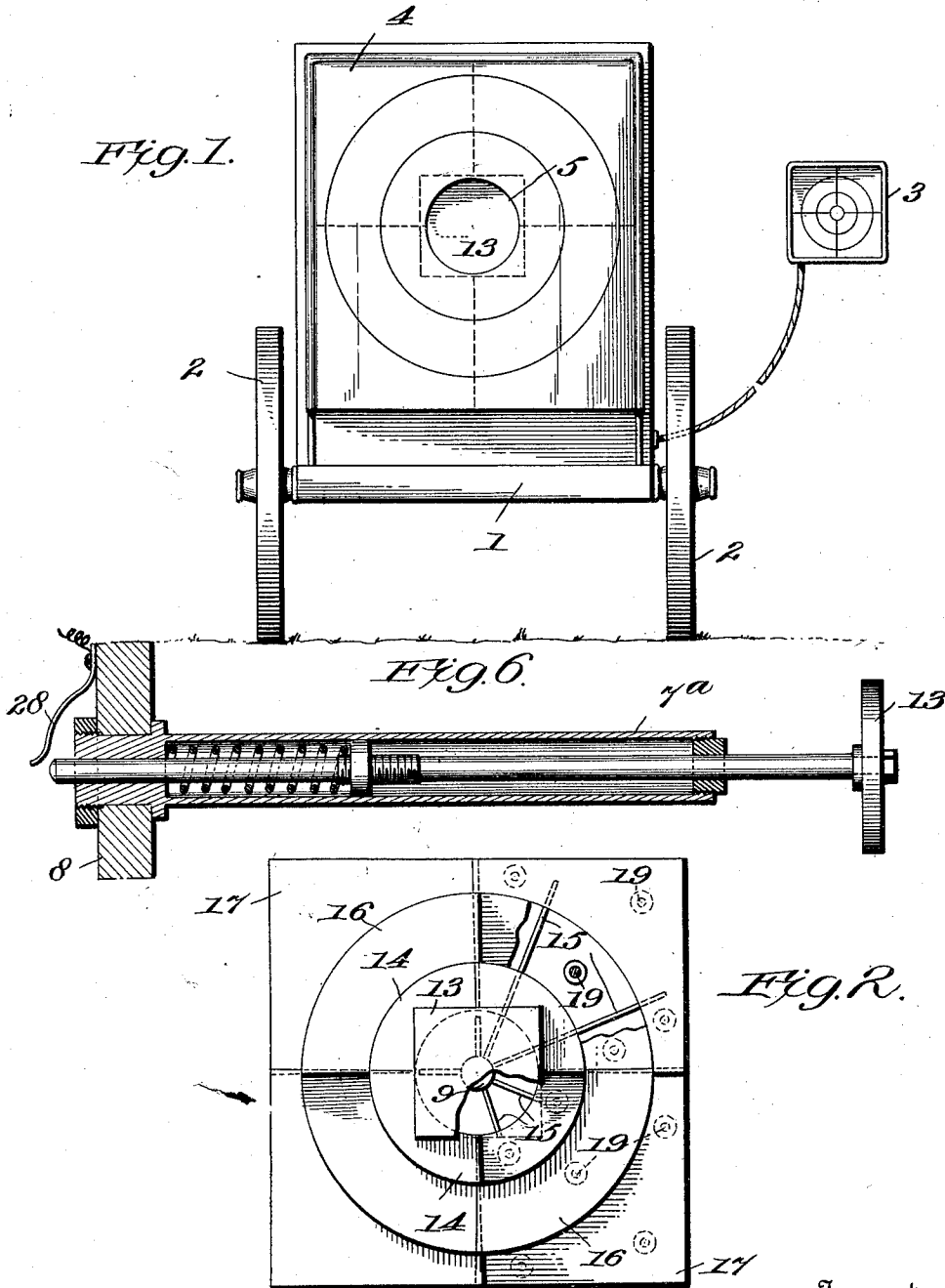


M. ST. C. ELLIS.
SELF REGISTERING TARGET.
APPLICATION FILED JUNE 1, 1910.

1,005,008.

Patented Oct. 3, 1911.

