Intellectual Property Office

BL O/0588/23

22 June 2023

PATENTS ACT 1977

APPLICANT	UTM IP Limited
ISSUE	Whether patent application GB1803407.4 complies with section 1(1)(b)
HEARING OFFICER	Phil Thorpe

DECISION

Introduction

1 Patent application GB1803407.4 has a filing date and earliest priority date of 2nd March 2018 and was published as GB 2572534 on 9th October 2019.

2 The application has been searched and examined by the Intellectual Property Office (IPO). There has been several rounds of exam reports and amendments, resulting in the current claim set dated 23rd December 2022.

3 Despite the detailed correspondence between the examiner and the applicant's attorney, the applicant has been unable to satisfy the examiner that the application has met all the requirements of the Patent Act 1977 (the Act). The outstanding issue is that the examiner considers that the application does not involve an inventive step.

4 As such, the matter came before me in a Hearing which took place on 31st March 2023. At the hearing the applicant was represented by Mr Graham Lock from Fry Heath & Spence. In advance of the hearing, Mr Lock provided a skeleton argument for which I am grateful.

The Invention

5 The invention relates to a conversion kit that can convert a firearm to fire different types of training ammunition. Such kits typically include a liner to be fitted within a barrel of a firearm. Different liners are required to fire different calibres of ammunition, so conversion kits need a separate liner for each type of the ammunition to be fired.

6 Some known kits convert firearms by fitting a liner in a barrel and gluing it in place, then machining the liner to enable firing of a training ammunition. A further known kit, which converts firearms to fire blank ammunition, includes a liner which can be held inside a barrel with a coiled spring pin. Problems may arise if the user wants to fire more than one calibre of training ammunition, as they would require a different barrel

assembly for each type of ammunition. This proves both inconvenient and expensive.

7 The invention seeks to provide a conversion kit which allows for quick and easy changing of barrel liners by use of a retaining pin. A single barrel 2 is provided alongside a plurality of interchangeable barrel liners 3 for firing different training ammunition. To secure a barrel liner in position within the bore 4 of the barrel, a retaining pin, specifically a coiled spring pin, is inserted into a channel (hole) 5 in the side of the barrel and engages a groove or notch in the side of the liner. By removing the pin, the liner can be quickly removed, and a further liner swapped into the barrel.

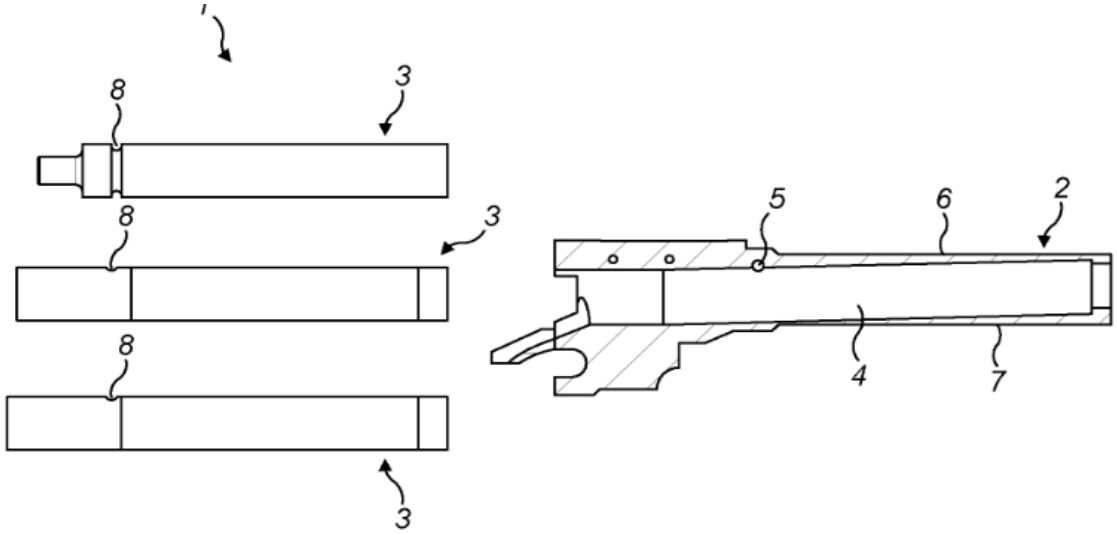


FIG. 2

8 The claims under consideration were filed on 23rd December 2022. Claim 1 is the only independent claim and reads as follows:

