(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 026 471 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.08.2000 Bulletin 2000/32

(51) Int Cl.[7]: **F41A 23/06**

(21) Application number: **00300664.0**

(22) Date of filing: **28.01.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **01.02.1999 GB 9902186**

(71) Applicant: **Accuracy International Ltd.**
Portsmouth, Hampshire PO3 5SJ (GB)

(72) Inventor: **Cooper, Malcolm,**
c/o Accuracy International Ltd
Portsmouth, Hampshire PO3 5SJ (GB)

(74) Representative: **Boden, Keith McMurray et al**
D. Young & Co.
21 New Fetter Lane
London EC4A 1DA (GB)

(54) Support mechanism for firearms

(57) A telescopically retractable or extendable support 11 for a firearm 1, comprising a plurality of telescoping supporting components 17,27. The support is preferably attachable to a firearm so that said support may be telescopically retracted or extended with respect to said firearm. Preferably, the support is substantially telescopically retractable into said firearm.

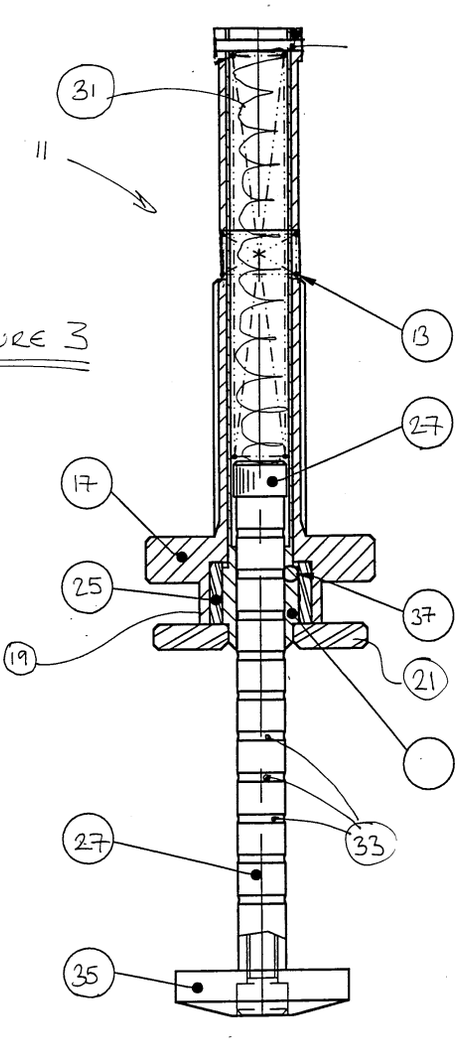

FIGURE 3

EP 1 026 471 A2

Description

[0001] This invention relates to a support mechanism for firearms, and more particularly to a rifle support mechanism and to a rifle incorporating such a support. Various mechanisms have previously been proposed to artificially aid the stability of a marksman's weapon and to steady the aim of firearms such as a rifle. For example, some previously proposed rifles used for hunting and precision shooting have made use of a 'bipod' at the front of the rifle to aid steadiness. One such previously proposed 'bipod' comprises a pair of legs joined to the fore-end that can be arranged to form a triangle with the muzzle when the legs are in contact with the ground.

[0002] It has also been proposed to provide rifles with a third leg or spike at the rear of the gun to further improve the steadiness of a bipod or otherwise supported or rested gun.

[0003] Whilst these three-legged or "tripod" rifles exhibit a greatly improved steadiness with respect to existing "bipod" guns, they do suffer from the fact that previously proposed third legs are only capable of relatively limited extension and thus the guns incorporating these legs are only adjustable over a relatively small vertical range. The fact that these previously proposed guns are only adjustable over a relatively small range severely limits their usefulness in the field.

[0004] It is an object of the present invention to alleviate these and/or other problems associated with these previously proposed rifles.

[0005] In accordance with an aspect of the invention, there is provided a support mechanism for firearms, the mechanism comprising a unit engageable with and/or extendable from the firearm and a leg extendable from the unit.

[0006] A further aspect of the invention provides a firearm comprising a support mechanism which comprises a unit engageable with and/or extendable from the firearm and a leg extendable from the unit.

[0007] A further aspect of the invention provides a support for a firearm that is at least partly retractable within the firearm.

[0008] Another aspect of the invention provides an adjustable support for a firearm that is attached or attachable to the firearm.