2 SHEETS-SHEET 1.



Witnesses
Geo. A. Byrne.
Byron Collins.

Inventor
Mark St. C. Ellis

By Wilkinson, Fisher & Witherspoon
Attorneys

2 SHEETS—SHEET 2.

Fig. 5. A perspective view of the apparatus showing the frame, wheels, and the central circular target with concentric circles and a crosshair. The target is mounted on a vertical support structure. The entire device is labeled with reference numerals 31 through 38.

Inventor
Mark StC. Ellis.
37
By Wilkinson,
Fisher & Witherspoon
Attorneys

UNITED STATES PATENT OFFICE.

MARK ST. CLAIR ELLIS, OF THE UNITED STATES NAVY, ASSIGNOR TO SELF SCORING TARGET COMPANY, A CORPORATION OF CALIFORNIA.

SELF-REGISTERING TARGET.

1,005,008.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MARK ST. CLAIR ELLIS, lieutenant-commander, U. S. Navy, a citizen of the United States, stationed on board U. S. S. *California*, have invented certain new and useful Improvements in Self-Registering Targets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in self registering targets and is a specific improvement upon my former Patent, No. 804,712, dated November 14, 1905.

The main objects are to render target practice more easy, more expeditious, less expensive, less dangerous to the man in the butts, many of whom have lost life or limb, more attractive as a sport, and to render it unnecessary to build expensive butts and ranges to bring target practice within the reach of people at large possessed of moderate means, the special aim of the device being to perfect the men in the Army and Navy and the country at large in the use of rifles and revolvers.

Further objects are to render the construction of such a target less expensive than that set forth in my patent, more certain to operate, with less liability to error, and much lighter.

With these objects in view, and others that will be set forth in the detailed description, my invention consists in the construction and combinations of parts as hereinafter described and claimed.

In the accompanying drawing—Figure 1 is an end view of my complete invention as designed for service in the Army, mounted on a truck. Fig. 2 shows an elevation of the target, partly broken away, showing the mechanism for operating the register to indicate the position of the hit upon the target. Fig. 3 is a cross-section of the target proper, when mounted on the ground. Fig. 4 is a detail sectional view, on an enlarged scale. Fig. 5 is a side view of a modified form. Fig. 6 is a sectional view of a modified form of support for the bull's eye.

As designed for military service, the target is shown mounted on a truck 1, having wheels 2 so that it can be readily moved from place to place. It could, of course, be set upon the ground, as indicated in Fig. 3,

or in case of use by men in the naval service, it could be mounted upon a float, as described in my former patent.

3 indicates the annunicator, made of the shape of the target and located in convenient proximity to the marksman.

In front of the main or real target, a false target 4 is located, having a central opening 5, this being marked like an ordinary target and this being the mark which appears to the marksman. Behind this canvas or false target, is located the real self registering target, a section of which is shown in Fig. 3. I may, however, dispense with the said false target entirely, and simply paint the steel plates of the real target in colors and designations suitable for use with the Army "A," "B," "C," and "D" targets, and silhouettes, and skirmish targets, so that the marksmen will shoot at the real target thus painted. The use of the false target is to prevent frequent repainting, and also it is felt by most marksmen that a paper or canvas target produces a better target at which to aim than the painted steel plate. It is manifest that a false target mounted a suitable distance in front of the real target, so as to prevent injury to it from the splash of the bullet, would make a good point at which to aim for a protracted period. Whereas should the painted metal plates be the point of aim, the explosive effect of the new Springfield bullet would soon destroy the paint and render it necessary to recoat the metal with paint, and thus delay the practice.

The real target consists of a heavy wooden backing 6, which may be made in two parts, if desired. Centrally fixed in said backing is a rod 7, of steel or iron, firmly secured against said backing by nuts, such as 8. On the rod 7, but insulated therefrom, are mounted a series of hubs 9, 10, 11, and 12. The hub 9 carries the bullet-proof plate 13, which is supported by bent springs 14', so that when the plate 13 is struck by a bullet, it is driven back against the rod 7, closing the electrical contact through said rod. I may, however, as shown in Fig. 6, use a hollow rod or pipe 7^a, with the plate 13, attached to a rod which moves against the action of a spiral spring to the rear in the hollow spindle 7^a, making contact with a spring 28 in the rear of the backing 6 when the plate 13 is hit by the bullet; the action

of this plate 13 and its rod being similar to that of the contact shuttles hereinafter described.

