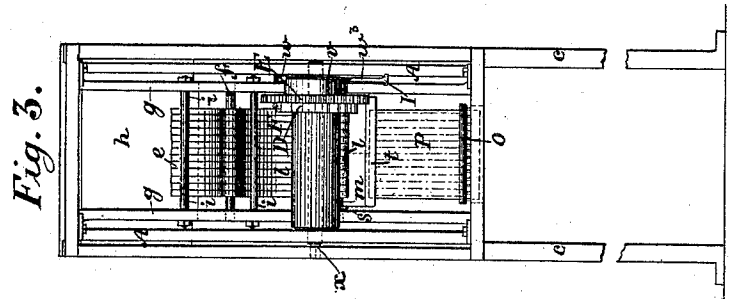
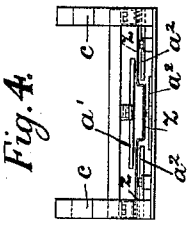
(No Model.)

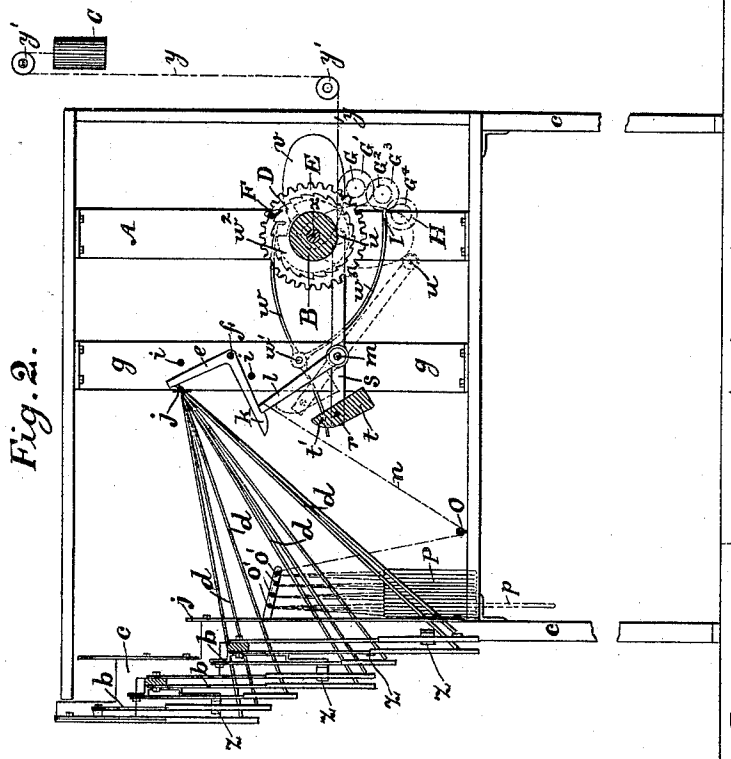
J. PATERSON.

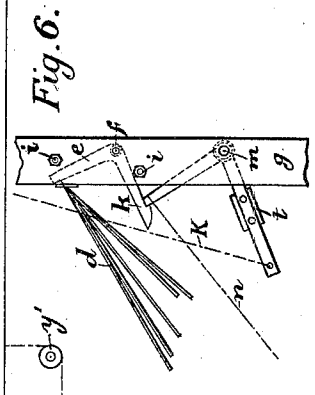
SELF INDICATING TARGET.

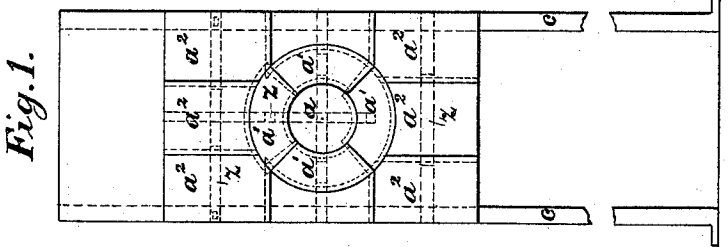
No. 395,581. Patented Jan. 1, 1889.

