt 3 driving forward the firing bolt to cause the firing pin to strike the plug 11 and to drive forward the spring 8 until the needle 9 punctures the target sheet, the recoil causing the needle 9 to withdraw and then the gun is withdrawn from contact with the target and by inspection the marksman can see not only how nearly to the bull's-eye he has punctured the target but also observes by the marking of the pencil with relation to the bull's-eye *c* how steadily he has held the gun.

What I claim is:

1. In combination with a fire arm having a firing pin and mechanism for actuating the firing pin, a coiled spring adapted to be inserted in the barrel of the fire arm and being slidable therein and having its forward end formed with a straight needle portion fast thereto and in alinement with the axis of the barrel, a head connected with the rear end of the spring slidable therewith and adapted to be engaged by the firing pin whereby the firing pin moves the said entire spring in a forward direction to project said needle end from the muzzle of the fire arm.

2. In combination with a fire arm having a firing bolt and mechanism for actuating the firing bolt, a coiled spring adapted to be inserted in the forward part of the barrel of the fire arm and being slidable therein and being provided at its forward end with a needle which is in alinement with the axis of the barrel, a rod connected with the rear end of said spring and projecting rearwardly, a head on the rear end of said rod, said rod and head being slidable with said needle-carrying spring, said head extending into the cartridge chamber, a spring which normally holds said rod and head in position where the head will be engaged by the firing pin when the firing mechanism is operated, thereby driving said rod forward and imparting a forward movement to the needle-carrying spring and needle whereby the needle is projected outside of the muzzle of the barrel.

3. In combination with a fire arm having a firing bolt and mechanism for actuating the firing bolt, a coiled spring adapted to be inserted in the forward part of the barrel of the fire arm and being slidable therein and being provided at its forward end with a needle which is in alinement with the axis of the barrel, a tube adapted to be inserted in the cartridge chamber of the barrel, means for limiting the forward position of the said tube, a rod whose forward end is secured to the rear end of said needle-carrying spring and whose rear end extends back into said tube, a head on the rear end of said rod fitted to the interior of said tube and slidable therein, means for limiting the rearward movement of said rod and plug, a spring which normally retains said rod and plug in their most rearward position, said rod and plug being so located that the plug is engaged by the firing bolt when the firing mechanism is actuated, thereby driving the said plug and rod forward against the tension of their holding spring and driving forward the needle-carrying spring and needle.

4. In combination with a fire arm having a firing bolt and mechanism for actuating the firing bolt, a coiled spring adapted to be inserted in the forward part of the barrel of the fire arm and being slidable therein and being provided at its forward end with a needle which is in alinement with the axis of the barrel, a tube adapted to be inserted in the cartridge chamber of the barrel, means for limiting the forward position of the said tube, a rod whose forward end is detachably connected with the rear end of said needle-carrying spring and whose rear end extends back into said tube, a head on the rear end of said rod fitted to the interior of said tube and slidable therein, means for limiting the rearward movement of said rod and head in said tube, a spring which normally retains said rod and head in their most rearward position in said tube, said rod and head being so located that the head is engaged by the firing bolt when the firing mechanism is actuated, thereby driving the said head and rod forward against the tension of their holding spring and driving forward the needle-carrying spring and needle.

5. In combination with a fire arm having a firing bolt and mechanism for actuating the firing bolt, a coiled spring adapted to be inserted in the forward part of the barrel of

the fire arm and being slidable therein and being provided at its forward end with a needle which is in alinement with the axis of the barrel, a rod connected with the rear end of said spring and projecting rearwardly, a head on the rear end of said rod, said rod and head being slidable with said needle-carrying spring, said head extending into the cartridge chamber, a spring which normally holds said rod and head in position where the head will be engaged by the firing pin when the firing mechanism is operated, thereby driving said rod forward and imparting a forward movement to the needle-carrying spring and needle whereby the needle is projected outside of the muzzle of the barrel, said needle-carrying spring and needle being of such length and so positioned that in the normally rearward position the needle will be wholly within the barrel.

