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PISTOOLIN LAUKAISULAITE

FIRING DEVICE FOR A GUN

FIRING DEVICE FOR A GUN

Subject matter of the invention

[0001] The present invention relates to a pistol percussion device.

Prior art

[0002] In general, pistol firing devices comprise either a hammer producing a shock at the rear of a striker the front end of which strikes the primer of a chambered munition, or a pre-armed striker set in motion by a compressed spring when the gun is loaded.

[0003] The current trend is to abandon hammer devices. Indeed, such open devices easily become clogged, or can become blocked due to an object placed between the hammer and the striker.

[0004] In the case of pre-armed strikers, the spring has to be apt to store enough energy so as to provide a safe percussion, while occupying a small space, in particular compared to the longitudinal axis of the pistol. For a balanced movement of the striker, the percussion spring is generally arranged concentrically about the axis of the striker, either around the striker or inside the striker. The striker then serves as a guide for the spring so as to reduce the risk of buckling during compression.

[0005] Such concentric arrangement greatly limits the choice of the spring and forces a compromise between either a short spring subject to high cyclic stresses potentially causing fatigue ruptures, or a longer spring inducing an elongation of the slide.

[0006] The reliability of the firing device is directly related to the amount of energy stored in the striker spring and given the above-mentioned constraints it is difficult to increase such amount in prior art devices without increasing the bulk of the device.

[0007] The document WO03/081160 discloses a striker actuated by a single spring arranged laterally and parallel to the striker.

Summary of the invention

[0008] The invention relates to a pistol according to claim 1.

[0009] Lateral means that the axes of the springs are parallel and arranged both either above or below, and either to the left or to the right.

[0010] Preferably, the at least two springs and the corresponding bearing surfaces are arranged symmetrically about the striker axis.

[0011] In the present description, symmetrical refers to any type of symmetry, including rotation symmetries, so that the torques applied by the at least two springs cancel each other out: there can be two springs arranged symmetrically on either side of the axis or of rotational symmetry of order 3 (3 springs located on a circle at angles separated by 120°).

[0012] According to preferred embodiments of the invention, the slide comprises one or a suitable combination of at least two of the following features:

- the striker comprises at least two recesses arranged around the axis thereof for receiving said at least two springs;
- the device comprises only two striker springs arranged symmetrically on either side of the striker axis, the two springs being arranged on both sides of the striker axis;
- said striker springs and said striker are arranged in a slide housing, said housing comprising a stop surface for the striker springs, for stopping the spring pressure on the striker bearing surfaces before the striker head emerges from a receiving bottom of the slide, so as to allow the striker to follow a free path at the end of the percussion movement and to return to the rear rest position of the striker at rest without emerging from the receiving bottom;
- a return spring bearing on the slide and applying a rearward force to the striker is arranged in said housing of the slide;
- the weight of the striker is comprised between 1.5 and 6 g, preferentially between 2 and 3 g;
- the housing is provided in a housing fastened to the slide;
- the housing is made of polymer;
- said striker and said at least two springs are pre-assembled in said housing, said springs being held in position by a spring support comprising at least two spring guides inserted inside said springs;

- the slide is essentially metallic and the striker comprises a rod for supporting the striker head sliding in a guide conduit (preferentially cylindrical) of the striker provided in the metal of the slide;
- said at least two springs, the axes of which are parallel to each other, are compression springs;
- the respective axes of said at least two springs and the axis of the striker are coplanar.

Brief description of figures

[0013] Figure 1 shows a section of an example of a pistol according to the invention.

[0014] Figure 2 shows a section, in a top view and in a side view, of a slide of a pistol according to the invention.

[0015] Figure 3 shows a perspective view of a pistol striker according to the invention.

[0016] Figure 4 represents a perspective view of a safety catch for the blocking the striker.

Legend of the figures

1. striker
2. striker lock (safety catch)
3. striker stop
4. right-hand striker spring
5. slide
6. left-hand striker spring
7. slide insert
8. extractor claw
9. striker head
10. left-hand striker safety pin
11. right-hand striker safety pin
12. spring bearing surface
13. striker spring housing recess
14. striker safety pin housing recess
15. Equivalent recess to the return spring housing in order to balance the catch

16. Return spring housing
17. Bearing surface of the right-hand striker safety pin
18. Bearing surface of the left-hand striker safety pin
19. Striker return spring
20. Striker axis
21. Spring support
22. Spring stop surface 4,6
23. Receiving bottom (or breechblock bottom or percussion bottom)
24. Casing
25. Lateral extension of the striker
26. Striker safety control trigger
27. Rotation axis of the safety catch
28. Striker trigger
29. Striker guide channel

<u>Detailed description of the invention</u>

[0017] The present description essentially describes an example of a gun implementing all of the aspects of the present invention. A person skilled in the art will easily understand that the different aspects of the invention, although usable separately, have synergies which will become clearly apparent given the example and the few variants described.

