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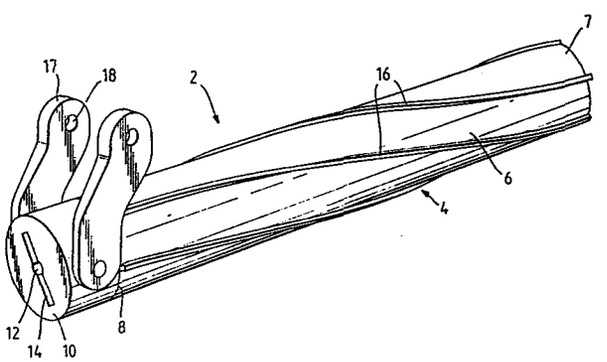
(54) Blank firing attachment.

(57) A blank firing attachment (2) for a firearm having a non-protrusive, rifled barrel comprises a tube (6) insertable within the barrel and having a screwthread (16) engageable with the rifling. The tube (6) is partially closed by an end plug (10) having a gas emission hole (12) and is provided with a restraining means (17) engageable with the firearm for preventing relative rotation during firing.



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BLANK FIRING ATTACHMENT

This invention relates to firearms, and in particular to blank firing attachments for fully or semi-automatic firearms.

It is well established that the effectiveness of training exercises which cannot be carried out using live rounds of ammunition, for safety reasons for example, is greatly enhanced if the firearms are instead able to fire blank rounds. This is largely due to the added realism introduced by the noise of the weapons and the need to reload weapons after firing. If fully automatic or semi-automatic firearms are used they should ideally retain their ability to fire in the single, repetitive and short burst modes in their blank firing role. To operate automatically in these modes it is necessary that sufficient back pressure is built up during the firing cycle of the blank round to operate the bolt mechanism to extract the empty cartridge, cock the firing action and chamber the next round. When a live round is fired the bullet restricts the free expansion of the propellant gases out of the barrel muzzle thereby causing the development of the necessary back pressure. When a blank round is fired, however, there is no bullet and some other means has to be used to restrict the free expansion of the gases generated by the round.

A known method of restricting the expansion of the gases is to attach a blank firing attachment over the muzzle of the barrel in the form of a barrel restrictor, that is a device which restricts the bore of the barrel by providing only a relatively small exit through which the gases must pass to escape the muzzle of the barrel, the area of the exit being chosen to restrict the outflow sufficiently to achieve the required back pressure. A known blank firing attachment of this kind is in the form of a cap having a central gas emission hole which is screwed onto the muzzle of the barrel by means of a threaded portion on the outer surface of the end of the barrel.

Blank firing attachments of this type cannot, however, be attached to firearms having barrels which do not protrude from their receivers. It is the object of the present invention to provide a blank firing attachment that can be used with such firearms that have rifled barrels.

Accordingly there is provided a blank firing attachment for a firearm having a rifled barrel comprising a barrel restrictor having a barrel engagement means rotatably engageable with the rifling of the barrel, and a restraining means which acts to prevent rotation of the barrel restrictor relative to the barrel during firing of the firearm.

When a firearm is to be converted to the blank firing mode the blank firing attachment is inserted into the gun barrel by rotating the barrel engagement means so that the barrel restrictor restricts the bore of the barrel. When a blank round is fired the back-pressure generated by the blank firing attachment acts to urge the barrel restrictor from the barrel. Because the restrictor is engaged with the rifling of the barrel it can only move out of the barrel if it rotates relative to it. The restraining means prevents this rotation and so the blank firing attachment is retained in position.

Preferably the barrel restrictor is provided with a rotation means whereby the barrel restrictor is rotatable during insertion into the barrel.

Embodiments of the invention will be described, by way of example only, with reference to the accompanying drawings in which

Figure 1 is a perspective view of a blank firing attachment for a MP5KA1 Heckler and Koch sub-machine gun according to the present invention having a central gas emission hole,

Figure 2 is a part cut away perspective view of the blank firing attachment shown in Figure 1,

Figure 3 is a perspective view of an alternative arrangement of the blank firing attachment shown in Figures 1 to 3 in which the barrel engagement means includes raised studs, and

Figure 4 is a part longitudinal section of an alternative arrangement of the blank firing attachment shown in Figures 1 to 3 in which the gas emission hole is radially directed.