6. In combination with a fire arm having a firing bolt and mechanism for actuating the firing bolt, a coiled spring adapted to be inserted in the forward part of the barrel of the fire arm and being slidable therein and being formed at its forward end with a needle portion which is in alinement with the axis of the barrel, a rod connected with the rear end of said spring and projecting rearwardly, said rod being slidable together with said needle pointed spring, a spring which normally holds said rod in position where it will be engaged by the firing pin when the firing mechanism is operated, thereby driving said rod forward and imparting a forward movement to the needle pointed spring whereby the needle is projected outside of the muzzle of the barrel.

7. In combination with a fire arm having firing mechanism, a coiled spring adapted to be inserted in the barrel of the fire arm and being slidable therein, said spring terminating at its forward end in a straight pointed portion, means whereby the firing mechanism actuates the said spring and moves the entire spring longitudinally forcing the pointed forward end out of the muzzle of the barrel.

8. In combination with a fire arm having firing mechanism, a coiled spring adapted to be inserted in the barrel of the fire arm and being slidable therein, said spring terminating at its forward end in a straight pointed portion parallel with the barrel, means whereby the firing mechanism actuates the said spring and moves the entire spring longitudinally forcing the pointed forward end out of the muzzle of the barrel and means whereby the said spring and pointed end are automatically retracted after the forward movement.

9. A target holder, hangers secured to the opposite side edges of said target holder at opposite ends of the upper portion thereof, two parallel track bars on which said hangers are adapted to ride, each of said hangers having two sets of rollers, one set of which is adapted to engage with the under sides of the track bars and the other set of which is adapted to engage with the upper sides of the track bars, whereby the hangers may be rolled forward and back on said track bars carrying the attached target.

10. A target holder, hangers secured to said target holder at opposite ends of the upper portion thereof, two parallel track bars on which said hangers are adapted to ride, each of said hangers having two sets of rollers, one set of which is adapted to engage with the under sides of the track bars and the other set of which is adapted to engage with the upper sides of the track bars, whereby the hangers may be rolled forward and back on said track bars carrying the attached target, and means whereby the hangers are normally retained in their most forward position.

11. A target holder, a slidable carriage from which said target is suspended, ways on which said carriage moves, whereby the target is movable broadside in a forward and rearward direction and means which tend normally to retain said carriage and target in their forward position, a support to which said ways at their rear end are connected, a strip of flexible material on which is formed a continuous series of targets wound into a roll, a hanger attached to said support in which said roll is journaled, said target holder being formed with slits, one above the other, spaced apart a distance equal to the length of one of the targets on the strip, said slits being so formed that the target strip may be threaded through the uppermost one of said slits to the front of the target holder, thence down upon the face of the target holder and rearwardly through the lower slit.

12. A target holder, a slidable carriage from which said target is suspended, and ways on which said carriage moves whereby the target is movable broadside in a forward and rearward direction and means which tend normally to retain said carriage and target in their forward position, a support to which said ways at their rear end are connected, a strip of flexible material on which is formed a continuous series of targets wound into a roll, a hanger attached to said support on which said roll is journaled, said target holder being formed with slots, one above the other, a roll journaled in the lower slot around which the target strip may run, so that the target strip may be threaded through the uppermost one of said slots to the front of the target holder, thence down upon the face of the target holder, thence rearwardly and to the front again around said roll.

13. A target holder, a slidable carriage from which said target is suspended, ways on which said carriage moves, whereby the target is movable broadside in a forward and rearward direction and means which tend normally to retain said carriage and target in their forward position, a support to which said ways at their rear end are connected, a strip of flexible material on which is formed a continuous series of targets wound into a roll, a hanger attached to said support in which said roll is journaled, said target holder being formed with a slit through which the target strip may be threaded to the front face of the target holder.

