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<p>(21) International Application Number: PCT/NL94/00288</p> <p>(22) International Filing Date: 15 November 1994 (15.11.94)</p> <p>(30) Priority Data: 93/6546 6 December 1993 (06.12.93) ZA</p> <p>(71) Applicants (for all designated States except US): DENEL (PROPRIETARY) LIMITED [ZA/ZA]; 368 Selbourne Avenue, Verwoerdburg, 0147 (ZA). OCTROOIBUREAU KISCH N.V. [NL/NL]; 62, De Ruyterkade, Curaçao (AN).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): VAN NIEKERK, Pieter, Willem [ZA/ZA]; 64 Blackberry Street, Zwartkop, Ext IV, Verwoerdburg, 1057 (ZA). MARITZ, Daniel, Jacobus, Johannes [ZA/ZA]; 80 Akkerboom Street, Zwartkop, Ext IV, Verwoerdburg, 0157 (ZA). PRINSLOO, Kurt, Karl [ZA/ZA]; 23 Cabildo, 1, Bultafhoek, Verwoerdburgstad, Verwoerdburg, 0157 (ZA). DE BRUIN, Jakob [ZA/ZA]; 917 Weir Street, Gardens, Pretoria, 0082 (ZA). KOEKE-MOER, Brian [ZA/ZA]; 832 De Villebois, Mareuil Avenue, Wingate Park, Pretoria, 0153 (ZA). GREEFF, Echbertus, Hendrik, Daniel [ZA/ZA]; 29 Aldea, 11 Randkant Crescent, Verwoerdburgstad, Verwoerdburg, 0157 (ZA).</p>		<p>(74) Agent: IEMENSCHOT, J.A.; Exterpatent B.V., P.O. Box 3241, NL-2280 GE RIJSWIJK (NL).</p> <p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ).</p> <p>Published With international search report.</p>
<p>(54) Title: HAMMER DEVICE FOR A FIREARM</p> <div> </div> <p>(57) Abstract</p> <p>A hammer mechanism (15) for a firearm (10) including a hammer member (16) which is pivotally mounted on the firearm (10) for reciprocal pivotal movement about an axis between a cocked and a firing position; and a spring (21) which is located on the axis which serves to urge the hammer member (16) towards the firing position. The mechanism (15) also includes an elongated spring loaded sear (28) of which the one end is mounted for pivotal movement about an axis which extends parallel to that of hammer member (16) and of which the other end includes a catch formation (29) adapted releasably to engage hammer member (16) when it is in the cocked position.</p>		

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Hammer device for a firearm.

THIS invention relates to a hammer mechanism for a firearm or the like.

Most conventional hammers for firearms are characterised by the fact that they comprise an elongated hammer member 5 which is pivotally mounted towards its one end so that when the trigger of the firearm is pulled the hammer is pivotally movable under the biasing action of a spring or the like from a first or 'cocked' position to a second or firing position where it engages a firing pin which causes 10 the shot to be fired.

A disadvantage found with the known hammer arrangements is that the said spring is usually of such construction, and located in such position in the body of the firearm, that it adds an unwanted element of bulkiness thereto.

15 Also, because such spring is usually located in a remote position relative to the hammer member, a positive, reliable action is often not possible between such spring and the member.

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It is accordingly an object of this invention to provide a hammer mechanism for a firearm or the like which is relatively compact and which has certain other advantages over the known arrangements.

5 According to the invention a hammer mechanism for a firearm or the like includes a hammer member which is pivotally mounted on the firearm for reciprocal pivotal movement about an axis between a first or cocked and a second or firing position; and a spring or the like which
10 serves to urge the hammer member towards the firing position, characterised in that the spring is located on said axis.

It will be appreciated that with the spring so located, the hammer mechanism can be very compact thus reducing the
15 overall bulkiness of the firearm.

Further according to the invention the spring comprises a helically wound torsion spring which is so located that its longitudinal axis coincides with the axis about which the hammer member is pivotally movable.

Still further according to the invention the hammer member is mounted for its said pivotal movement on an elongated shaft or the like, and the torsion spring is helically wound around the same shaft.

5 Still further according to the invention the hammer mechanism includes a sear comprising an elongated member of which the one end is mounted for pivotal movement about an axis which extends parallel to that of the hammer member, the other end of the sear including a catch
10 formation adapted releasably to engage the hammer member when it is in the cocked position and to hold the hammer member in such position, the sear being spring biased towards such engagement.

Still further according to the invention the sear is
15 connectable to a trigger bar which can move the sear out of engagement with the hammer member when the trigger is pulled to fire the shot.

Still further according to the invention the sear spring
comprises a torsion spring which is helically wound onto
20 an elongated shaft which extends parallel to the shaft of the hammer member.