[0018] The present invention relates to a pistol comprising a firing device wherein the percussion energy is supplied by at least two striker springs 4,6 arranged symmetrically on both sides of the striker axis 20, unlike the prior art where a single spring arranged concentrically about the axis is used.

[0019] Indeed, the use of two springs makes it possible to reduce the length of each of the springs for a given energy and stress level. It is in this way possible to store sufficient energy in the springs while providing a long service life given the level of acceptable stresses in the springs, in particular with regard to the fatigue of the springs. However, the higher the energy, the more the percussion is provided, in particular in adverse conditions.

[0020] The use of a plurality of springs with suitable length and working in parallel makes it possible to use a lower stiffness for providing the same level of energy.

The goal thereof is also to reduce the energy required for the “racking” of the gun (manual rearming). Since the stiffness of the percussion springs is lower, it is therefore possible to reduce the force of the recuperator spring dimensioned so as to set the slide in firing position and tension the percussion springs. The invention thus can be further used for improving the general comfort in using the gun and the service life thereof.

[0021] Advantageously, the placement of the springs next to the striker makes it possible to make same tapered and lighter. However, the lighter the striker, the more reliable the firing of the primer for the same potential energy stored in the percussion spring(s). Preferentially, the weight of the striker is comprised between 1.5 and 6 g, preferentially between 2 and 3 g.

[0022] According to a preferred embodiment, the striker comprises at least two symmetrical recesses 13 on both sides of the striker axis 20, so as to receive the at least two springs 4,6. Such recesses reduce the total weight of the striker and reduce the torque generated by each spring by moving the spring closer to the striker axis.

[0023] According to the prior art, the thrust of the spring is exerted only over a part of the striker stroke. The end of the striker stroke then takes place without any contact with the spring. Thus, a small return spring makes it possible to push the striker out of the receiving bottom. The vertical displacement of the cartridge during unlocking can then take place without rubbing on the striker and hence without any risk of breaking the striker. In the prior art, the free stroke of the striker is generally achieved by adding components, which goes in the direction of an increased complexity and of an increase in the price of the gun.

[0024] According to a preferred embodiment of the invention, after an initial stroke pushed by the springs, the percussion springs 4,6 no longer press on the striker but against a stop surface 22 of a housing in the slide 5 receiving the firing device according to the invention. The striker thus travels freely from such point. It should also be noted that the use of a light striker makes possible the use of a very weak striker return spring and thus having little impact on the percussion energy stored in the system, the return spring being put in opposition to the percussion springs.

[0025] In general, the slide is the most expensive component of the pistol. A significant reduction in the price thereof can be achieved by using a plastic casing which eliminates costly machining operations in the slide.

[0026] Advantageously, said housing is provided in a casing 24 fastened to the slide 5. Preferentially, said casing 24 is made of polymer while the rest of the slide is essentially metallic.

[0027] Advantageously, said striker 1 and said at least two springs 4,6 are pre-assembled in said casing 24, said springs being held in position by a spring support 21 comprising at least two spring guides inserted inside said springs 4,6.

[0028] In the case of a polymeric casing, guiding the striker so as to remain concentric with the primer can be an additional technical difficulty.

[0029] In order to solve such problem, the striker 1 is preferentially guided throughout the stroke thereof in a channel 29 provided in the metal part of the slide 5 opening out into the receiving bottom 23. Guiding then takes place via a support shaft or rod for the striker head 9 in a bore opening out into the receiving bottom 23. Preferentially, the slide is essentially metallic and the striker 1 comprises a support rod for the striker head 9 sliding in a cylindrical guide conduit for the striker 1 provided in the metal of the slide 5.

[0030] According to preferred embodiments of the invention compatible with the above-described modes, the pistol further comprises a striker safety device integrated into the slide 5, the striker 1 comprising a lateral extension 25 comprising two safety pins 10,11 and a striker safety catch 2 arranged on a rotation axis 27 fastened to the slide and parallel to the striker translation axis 20, the safety catch 2 being apt to rotate in a vertical plane between a firing position and a blocking position, said catch 25 comprising two bearing surfaces 17,18 on which said pins 10,11 rest when said catch is in the blocking position and two recesses 14 which can let through said pins 10,11 when said catch is in the firing position, the center of mass of said catch 2 being on the rotation axis 27 thereof and the rotation axis 27 being a main axis of inertia of said catch 2.