[0009] Another aspect of the invention provides a support for a firearm comprising telescoping supporting components that could be adjustable.

[0010] In all of the above aspects it is preferred that the support is adjustable to preset positions. It is also preferred that the support comprises fine, coarse or fine and coarse adjustment means. Preferably the support and/or the leg is screw-threadably extendable.

[0011] An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic elevational view of a rifle;

Figure 2 is an enlarged view of a portion of the rifle of Figure 1;

Figure 3 is a cross-sectional through the rifle of Figure 1 along the line A--A.

[0012] As shown in Figure 1, most modern rifles 1 are of a modular construction and typically comprise a barrel 3, a firing mechanism 5 and a butt 7 bolted, or otherwise secured, to the firing mechanism 5. In this illustrative embodiment a pair of legs 9 forming a bipod are fixed to a fore-end 4 of the rifle 1, the legs being capable of supporting the front portion of the rifle.

[0013] It should be noted that whilst the embodiment to be described hereinafter particularly relates to a modular bipod rifle, it will be appreciated by persons skilled in the art that the teachings of the invention are equally applicable to any kind of rifle or other firearm. It is even conceivable that the teachings of the invention could be retrofitted to existing rifles or firearms.

[0014] Figure 2 is an enlarged view of a section of the rifle of Figure 1 showing the portion of the rifle 1 where the rifle body joins with the butt 7. As shown, a support mechanism 11 is provided that may be adjusted by the user of the rifle for the support thereof. The support mechanism 11 is preferably positioned as close as possible to the butt 7 and as far away as possible from the bipod support 9 (if provided) or from the muzzle of the barrel 3.

[0015] The support mechanism 11 of this embodiment comprises a retractable third leg that advantageously has both coarse and fine adjustment combined in the one mechanism. The mechanism of this embodiment provides for a more versatile support when compared to other previously proposed guns as it has a greater range of extension, and yet is advantageously still retractable inside the gun.

[0016] As shown in Figure 3, the support mechanism 11 comprises an externally threaded cylinder 13 that is screwably engaged with a threaded aperture formed in the rifle body. The cylinder 13 is formed with a collet wheel 17 at one end, and the collet wheel 17 has a second cylinder 19 of larger diameter than the first cylinder 13 extending therefrom. An actuating member 21 is provided, and the member 21 is formed with a shoulder 25 that extends, when the device is assembled, into the second cylinder 19. The shoulder 25 of the actuating member 21 is retained within the second cylinder 19 by a spring so that the actuating member 21 normally abuts the second cylinder 19.

[0017] A support leg 27 is inserted through the actuating member 21, the second cylinder 29 and the first cylinder 13 and is retained within the first cylinder 13 by a spring 31 that is attached at one end to the support leg 27 and at the other end to a pin inserted through the end of the first cylinder 13 furthest from the collet wheel 17. The support leg 27 is formed with a series of spaced grooves 33 and with a foot 35 at one end.

[0018] The support mechanism 11 includes one or

more ball bearings 37 that are trappable in grooves of the leg 27. The ball bearings 37 are held in the groove by the shoulder 25 of the actuating member 21 and act to resist movement of the leg 27. When the actuating member 21 is pulled away from the collet wheel 17 against the action of the spring, the ball bearings 37 are free to move into a space formed between the leg 27 and the second cylinder 19 as a result of the removal of the shoulder 25. When the ball bearings move into this space, they are free to move out of the groove and thus the leg may be extended or retracted as desired. Releasing the actuating member 21 causes the ball bearings to be driven from the space into the next available groove whereupon the leg will once more become locked. The tension of the spring between the actuating member 21 and the second cylinder 19 is chosen to be sufficient to ensure that the inner leg is trapped and held firmly by the action of the ball bearings in the grooves.

[0019] The provision of the spring 31 between the leg 27 and the retaining pin advantageously provides for a very swift retraction of the support mechanism simply by pulling the actuating member 21 away from the collet wheel 17 against the action of the spring provided therebetween.

[0020] From the above, it can be seen that the length of the leg 27 extending from the collet wheel 17 may easily be adjusted simply by pulling the actuating member 21 and the leg 27. The spaced grooves provide a number of predetermined leg extensions that may be selected at will by the operator of the gun, and it is these predetermined leg extensions that provide the aforementioned coarse leg length adjustment.