14. In combination with a fire arm, a target practice attachment comprising a needle and intermediate mechanism adapted to be inserted in the barrel of the fire arm and actuated by the firing mechanism to project the needle a limited distance from the end of the barrel, means for limiting the forward thrust of the needle and a marking device attached to the barrel projecting at least as far forward as the end of the barrel whereby, if the end of the muzzle is held against the target in aiming the fire arm, the marking device will record upon the target any oscillating and vibratory movements of the barrel.

15. In combination with a fire arm, a target practice attachment comprising a needle carried by and slidably supported with relation to the barrel and intermediate mechanism adapted to be actuated by the firing mechanism to project the needle a limited distance from the end of the barrel, and a marking device attached to the barrel whereby, if the end of the muzzle is held against the target in aiming the fire arm, the marking device will record upon the target any oscillating and vibratory movements of the barrel.

16. In combination with a fire arm, a target practice attachment comprising a needle and intermediate mechanism adapted to be inserted in the barrel of the fire arm and actuated by the firing mechanism to project the needle a limited distance from the end of the barrel, and a marking device attached to the barrel whereby, if the end of the muzzle is held against the target in aiming the fire arm, the marking device will record upon the target any oscillating and vibratory movements of the barrel.

17. In combination with a fire arm, a target practice attachment comprising a needle and intermediate mechanism adapted to be inserted in the barrel of the fire arm, and actuated by the firing mechanism to be projected a limited distance from the end of the barrel, a fore sight and a rear sight on the barrel of the fire arm, a marking device attached to the barrel and extending parallel therewith at one side of the barrel pointing toward the front, a target having three bull's-eyes thereon positioned in relation to each other and the same distance apart from each other as are the line connecting the fore sight and rear sight, the line of the axis of the needle and the line of the axis of the marking device with relation to each other so that if the barrel of the gun is held against the target in such manner that the line of the sights is in line with one of the bull's-eyes and the axis of the needle is in line with another bull's-eye, the marking device will be in line with a third bull's-eye.

18. A target holder, a strip containing a series of target sheets of uniform length formed in a roll, a hanger on which said roll is journaled back of the target holder, said target holder being formed with a slit through which the target strip may be threaded from the rear to the front face of the target holder, a guide mark on the target holder and a guide mark on each target sheet to indicate the positioning of the target sheet.

19. A target block, a strip containing a series of target sheets, said target block being formed with a slit through which the target strip may be threaded from the rear to the front face of the target block, a second slit at some distance below the first slit and a roller journaled in said lower slit around which the target strip may be passed from front to rear and from rear to front again.

20. A target block, a strip containing a series of target sheets, said target block being formed with a slit through which the target strip may be threaded from the rear to the front face of the target, a second slit at some distance below the first slit, a guide in said lower slit with a space above and below it so that the strip may be threaded back around said guide to the front again and a tearing plate attached to the target in such manner that the downwardly hanging portion of the strip, after it has passed around the said guide, may be engaged with said tearing plate to sever the strip.

21. A target block provided with an opening having a rounded notch in the lower end which is adapted to be used as a sight opening through the target at a distant object and a removable section which fits into said opening and is adapted to be detachably held therein, the rounded lower end of said removable section which fits in said rounded notch being colored with a contrasting color to the face of the target block to represent a bull's-eye.

22. In combination with a fire arm, a coiled spring adapted to be inserted in the barrel of the fire arm and being slidable therein, said spring terminating at its forward end in a straight pointed portion, means whereby the firing mechanism im-

parts a sharp blow to the rear end of said spring, thereby causing the whole spring to move slightly forward and expanding the spring so that the forward end moves a greater distance than the rear end and causing the pointed end to travel a greater distance than the rear end of the spring.

In testimony whereof I affix my signature, in presence of two witnesses.

JAMES M. CLARK, 3RD.

Witnesses:
WILLIAM A. COPELAND,
ALICE H. MORRISON.