United States Patent [19]

Loe

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[54] **INDICATING TARGET EMPLOYING FOIL SHEET**

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[52] **U.S. Cl.** ..... **273/102.1 C**; 273/102 B; 73/167

[51] **Int. Cl.**[2] **F41J 3/00**

[58] **Field of Search** ... 273/102 R, 102 AP, 102 PM, 273/102.1 R, 102.1 C, 102.1 CM, 102.4, 102.2 A; 73/167; 40/125 F, 125 G, 130 B, 138, 139; 35/25

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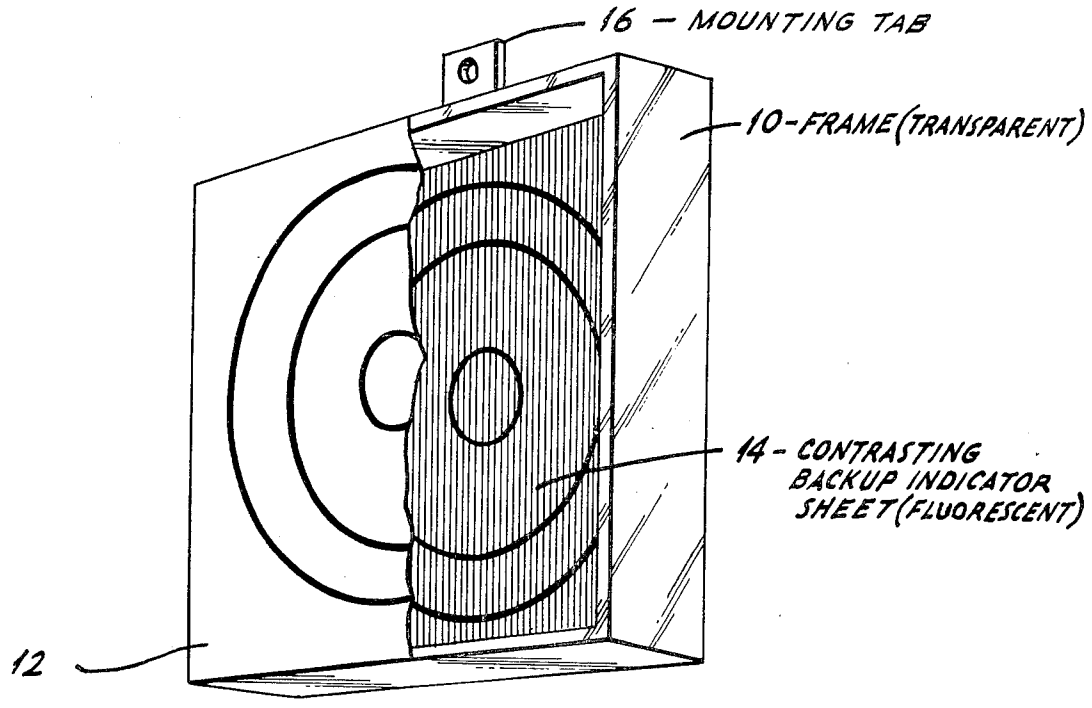
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[57] **ABSTRACT**

A target for firearms comprising a metal foil sheet with a conventional target pattern printed thereon. The foil may be mounted in spaced relation to a backup sheet of highly contrasting color by means of a transparent frame. When struck by a firearm projectile, a substantially larger-than-projectile-size hole is produced in the metal foil target, thus revealing an area of the contrasting backup sheet. The projectile makes only a conventional size hole in the backup sheet which has congruent target lines thereon for precise scoring. The point of impact thus appears on the target as a relatively large area of color which can easily be seen at target range distances.