Referring to Figures 1 and 2 there is shown a blank firing attachment 2 which has a barrel restrictor 4 in the form of a steel tube 6 having a breech end 7 and a muzzle end 8, the end 8 being partially closed by a steel plug 10 welded to the tube 6. A gas emission hole 12 drilled through the plug coaxially with the

tube 6 provides an exit for gases generated during the firing of a blank round which is of sufficient restriction to generate the required back pressure for operating the known automatic mechanisms of the specific firearm to which it is attached. The dimensions of the gas emission hole necessary to restrict the gases sufficiently will vary from firearm to firearm and with the type of blank ammunition used but the appropriate dimensions are readily found by trial and error.

The tube 6 is provided with raised screw threads 16, constituting the barrel engagement means, proud of the outer surface of the tube 6 and dimensioned to engage as an easy sliding fit with the rifling of the gun barrel. The screw threads 16 act to seal the rifling, so largely preventing the gases escaping from the barrel other than through the gas emission hole 12.

The tube 6 is inserted into the barrel by engaging the threads 16 with the rifling of the barrel and rotating the blank firing attachment 2 to screw it into the barrel by means of a screwdriver slot 14, constituting the rotation means, cut into the end of the plug 10. When in place in a gun barrel, the plug 10 of the barrel restrictor 4 protrudes from the muzzle of the barrel. It is brightly painted to remind the user that the blank firing attachment 2 is fitted.

Pivotally attached to the plug 10 are lugs 17, constituting the restraining means, in which are drilled fixing holes 18 which can be aligned with a through hole in the body of the Heckler and Koch sub-machine gun (not shown) when the blank firing attachment is in position. A bolt (not shown) passed through the holes 18 and the through hole and held in place by a nut (not shown) locks the gun firing attachment in position by preventing rotation of the barrel restrictor during firing of the firearm. It will be appreciated that the particular configuration of the lugs 17 in the embodiment shown in Figures 1 to 4 is dependent on the design of the receiver of the particular firearm with which it is to be used and that if a blank firing attachment according to the present invention is made for another weapon a different shape of lug 17 will generally be necessary. The form of lugs is not restricted to the shape shown in the embodiments here described but may take any form which is able

to prevent the barrel restrictor rotating relative to the barrel during firing. For example, a clamping mechanism may be fixed to an arm attached to the barrel restrictor or, if the barrel moves relative to the receiver during firing of the blank, the restraining means can take the form of one or more pivoted arms which can pivot to allow movement of the blank firing attachment with the barrel relative to the receiver but not so as to allow the barrel restrictor to rotate within the barrel. The tube 6 has a mark (not shown) to indicate to the user the necessary orientation of the tube 6 on initial entry into the barrel to ensure that the lugs 17 are in the correct position on fully inserting the attachment 2.

The restraining means need not be in the form of a lug or lugs but should be understood as including any means which restrains the barrel restrictor from rotating during firing. In particular it need not require the prior fixing of a physical connection between the barrel restrictor and some other part of the firearm. For example, the tube 6 can be of a resilient material having a thickness which allows it to distort during firing of the blank under the action of the pressure generated by the gases so as to grip the inner surface of the gun barrel and thereby prevent rotation of the barrel restrictor by frictional grip with the inner surface of the barrel and enhance the sealing between the attachment and the barrel.

When the restraining means comprises a member or members that connect the blank firing attachment to the firearm, as the lugs 17 in the described embodiments, it may be possible to use those members as the insertion means if they are fixed securely enough to the blank firing attachment.