> A conversion kit for converting a firearm to fire one of a plurality of different types of non-lethal training ammunition which comprises a single barrel and a plurality of interchangeable barrel liners which can be used in place of each other, wherein the barrel defines a bore which receives one of the barrel liners, and a retaining pin, wherein one of the plurality of barrel liners is inserted into the barrel and is held in position with the retaining pin, and wherein the retaining pin engages in a channel through the barrel which is substantially perpendicular to the bore of the barrel, or the longitudinal axis of the barrel, or the bore of the barrel and the longitudinal axis of the barrel, and the retaining pin is a coiled spring pin which engages in a groove or notch in a radially outer surface of the barrel liner to retain the barrel liner in position relative to the barrel for firing ammunition.

The Law

9 Section 1(1) states (with added emphasis):

> A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –

a) the invention is new;

b) it involves an inventive step;

c) it is capable of industrial application;

d) the grant for a patent for it is not excluded by subsections (2) and (3) or section 4A below;

10 Section 3 then sets out how the presence of an inventive step is determined. It says:

> An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).

11 A structured approach is required when assessing obviousness, particularly to avoid any hindsight. Mr Lock agreed that to determine whether the invention in question involves an inventive step it would be appropriate to use the well-established steps set out by the Court of Appeal in *Windsurfing*[1] and reformulated by that Court in *Pozzoli.*[2] These steps are:

> (1)(a) Identify the notional "person skilled in the art";
>
> (1)(b) Identify the relevant common general knowledge of that person;
>
> (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
>
> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
>
> (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

(1)(a) Identify the notional "person skilled in the art"

12 The examiner identified the skilled person to be a designer, manufacturer, or operator of firearm barrel liners. Mr Lock found this a reasonable assessment, describing the skilled person slightly more broadly as someone involved in working or designing firearms. I am happy to accept Mr Lock's description.

(1)(b) Identify the relevant common general knowledge of that person

13 The examiner and applicant appear in agreement that the common general knowledge of the skilled person would include common place fastening mechanisms used in firearms, which includes screws and coiled spring pins. The examiner further noted that paragraph 6 of page 1 of the application as filed states that there is a known conversion kit for converting a firearm to fire blank ammunition, with said kit including a liner which fits insider a barrel and is held in position with a coiled spring pin. Mr Lock agreed that this kit would be known to the skilled person, but considered that the use of coiled spring pins in the context of interchangeable liners

---

[1] *Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd,* [1985] RPC 59
[2] *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588

would not form part of the skilled person's common general knowledge. I accept that the concept of using coiled spring pins with a set of interchangeable liners would not form part of the common general knowledge. However, I am satisfied, particularly given the prior art acknowledged in the application, that the use of coiled spring pins to secure a liner in a barrel is part of the common general knowledge of the skilled person.

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it

14 Guidance on identifying the inventive concept was given by Jacob LJ. comments in *Pozzoli* where he noted:

> *"[17] What now becomes stage (2), identifying the inventive concept, also needs some elaboration. As I pointed out in Unilever v Chefaro [1994) RPC 567 at page 580:'It is the inventive concept of the claim in question which must be considered, not some generalised concept to be derived from the specification as a whole. Different claims can, and generally will, have different inventive concepts. The first stage of identification of the concept is likely to be a question of construction: what does the claim mean? It might be thought there is no second stage – the concept is what the claim covers and that is that. But that is too wooden and not what courts, applying Windsurfing stage one, have done. It is too wooden because if one merely construes the claim one does not distinguish between portions which matter and portions which, although limitations on the ambit of the claim, do not. One is trying to identify the essence of the claim in this exercise.'*
>
> *[18] So what one is seeking to do is to strip out unnecessary verbiage, to do what Mummery L.J. described as make a precis."*

