

Impact Marks from Ejected Cartridge Casings

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Abstract: Ejected casings from handguns fired at a shooting range were observed to leave impact marks on nearby wooden support posts. This led to the idea that such marks could be present at shooting scenes and, if found, could provide additional information to aid in scene reconstructions. The identification and careful interpretation of such marks from actual shooting scenes could assist in reconstructing shooting incidents.

Introduction

In the reconstruction of shooting incidents, investigators consider a variety of information and scene findings, including the following: projectile trajectories; range-of-fire indicators; the number and distribution of ejected cartridge casings; bloodstain patterns; the presence or absence of gunshot residue on hands; and information provided by witnesses, victims, and suspects. The purpose of this paper is to acquaint investigators with cartridge casing impact marks, an additional type of physical evidence that may be present at shooting scenes.

The idea that casing impact marks could be left on a surface(s) at a shooting scene came from observations made at a firing range. It was observed that casings being ejected from semiautomatic handguns frequently struck wooden support posts that were adjacent to the shooter. Close examinations of the posts

revealed that they were extensively covered with small marks and indentations. These observations led to the thought that, in certain circumstances, casings ejected at shooting scenes might leave impact marks on nearby surfaces.

Materials and Methods

Pieces of painted 3/8 inch thick wallboard, the type commonly used in the construction of homes and office buildings, were attached to support posts on the right side of a shooting platform at a firing range. The wallboard was positioned so as to be approximately parallel with the barrel and about 30 inches to the right of a weapon being fired down-range.

Using a Sig-Sauer, Model 228, semi-automatic pistol, numerous rounds of 9 mm ammunition were fired. Expended casings, ejecting to the shooter's right side, frequently struck the wallboard. (Other weapons might eject fired casings in a different direction.)

Results and Discussion

Impact marks were easily observable on the wallboard [Figure 1]. Closer examination of marks resulted in the identification of four basic types [Figure 2]. The characteristics of the different marks indicate the portion of the casing that produced the impact mark or impression [Figure 3].

Conclusion

Ejected ammunition casings can leave characteristic impact marks on wallboard. The identification and documentation of such marks at shooting scenes, evaluated with other physical evidence and information, could help in reconstructing events. The possibility of finding impact marks seems particularly promising when a semiautomatic weapon has been discharged inside of a building, especially in the close confines of a hallway, stairwell, or small room.

Attempts to directly apply what is presented here to actual scene findings should be done with caution. This research did not assess other variables such as when other types of firearms or ammunition are involved, or when casings strike surfaces other than wallboard. In addition, nothing in this limited study allows for the approximate positioning of a weapon in relationship to a mark left by a casing ejected from that particular weapon.

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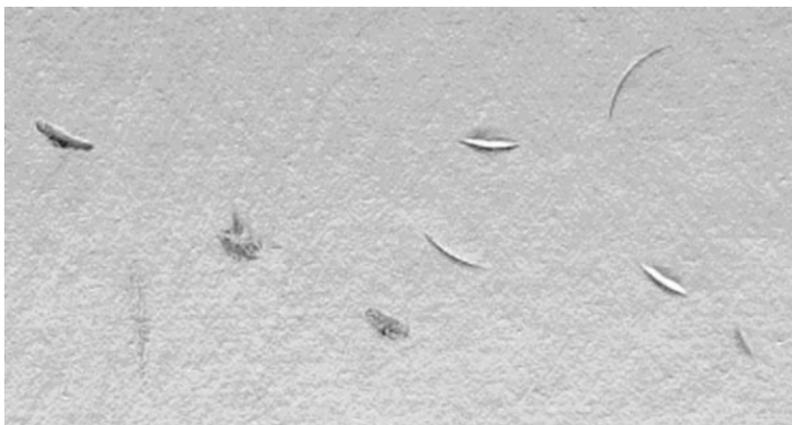


Figure 1

9 mm cartridge casing impact marks in wallboard.

