US 20070204502A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0204502 A1**

Popikow (43) **Pub. Date: Sep. 6, 2007**

(54) **ADJUSTABLE SIGHTING DEVICE FOR A SMALL ARM**

(76) Inventor: **Sergej Popikow**, Weitnau (DE)

Correspondence Address:
FLEIT KAIN GIBBONS GUTMAN BONGINI & BIANCO
21355 EAST DIXIE HIGHWAY, SUITE 115
MIAMI, FL 33180

(21) Appl. No.: **11/680,129**

(22) Filed: **Feb. 28, 2007**

(30) **Foreign Application Priority Data**

Mar. 3, 2006 (DE) 10 2006 009 893.5

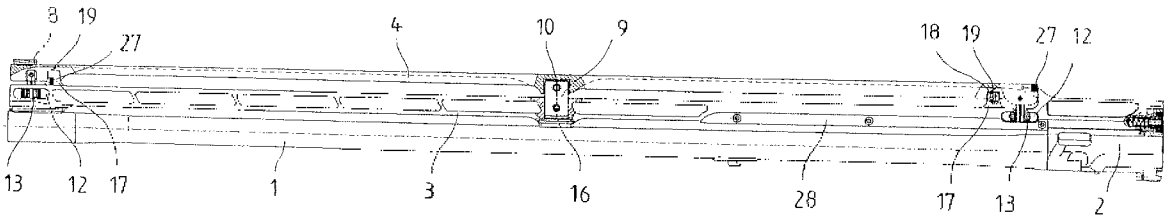
Publication Classification

(51) **Int. Cl.**
F41G 1/00 (2006.01)

(52) **U.S. Cl.** **42/112**; 42/138

(57) **ABSTRACT**

The invention concerns an adjustable sighting device for a small arm, in particular, for a shotgun, with a rail body (**3**) that can be fixed on the barrel (**1**) or the barrel group of the small arm, and a sighting device (**4**) which is arranged in an adjustable manner on the rail body (**3**). In order to obtain improved adjustment possibilities, the sight rail (**4**) is adjustable in height relative to the rail body (**3**) at both ends, by means of adjusting elements (**6**, **13**).