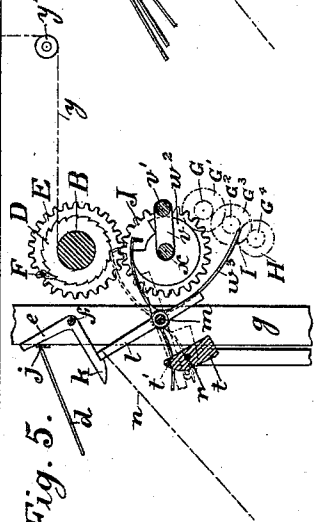












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UNITED STATES PATENT OFFICE.

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SELF-INDICATING TARGET.

SPECIFICATION forming part of Letters Patent No. 395,581, dated January 1, 1889.

Application filed March 26, 1888. Serial No. 268,560. (No model.) Patented in England April 29, 1887, No. 6,268.

To all whom it may concern:

Be it known that I, JAMES PATERSON, a subject of the Queen of Great Britain, residing at 123 West Graham Street, Glasgow, in the county of Lanark, Scotland, have invented new and useful Improvements in Self-Indicating Targets, (for which I have obtained a patent in Great Britain, No. 6,268, bearing date the 29th day of April, 1887,) of which the following is a specification.

This invention has for its object improvements in targets, and, while generally applicable, it relates more especially to the class of such targets which are erected for practice in drill-halls, shooting-galleries, ranges in connection with private residences or clubs, and like situations where in practicing the rifle is usually fitted with a "Morris" or other tube.

The target as constructed in accordance with the invention has the part to be shot at—that is to say, the "bull's-eye," "inner," and "outer" values—each or one or more of them composed of a series of sections separate one from the other, but arranged to overlap, there being provided in conjunction with each section a rod which acts so as automatically to operate escapement or trigger mechanism and release an indicator which shows to the marksman the value of the shot, the said indicator after each exhibition being returned to its hid or normal position either by automatic mechanism or by hand.

I attain the objects of my invention by the mechanism illustrated on the accompanying drawings, in which—

Figure 1 is a front elevation of the improved self-indicating target. Fig. 2 is a side elevation with one side of the casing removed to show the interior mechanism. Fig. 3 is a back end elevation with the end of the casing removed for the like purpose. Fig. 4 is a plan at the face end of the target. Figs. 5 and 6 are side elevations of modifications of parts of the indicating apparatus of the target.

As shown by Figs. 1, 2, 3, and 4, the target consists of a series of plates, a a' a^2, the inner and outer values, a' a^2, being each composed of a number of sections, and, if desired, the bull's-eye a may also be so composed, although it is shown on the drawings as consisting of one plate. The several plates or sections are suspended by straps or tangs b from cross bars or rods extending from side to side of the framing c, and, as seen by Fig. 2, the plates are arranged in different planes vertically, the plate a, constituting the bull's-eye, being in one plane, while the plates constituting the other values, a' and a^2, are in different planes relatively with the bull's-eye and with each other, spaces being thus left between the several sections of the target. Against the back of each section or plate there abuts one end of a rod, d, the other extremities of these rods acting each against one arm of a bell-crank lever, e. The series of levers is centered upon a horizontal bar or rod, f, carried in vertical frames g within the casing h of the apparatus, and in conjunction with the levers there are provided two stop-bars, i, to confine their movements within certain limits. The rods d are supported in position by passing them through holes made in plates j, and the bell-crank levers e have each a catch or hook, k, formed upon the lower arm and which engages with the upper end of a hammer or fall-bar, l, centered on a shaft, m, also supported in the vertical frames or standards g. The outer ends of the hammers have each connected to them one extremity of a wire or cord, n, which passes from thence under a guide pulley, roller, or bar, o, thence over guide pulleys, rollers, or bars o' to a series of rectangular, circular, or other shaped boards or disks p, arranged one behind the other in rear of the target-face, and which boards or disks constitute the indicators whereby the values of the shots are shown. A separate bell-crank, e, hammer l, cord n, and indicator p are provided for each section of the several values a a' a^2 of the target, each section or plate of the several values being numbered and its indicator correspondingly numbered on the face of it, the disks or boards p being so hung that, excepting when the value of a shot is to be indicated, they are out of sight within the casing h of the target. On the rod or bar m two levers, s, are also centered, one at each side of the casing h. These levers carry on a rod, r, extending between their forward ends, a bar or block, t. One of the levers is continued rearward from its fulcrum, and on its tail end a roller, u, is centered, the said roller being at certain times acted upon

by a cam, v, to depress it, as hereinafter more particularly described.