The invention will now be described further by way of example with reference to the drawings in which:

Figure 1 is a diagrammatic side view, partly in section, of a firearm in the form of a pistol provided with a hammer mechanism according to the invention shown with the hammer in the firing position;

Figure 2 is a diagrammatic front elevation (partly in section) of the hammer mechanism of figure 1; and

Figure 3 is a diagrammatic side elevation (partly in section) of the mechanism of figures 1 and 2.

In this embodiment of the invention a pistol 10, which comprises a hand engagable grip 11, trigger 12, barrel 13 and a reciprocally movable slide 14 having a firing pin (not shown), is provided with a hammer mechanism 15 according to the invention.

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Hammer mechanism 15 includes an elongated substantially inverted U-shaped hammer member 16 of which the ends of the 'U' are pivotally mounted on an elongated shaft 17 which in turn is mounted between two opposed arms of a substantially U-shaped frame 18 which is integral with that part of the body of pistol 10 which houses the rear ends of two parallel extending spaced apart guide members 19 associated with slide 14.

Member 16 is pivotally movable in the direction of arrow 20 (figure 3) on shaft 17 from a first or cocked position shown in dotted lines in figure 3 where it is spaced from the firing pin (not shown) of pistol 10 to a second or firing position (shown in all three of the drawings) where it can engage the rear end of the said firing pin (not shown).

Movement of member 16 to the cocked position is effected by the movement of slide 14 towards the rear end of pistol 10. Such movement of member 16 takes place against the biasing action of an elongated torsion spring 21 which is helically wound onto shaft 17 so that it extends between the ends of member 16, the longer projecting end 22 of spring 21 being made to engage member 16, and the shorter projecting end 23 of spring 21 including a hook formation

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adapted to engage the surrounds of a second elongated shaft 24 which is also mounted on frame 18 slightly below and in parallel spaced relationship to shaft 17.

Shaft 24 also has an elongated torsion spring 25 helically wound onto it. The shorter projecting end 26 of spring 25 engages the base of frame 18 while its longer end 27 engages an elongated sear member 28 of slightly curved configuration of which the one end is pivotally carried on shaft 24 while its other end includes a hook formation 29 adapted releasably to engage a catch formation 30 (figure 3) provided on hammer member 16 when the latter is in the cocked position.

Sear member 28, which includes an aperture 31 intended for connection to the one end of a trigger bar (not shown) of which the other end is connected to trigger 12 of pistol 10, is reciprocally movable on shaft 24 under the biasing action of spring 25 in a manner so that it remains in constant sliding engagement with member 16 during the pivotal movement of the latter and so that its hook formation 29 can engage catch formation 30 on member 16 when the latter is in the cocked position.

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When trigger 12 is pulled with member 16 in the cocked position, the trigger bar (not shown) causes sear member 28 to move against the biasing action of spring 25 in a manner so that hook 29 releases catch 30 and member 16 is free to move under the influence of spring 21 to the firing position where it will engage the firing pin (not shown) to fire the shot.

When slide 14 automatically moves towards the rear end of pistol 10 after the shot has been fired, or when it is so moved manually, it carries member 16 with it to the cocked position where hook 29 will again engage catch 30 under the biasing influence of spring 25 to keep member 16 in the cocked position. Slide 14 then in conventional manner returns under the influence of its spring (not shown) to its forward position, the arrangement being such that hammer member 16 cannot engage the firing pin unless slide 14 is in its extreme forward position.

It will be appreciated that because its springs 21 and 25 are located within the outer perimeters of hammer member 16 and its frame 18, a very compact arrangement is possible.

Furthermore, because of the direct operation of springs 21 and 25 on members 16 and 28 respectively, a very positive and therefor reliable biasing action is provided.

It will be appreciated that the invention also includes
5 within its scope a firearm, particularly a pistol, provided with a hammer mechanism according to the invention.

It will be appreciated further that there are no doubt many variations in detail possible with a hammer
10 mechanism and firearm according to the invention without departing from the spirit and/or scope of the appended claims.