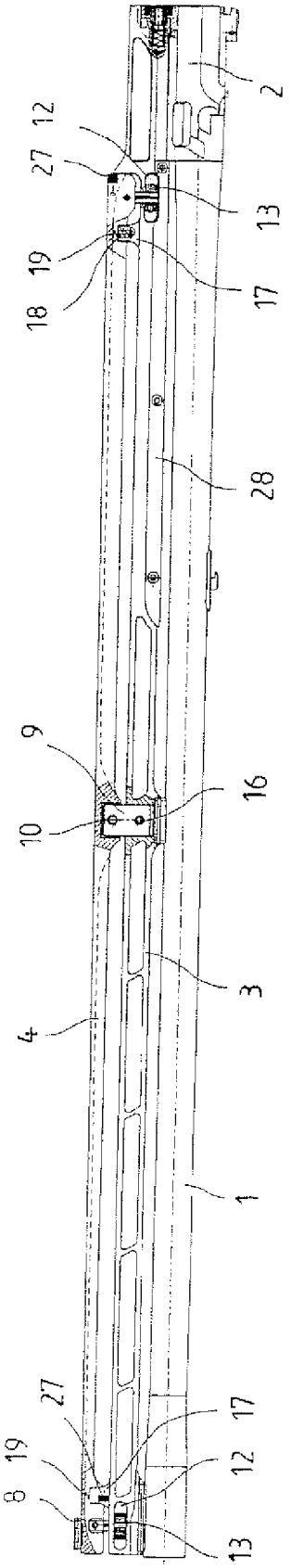


Fig. 1

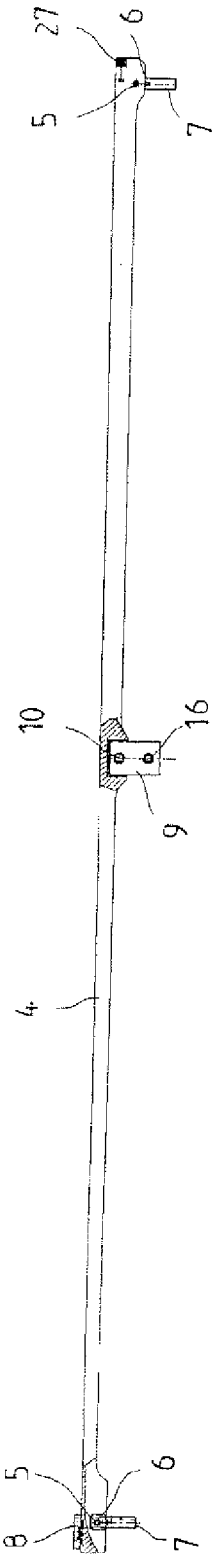


Fig. 2

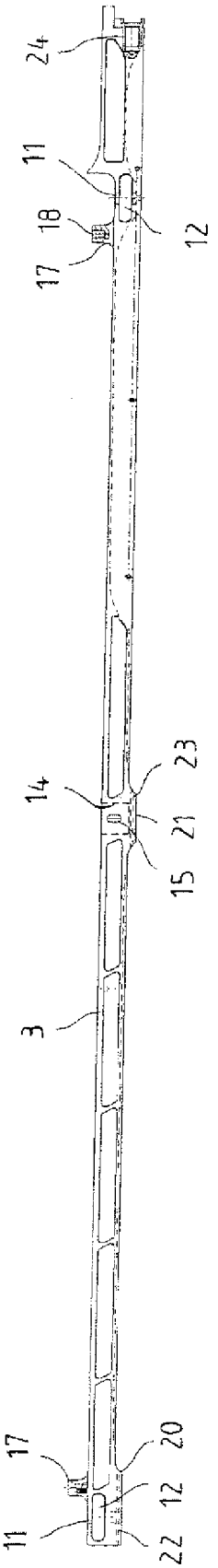


Fig. 3

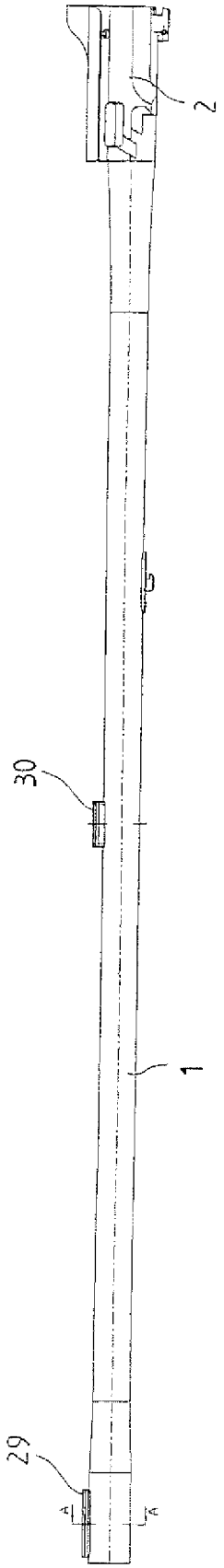


Fig. 4

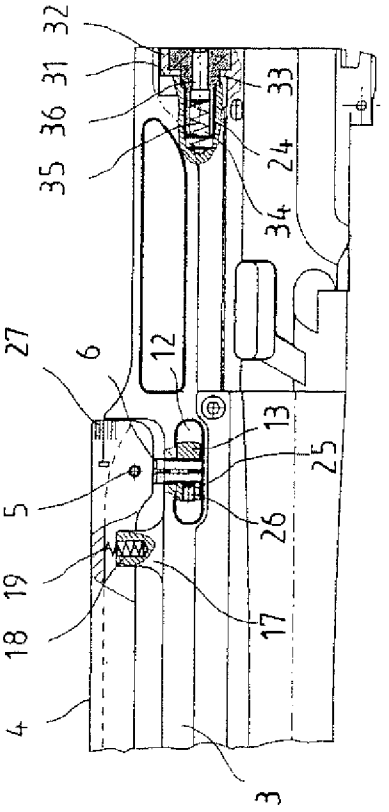


Fig. 6

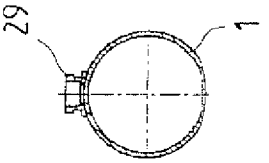


Fig. 5

ADJUSTABLE SIGHTING DEVICE FOR A SMALL ARM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under 35 U.S.C. §119 to German Patent Application No. 10 2006 009 893.5 filed Mar. 3, 2006, the entire contents of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The invention concerns an adjustable sighting device for a small arm, in particular a shotgun. The invention also concerns a small arm with such a sighting device.

BACKGROUND OF THE INVENTION

[0003] In sporting shotgun shooting, especially in American Trap, there are different sports disciplines that make different demands on a gun with regard to point of impact and/or the target image. Thus, for example, in American Single Trap the distance between the pigeon bunker and the marksman's stand changes depending on the degree of difficulty. In order to adapt to this change, the marksman needs an adjustment possibility on his sight rail. Known sighting devices of this type are limited, however, in their adjustment possibilities, and usually permit only one-dimensional adjustment.

[0004] The objective of the invention is to create an adjustable sighting device of the type mentioned at the beginning, and a small arm with such a sighting device, which have improved adjusting possibilities.

SUMMARY OF THE INVENTION

[0005] This objective is attained by an adjustable sighting device as set forth in the claims and by a small arm as also set forth in the claims. Appropriate developments and advantageous refinements of the invention are the subject of the dependent claims.

[0006] With the sighting device according to the invention, the sight rail can be adjusted in height at both ends, relative to the rail body, by adjustment elements. In this way, there is the possibility of vertically adjusting the sight rail in the muzzle area and in the rear area. Thus, both a parallel and an angular adjustment of the sight rail can be obtained without producing bending stresses in the sight rail. Another advantage of the sighting device according to the invention is found in the feasibility of simple replacement of the sight rail. It can be simply mounted and if necessary, it can be quickly and simply replaced. With the sighting device according to the invention, the barrel is to a large extent free and can expand, relative to the rail body, in the event of temperature fluctuations.