The bar or block t, which is so balanced as to hang normally in or about the position shown on Fig. 2, has a pin, t', projecting from one side of it, and when the said bar is struck by one of the hammers l in falling the pin, acting on one end of a detent-lever, w, centered on a stud, w', secured in one of the vertical standards g, raises the other end of the said lever, which has a hook or finger upon it, out of a notch cut in the periphery of a disk, w^2, carried upon the same shaft or axis, x, as the cam v. The shaft x, which is supported in vertical standards A, also within the casing h, has a drum, B, secured upon it, a length of cord, wire, or chain, y, being wound upon the said drum and from thence conducted through the back of the casing h and under and over pulleys y', the free end of the cord, wire, or chain having a weight, C, connected to it.

Upon the drum B there is secured a ratchet-wheel, D, geared by means of a pawl, F, with a spur-wheel, E, carried loose on the shaft x, the pawl being centered upon the wheel E, which has the disk w^2 and the cam v connected to it, being likewise loose on the shaft x. The wheel E is also geared with a pinion, G, which, through the train of wheels G′ G^2 G^3 G^4, operates a fly, H, in conjunction with which a brake, I, is provided, the said brake being formed on or connected to an arm, w^3, made on the detent-lever w. The surface of the fly is preferably covered with india-rubber, leather, or like material.

The action of the apparatus constructed as hereinbefore described is as follows: When the bull's-eye a or any of the sections a' a^2 constituting the inner and outer values is struck by a shot, that section is by the impact of the bullet driven momentarily rearward, so as to act upon the end of the rod d provided in conjunction with the said section and raise the hook or catch k of the bell-crank lever e from the hammer l, which thereupon falls and drops the board or disk p indicative of the proper value of the shot into the position shown in dotted lines at Fig. 2, where, from the color of the disk and the number upon it, or from the number upon it merely, the exact section of plate struck is shown to the marksman. Immediately after so dropping the indicator the hammer l comes in contact with the bar or block t, and the upper end of the said bar being thereby caused to swing downward, the pin t', fixed in it, depresses the end of the lever w and causes its finger to rise free of the notch in the periphery of the disk w^2, the brake I being at the same time lifted from the fly H. There being then no detent to the action of the weight C, the said weight causes the drum B to turn, and through the gearing of the pawl F with the ratchet-wheel D to also turn the wheel E, disk w^2, cam v, and fly H. The cam in rotating depresses the lever s, which has the effect of raising the hammer l until it is caught by the hook of the bell-crank lever e, the raising of the hammer drawing up the indicator board or disk out of sight to its normal position behind the plates a. When the hammer l has been so raised, the finger of the detent-lever entering the notch in the periphery of the disk w^2 and the brake I coming into frictional contact with the drum of the fly H, the movement of the mechanism is automatically stopped until it is again released by one of the plates a a' a^2 being struck.

As shown by Fig. 1, the edges of some of the plates overlap others, and to prevent these overlapping plates when struck by a bullet from also through contact carrying back one or more other plates with them, and so giving a wrong indication, a series of bridges, z, is employed, the ends of the said bridges being permanently connected to the framing of the target, while the parts intermediate between the ends pass horizontally in the vertical spaces between the sections, as indicated at Fig. 4. An overlapping section in moving rearward is thus stopped by the bridge from acting on the plate whose edge it overlaps.

Fig. 5 shows a modification of the clock-work mechanism hereinbefore described, wherein the barrel B for the cord, wire, or chain y, suspending the weight C, instead of being on the same axis, x, as the cam or crank v for raising the hammer l, is carried upon a separate axis, the cam or crank having the detent-disk w^2 secured on its axis, and also a spur-wheel, J, geared to the barrel B through the spur-wheel E, pawl F, and ratchet-wheel D, the wheel E being loose, as before set forth. The wheel J is geared to the fly H by a train of spur-wheels, G G′ G^2 G^3 G^4, as in the previously-described arrangement, and the cam v may either be constructed, as shown at Fig. 2, to act on one only of the levers w, or it may be composed of two side pieces, V, with a cross-bar, v', extending between, so as to cause it to act on both levers.