15 The examiner identified the inventive concept as follows:

> A conversion kit comprising a singular barrel and multiple barrel liners which each correspond to a non-lethal ammunition, the barrel having a bore into which the barrel liner is inserted, and a coiled spring retaining pin which engages in a channel through the barrel which is substantially perpendicular to the barrel bore and/or the barrel longitudinal axis, or both, holding the barrel liner in place inside the barrel, wherein the coiled spring retaining pin engages in a groove or notch in a radially outer surface of the barrel liner to retain the barrel liner in position relative to the barrel for firing ammunition.

16 The applicant did not identify an inventive concept in such terms, but the skeleton argument provided by the attorney gives the alleged advantages of the invention as allowing various liners to be quickly and easily swapped, while using a single barrel, and providing more consistent and predictable performance when firing non-lethal ammunition. Mr Lock considered the technical advantage to be quick and easy changing between liners in a barrel and summarised the inventive concept as a kit comprising a single barrel, a multiple liners, with a retaining pin which goes through the side of the barrel into a notch or channel into the side of a liner to retain the liner, and where removal of the pin allows the liner to be swapped out for another.

17 I noted an issue of construction in claim 1 defining a conversion kit 'for converting a firearm to fire one of a plurality of non-lethal training ammunition'. The application as filed does not give particular meaning to 'non-lethal training ammunition' and so I consider that firing blanks would fall within this meaning. It is well-established that a claim to an apparatus for a particular purpose are normally construed as a claim to apparatus suitable for that purpose. Mr Lock stated that the applicant is not

interested in lethal ammunition and that firearms for lethal and non-lethal ammunition often differ in terms of the firing mechanism, but agreed that such features are not reflected in the claims. A kit for converting a firearm to fire lethal ammunition or blanks could fall within the scope of the claim, provided all the other features of the claim were disclosed.

18 Therefore, the inventive concept is:

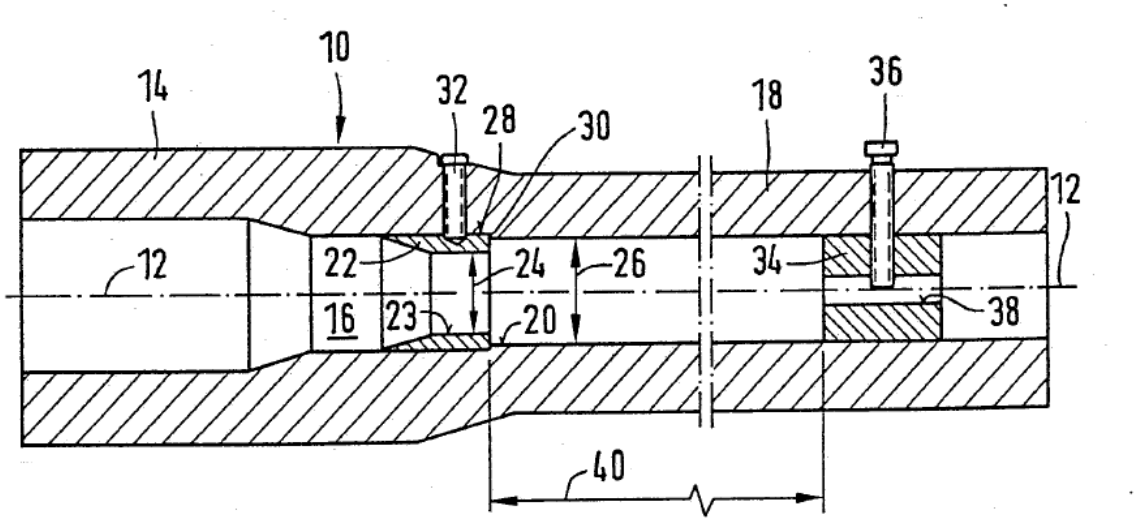
> A conversion kit comprising a singular barrel and multiple barrel liners, corresponding to different ammunition, the barrel having a bore into which a barrel liner may be inserted, and a coiled spring retaining pin which removably engages in a channel through the barrel which is substantially perpendicular to the barrel bore, the longitudinal axis of the barrel or both, and removably engages in a groove or notch in a radially outer surface of the barrel liner to retain the barrel liner in position relative to the barrel.

