EJECTABLE HINGED SIGHT FOR PROJECTILES FITTED TO THE MUZZLE OF FIREARMS

FILED FEB. 23, 1960

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Filed Feb. 23, 1960, Ser. No. 10,480

3,056,352

Claims priority; application Belgium Oct. 28, 1959

2 Claims. (Cl. 102—65.5)

It is common practice to equip finned projectiles fitted to the muzzle of the firearms with which these projectiles are to be shot, with a sight which is thrown-off when the projectile is fired. Such sights are generally made of a comparatively narrow and long thin strip, fitted with a proper scale and with some means for fastening it to the rear part of the projectile.

In actual practice however, the proper fitting of such ejectable sights is still meeting with serious difficulties. The riflemen must indeed, after having fitted the projectile over the muzzle of the firearm—or before doing so—fix the sight to the projectile. If one takes into account the very critical circumstances under which this kind of fire is applied, mostly at close range, it will be readily appreciated that the operation described above has serious drawbacks.

Another disadvantage is the fact that, as the sight is not integral with the projectile, the riflemen must first grope for the sight and grasp it correctly before fitting it to the projectile, which is another source of serious difficulties, especially in cases of rapid fire, when the riflemen is nervous or has to act under bad atmospheric conditions.

The present invention concerns an ejectable and hinged sight of new design which definitely does away with aforementioned disadvantages, whilst making the use and handling of the sight much more easy and without any nervous strain. This sight is such, that it is attached to the projectile in the actual packing of the latter, that it automatically jumps into its correct position through the mere fact of removing the projectile from its case or packaging, and that it can be thrown-off when the projectile starts on its flight.

In order to fulfill these various conditions and to obtain such results, the sight according to the present invention is assembled of a thin, comparatively long and narrow strip fitted with an appropriate scale; the characteristic device conforming to the present invention is the elastic means for connecting aforesaid strip to one of the fins of the projectile in such way that this strip might be tipped forward in the direction of the tubular tail of the projectile, and that on the other hand, the complete sight might be thrown-off the projectile, either by the effect of inertia, or by the pressure which the air exerts on aforesaid strip.

This elastic means of connection is essentially characterized by a thin elastic wire, mostly of steel, shaped more or less in U-form so as to be supported by the side branches of aforesaid U on an axis which is integral with aforesaid strip. This elastic element is arranged, both with respect to aforesaid strip and to the corresponding fin, in such a way that the strip can tip forward whilst being prevented from tipping toward the rear; this elastic element is further made in such way that it can be hooked to the rear part of the projectile, so as to be easily disconnected when the projectile is fired, thus throwing-off the sight.

All these characteristics, as well as the constructional details of a preferred form of embodiment of this sight, will appear more clearly in the detailed description given below, without implying any limitations whatsoever, with reference to the appended drawings in which:

FIGURE 1 is a front view with partial section of a diagrammatic representation of a finned projectile fitted with the sight conforming to the present invention;

FIGURE 2 shows the same device such as it looks in the case or packing of the projectile;

FIGURE 3 is a summary representation of the automatic way in which the sight takes-up its correct position when the projectile is removed from its case;

FIGURE 4 is a summary representation of the phase when the sight comes-off the projectile;

FIGURE 5 is a front elevation of the ejectable and hinged sight conforming to the present invention;

FIGURE 6 is a section along line VI—VI of FIGURE 5;

FIGURE 7 is a perspective representation of the essential parts of the sight and of the projectile equipped with the latter.

In these figures, the projectile is represented conventionally by the body 1, the impact device 2, the tubular tail 3 and the fins 4. For making it possible to apply the ejectable and hinged sight conforming to the present invention, each one of the fins has on its radial rear edge 5 a first notch 6 which is fairly deep and located at about one-third of the height of aforesaid radial edge 5, a second much more shallow notch 7 is provided near the base of the fin, i.e., at a short distance from the corresponding part of the tubular tail 3 of the projectile, and lastly, a transverse projection 8 located near that edge of the fin which is parallel to the longitudinal axis of the projectile, this projection being made for instance by pressing or by driving the material and being intended as a stop for the sight.

The actual sight consists of the strip 9 fitted with an appropriate scale; this strip extends downward by another strip 10 along the axis of which there is a slit 11 which extends into aforesaid strip 9; this slit is slightly wider than the thickness of a fin and is sufficiently long for allowing the sight to tip forward, as will be explained hereafter.