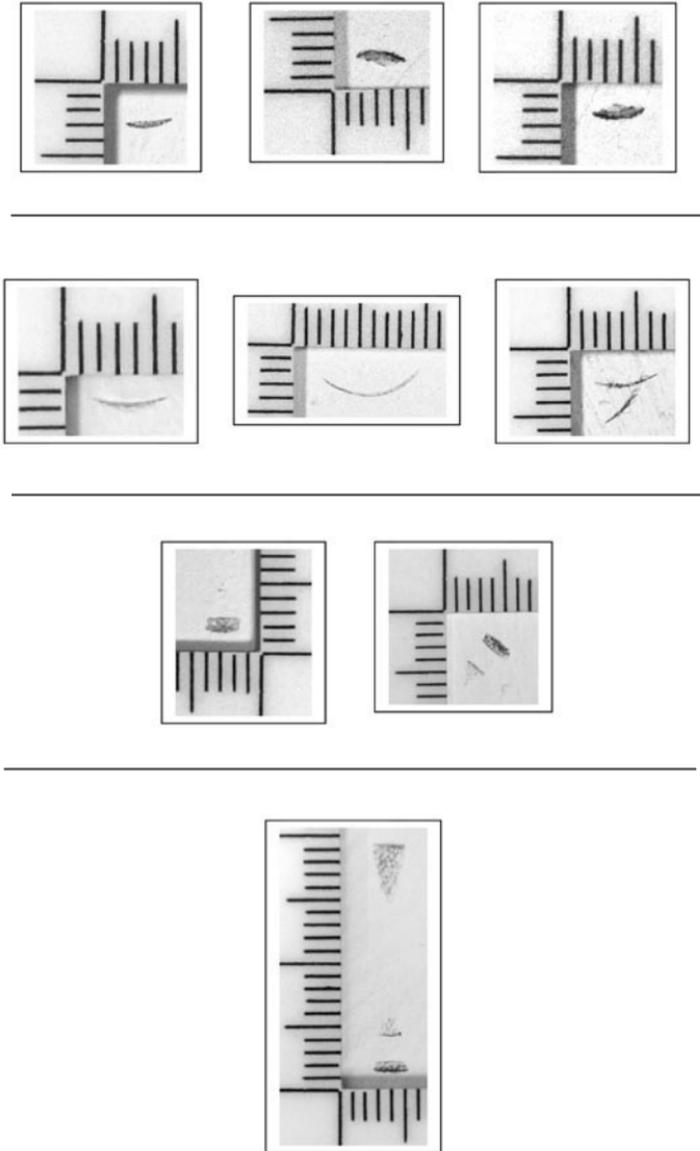


Figure 2

Four types of 9 mm cartridge casing impact marks in wallboard.

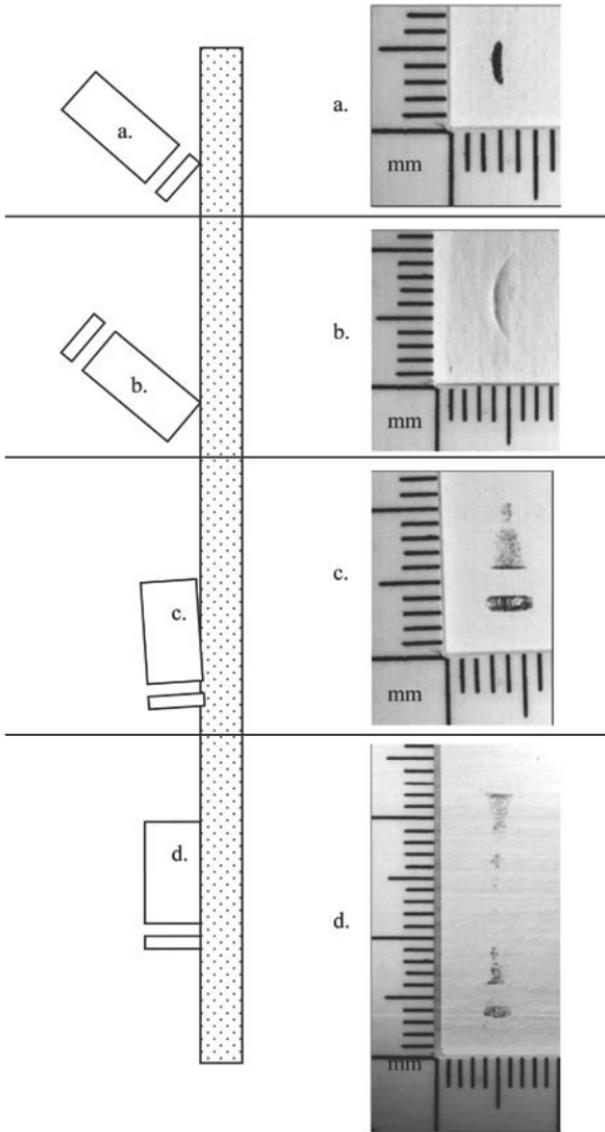


Figure 3
9 mm cartridge casing impact marks in wallboard.