The blank round commonly used with the MP5KA1 is the 9mm round sold under the trade name GEECO. This round has a rounded plastic dummy bullet about 7.5mm in diameter set centrally into the end of a 9mm cartridge with a cross indentation on its nose so that upon firing the blank the bullet petals open allowing the propellant gas to escape into the barrel of the firearm. The petalled bullet is retained in the case, extracted with it and discarded. The presence of this rounded dummy bullet allows the round to be loaded in automatic weapons since the round can be chambered and extracted

automatically: a blunt nose design does not ride up from the magazine to move smoothly into the chamber.

The tube 6 of the blank firing attachment illustrated in Figures 1-4 is long enough to extend back to the breech when fully inserted into the barrel and has an inner diameter small enough to prevent the chambering of a live 9mm ball round but large enough to allow the blank GEECO blank cartridge to chamber. This provides an extra safety feature when using the above described blank firing attachment shown in the above described embodiments with the GEECO blank round but it will be appreciated that it is not necessary to have this additional advantage for the operation of the blank firing attachment according to the present invention.

Other arrangements of barrel engagement means may also be used. Referring to Figure 3 there is shown a blank firing attachment 20 in which the barrel engagement means comprises screw thread portions 22 and raised studs 24. The screw threads 22 should be long enough to seal the rifling. The raised studs 24 forward of the screw thread portions 22 provide support and alignment for the muzzle end 8 of the tube 6 thereby reducing the need to machine a mirror image of the rifling thread along the whole length of the tube 6.

Referring now to Figure 4 there is shown part of an alternative blank firing attachment 26 similar to the one illustrated in Figures 1 to 3 except that it is provided with a plug 28 having a gas emission hole 30 which is orientated to direct the escaping gases radially with respect to the tube 6. This arrangement permits the firearm to be pointed at a person during firing without danger.

The preferred material for the tube 6 is steel which gives durability and resilience. However, the cost of manufacture in steel is high and it is envisaged that a suitable alternative would be a plastic or filled resin casting with a metal insert in which is formed a gas emission hole.

A further advantage of the present invention is that no permanent alteration to the firearm is necessary to allow it to be used in a blank round or live round firing mode and that the firearm can retain its ability to fire normal live rounds of ammunition.

CLAIMS

1. A blank firing attachment for a firearm having a rifled barrel comprising a barrel restrictor characterised by having a barrel engagement means (16) rotatably engageable with the rifling of the barrel and a restraining means (17) which acts to prevent rotation of the barrel restrictor relative to the barrel during firing of the firearm.

2. A blank firing attachment as claimed in claim 1 characterised in that the barrel restrictor is provided with a rotation means (14) whereby the barrel restrictor is rotatable during insertion into the barrel.

3. A blank firing attachment as claimed in Claim 2 characterised in that rotation means comprises a screwdriver slot (14) in the barrel restrictor.

4. A blank firing attachment as claimed in any one of the preceding Claims characterised in that the restraining means comprises a pair of lugs (17) pivotally attached to the barrel restrictor.

5. A blank firing attachment as claimed in any one of the preceding Claims characterised in that the barrel restrictor comprises a tubular member (6) partially closed by a plug (10) having at least one gas emission hole (12).

6. A blank firing attachment as claimed in Claim 5 characterised in that the restraining means includes a portion of the tubular member (6) radially deformable by the normal operating back pressure of the firearm.

7. A blank firing attachment as claimed in claim 5 characterised in that a portion of the plug (10) protrudes from the muzzle of the gun when the blank firing attachment is in an operative position.

8. A blank firing attachment as claimed in claim 7 characterised in that each gas emission hole (30) is radially orientated.

9. A blank firing attachment as claimed in any one of the preceding Claims characterised in that the barrel restrictor is configured so that when inserted in the barrel it extends to the breech of the barrel and is so dimensioned as to permit chambering of a blank round and to prevent chambering of a live round.

10. A blank firing attachment as claimed in Claim 1 characterised in that the barrel engagement means (16) includes a plurality of studs (24).

Fig. 1.

