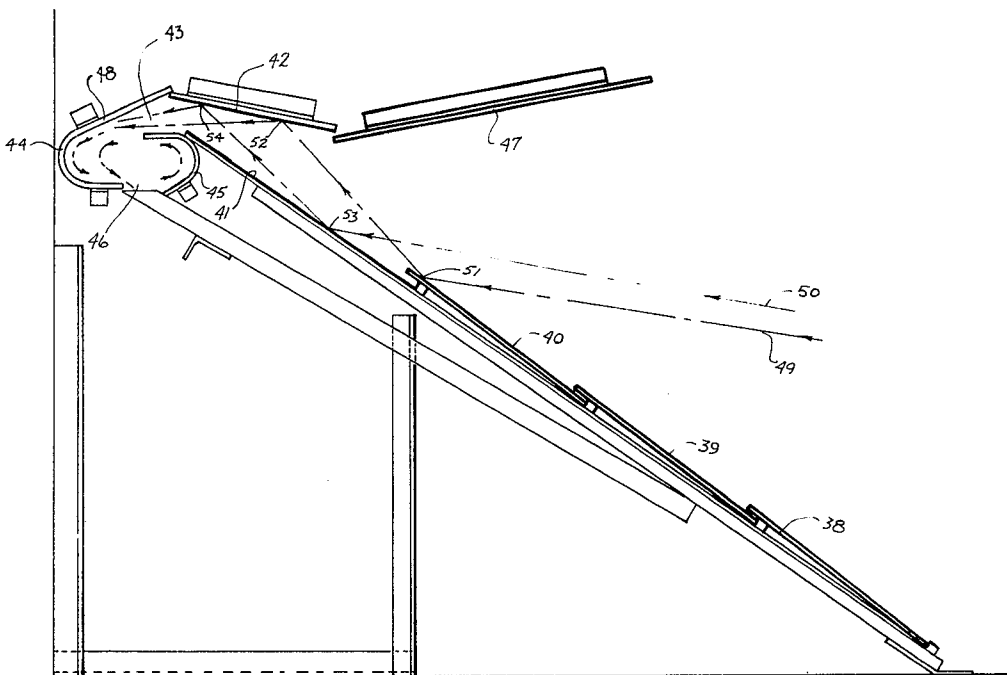


**[54] BULLET DEFLECTION APPARATUS**[72] Inventor: **Joseph Nikoden**, Inverness, Ill.[73] Assignee: **Detroit Bullet Trap Corp.**,  
Schaumburg, Ill.[22] Filed: **Oct. 7, 1970**[21] Appl. No: **79,028**[52] U.S. Cl. .... **273/102.4, 89/36**[51] Int. Cl. .... **F41j 1/12**[58] Field of Search ..... **273/102.4, 103, 102 S; 89/36****[56] References Cited****UNITED STATES PATENTS**

3,563,549	2/1971	Dragone.....	273/103
2,201,527	5/1940	Freeman.....	273/102.4
2,420,304	5/1947	Diem.....	273/102.4 UX
694,581	3/1902	Reichlin.....	273/102.4

