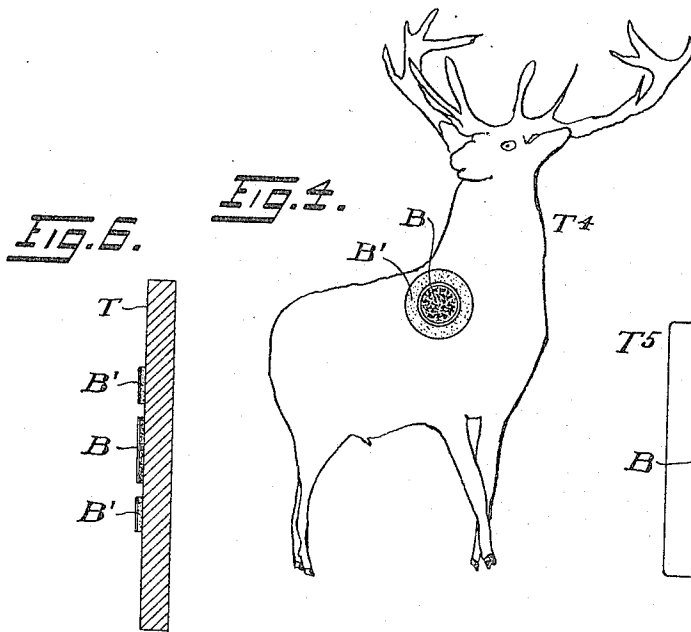
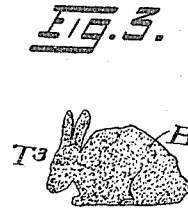
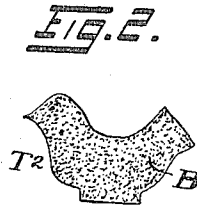
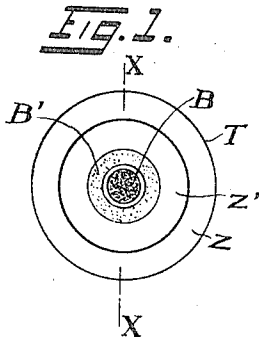


A. F. HEBARD.
 TARGET.
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1,145,585.

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UNITED STATES PATENT OFFICE.

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TARGET.

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To all whom it may concern:

Be it known that I, ARTHUR F. HEBARD, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Targets, of which the following is a specification.

This invention relates more especially to targets of the class used in shooting galleries, and in trials of marksmanship.

A principal object of the invention is to furnish targets which will report to the marksman and to spectators by a visible signal when a hit, or "bull's-eye", has been made, and will also indicate or record the hit in a tangible and reliable manner.

In the accompanying drawing, forming a part of this specification, Figure 1 represents a bull's-eye target for use at various ranges; Figs. 2 and 3 show well-known forms of small targets suitable for shooting gallery use; Fig. 4 illustrates one form among many of animal-shape targets to which my improvement is applicable; Fig. 5 shows one of many forms in which the target may be arranged, as for use, for instance, in games or competitions, and Fig. 6 is a sectional view in line X—X, Fig. 1.

Similar characters designate like parts in all the views.

In the several figures, the bull's-eye target-area is indicated by B, while an adjacent area of any suitable size is indicated (except in Fig. 5) at B'. In Figs. 2 and 3, small targets are shown of a conventional style; and these may ordinarily have the "bull's-eye" area B extend over the entire exposed side of the target, as indicated in these views by shading, such as used on the area B, in Figs. 1 and 4. On the bull's-eye area B, I place a surface layer or coating of a combustible material made in some part of a substance ignitable by projectile impact, and when two adjacent areas, as B, B', (or B and N or N', Fig. 5) are to be covered with such combustible layers, one of these, preferably the layer on area B, may be made both combustible and explosive. For these purposes, I may employ a paste or paint having therein a small proportion of explosive materials, such for instance as well-known match-making chemicals, with a component of explosive chlorates or the like, incorporated therein.