Under another modification illustrated at Fig. 6 the automatic mechanism for raising the indicator disks or boards p to their normal position may be dispensed with, the hammers l being lifted to gear with the levers e and to raise the indicators by pulling a chain or cord, K, connected to one of the levers carrying the bar t, the chain or cord being carried over pulleys to the firing or other point. The bar t under this arrangement is secured in one permanent position relatively with the levers s, and not so as to swing on a center, as in the arrangement first described.

I am aware that prior to my invention targets have been constructed with the plates constituting the several values made in sections. The joints of such sections have not, however, been lapped over each other, but have been butted and flush, which results in rendering the target unreliable, as a shot striking at the joint of the section is with such arrangement liable to give two indications.

I therefore do not claim such combination, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a self-indicating target, the combination of the central section or bull's-eye and a congeries of overlapping sections arranged in overlapping concentric series, substantially as and for the purpose set forth.

2. In a self-indicating target, the combination of a series of overlapping sections or plates constituting the face of the target and a series of indicator-operating rods against which the sections have bearing, all of said rods being adapted to be operated separately and independently by said sections, substantially as and for the purpose set forth.

3. In a self-indicating target, the combination of a series of overlapping sections suspended by tangs or straps at their top, arranged around a central section, and constituting the face of the target, and indicating devices individually operated by each of said sections, substantially as set forth.

4. In a self-indicating target, the combination of a series of overlapping sections disconnected from one another and arranged one back of the other, and a series of bridge pieces or strips arranged between the sections, substantially as and for the purpose set forth.

5. In a self-indicating target, the combination of the value-plates constituting the face of the target, disconnected rods bearing on the rear sides of said value-plates, a guide-strip through which the rear ends of the rods project, bell-crank levers arranged on a single pivot-pin and engaged at their upper ends by the rear ends of said rods, catches at the lower ends of said bell-crank levers, indicators, hammer or fall bars engaged by said catches, suspension-cords connecting the indicators and hammer or fall bars, and means for returning the indicators to their hidden position, substantially as set forth.

6. In a self-indicating target, the combination of the value-plates constituting the face of the target, the rods operated by said plates, the bell-crank levers engaged at their upper ends by said rods, catches at the lower ends of said bell-crank levers, stop-pins behind the upper ends and below the lower ends of said bell-crank levers, as explained, indicators, hammer or fall bars engaged by said catches, suspension-cords connecting the indicators and hammer or fall bars, and means for returning the indicators to their hidden position, substantially as and for the purpose set forth.

7. In a self-indicating target, the combination of the value-plates constituting the face of the target, indicators suspended by cords, pivoted hammer-bars to which the said cords are secured, mechanism, substantially as described, operated by the value-plates and provided with catches for supporting said hammer-bars, pivoted levers having a cross-bar pivoted between them, and cam mechanism for depressing the free ends of said levers, substantially as set forth.

8. In a self-indicating target, the combination of the indicators and mechanism for returning them to their hidden position, consisting of hammers *l*, drum B, operated by a cord wound upon it having a weight attached, loose ratchet-wheel D on the drum, pawl or detent *w*, engaging the teeth of the ratchet, said detent being adapted to be disengaged from the ratchet through the medium of suitable mechanism by the fall of the hammers *l*, and automatically-operated clock mechanism having a cam actuated thereby, whereby it is brought into engagement with the disengaging mechanism of the detent, substantially as set forth.

9. In a self-indicating target, the combination of the indicators suspended by cords, levers *s*, having bar *t* pivoted to them, pins projecting from said bar, detents *w*, engaged by said pins, fall-bars or hammers *l*, having the suspending-cords of the indicators attached to them, a shaft having a drum, gear-wheel and ratchet-wheel mounted thereon, the latter being loose and engaged by detent *w*, means for rotating the drum, and cam *v*, mounted on said shaft and engaging the ends of levers *s*, substantially as set forth.

In witness whereof I have hereunto set my hand and seal this 29th day of December, 1887.

JAMES PATERSON. [L. S.]

Witnesses:

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