[0031] The catch 2 is actuated in rotation by a safety control trigger 30, which is as such actuated by the fire control chain controlled by a trigger blade.

PATENTTIVAATIMUKSET

1. Pistooli, joka käsittää laukaisulaitteen, joka on sijoitettu luistiin (5), jolloin mainittu laite käsittää iskurin pään (9) käsittävän iskurin (1), tunnettu siitä, että mainittu iskuri (1) käsittää vähintään kaksi tukipintaa (12), jotka on sijoitettu kohtisuoraan iskurin (1) akseliin (20) nähden, ja että mainittu laite käsittää vähintään kaksi iskurin jousta (4, 6), jotka ovat yhdensuuntaisia ja jotka on järjestetty sivusuunnassa iskurin akselin (20) sivulle ja jotka tukeutuvat kyseiseen vähintään kahteen tukipintaan (12).

2. Patenttivaatimuksen 1 mukainen pistooli, jossa kyseiset vähintään kaksi jousta ja vastaavat tukipinnat on järjestetty symmetrisesti iskurin akselin ympärille.

3. Patenttivaatimuksen 1 tai 2 mukainen pistooli, jossa iskuri (1) käsittää vähintään kaksi syvennystä (13), jotka on järjestetty sen akselin (20) ympärille mainittujen vähintään kahden jousen (4, 6) vastaanottamiseksi.

4. Jonkin edellisen patenttivaatimuksen mukainen pistooli, jossa kyseiset vähintään kaksi iskurin jousta (4, 6) ovat kaksi iskurin jousta (4, 6), jotka on järjestetty iskurin akselin (20) molemmille puolille.

5. Jonkin edellisen patenttivaatimuksen mukainen pistooli, jossa mainitut iskurin jouset (4, 6) ja mainittu iskuri (1) on järjestetty luistin (5) tilaan, jolloin mainittu tila käsittää iskurin jousien (4, 6) pysäytyspinnan (22), joka mahdollistaa jousien (4, 6) paineen vastaanottamisen iskurin (1) tukipinnoille (12) ennen iskurin pään (9) esiintuloa ulos luistin kuopan (23) pohjasta niin, että mahdollistetaan iskurin (1) vapaa liikkuminen iskuliikkeen lopussa ja iskurin palaaminen iskurin levossa olevaan takalepoasentoon ilman, että se tulee esiin kuopan pohjasta.

6. Patenttivaatimuksen 5 mukainen pistooli, jossa mainittuun luistin (5) tilaan on sijoitettu palautusjousi (19), joka tukeutuu luistiin (5) ja kohdistaa iskuriin (1) taaksepäin suuntautuvan voiman.

7. Jonkin edellisen patenttivaatimuksen mukainen pistooli, jossa iskurin massa on 1,5–6 g, edullisesti 2–3 g.

8. Jonkin patenttivaatimuksen 5 tai 6 mukainen pistooli, jossa mainittu tila on järjestetty luistiin (5) kiinnitettyyn koteloon (24).

9. Patenttivaatimuksen 8 mukainen pistooli, jossa mainittu kotelo (24) on polymeeriä.

10. Jonkin patenttivaatimuksen 8 tai 9 mukainen pistooli, jossa mainittu iskuri (1) ja mainitut vähintään kaksi jousta (4, 6) on esiasennettu mainittuun koteloon (24), jolloin mainittuja jousia pidetään paikoillaan jousituen (21) avulla, joka käsittää vähintään kaksi jousiohjainta, jotka työntyvät mainittujen jousien (4, 6) sisään.

11. Jonkin edellisen patenttivaatimuksen mukainen pistooli, jossa luisti on olennaisesti metallia ja iskuri (1) käsittää iskurin pään (9) tukitangon, joka liukuu luistin (5) metalliin muodostetussa iskurin (1) ohjausputkessa.

12. Jonkin edellisen patenttivaatimuksen mukainen pistooli, jossa mainitut vähintään kaksi jousta (4, 6), joiden vastaavat akselit ovat yhdensuuntaisia keskenään, ovat puristustyyppisiä jousia.