[0021] The aforementioned fine leg length adjustment is provided simply by rotating the collet wheel 17 to unscrew the first cylinder 13 from the threaded aperture in the rifle body. Rotating the collet wheel 17 in one direction will drive the first cylinder 13, actuating member 21 and leg 27 away from the rifle body; and rotating the collet wheel 17 in the opposite direction will draw the first cylinder 13, actuating member 21 and leg 27 towards and into the rifle body.

[0022] It can be seen therefore that the arrangement described herein not only provides for coarse leg length adjustment, but also provides for fine leg length adjustment. It should also be noted that the support mechanism is advantageously fully disassemblable for cleaning or maintenance as the support leg can be removed from the first cylinder 13 simply by removing the pin securing the spring 31 to the cylinder 13, and the first cylinder 13 can be wholly removed from the gun simply by rotating the collet wheel 17 to unscrew the first cylinder 13 from the gun. The support mechanism is also advantageously substantially retractable within the rifle body.

[0023] It will be understood, of course that embodiments of the invention have been described above by way of example only, and that modifications may be made without departing from the scope of the invention.

[0024] For example, whilst the above described embodiment provides for a leg and one screwably extendable cylinder, it will be appreciated that the first cylinder could be screwably received within a further cylinder that is itself screwably engaged with the threaded aperture of the gun - thereby providing one leg and two screwably extendable cylinders to yet further increase the adjustability of the support. It is furthermore conceivable that the support mechanism could simply comprise a telescopic arrangement with modules of the telescopic support being screwably or otherwise engageable with one another, the supporting leg either being one of said telescopic modules or being received in one of said modules in a manner similar to that substantially as described herein for the supporting leg 27.

[0025] Advantageously, the supporting leg mechanism described herein could be used wholly or partly in other gun support systems. It could also be used independently to help support and aim a rifle. It could even be used as a handle by the operator for steadying and aiming the rifle.

[0026] It will furthermore be appreciated that the support could be employed at the front of the gun as part of a bipod arrangement or as a sole support. It is also conceivable that the first cylinder could be permanently mounted in or formed as part of the firearm, with only the leg and/or intervening cylinder(s) being extendable therefrom.

Claims

1. A telescopically retractable or extendable support for a firearm, comprising a plurality of telescoping supporting components.

2. A support according to Claim 2, wherein said support is attachable to a firearm so that said support may be telescopically retracted or extended with respect to said firearm.

3. A support according to Claim 1 or Claim 2, wherein said support is substantially telescopically retractable into said firearm.

4. A support according to Claim 3, wherein said support is substantially telescopically retractable into the butt of said firearm.

5. A support according to any preceding claim, wherein at least a said component is screwably retractable or extendable.

6. A support according to any preceding claim, wherein at least a said component is resiliently biased for retraction or extension.

7. A support according to Claim 5 and Claim 6, comprising a first supporting component screwably en-

gageable with and telescopically extendable from a firearm, and one or more further supporting components telescopically extendable from and retractable within said first component.

8. A support according to Claim 7, wherein said one or more further supporting components comprise a second supporting component resiliently biased for retraction within said first component.

9. A support according to any preceding claim, wherein said support is adjustable.

10. A support according to Claim 5, wherein said support is adjustable to preset positions.

11. A support according to Claim 9 or 10, wherein said support comprises fine, coarse or fine and coarse adjustment means.

12. A support according to any preceding claim, comprising means for retaining said support in a selected extended or retracted support position.

13. A support according to Claim 8, wherein the second supporting component is provided with a plurality of transverse grooves.

14. A support according to Claim 12 and 13, wherein at least an end portion of the first supporting component is of a greater diameter than the second supporting component to provide a cavity therebetween.

15. A support according to Claim 12, 13 and 14, wherein said retaining means comprises an actuating member and a ball bearing receivable within said cavity, said actuating member being movable (preferably against a resilient bias) from a first position trapping said ball bearing in a said transverse groove of said second supporting component to a second position freeing said ball bearing from a said groove, said second supporting component being freely extendable or retractable from or into said first supporting component when said actuating member is in said second position and being retained in a said support position when said actuating member is in said first position.