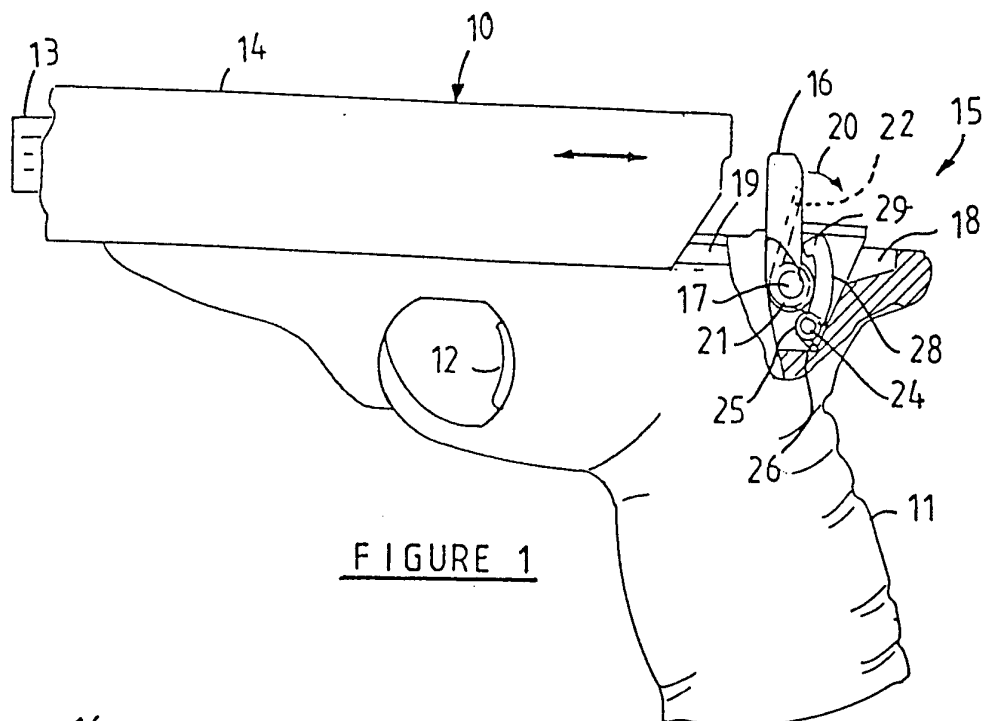
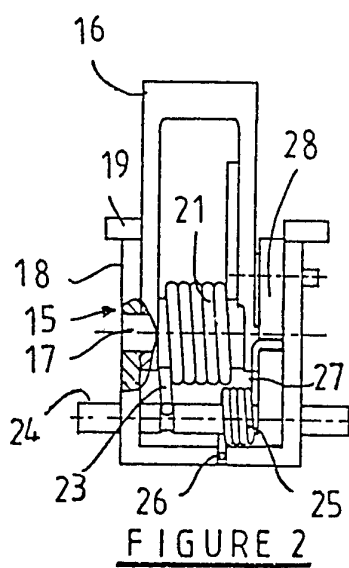
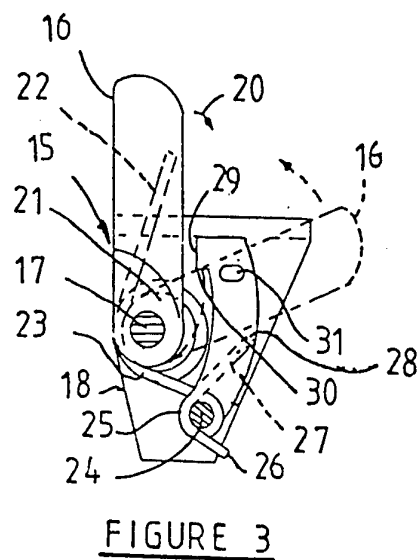
CLAIMS

1. A hammer mechanism for a firearm including a hammer member which is pivotably mounted on the firearm for reciprocal pivotal movement about an axis between a first or cocked and a second or firing position; and a spring or the like which serves to urge the hammer member towards the firing position, characterised in that the spring is located on said axis.
5
2. The hammer mechanism of claim 1 of which the spring comprises a helically wound torsion spring which is so located that its longitudinal axis coincides with the axis about which the hammer member is pivotally movable.
10
3. The hammer mechanism of claim 2 of which the hammer member is mounted for its said pivotal movement on an elongated shaft or the like, and the torsion spring is helically wound around the same shaft.
4. The hammer mechanism of any one of the preceding claims which includes an elongated sear of which the one end is mounted for pivotal movement about an axis which extends parallel to that of the hammer member, the other end of the sear including a catch formation adapted releasably to engage the hammer member when
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it is in the cocked position and to hold the hammer member in such position, the sear being spring biased towards such engagement.

- 5 5. The hammer mechanism of claim 4 of which the sear is connectable to a trigger bar which can move the sear out of engagement with the hammer member when the trigger is pulled to fire the shot.
- 10 6. The hammer mechanism of claims 4 or 5 of which the sear spring comprises a torsion spring which is helically wound onto an elongated shaft which extends parallel to the shaft on which the hammer member is mounted and onto which a torsion spring is mounted for biasing the hammer member towards the firing position.
7. A hammer mechanism for a firearm substantially as herein described and as illustrated in the drawings.
8. A firearm including a hammer mechanism as claimed in any one of the preceding claims.
- 15 9. The firearm of claim 8 comprising a pistol.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL 94/00288

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 F41A19/14 F41A19/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 F41A

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CH,A,661 343 (HÄMMERLI AG) 15 July 1987 see page 3, right column, line 10 - line 23 see figure 5	1-9
X	DE,A,15 78 423 (SCHWEIZERISCHE INDUSTRIE-GESELLSCHAFT) 29 April 1971 see page 3 - page 5 see figures	1-5,7-9

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/NL 94/00288

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CH-A-661343	15-07-87	DE-A- 3702228 FR-A- 2593594	01-10-87 31-07-87
DE-A-1578423	29-04-71	BE-A- 701039	18-12-67