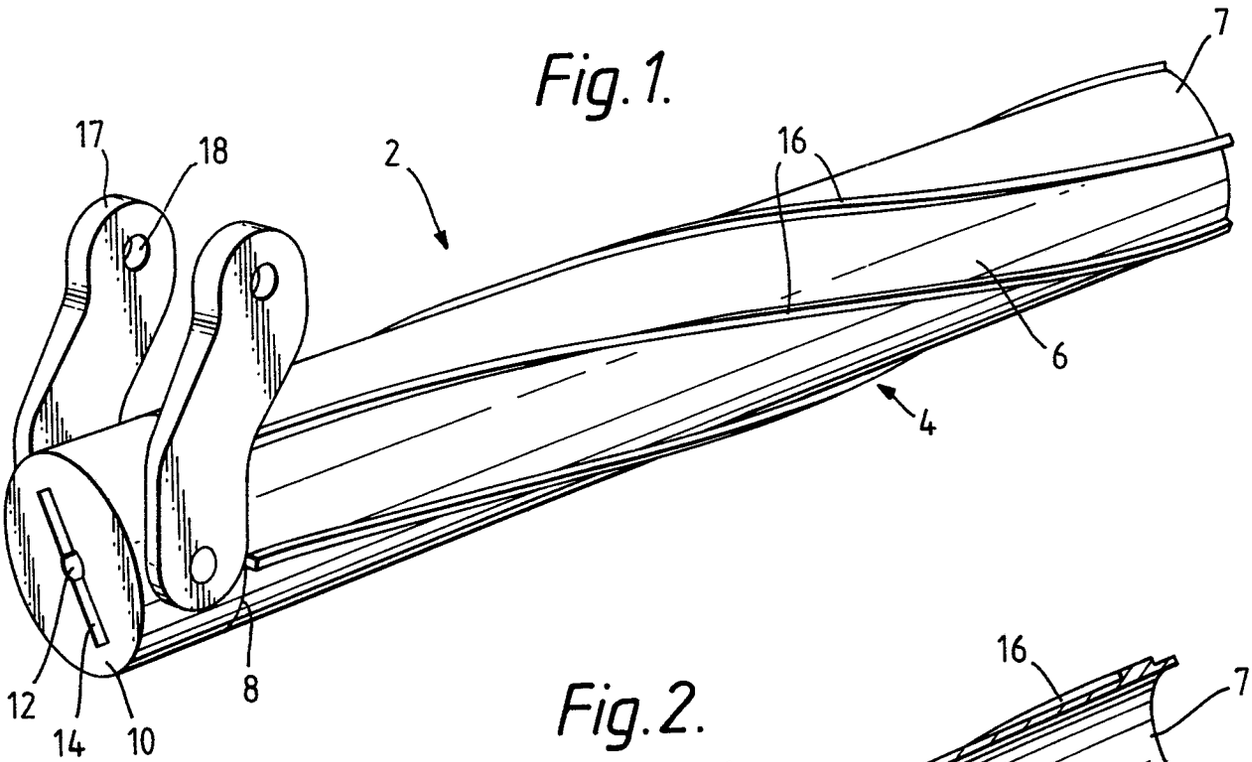


Fig. 2.