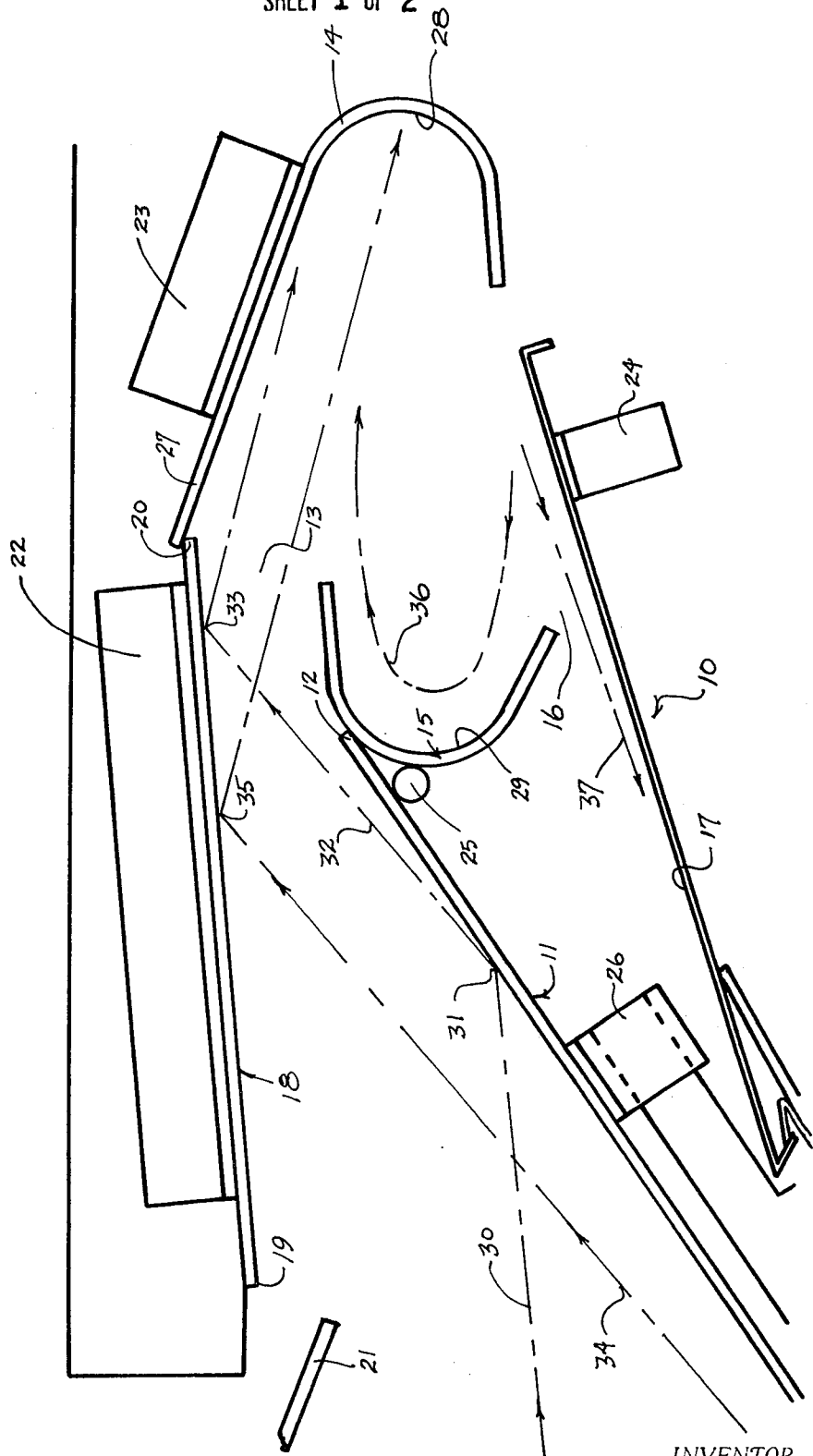
*Primary Examiner*—Richard C. Pinkham*Assistant Examiner*—Marvin Siskind*Attorney*—Hill, Sherman, Meroni, Gross & Simpson**[57] ABSTRACT**

A bullet trap for a practice shooting range having an upwardly angled main deflecting plate leading to a bullet spending or de-energizing chamber. An upper deflection plate is located vertically above the main plate and is also angled upwardly and rearwardly leading to the opening of the bullet spending chamber. The bullet spending chamber has a plate which is angled downwardly and rearwardly from the rearward edge of the deflection plate. The bullet spending chamber has cylindrical surfaces facing one another which redirect the bullet back and forth until its kinetic energy is exhausted. The lead may then be recovered at any convenient location. A further plate is provided immediately forwardly of the upper deflection plate, and this plate is angled rearwardly and downwardly and terminates adjacent to the forward edge of the upper deflection plate. The upper deflection plate may be angled from 5° to 12° for optimum conditions.

**8 Claims, 2 Drawing Figures**

SHEET 1 OF 2

FIG. 1



INVENTOR.  
JOSEPH NIKODEN JR.



**BULLET DEFLECTION APPARATUS****BACKGROUND OF THE INVENTION****1. Description Of The Prior Art**

The principal patent relating to upwardly angled deflection plates leading to a bullet spending chamber is a U.S. Pat. No. 2,772,092. This patent discloses much of the basic bullet deflection apparatus which is currently in use today. Another patent which is related is a Caswell U.S. Pat. No. 1,992,001. Still another patent which shows a typical bullet trap arrangement is U.S. Pat. No. 3,404,887. This latter patent shows an upwardly angled deflection means having a horizontal deflection plate at the upper edge thereof leading to a bullet spending chamber.

**2. Field Of The Invention**

The field of art to which this invention pertains is a bullet trap for a practice shooting range and in particular to a bullet trap having an upwardly and rearwardly angled deflection plate means leading to a bullet de-energizing chamber at the upper end thereof.