13. Patenttivaatimuksen 12 mukainen pistooli, jossa mainittujen vähintään kahden jousen vastaavat akselit ja iskurin akseli ovat samassa tasossa.

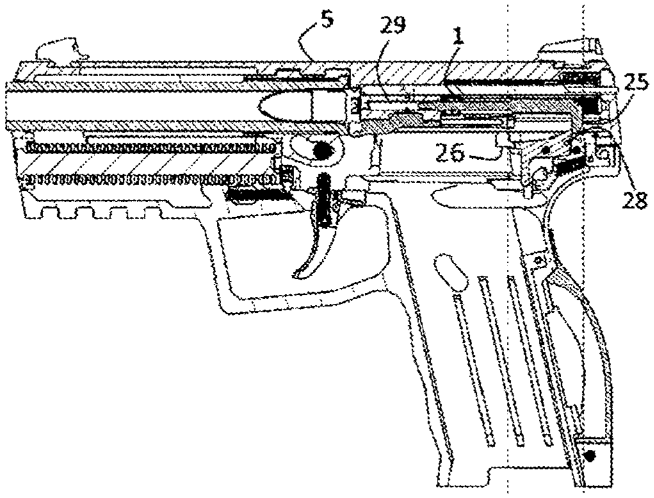

Fig. 1

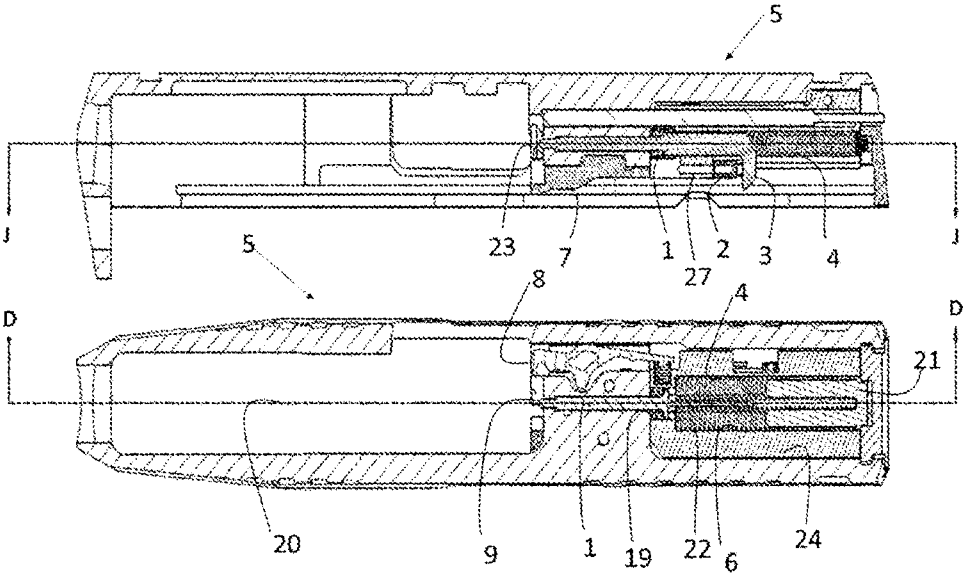

Fig. 2

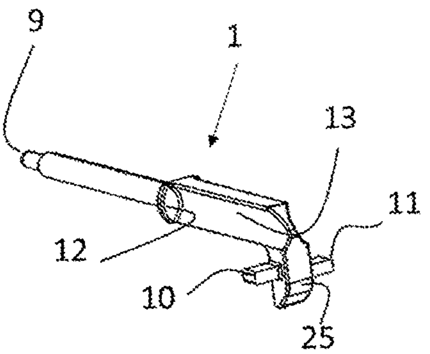

Fig. 3

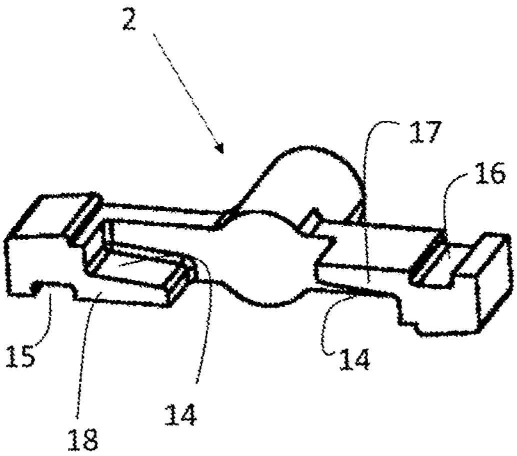

Fig. 4