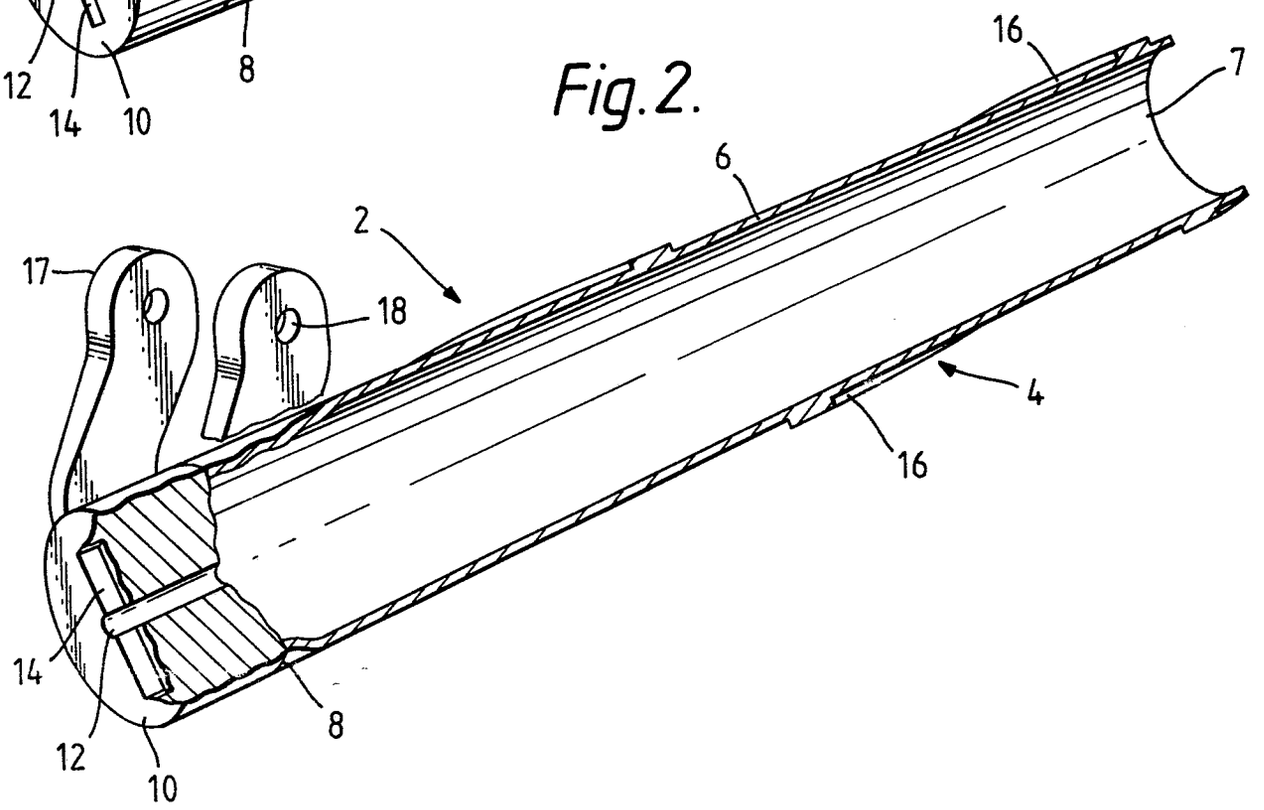


Fig.3.