(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed

19 Two prior art documents are considered by the examiner to form separate starting points for assessing the inventiveness of the claims. Document ES 2070046 A2 was filed on 4th of November 1992 and published on 16th of May 1995. Document DE 3733216 A1 was filed on 1st of October 1987 and published on 13th April 1989.

20 I will consider DE 3733216 A1 first. There appears to be some disagreement between the applicant and examiner around the disclosure of this document. The examiner identified two differences between the disclosure of the document and invention of claim 1. Firstly, a coiled spring retaining pin is not used to hold the liner in place. Rather fastening screws. Secondly, the document does not discuss multiple barrel liners.

21 The applicant notes with reference to the figures below that in the assembly of DE 3733216 A1 there are two components inserted within the bore of the barrel 14, namely limiter sleeve 22 and a nozzle insert 34. The limiter sleeve 22 is used to convert the firearm into firing blanks. It has a longitudinally axial hole 23 with a diameter smaller than that of live ammunition to prevent it from being fired from the weapon barrel. The sleeve is supported against an annular shoulder 30 of the cartridge chamber 16 and prevents live cartridges from being fitted successfully in the cartridge chamber. The barrel has radially aligned threaded bores which open into the limiter sleeve and may receive screws 32 which fasten the limiter sleeve in position. The nozzle insert 34 is positioned towards a rear end of the weapon from the limiter sleeve, with a distance 40 between the limiter sleeve and the nozzle insert determining a gas storage space. Further screws 36 extend through a bore in the barrel, and through the nozzle insert 34. They can protrude into the inner bore 38 of the nozzle insert, to adjust the inner bore's diameter and achieve desired throttling effects.



22 The applicant agrees with the examiner that DE 3733216 A1 does not disclose a coiled spring retaining pin to secure either of the inserts in place. They assert a further difference is that the screws disclosed in the document screw into aligned holes in the barrel and barrel liner, instead of engaging in a groove or notch in a radially outer surface of the barrel liner.

23 I consider that DE 3733216 A1, given figure 1 and the corresponding discussion in the description, clearly discloses that the screw 36 extends fully through the nozzle insert 34 into its inner bore 38. As noted by Mr Lock, this is required so that the throttling diameter of the nozzle insert can be adjusted. A threaded hole open at both ends cannot be considered a groove or notch, and so screw 36 cannot be said to engage in a groove or notch in a radially outer surface of the nozzle insert.

24 DE 3733216 A1 notes that the weapon barrel 10 has a plurality of radially arranged bores which open into the limiter sleeve for receiving the screws 32 which fasten the limiter sleeve in the axial and radial direction. There is however no clear disclosure that these screws engage in a groove in a radially outer surface of the limiter sleeve 23.

25 Mr Lock also raised that the weapon of DE 3733216 A1 would not be suitable for firing non-lethal training ammunition, because the conversion was intended for the weapon to fire blanks. In light of the discussion of claim construction in paragraph 17 of this decision, I do not consider this to be a difference between claim 1 as construed or the inventive concept.

26 In summary, I consider the differences between the kit of DE 3733216 A1 and the inventive concept to lie in the use of screws instead of coiled spring pin retaining pins and that there is no clear disclosure of grooves or notches in either liner. Further the document does not disclose multiple interchangeable barrel liners.