9 Claims, 3 Drawing Figures



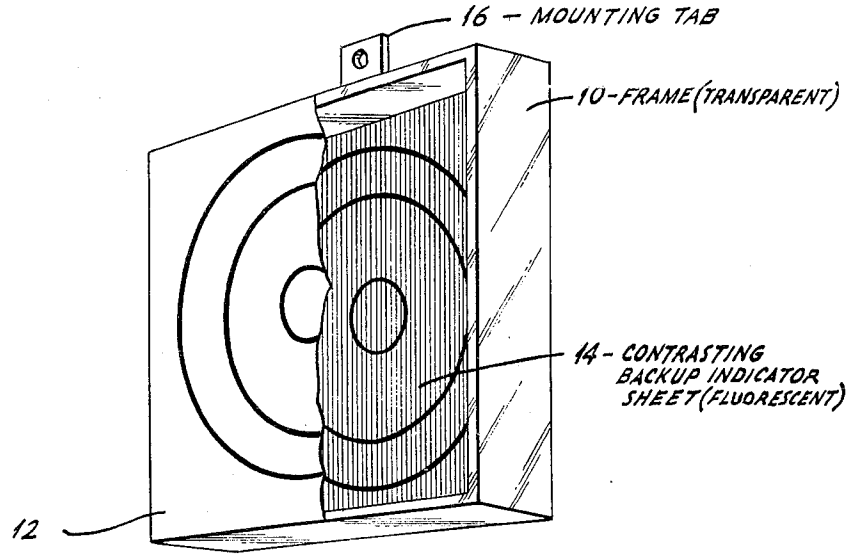


FIG. 1.
TARGET ASSEMBLY

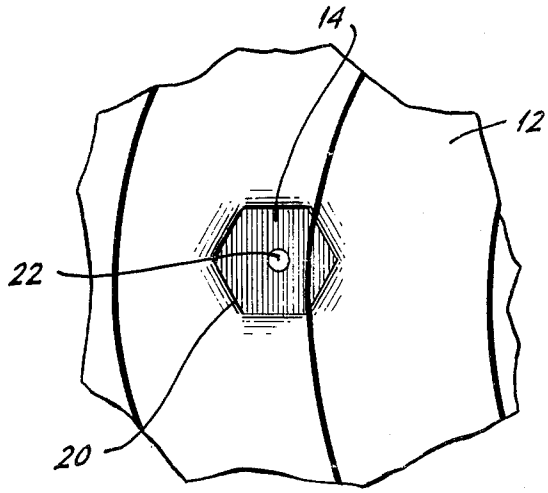


FIG. 2. PORTION OF TARGET SHOWING EFFECT OF BULLET IMPACT

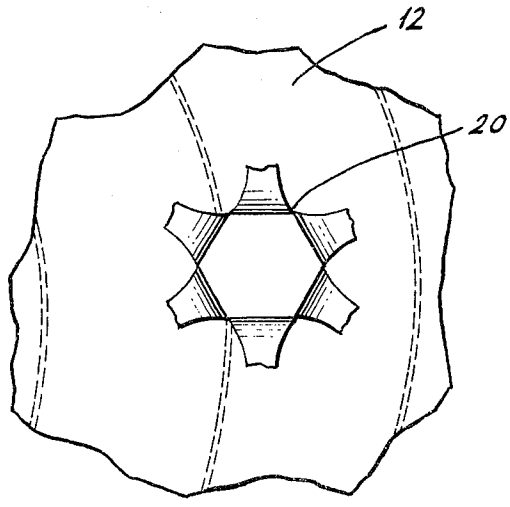


FIG. 3. REAR VIEW OF FIG. 2.

INDICATING TARGET EMPLOYING FOIL SHEET

BACKGROUND

1. Field of the Invention

This invention relates to a firearms target especially suitable for use with small or hand held firearms. The target provides a high visibility indication of the point of projectile impact on the target.

2. Description of the Prior Art

Common firearms targets comprise generally a sheet of paper having the usual concentric circles and bullseye printed thereon. When puncture by a speeding bullet, a slightly smaller-than-bullet-sized hole is produced in the paper sheet. At conventional target range distances the location of the hole is very difficult to determine because of its small size and lack of contrast with the rest of the target. This lack of hole visibility is especially pronounced when using rounds of small diameter, e.g., **0.22** inch.

Some improvement has been made with the advent of indicating targets. These have included one comprising a stretched rubber membrane which, when punctured, revealed a contrastingly colored backing sheet. Another type used a resiliently deformable material mounted behind an inelastic paper target sheet. A third type relied upon the action of fluid released by projectile puncture of a capsule. Other types used further relatively complex schemes. While providing improved visibility vis-a-vis the simple paper target, these prior art indicating targets suffered from the drawbacks of high cost due to expensive materials or complex assembly requirements, or they were difficult to mass produce, again resulting in high cost. Also, their reliability and point of impact visibility was less then desirable. As a result, no relatively inexpensive, reliable, high visibility indicating targets are yet available, to the best of my knowledge.

The present invention overcomes the drawbacks of the prior art indicating targets by employing a construction which can be duplicated substantially entirely by processes currently in use in the printing industry. It is therefore extremely inexpensive to produce, yet produces a very high contrast indication of the point of bullet impact in a reliable manner.

Accordingly, several objects of the present invention are to provide an indicating target which overcomes the drawbacks of prior art indicating targets, which is inexpensive to produce, which is amenable to mass production techniques, which is reliable in operation, and which provides a high contrast indication of the point of bullet impact. Additional objects and advantages will become apparent from the ensuing description thereof.

DRAWINGS

FIG. 1 is an isometric cutaway view of a target assembly according to the invention.

FIG. 2 shows a portion of the target illustrating the effect of a bullet impact.