Aforesaid slit divides strip 10 into two half-strips 10—10' respectively; onto one face of each of these half-strips, a kind of stirrup 12—13 respectively, is fastened, against which stirrup an axis 14 bears, one end of which is fitted with a head 15. It will be observed that that part of aforesaid axis 14 comprised between the two stirrups 12 and 13 is left free over the whole width of the slit 11. An elastic element bears against both ends of aforesaid axis 14, this elastic element being made of a steel wire which is bent and coiled in such way that it forms a U-shaped branch 16 both lateral edges of which make a helical winding, 17—18 respectively, which windings extend into lateral branches 19—20 respectively, the free ends of which are bent toward each other so as to form two stops, 21—22 respectively. This elastic element is mounted in such way that aforesaid helical windings 17 take-up a position in the axial extension of the stirrups 12—13 respectively, aforesaid axis 14 going simultaneously through the latter and through the windings; in this position, the U-branch 16 is located in front on the strip 10, whilst the lateral branches 19—20 come on either side of aforesaid strip 10 and the stop ends 21—22 come beyond strip 9. In this position, the strip is placed on a fin which goes through the slit 11, the free central part of the axis 14 engaging notch 6 of the fin whilst the central part of the intermediate branch of the U-element 16 engages the shallow underlying notch 7 of the same fin.

In this arrangement, both lateral branches 19—21 and 20—22 tend to thrust elastically strip 9 toward the rear against stop 8 which latter limits the movement of aforesaid strip and secures same into its correct position. It will be noticed that, by means of this arrangement, and by the orientation of the helical windings 17—18 of the elastic element, aforesaid strip 9 can be tipped forward...
but is prevented from being tipped rearward on account of the presence of aforesaid stop 8.

Thus, normally, the sight when mounted on a fin of the projectile occupies the position which is shown diagrammatically in FIGURE 1; as long as the projectile and the sight are in their case, they are still connected to each other and occupy a location as shown diagrammatically in FIGURE 2, without impairing in any way the elastic connecting device between the sight and the projectile; when the latter is normally removed from its case 23 (FIGURE 3), by a longitudinal pull, the sight is automatically raised to the correct upright position; lastly, at the moment when the projectile is fired (FIGURE 4), the sight is automatically separated from the projectile because both notches 6—7 point in the same direction and there is nothing to prevent this separation from taking place on account of the effects of inertia or of air pressure when the projectile starts on its flight.

It is obvious that the elastic device inserted between the actual strip or sight and a fin of the projectile, could be replaced by any other equivalent elastic device without exceeding the scope of the present invention. The latter extends in fact to all these embodiments as well as to the actual sight fitted with its elastic device, and to any projectile equipped with such sights.

What I claim is:

1. In combination with a projectile having at least one radial fin upon its rear end, said fin having an open-ended notch upon its radial rear edge and a projection located upon a flat surface of said fin between said notch and the outer edge of the fin; an ejectable sight comprising a narrow long strip having a central longitudinal slit fitting over said fin, the length of said slit being at least equal to the length of said fin and the width of said slit being slightly greater than the width of said fin, a transverse axis member engaging said notch, and resilient means engaging said axis member, said fin and said strip for pivoting said strip about said axis member and for urging the portion of said strip located above said axis member into engagement with said projection.

2. In combination with a projectile having at least one radial fin upon its rear end, said fin having an open-ended notch, and another notch spaced from the first-mentioned notch, said notches being located upon the radial rear edge of said fin, said fin further having a projection located upon a flat surface of said fin between the first-mentioned notch and the outer edge of the fin; an ejectable sight comprising a narrow long strip having a central longitudinal slit fitting over said fin, the length of said slit being at least equal to the length of said fin and the width of said slit being slightly greater than the width of said fin, a transverse axis member engaging the first-mentioned notch, and a U-shaped spring having legs comprising wound portions enclosing the ends of said axis member and end branches engaging a rear surface of said strip between said axis member and an upper edge of said strip, said U-shaped spring further having an intermediate portion extending between said legs and fitting into the second-mentioned notch, said spring pivoting said strip about said axis member and urging the portion of said strip located above said axis member into engagement with said projection.

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