**SUMMARY OF THE INVENTION**

It is a principal feature of the present invention to provide an improved bullet trap for a practice shooting range.

It is another feature of the present invention to provide an improved deflection means for directing live bullets into a bullet de-energizing chamber.

It is an important object of the present invention to provide a bullet trap arrangement utilizing an upwardly and rearwardly angled deflection plate means with an upper deflection plate means which is also upwardly and rearwardly angled.

It is another object of the present invention to provide an upper deflection plate means for a bullet trap as described above wherein the upper deflection plate means is angled at between 5° and 15° from horizontal.

It is another object of the present invention to provide a bullet trap arrangement as described above wherein the bullet de-energizing chamber has a plate extending downwardly and rearwardly from the upper deflection plate to the interior of the bullet spending chamber.

These and other objects, features and advantages of the invention will be readily apparent from the following description of a certain preferred embodiment thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a sectional view of a bullet trap arrangement according to the present invention and showing an upper deflection plate which is angled at approximately 5° from horizontal.

FIG. 2 is a sectional view through an entire bullet trap arrangement according to the present invention and illustrating the position and functioning of an upper deflection plate which is angled from horizontal to approximately 12°.

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

Increasing needs for law enforcement have correspondingly increased the need for practice shooting ranges to train law enforcement officers. It is important however that such shooting ranges be safe for the user and be economical to operate.

Bullet de-energizing means such as is disclosed in a Nikoden U.S. Pat. No. 2,772,092 had been developed to gradually de-energize the kinetic energy of a live bullet by permitting gradual collisions against curved deflection plates. The result is that the bullet is safely de-energized with a minimum wear on the deflection plates and with maximum recovery of lead.

Another arrangement for a bullet deflection means is shown in a Dunder U.S. Pat. No. 3,404,887. The Dunder patent shows an upwardly angled deflection means with a substantially horizontally disposed deflection plate positioned immediately above and forwardly of the upper end of the main deflection plate. However, it has been found that such a horizontal deflection means spaced above the upper edge of the main deflection plate does not provide maximum assurance against lead fragments being deflected back toward the shooter.

In the present application I have provided a deflection plate which is spaced above the upper edge of the main deflection plate, but which is directed upwardly and rearwardly as well. The preferable angle of the upper deflection plate is from 5° to 12° with the lower main plate being between 30° and 40° from horizontal.

In addition, I have provided a rearwardly and downwardly directed deflection plate immediately ahead of the upper deflection plate. Also, my bullet de-energizing means has a rearwardly and downwardly plate portion which has its forward edge adjacent to the rearward edge of the upper deflection plate means.

Referring to the drawings in greater detail, a bullet trap arrangement according to the present invention is illustrated generally by the reference numeral 10 and includes an upwardly and rearwardly deflecting main plate 11 which terminates at an upper end 12. The upper end 12 leads directly to an opening 13 in a bullet spending or bullet de-energizing chamber which includes a pair of members 14 and 15. The members 14 and 15 are generally semi-cylindrical in shape and lead to a further opening 16 which may conduct the expended lead down along a chute 17 to a convenient point for retrieving the lead.

The bullet trap 10 is provided with an upper deflection plate 18 which is also upwardly and rearwardly directed and which extends from a point 19 to a point 20.

The upper deflection plate 18 is spaced above the upper end 12 of the lower deflection plate 11 to define in part the opening 13 to the bullet spending chamber.

In addition, a rearwardly and downwardly extending plate (a portion of which is shown in Figure 1) 21 is provided immediately ahead of the upper plate 18. All of the deflection plates are provided with suitable reinforcement members such as the members 22, 23, 24, 25 and 26.

The upper deflection plate 18 may have an angle of from 5° to 15° from horizontal. The particular embodiment shown in FIG. 1 has an angle of 5° off horizontal.

By so angling the upper deflection plate 18, live bullets are directed into the opening 13 to the bullet spending chamber in such a way as to minimize the chance of lead fragments being deflected back to the shooter. The plate 21 acts to guide live bullets which are fired unusually high, downwardly to the main plate 11 and from the main plate 11 to the upper deflection plate 18 and hence to the bullet spending chamber through the opening 13.