For applying directly to the target-areas, the combustible material, for forming the described surface-layer or coating, this material may, if preferred, be prepared in the form of a wet or plastic mixture, such as a paint, and thus be made non-explosive until after the material is spread upon the target and the combustible or explosive qualities, or both, afterward developed. This may usually be done by allowing the applied soft-layer to harden or dry in place, and the drying may be effected by the evaporation of a solvent, or otherwise, according to the nature of the particular materials or composition which may be selected for use in any given instance.

When the combustible layer is to be applied to the areas B or B', or to both, especially on targets for use on rifle ranges for target-practice,—where a quick replacement of the consumed surface-layers is important,—the surface layers may be first formed on a sheet-material, (such for instance as a suitable paper, or thin metal or an asbestos disk), and such compound layers may then be adhesively or otherwise affixed in any convenient manner upon the proper target-areas. This may ordinarily be done by pasting or cementing said compound layers directly upon the target. In Fig. 6, the layers B and B' are shown of a substantial thickness, for indicating how the compound surface-layers, when applied as here described, would lie against the surface of the target. The two layers B and B' may be formed, if so desired, upon a single piece of sheet-material, and so be made affixable to the target as a single device.

For the purposes of this description the target areas, as B, B', Fig. 1, are considered as being adjacent because one is located near the other, and are also considered as being concentric since one of them, as B', surrounds another of them, as B; but the boundaries of the said area or areas are not required to be circular in order to make them concentric in the broader sense in which this term is here employed.

In practice, a narrow clear space may be left between the areas B and B', as shown by the boundary lines of those areas in Figs. 1, 4 and 6; also, as similarly indicated in Fig. 5. For protecting the near-by layers, as B and B', (or B and N, or N', Fig. 5), from being ignited from the flash of the

other when one of them is hit by a projectile, the layers may all be covered with a thin non-inflammable coating, or sheet-material, so that a compound layer will only be fired or ignited by impact and from within the combustible layer thereof, and within the area of impact.

In practice it will sometimes be desirable to provide each of a plurality of the target areas with a combustible surface layer which is ignitable by projectile impact, and sometimes to provide one or the other of a pair of adjacent or concentric, or adjacent and concentric, target areas with a combustible surface layer which is ignitable by projectile impact, and to provide the other said area with a combustible and explosive surface layer which is similarly ignitable by projectile impact. In this manner the hitting of one said area can be distinguished by the character of the combustion which is caused by, and immediately follows, the impact of the projectile, while the hitting of the other such area can be further distinguished by the explosive combustion similarly induced.

When two of the combustible layers are applied on adjacent target areas, one said layer may be of a character to be distinguished from the other by the kind or character of combustion following the hit, this being provided for by the use of suitable coloring matters in the combustible layer. This may be effected in some cases by a different intensity of the combustion, and in other cases by producing lights of different colors, as for instance by using a red light when a bull's-eye, as B, is hit, and by using a blue, green or other light when the adjacent area, B', is hit. As an example of such explosive colored burning mixtures as I have found satisfactory in practice, the following substances have produced satisfactory area-varying results when applied to the target as above set forth:

Yellow flashing compound.—3 parts red phosphorus, 2 parts potassium nitrate, 1 part antimony sulfid, 1 part five per cent. glue solution.

Red flashing compound.—3 parts red phosphorus, $1\frac{1}{2}$ parts strontium nitrate, $\frac{1}{2}$ part lithium carbonate, 1 part antimony sulfid, 1 part five per cent. glue solution.

Green flashing compound.—3 parts red phosphorus, 3 parts barium nitrate, 1 part antimony sulfid, 1 part five per cent. glue solution.

Obviously other combinations of colors may be produced by varying the nitrates, as above indicated, or substituting other suitable chlorates, or the like, as previously noted. In practice I prefer to provide a bull's-eye target-area, as B, with a surface layer which is both combustible and explosive, in order to produce a more notice-

able effect when the marksman makes a bull's-eye shot.