16. A firearm comprising a support according to any preceding claim.

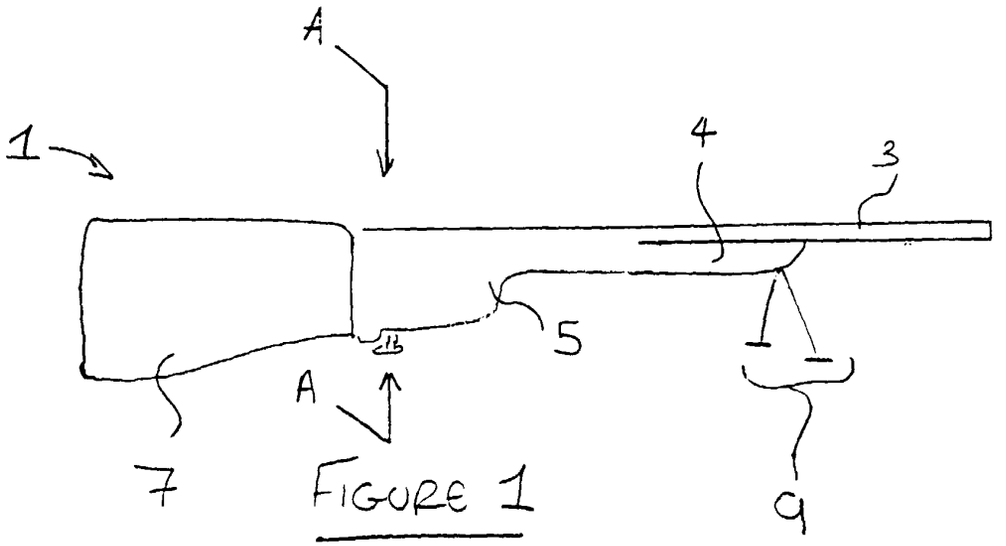