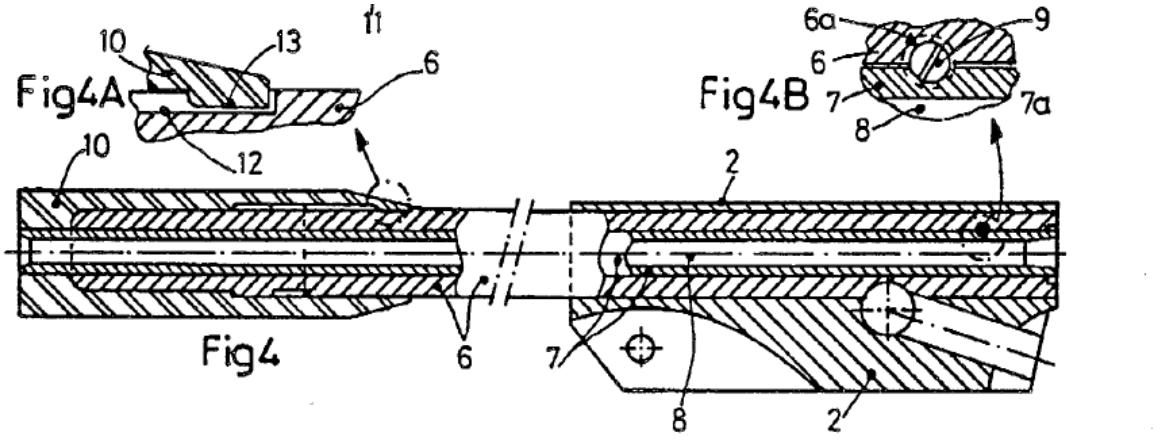
27 I find that the disclosure of document ES 2070046 A2 is much closer to that of the inventive concept in issue.

28 ES 2070046 A2 discloses a weapon comprising a barrel 6 capable of receiving interchangeable liners 7 corresponding to different calibre. The translated description notes for example that:

> *[0015] … It also opens the possibility of supplying a weapon with coaxial tubes of different calibres (for example, the two most usual ones, of 4.5 millimetres and of 5.5 millimetres), so that the user can use whatever he finds at any moment. more appropriate.*

29 At the tip of the liner to be used is a silencer 10, which has a projection 13 that corresponds to a notch 12 of the barrel 6. Furthermore, the barrel and the liners comprise corresponding half bores 6a, 7a, which when aligned form a bore into which a fastening screw can be fitted. In explaining how the liner is secured in the barrel, Mr Lock made reference to figure 4 and paragraphs 34 and 35 of the translated description which reads as follows:

> *[0034] The axial and angular locking and locking between said tubes (6) and (7) is verified through the screwing of the fastener screw (9) at the same time in the respective half-drills (6a) and (7a) (figure 4B).*
>
> *[0035] And the clear identification of the precise angular position for the application of said screw (9) is achieved by the reciprocal coupling of the projection (13) of the housing (11) of the silencer (10) with respect to the notch (12) of the support tub*



30 Mr Lock interprets the disclosure to mean that when assembling the kit, the user aligns the half-bores and of the barrel and inserted liner, before inserting the fastening screw, after which alignment may be confirmed by the coupling of the notch of the barrel and the projection of the silencer. I consider the meaning of the disclosure slightly differently, in that the reciprocal coupling of the projection and notch causes alignment of the half-bores so that the fastening screw can be inserted. However, this is not a point of major difference and Mr Lock and I are in agreement that it is essential for the half-bores of the liner and barrel to be aligned to allow for insertion of the fastening screw therein.

31 The examiner asserts in their pre-hearing report that ES 2070046 A2 provides for all the features of claim 1, with the exception that a coiled spring pin retaining pin is not used to hold the liner 7 in place. Instead, a fastening screw is used.

32 The applicant has not identified any further differences, but Mr Lock asserts that careful consideration should be given to the disclosed arrangement of ES 2070046 A2 and its assembly, as it will be significant in step 4 of *Pozzoli.*

(4) Viewed without any knowledge of the alleged as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

33 The skeleton arguments provided before the hearing says that the question of obviousness to be answered is whether there is any teaching in the prior art as a whole which would prompt the skilled person to modify the closest prior art to arrive at the invention. They further state that to uphold the inventive step objection the examiner must establish that there was a "recognisable pointer" in the state of the art to lead the skilled person directly to the invention. However, this is not the question posed by *Pozzoli.* That question is whether the differences between the prior art and the inventive concept constitute steps that would be obvious to the identified skilled person considering their common general knowledge.