On the hub 10, by means of radially projecting springs 15, is mounted the second portion of the target, which is in the form of an annular ring, as indicated in Fig. 5, divided into four sections or quadrants. Similarly, on the hub 11, by means of radial springs, is mounted a ring 16, divided into quadrants, and on the hub 12, by means of radial springs, is mounted a ring 17, also divided into quadrants. As shown in Fig. 3, the different sections of the target, if projected onto one frame, would form a complete target, as indicated in Fig. 5. The different sections of each ring of the target are preferably mounted in different planes, as shown in Fig. 3.

In the actual use of my patented target, it was found that occasionally the electric contacts made when the bullet struck the target were too short, and I have devised specific means for overcoming this defect by means of a contact shuttle, each of these shuttles being electrically connected to the common return wire 18. These shuttles are shown enlarged in Fig. 4. Each shuttle consists of a metal tube, such as 19, adapted to pass freely through an aperture 20 in the wooden backing 6, but contacting with a metal washer 21, connected by means of a wire 22 to the common return wire 18. The other end of this shuttle is screw-threaded, and on it it has an iron or steel head 23, which contacts with one of the target plates, such as 17. Each of the quadrant target plates may have as many contact shuttles as desired. As a matter of fact, in actual practice I employ at least four contact shuttles in normal contact with the rear of each designating plate. This adds greatly to the sensitiveness of the target and insures its better operation.

The washer 21 furnishes one bearing for the shuttle 19, and a second bearing is furnished by the steel bar 24, supported against the backing 6. On this bar is secured a cylinder 25, within which is located a weak spring 26, which normally holds the head 23 of the shuttle 19 against the target quadrant 17, the construction of all the plates and shuttles, except the bull's eye, being exactly the same.

27 represents a nut, rotating freely in the cylinder 25 on the screw-threaded end of the contact shuttle 19, which is used for the purpose of adjusting the tension of the spring 26.

On the rear face of the wood backing 6, is located a spring 28, which is connected by a wire 29 with the corresponding section on the annunciator. Each one of the contact shuttles 19 has its corresponding spring 28.

To prevent undue vibration of the target plates when struck by a bullet, I provide a wire rope or chain connecting each of said

target plates to the backing. For instance, in Fig. 3, the chain 30 is attached to the target plate 17 and the steel bar 24. This permits the target plate 17 to yield freely toward the backing when struck by a bullet, but vibration beyond the normal position is prevented by the chain or rope 30, thus preventing the vibration of the opposite plate on the same hub and preventing any chance of the opposite plate making an electrical contact and registering a hit.

It will be observed that as each contact shuttle is driven backward against its corresponding spring, an electrical contact will be set up for an appreciable time, thus making sure that every hit will be duly registered. The construction shown on all the rear hubs is substantially the same, except that the quadrant plates are staggered in relation to said hubs.

If the bull's eye 13 is struck by a bullet, the springs 14' yield until the part 13 makes contact with the rod 7, thus giving a signal.

The contact shuttle 19 is completely protected if, for instance, a bullet should strike on the dividing line between two successive target plates, such as 14 and 16, since the front portion of the contact shuttle is fully protected by the corresponding target plate, and the spattering which sometimes occurs when a bullet strikes the edge of a target plate is prevented from striking the contact shuttle by the cylinder 25 and bar 24, the cylinder 25 also protecting the spring 26. The cylinder 25 may, however, be omitted. This provision of contact shuttles for target practice, the springs of which are protected, saves cost of construction, increases the life of the target, and renders it absolutely reliable. Furthermore, the springs of the contact shuttles tend to stop vibration of the plates as well as the chains or cables 30.