[0007] In a particularly appropriate embodiment, the sight rail can be continuously adjusted relative to the rail body. This enables a particularly accurate adjustment.

[0008] In an embodiment which can be simply operated, the adjustment elements are formed by adjusting bolts that are arranged in an articulated manner on the sight rail, and by corresponding adjusting nuts on the rail body. The adjusting nuts are preferably constructed as knurled nuts, and can thus be adjusted manually in a simple manner.

[0009] In another appropriate embodiment, the sight rail is situated on a middle element, which can be adjusted in height, such that it can pivot. In this way, an additional support of the sight rail relative to the rail body is obtained. In spite of the additional guide, both a parallel and angular adjustment of the sight rail can be obtained without warping.

[0010] Pressure spring are appropriately clamped in between the rail body and the sight rail. The sight rail is thus held free from play.

[0011] The rail body can be preferably guided on the barrel such that it is movable, and is firmly connected to the barrel only at one end. In this way the barrel can expand from heating without producing warping or deformation of the rail body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Other distinctive features and advantages of the invention can be deduced from the following description of a preferred embodiment example, with the aid of the drawing. The figures show the following:

[0013] FIG. **1**, a barrel of a shotgun with a sighting device according to the invention, in a partially cut side view;

[0014] FIG. **2**, a sight rail of the sighting device shown in FIG. **1** in a partially cut side view;

[0015] FIG. **3**, a rail body of the sighting device shown in FIG. **1** in a partially cut side view;

[0016] FIG. **4**, a barrel of a shotgun with a barrel hook element in a side view;

[0017] FIG. **5**, a cross-section along the line A-A of FIG. **4**; and

[0018] FIG. **6**, the rear part of the barrel with the barrel hook element in an enlarged, partially cut side view.