The bullet spending chamber which includes the members 14 and 15 has a rearwardly and downwardly angled plane surface 27 which extends from immediately above the rearward edge 20 of the upper deflection plate 18. This downwardly and rearwardly directed portion cooperates with the deflection plate 18 to guide the lead into the curved surface 28 of the bullet spending chamber. Lead entering the curved surface portion 28 may then be directed into a curved closed path by multiple deflections from the surface 28 and a further curved surface 29 which are part of the bullet spending chamber.

Two bullet paths are illustrated in FIG. 1 to show the operation of the upper deflection plate 18. For example, a bullet following the trajectory 30 may impinge against the forwardly facing surface of the plate 11 at a point 31 and be redirected along a trajectory 32 which causes the bullet to impinge at the lower surface of the upper deflection plate 18 at a point 33. From the point 33 the bullet is then directed through the opening 13 to the bullet spending chamber where it is de-energized.

As a further example, a bullet following the trajectory 34 may strike the lower surface of the upper plate 18 at a point 35 and then be directed through the opening 13 to the bullet spending chamber. After entering the bullet spending chamber, the bullet may then follow a curved path such as the path 36 and finally, after its kinetic energy is consumed in collisions, the lead passes through the opening 16 and follows a path 37 to a lead recovery station.

A further embodiment of the bullet trap arrangement of the present invention is shown in FIG. 2.

In Fig. 2 a series of deflection plates 38, 39, 40 and 41 are assembled together to form the main upwardly and rearwardly directed deflection plate. The upper deflection plate is the plate 42 which is also rearwardly and upwardly directed. The deflection plate 42, in this example, has an angle of approximately 12° off horizontal.

Bullets deflected from the plate 42 are then directed through an opening 43 into a bullet de-energizing chamber consisting of the members 44 and 45. Bullets are de-energized and then passed through an opening 46 to a chute or other means for retrieving the lead at a convenient location.

In this example, also, a rearwardly and downwardly directed plate 47 is provided immediately ahead of the upper deflection plate 42. Also, the member 44 of the bullet spending chamber has a portion 48 which is directed rearwardly and downwardly from the rearward edge of the upper deflection plate 42 to cooperate in properly guiding the live bullets into the de-energiz-

ing portion of the bullet trap.

Typical trajectories for bullets fired at a target are illustrated in FIG. 2 by the reference numerals 49 and 50. The trajectory 49 involves a collision with the plate 40 at a point 51 and a second collision at a point 52 against the lower surface of the upper deflection plate 42 from where it is then directed to the de-energizing chamber. The second trajectory 50 involves a collision at the plate 41 at a point 53 and a second collision at the plate 42 at a point 54 from where it is then directed to the de-energizing portion of the bullet trap.

Accordingly, the apparatus of the present invention provides an improved means for safely directing live bullets into a bullet de-energizing chamber and minimizing the chances of fragmentation back to a shooting position.

I claim as my invention:

1. In a bullet trap for a practice shooting range, a bullet spending chamber having at least one live bullet opening, a lower upwardly and rearwardly angled deflection plate means extending from a point below said live bullet opening to a point immediately adjacent thereto for deflecting bullets upwardly and rearwardly into said bullet spending chamber,

an upper upwardly and rearwardly angled deflection plate means leading to said live bullet opening for deflecting bullets downwardly and rearwardly into said bullet spending chamber,

said lower and upper deflection plates being spaced apart vertically in the vicinity of said live bullet opening so as to permit deflected bullets to enter said bullet spending chamber through said live bullet opening.

2. In a bullet trap for a practice shooting in accordance with claim 1 wherein said bullet spending chamber includes a downwardly and rearwardly angled plate portion extending from a point adjacent to the rearwardly facing edge of said upper deflection plate.

3. In a bullet trap for a practice shooting in accordance with claim 2 wherein said downwardly and rearwardly angled plate has a deflecting surface thereof facing substantially forwardly to redirect bullets into substantially forwardly direction.

4. In a bullet trap for a practice shooting in accordance with claim 3 wherein said deflection surface of said downwardly and rearwardly angled plate is non-planar.

5. In a bullet trap for a practice shooting in accordance with claim 1 wherein said upper plate has an angle of between 5° and 15° with the horizontal.

6. In a bullet trap for a practice shooting range in accordance with claim 1 wherein said upper plate has an angle of 12° with the horizontal.

7. In a bullet trap for a practice shooting range in accordance with claim 1 wherein said upper deflection plate is between 5° and 12° from horizontal.

8. In a bullet trap for a practice shooting range in accordance with claim 1 wherein said lower deflection plate is between 30° and 40° off horizontal.

\* \* \* \* \*