34 The applicant and Mr Lock have stressed that the examiner should be wary of hindsight or *ex post facto* analysis. The Manual of Patent Practice states that it can be very easy to be misled by a line of reasoning that involves working forward from the stated problem in a succession of easy steps when one knows the desired solution.

35 With respect to DE 3722216 A1, Mr Lock correctly asserts that screws securing the nozzle insert to the barrel are necessary to finely adjust the gas pressure in the cylinder space in the weapon barrel. To do this it is necessary for the screws to pass into the inner bore of the nozzle insert, and so the skilled person would not consider having them instead engage a groove or bore in the outer surface of nozzle insert. Furthermore, coiled spring pins would prevent rather than replicate this effect and so the skilled person would not consider it obvious to use them in place of or alongside the screws.

36 The limiter sleeve of DE 3722216 A1 may also be considered a liner, secured by screws. In this case the screws are not clearly disclosed as engaging in a groove or bore in the radially outer surface of the sleeve. Further the document does not discuss having interchangeable liners or adapting the weapon to fire different types of ammunition once it has been converted to fire blanks. Therefore, I consider the skilled person would not find it obvious to arrive at the inventive concept based on this piece of prior art without hindsight of the aims of the invention.

37 However, I think the position is different with regards to ES 2070046 A2.

38 As established, ES 2070046 A2 discloses a screw to retain the liner within the barrel not a coiled spring pin. Mr Lock asserts that this difference to the inventive concept is not as simple as it first appears given the teaching of the document. He considers that the disclosure of ES 2070046 A2 is focused on the precise alignment of the half bores of the liner and the and barrel which are threaded with the screw. This is quite different from the current invention, which does not focus on the alignment of the liner and barrel. Furthermore, Mr Lock considers that the importance of the screw in aligning the barrel and liner is emphasised in the document, particularly in

paragraphs 34 and 35, and therefore the skilled person would not consider replacing it.

39 I agree that for the screw to be inserted in the kit disclosed by ES 2070046 A2 the half bores of the liner and the barrel need to be angularly aligned, and that such angular alignment is not required in the present invention. I would note that alignment of the channel in the bore with the groove is required in the present invention but only alignment along the length of the bore. The precise radial orientation of the liner to the channel is not important. Radial alignment is however required between the liner and barrel in ES 2070046 A2 however the document teaches how to achieve that using the projection and the notch.

40 The screw itself is not required for the orientation or angular alignment of the liner and the barrel. It is used to secure the liner to the barrel when it has been so aligned. A coiled spring pin retaining pin would achieve the desired result of the citation in the same way as the screw does. In other words, using the language of the document in question, verification of the axial and angular locking would still be achieved by a coiled spring pin in place of the screw. The issue is whether it would be obvious to the skilled person that the objective and aim of the screw in the prior art could be achieved equally via a spring pin. I believe it would, given their identified common general knowledge.

Conclusion

41 Having carefully considered the arguments of the applicant, I find that the invention as currently claimed does involve an inventive step having regard to document DE 3722216 A1. However, I find that the invention is obvious in view of the disclosure of document ES 2070046 A2.

42 Mr Lock had suggested that the applicant may wish to file further amended claims if the present claim 1 was found to be obvious, but no auxiliary claims have been presented at this stage for consideration. When I pressed him on whether any of the dependent claims might provide an inventive step if I found claim 1 to be lacking in that respect, Mr Lock did not point me to any particular feature in any of the dependent claims. It is the examiner's opinion that the current dependent claims also lack an inventive step over ES 2070046 A2. I have reviewed those and am satisfied that none of them would, in combination with claim 1, provide the necessary inventive step having regard to the disclosure in ES 2070046 A2.

43 I therefore refuse the application under section 18(3).

Appeal

44 Any appeal must be lodged within 28 days after the date of this decision.

Phil Thorpe

Deputy Director, acting for the Comptroller