DETAILED DESCRIPTION OF THE INVENTION

[0019] FIG. **1** shows a barrel **1** of a shotgun with a hook element **2** and a sighting device with a rail body **3** fastened to the barrel **1**, and a sight rail **4** situated on the rail body so that it can be adjusted.

[0020] The sight rail **4**, shown separately in FIG. **2**, extends almost over the entire length of the barrel **1** and has adjusting bolts **6** on its two ends, supported such that each can rotate around a transverse pin **5**, with a threaded shaft **7** projecting downwards. The two adjusting bolts **6** are flattened laterally in the head area, wherein a better guidance is obtained within the sight rail **4**. A sight **8** is fixed at the front end of the sight rail **4** on its upper side. A middle element **9**, protruding downwards, is supported in the middle of the sight rail **4** such that it can rotate around a transverse pin **10**.

[0021] FIG. **3** shows the rail body **3**, which can be mounted on the barrel **1** to hold the sight rail **4**. The rail body **3** extends over the entire length of the barrel **1** and the hook element **2**, and has boreholes **11** at its front end and in the rear area to hold adjusting bolts **6**, and interconnecting transverse elongated holes **12** for adjusting nuts **13**, shown in FIG. **1**. Between boreholes **11** is provided an opening **14**, constructed here as an elongated through hole, to hold the middle element **9** adapted to the shape of the opening **14**. The middle element **9** has the cross-section of a round-ended feather key. On one side of the track is shown an elongated hole **15** in the vicinity of a through hole for a not-depicted counterscrew that meshes into a lateral threaded borehole **16** of the middle element, shown in FIG. **1**. Two pegs **17**, protruding upwards, with blind holes **18** to hold pressure springs **19**, are provided on the upper side of the rail body

3 next to the boreholes 11. On its underside, the rail body 3 has two stops 20 and 21, at a distance from one another and protruding downwards, with T-shaped grooves 22 and 23. Here the stop 20 is located on the front end of the rail body 3 and the other stop 21 in the area of the middle opening 14. An end threaded borehole 24 for fastening the rail body 3 to the hook element 2 is provided on the right rear end of the rail body 3, shown in FIG. 3

[0022] As can be seen from FIG. 1, the two adjusting bolts 6 engage with their respective threaded shafts 7 in the two adjusting nuts 13 located within the elongated holes 12. The two adjusting nuts 13 are constructed as knurled nuts and protrude laterally outside the rail body 3. Radial threaded boreholes 25 with locking screws 26, which can be seen in FIG. 6, are located in the adjusting nuts 13, by means of which an undesired adjustment of the sight rail 4 can be avoided. Furthermore, nondepicted cup springs are also located on the underside of the adjusting nuts 13, which bias the adjusting nuts 13 axially within the elongated holes 12. FIG. 6 also shows one of the pressure springs 19, located in the blind holes 18 of the two pegs 17, by means of which the sight rail 4 is biased upwards relative to the rail body 3, and in this way is held free from play.

[0023] For adjustment of the sight rail 4, it is possible to first loosen the counterscrew located in the threaded borehole 16 so that the position of the sight rail 4 can be changed relative to the rail body 3. By rotating the two adjusting nuts 13, the sight rail 4 can be adjusted vertically in the muzzle area or in the area of the hook element 2, wherein both a continuous parallel and an angular adjustment can be attained without thereby producing bending stresses within the sight rail 4. Markings or scales 27 for indicating the adjustment position are placed on the sight rail 4 and/or on the rail body 3. Front shaft covers 28, which can be seen in FIG. 1, are fixed on the right and left side of the rail body 3.