While I have thus described my invention, I wish it to be distinctly understood that I do not limit myself to the exact details shown and described, as these could be varied widely without departing from the spirit of my invention, the essence of which is to lengthen the time of electrical contact when one of the target plates is struck by a bullet, thus insuring a registry of the hit, to prevent vibration of the target plates when one of them is hit, and to lighten and cheapen the construction.

In Fig. 5, I have shown my invention adapted to be used as a moving target. In this embodiment of my invention, the target proper is mounted on a truck, as shown in Fig. 1, but this truck is provided with vertical bars or guides 31, and to the target frame are secured rods such as 32, carrying grooved rollers 33 in contact with said guides, there being, of course, four of these guides. At the top, these guides are connected to a cross beam or frame 34, on which is mounted a

pulley 35. A cord 36 runs over this pulley and is attached to the target, and other cords, such as 37 and 38, may be used, by which the target may be drawn back and forth. By this arrangement, a self registering target is provided, which can be moved back and forth and up and down for a limited space, whereby practice at a moving target may be had.

While my invention has been described with particular reference to use with what is known as the Army "A", "B", "C", and "D" targets, it is in no wise limited to targets of such shape, as the same principles are readily applicable to targets of other shapes, such as silhouettes or skirmish targets. In silhouette targets, the same principles of construction apply, the only difference being in the shape of the exposed plates. I wish it distinctly understood that my invention is not limited to use with any particular form or shape of exposed plates. The description of the construction of the Army "A", "B", "C", and "D" targets has been set forth in detail, and since such construction is much more complicated, and requires a greater amount of electrical wiring than the skirmish target, it is felt that its successful working with the more complicated form, necessarily covers that of the less complicated.

I claim:—

1. In a self registering target, the combination of normally open electric circuits; a suitable register connected therewith; a backing; a horizontally disposed support mounted on and projecting from said backing; a plurality of resilient and radially disposed arms mounted on said support; a series of quadrant plates corresponding to target divisions mounted on said resilient arms; a plurality of frames mounted on said backing and disposed parallel with said support; cylinders mounted on said frames; shuttles for each of said quadrant plates mounted to have movement in said cylinders and backing; resilient devices mounted in said cylinders and holding said shuttles in contact with said quadrant plates; resilient devices for each of said shuttles mounted on said backing and adapted to engage with the shuttle and close a circuit through said register for an appreciable period when a shuttle is moved through impact by its corresponding target plate, substantially as described.

2. In a self registering target, the combination of normally open electric circuits; a suitable register connected therewith; a

backing; a horizontally disposed support mounted centrally of said backing and projecting therefrom; a plurality of resilient and radially disposed arms mounted on said support; a series of quadrant plates corresponding to target divisions mounted on said resilient arms; yoke frames mounted on said backing; cylinders secured to said yoke frames; shuttles mounted to have movement in said cylinders and the backing; a coil spring mounted on each of said shuttles within the cylinder and holding the shuttles in contact with their respective quadrant plates; connections between said quadrant plates and yoke frames adapted to hold said quadrant plates against excessive vibration; and a leaf spring for each of said shuttles secured to the backing and adapted to engage with the shuttle and close a circuit through said register for an appreciable period when a shuttle is moved through impact by its corresponding target plate, substantially as described.

3. In a self registering target, the combination of normally open electric circuits; a suitable register connected therewith; a backing; a horizontally disposed support mounted centrally of said backing and projecting therefrom; a plurality of resilient and radially disposed arms mounted on said support; a series of quadrant plates corresponding to target divisions mounted on said resilient arms; a plate resiliently mounted on the end of said horizontal support and arranged concentrically therewith; yoke frames secured to said backing and disposed parallel with the horizontal support; cylinders mounted at the ends of said frames; shuttles for said quadrant plates mounted to have movement in said cylinders and backing; members secured to said shuttles; spiral springs on said shuttles within said cylinders seating against said members and holding the shuttles in contact with the quadrant plates; and a leaf spring for each of said shuttles secured against the back of said backing and adapted to have prolonged engagement with the shuttles and close a circuit through said register when each shuttle is moved through impact by its corresponding target plate, substantially as described.

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

MARK ST. CLAIR ELLIS.

Witnesses:

J. L. BETTS,
H. GOLLERE.