FIG. 3 is a rear view of the front layer of the portion shown in FIG. **2.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

The indicating target according to the invention (FIG. 1) comprises a transparent (plastic) frame **10,** a metal foil sheet **12,** preferably of aluminum, having a conventional target pattern printed thereon, and a contrasting backup sheet **14,** preferably comprising a brightly-colored paper sheet having a target pattern printed on the front surface thereof which is congruent with the target pattern printed on foil sheet **12.** Foil sheet **12** is thus mounted in a flat upright position; the part of sheet **12** having the target pattern thereon, i.e., the part of sheet **12** other than the edges thereof, is spaced from or free of all other parts of the target assembly so that substantially any portion of sheet **12** may be torn and freely displaced from the rest of sheet **12** by a projectile's (bullet's) impact, as explained infra. Preferably the front surface of backup sheet **14** is dyed or printed bright red or orange in fluorescent colors to provide maximum contrast with foil sheet **12.** Means to suspend the target frame are provided by mounting tab **16** which is suitably affixed to frame **10.**

Frame **10** is preferably formed of a transparent plastic such as methyl methacrylate (sold under the marks Lucite and Plexiglass) in order to allow ambient light to illuminate backup sheet **14.** However wire or celluloid box frames are also suitable, especially where cost is an important factor. Foil sheet **12** and backup sheet are preferably affixed to the front and rear sides, respectively, of frame **10** by adhesive, but stapling, tacking, taping or other suitable means may be used. The preferred dimensions of target sheet **12** and backup sheet **14** preferably conform to the National Rifle Association standard target sizes for the various range distances and calibers and the spacing between sheets **12** and **14** should be about ¼ the width of sheets **12** and **14.** For example, for use in a **50** foot small bore rifle range, the target should be **9** by **7** inches and sheets **12** and **14** should be **1.75** inches apart.

While certain specific features of the invention have been shown and discussed in the above preferred embodiment, various omissions, substitutions, and changes in the form and details of the device illustrated and in their operation may be made within the scope of the invention.

For example, the target pattern may be omitted from the backup indicator sheet **14.**

In another modification the backup sheet **14** may be omitted, especially if ambient or background light is sufficient to show through the holes made in the metal foil to provide adequate viewing contrast.

In another modification frame **10** may be opaque (e.g., wood or cardboard), and backup sheet **14** translucent (but still of a bright high contrast color) such that light from the surroundings behind the target will pass therethrough and thus illuminate the brightly-colored surface thereof.

While the complete target assembly is preferably sold as a disposable unit, frame **10** can alternatively comprise a semi-permanent unit which can be used with replaceable sheets **12** and **14** until it (frame **10**) no longer is serviceable (due to bullet impact damage).

OPERATION OF THE PREFERRED EMBODIMENT

The invention takes advantage of the fact that certain metal foils (e.g., **0.025** mm thick aluminum) have been found to form a substantially larger-than-projectile-size hole when struck by a rapidly moving (about **300** meters per second) projectile. Cf. commonly used paper targets which form a hole which is actually smaller than the projectile size. In the metal foil sheet **12** of the invention a hole **20** (FIG. 2) formed by a bullet typically assumes a hexagonal shape shown, with the foil from

the hole tearing and folding around to the rear side of the foil sheet **12** as indicated in FIG. **3.** The projectile also produces a smaller-than-projectile-size hole **22** in backup sheet **14.** Since frame **10** is transparent, ambient light passes through the exposed frame, illuminating the brightly-colored backup sheet **14.**

The net result is that a larger-than-projectile caliber, high contrast, point of impact indication is produced. This indication has been found to be highly visible at normal target range distances. Since backup sheet **14** also contains target lines, the precise point of projectile impact **22** can still be determined for scoring purposes.

While the above description contains many specificities, these should not be construed as limitations upon the scope of the invention but merely as an exemplification of several preferred embodiments thereof. The true scope of the invention is indicated by the subject matter of the appended claims and their legal equivalents.

I claim:

1. An indicating target for producing a point of impact indication of substantially increased visibility comprising a sheet of metal foil having a target pattern on the front surface thereof and means for mounting said sheet in a flat upright position, the part of said sheet having said target pattern thereon being free from all other elements of said target so that substantially any portion of said sheet may be torn and freely displaced from the rest of said sheet by the impact of a projectile, a backup sheet having a color contrasting to the coloring on the front of said foil sheet, and means for mounting said backup sheet in spaced relation behind said foil sheet.

2. The target of claim **1** wherein said means comprises a frame, said metal foil being attached to the front of said frame and said contrasting color backup sheet being attached to the rear of said frame.

3. The target of claim **2** wherein said frame is constructed of a transparent material.

4. The target of claim **3** wherein said backup sheet has a target pattern thereon, said target pattern being congruent with said target pattern on said metal foil sheet.

5. The target of claim **2** wherein said backup sheet has a target pattern thereon, said target pattern being congruent with said target pattern on said metal foil sheet.

6. The target of claim **2** wherein said metal foil sheet is about **0.025** mm thick.

7. The target of claim **1** wherein said backup sheet has a target pattern thereon, said targer pattern being congruent with said target pattern on said metal foil sheet.

8. The target of claim **1** wherein said metal foil sheet is about **0.025** mm thick.

9. The target of claim **1** wherein said backup sheet has a fluorescent coloring.

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