[0024] For assembly of the sighting device, the barrel 1, shown in detail in FIG. 4, has on its upper side two bases 29 and 30, at a distance from one another, to hold the downwards-protruding stops 20 and 21 of the rail body 3. In this respect, the two bases 29 and 30 have a T-profile, which can be seen in FIG. 5, which fits the T-shaped grooves 22 and 23 of the stops 20 and 21. In this way, the rail body 3 can be shoved onto the barrel 1 from the front until with its backside 31, and according to FIG. 6, it encounters an upwards-protruding stop 32 of the hook element 2 and can be fixed by means of a securing screw 33 on the hook element 2, screwed into the threaded borehole 24. The two bases 29 and 30, for example, can be welded onto the barrel 1 or fixed to it in some other way.

[0025] In the embodiment shown, the barrel 1 is constructed with the barrel hook 2 as an alternate barrel for a receiver of an over-and-under shotgun. Instead of the upper barrel, however, the sighting device is provided here. The securing screw 33 for fixing the rail body 3 on the hook element 2 is situated, according to FIG. 6, at the height of the upper striking pin and has a middle through hole 34 with a stop pin 36, which acts rearward by means of a spring 35, for the nondepicted, upper striking pin of the double-barrel shotgun. In this way, a striking pin damper is created that cushions the upper striking pin when it strikes and protects it.

What is claimed is:

1. Adjustable sighting device for a small arm, in particular, for a shotgun, with a rail body (3) that can be fastened to the barrel (1) or the barrel group of the small arm, and a sight rail (4), which is located in an adjustable manner on the rail body (3), characterized in that the sight rail (4) can be adjusted in height relative to the rail body (3) at the two ends, by means of adjusting elements (6, 13),

2. Sighting device according to claim 1, characterized in that the sight rail (4) can be adjusted continuously relative to the rail body (3).

3. Sighting device according to claim 1, characterized in that the adjusting elements (6, 13) are formed on the rail body (3) by adjusting bolts (6) and corresponding adjusting nuts (13), which are arranged on the sight rail (4) in an articulated manner.

4. Sighting device according to claim 3, characterized in that the adjusting nuts (13) are arranged in through-going lateral elongated holes (12) of the rail body (3).

5. Sighting device according to claim 1, characterized in that the sight rail (4) is pivotably arranged on a height-adjustable middle element (9).

6. Sighting device according to claim 5, characterized in that the middle element (9) is arranged within an opening (14) of the rail body (3) such that it can be adjusted in height.

7. Sighting device according to claim 5, characterized in that the middle element (9) is held on the sight rail (4) such that it can be rotated around a transverse pin (10).

8. Sighting device according to claim 1, characterized in that pressure springs (19) are clamped between the rail body (3) and the sight rail (4).

9. Sighting device according to claim 8, characterized in that the pressure springs (19) are located in blind holes (18) of pegs (17) that project upward on the upper side of the rail body (3).

10. Sighting device according to claim 2, characterized in that the adjusting bolts (6) are arranged on the sight rail (4) such that it can rotate around transverse pins (5).

11. Sighting device according to claim 1, characterized in that the rail body (3) is movably guided on the barrel (1) and is connected firmly with the barrel (1) at only one end.

12. Sighting device according to claim 1, characterized in that the rail body (3) contains stops (20, 21), projecting downwards, with guide grooves (22, 23) for connection with bases (29, 30) on the upper side of the barrel (1) or barrel group.

13. Sighting device according to claim 1, characterized in that the rail body (3) is fastened to a hook element (2) of the barrel (1) via a securing screw (33).

14. Sighting device according to claim 13, characterized in that a striking pin damper (35, 36) is integrated in the securing screw (33).

15. Sighting device according to claim 14, characterized in that the striking pin damper (35, 36) comprises a stop pin (36), which is movably guided in a middle through hole (34) of the securing screw (33) and which acts backwards by means of a pressure spring (35).

16. Small arm with a barrel (1) and a sighting device fixed on the barrel (1), characterized in that the sighting device is designed according to claim 1.

* * * * *