My present improvements are also applicable to targets having areas specially arranged for use in various games and competitions, in which different explosive effects may be produced for determining the relative values of hits in the different parts of the target-surface. In Fig. 5 I have indicated one arrangement of a plurality of target-areas suitable for such uses; but the arrangement may be varied in many ways. The target T⁵ is here shown with the bull's-eye area B, an upper and adjacent area N, and a lower adjacent area N'. The area B, for instance, may have a combustible and explosive surface layer, and show a red colored combustion, while N may show a green and N' a yellow effect, with or without varying rates and intensities of combustion. In a competitive game, each said area, of course, may have different values arbitrarily assigned thereto, as for instance the explosive effect might count 10, the green effect 4 and the yellow effect, 2, units in value. Usually and preferably the coating should be compounded to be ignitable by impact only in the area subjected to the impact, so that each hit is marked by only a small spot of impaired coating.

Having thus described my invention, I claim:—

1. A target having a target-surface which comprises a plurality of adjacent target-areas, each of said areas being provided with a combustible surface-layer which is ignitable by projectile impact, each of said areas having a different colored ignition.

2. A target having target-areas thereon provided with multi-colored lighting compounds thereon, said compounds being ignitable by projectile impact.

3. A target having a target-surface which comprises a plurality of adjacent and concentric target-areas provided with ignitable surface-layers having in intensity different combustion effects, respectively.

4. A target having a target-surface which comprises a plurality of adjacent and concentric target-areas provided with combustible surface-layers having in intensity different combustion effects, respectively, and each ignitable by projectile impact.

5. A target having the target-surface thereof comprising three or more adjacent target-areas and having two of such adjacent areas provided each with a combustible surface layer ignitable by projectile impact, and having said layers of different combustible qualities in intensity, respectively, whereby the hit area may be distinguished by the character of the combustion following the hit.

6. A target having the target-surface thereof comprising two or more adjacent

and concentric target-areas and having two of such adjacent areas provided each with a combustible surface-layer ignitable by projectile impact, and having said layers of
5 different combustible qualities in intensity, respectively, whereby the hit area may be distinguished by the character of the combustion following the hit.

7. A target having the target-surface
10 thereof comprising two or more adjacent target-areas of which two adjacent areas are provided one of them with a combustible surface-layer ignitable by projectile impact, and the other of them with a combustible
15 and explosive surface-layer ignitable by projectile impact, and having these two ignitable layers of different combustible qualities respectively, whereby the hit area may be distinguished by the character of the combustion following the hit, and whereby the
20 hitting of one said area may be distinguished by an explosive combustion of an ignitable layer.

8. A target having the target-surface
25 thereof comprising two or more adjacent and concentric target-areas of which two adjacent areas are provided one of them with a combustible surface-layer ignitable by projectile impact, and the other of them
30 with a combustible and explosive surface-layer ignitable by projectile impact, and having these two ignitable layers of different combustible qualities, respectively, whereby the hit area may be distinguished by the
35 character of the combustion following the

hit, and whereby the hitting of one said area may be distinguished by an explosive combustion of an ignitable layer.

9. A target having the target-surface thereof comprising two or more adjacent
40 and section target-areas and having two of such adjacent areas provided each with a combustible surface-layer ignitable by projectile impact, having said layers of different combustible qualities, respectively,
45 whereby the hit area will be distinguished by the character of the combustion following the hit, and narrow clear spaces between adjacent target-areas to protect the adjacent area from being ignited when one of them
50 is ignited.

10. A target having the target-surface thereof comprising two or more adjacent and section target-areas and having two of
55 such adjacent areas provided each with a combustible surface-layer ignitable by projectile impact, having said layers of different combustible qualities, respectively, whereby the hit area will be distinguished
60 by the character of the combustion following the hit, and a thin non-inflammable coating on each layer to form a compound layer which will only be fired by impact and from within the combustible layer and
65 thereby the adjacent layers which have not been struck will be protected from ignition.

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Witnesses:

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