FIGURE 1

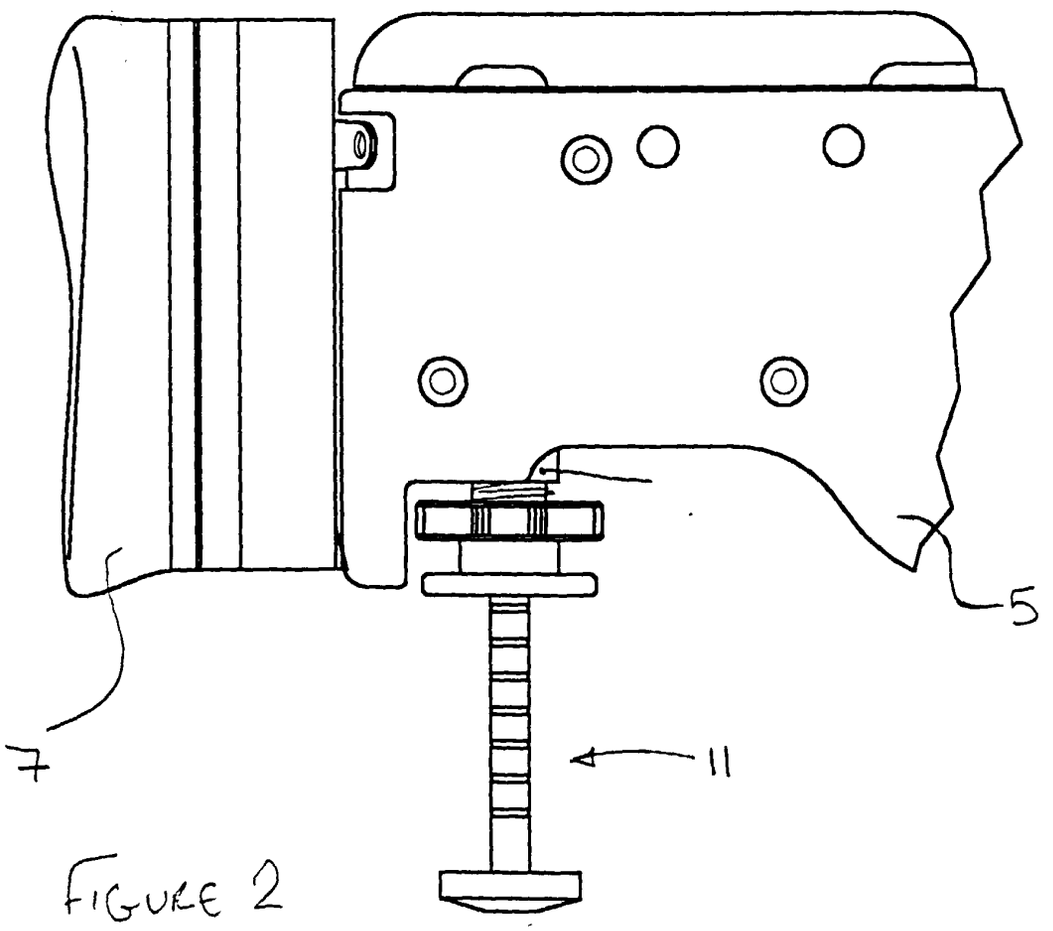

FIGURE 2

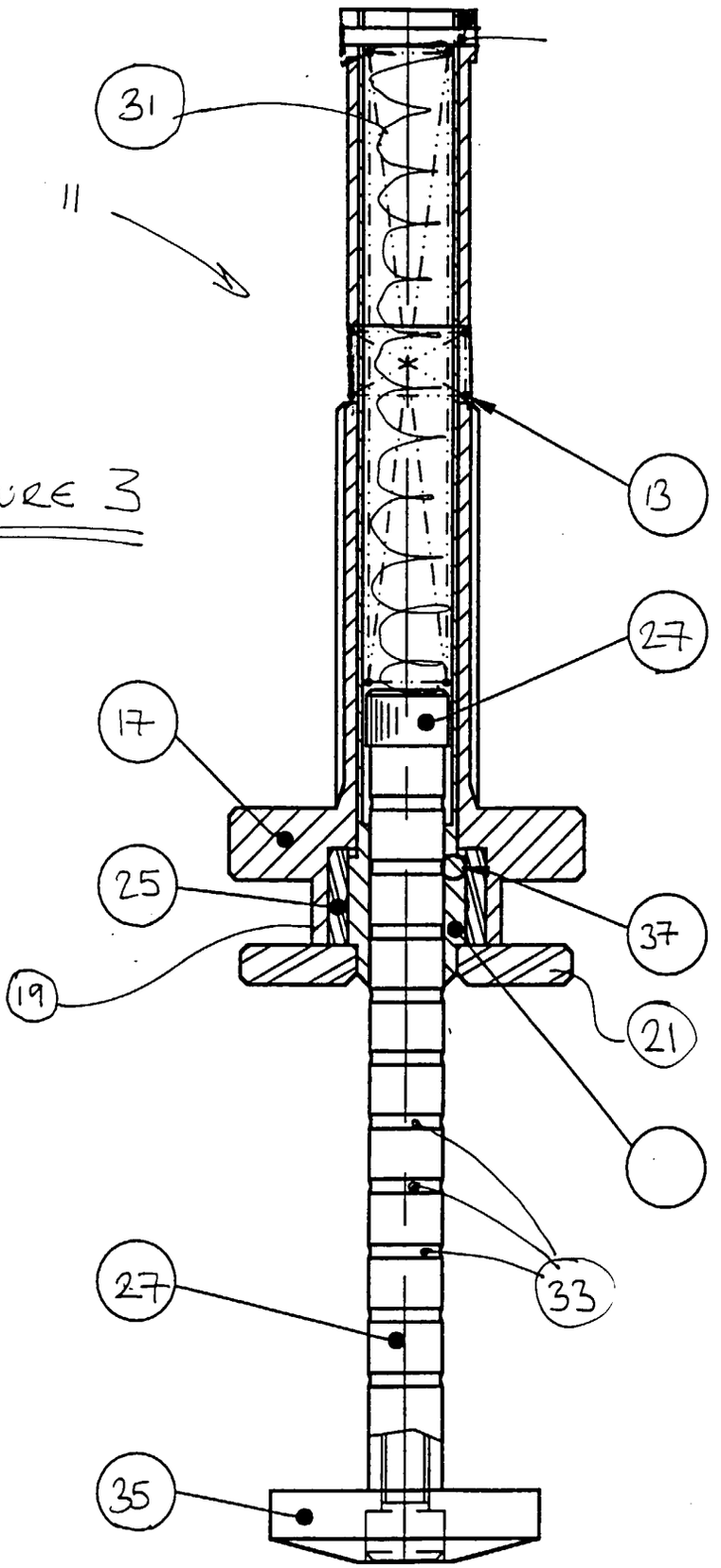

FIGURE 3