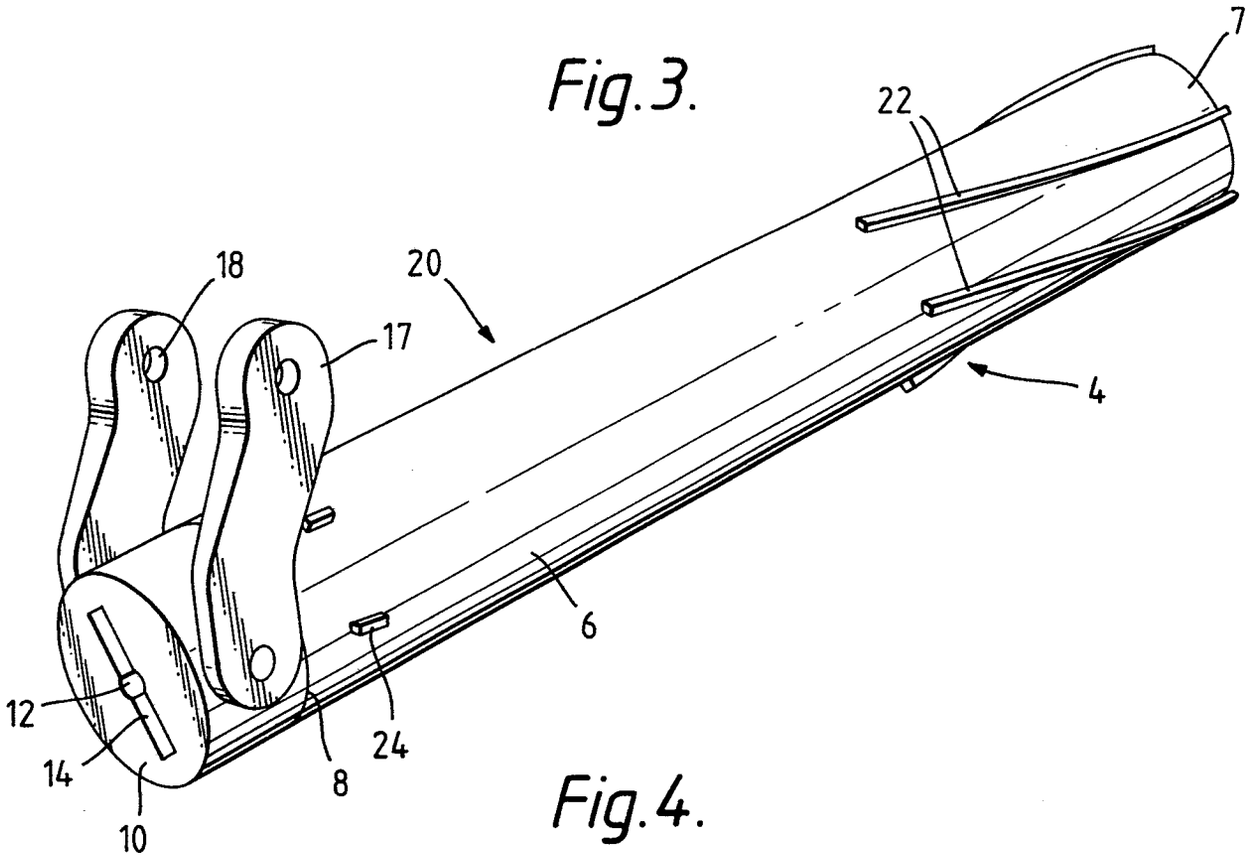
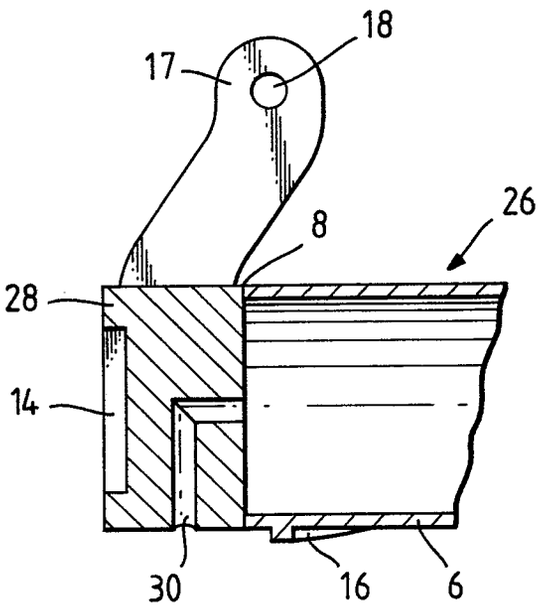


Fig.4.



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EUROPEAN SEARCH REPORT

Application number

EP 86 30 3731

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	US-A-4 084 340 (SCUDDER) * Column 2, lines 62-68; column 3, lines 1-4,35-43; figures 1-6 *	1,2,5-10	F 41 C 21/18
Y	US-A-1 671 327 (STUDLER) * Whole document *	1,2,5-10	
Y	US-A-3 744 370 (SNODGRASS) * Column 2, lines 61-68; column 3, lines 1-8; figure 3 *	8	
Y	FR-A-2 379 041 (ETAT FRANCAIS) * Page 2, lines 8-10,14-19; page 5, lines 11-37; page 6; page 7, lines 1-4; figures 2-6 *	9	
A	US-A-3 678 609 (FAZIO)		TECHNICAL FIELDS SEARCHED (Int. Cl.4) F 41 C F 41 D
A	DE-B-1 185 512 (RHEINMETALL)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27-06-1986	VAN DER PLAS J.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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