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### **Safety blank firing attachment**

The invention relates to a handheld firearm, preferably a self-loading rifle, having a blank firing attachment, as is described in the precharacterizing clause of Claim 1.

In this case, these documents are based on a handheld firearm which is held in a horizontal firing position and in the case of which "forwards" means "pointing in the firing direction" and the centre axis of the barrel runs "horizontally".

The handheld firearm is provided at the barrel muzzle with an external thread onto which an internal thread can be screwed from the front, which internal thread is formed in the internal-threaded section of a blind hole which is open to the rear and is formed in an elongated, cylindrical body, which can thus be screwed concentrically onto the barrel.

On the outside of the front part of this cylindrical body there is or are one or more spiral grooves which are covered from the outside by an external sleeve which is pushed onto the cylindrical body and is firmly welded to it, so that a spiral channel is formed, which is connected at its rear end, via a hole arrangement, to the blind hole. The external sleeve projects forwards beyond the cylindrical body

and the opening of the said spiral channel, where it forms a truncated cone which tapers forwards.

An internal bush, which is coaxial with respect to the barrel and is drilled through centrally, is fitted in the blind hole and immediately in front of the muzzle of the screwed-in barrel and, at the rear end, has a radially projecting circumferential flange which is supported on a step in the blind hole. In this case, the front part of the internal bush covers the opening of radial holes which pass through the cylindrical body and open outwards and behind the external sleeve.

At the rear end, the safety blank firing attachment has an attachment apparatus, by means of which it can be latched to a cutout in the barrel, when it is screwed onto the barrel.

This safety blank firing attachment is described in DE-A 15 78 381 from the applicant; at the time, it was manufactured in large quantities and has been introduced as standard ordnance in Sweden. Figure 1 of the attached drawing shows this implemented safety blank firing attachment as the closest prior art.

Owing to its spiral channel, this known safety blank firing attachment brakes all the particles which, for example, are blasted out of a blank cartridge, so completely that it is even completely safe to remain immediately in front of the safety blank firing attachment during firing. Furthermore, it is possible to make an accidentally discharged live firing completely ineffective without damaging the rifle to whose muzzle it is fitted; the round of a live shot penetrates into the centre hole in the inner bush, whose calibre is far less, expands this inner bush, ties it apart in front of the end circumferential flange, and pushes it forwards, so that the safety transverse holes are released, and the powder gases flowing behind can escape outwards. The circumferential internal bush bounces on the base of the blind hole and presses the front part of the cylindrical body

forwards, so that this tears off in the region of the outlet transverse holes. This front part of the cylindrical body now slides forwards with friction in the external sleeve, and is brought to rest in the  
5 conically tapered end of the external sleeve, while the latter is at the same time expanded.

The fracture of two weak points, the friction of parts which slide in one another and dimensional changes consume such an amount of work and produce such  
10 an amount of heat that the load on the external thread at the barrel muzzle is reduced to such an extent that it remains undamaged.

The sound of an accidentally fired, live shot is in this case so conspicuous that the person firing  
15 the weapon cannot fail to notice it, and then unloads the rifle in order to check it; regulations require the person firing the weapon to report the fact immediately and to hand over the rifle so that, until now, it has been assumed that the worst case was to fire an  
20 individual live cartridge which was accidentally located under the blank cartridges.

In fact, such an event should be extremely rare, since, in fact, live cartridges must be fired or handed in again, so that the soldier is never in  
25 possession of live cartridges when the intention is to fire blank cartridges.

However, a further case is also conceivable which can occur as a result of confusion: guards in military areas often carry loaded weapons with them  
30 and, for convenience, when guards are changed, they often hand over the magazine, and what is accommodated in it, to the new guard. If magazines are confused, it is possible for a guard who has just been relieved accidentally to take with him a magazine containing  
35 live cartridges, while the new guard inserts an unloaded magazine into his weapon. If such an error is not noticed due to lack of care when changing the guard, and this magazine which accidentally contains a number of large cartridges is used in exercises, then

it is easily possible for a number of blank cartridges to be loaded on top of the live cartridges. If this magazine is now fired on rapid fire with the blank firing attachment fitted, then a number of live shots  
5 may follow one another, to be precise two to three shots may be fired, before the person firing the weapon in fact immediately notices this situation, reacts to it, and releases the trigger on his rifle.

This described sequence can never be precluded,  
10 and the safety blank firing attachment of the type mentioned initially should therefore be developed such that it is possible to withstand even two or three successive live shots, as far as possible without any damage to the rifle.

15 In the known safety blank firing attachment, the second and all other live rounds strike the front part of the cylindrical body after it has already been torn away, expanding this part of the cylindrical body, so that it jams tightly in the external sleeve but, in  
20 the end, they very quickly drive it out of the external sleeve forwards; the load on the external thread on the barrel muzzle is in this case never higher than for the first live shot, so that even the other live shots do not damage the rifle itself.

25 The known safety blank firing attachment mentioned initially at most, but not reliably, withstands a second live shot, but not a third. Other, known blank firing attachments (US-PS 3,744,370, US-PS 3,766,822, US-PS 3,732,776 and CH-PS 381 569)  
30 contribute nothing to solving this problem.

Against the background of this problem, the invention is based on the object, while maintaining the proven design of the known safety blank firing attachment mentioned initially, of developing said  
35 blank firing attachment such that it reliably withstands a second live shot and, as far as possible, even a third as well.

This object is achieved according to the invention in that the cross section which is occupied

by the outlet hole or the outlet holes is drastically reduced in comparison with the known outlet cross section, in which case the claimed size (smaller than the cross section of the centre hole) shall be regarded only as a basis. In this way, the second weak point is designed to be considerably stronger so that a considerably greater impulse is required from the shot in order to destroy this weak point according to the invention than was the case in the past and was also permissible, since the same impulse would in fact be introduced into the muzzle thread with the known blank firing attachment and, in the case of the weak point which is more stable according to the invention, would damage this thread. The known attachment device, which consisted only of a latching spring which prevented the cylindrical body from being unscrewed, is therefore replaced by one which is set out to absorb axial forces and which any person skilled in the art can design as required. This attachment device according to the invention now absorbs the increased axial forces which the thread itself can no longer absorb, when the said weak point fractures, and thus protects the thread against damage.

In the safety blank firing attachment according to the invention, both weak points fracture when a live cartridge is fired, in the same way as in the known safety blank firing attachment, but considerably more work is consumed when the cylindrical body tears away (second weak point) than was previously the case, so that the torn-away front part of the cylindrical body now slides only a short distance forwards in the external sleeve. The conical narrowing still remains unaffected after the first shot. A second shot can thus still reliably be trapped by their joint action and, as a rule, a third as well.

However, since it is generally the relatively soft, front weak point to which the previous good effect of the known blank firing attachment can be ascribed, it would be expected that drastically

strengthening this weak point would lead only to damage occurring to the thread, as would undoubtedly also be the case if the attachment device had not been designed to absorb the increased axial forces.

5           According to Claim 2, the attachment device is arranged in its own retaining ring, which is welded at the rearward end of the cylindrical body. This allows optimization of the material of the cylindrical body, which is intended to allow the defined weak point, and,  
10           on the other hand, allows a high-strength material to be chosen for the construction of the attachment device.

          While the known blank firing attachment has four large-diameter outlet holes, between which narrow  
15           material webs are left which tear away correspondingly easily, it is preferred (Claim 3) to provide only a single outlet hole with a small cross section defined according to the invention, so that the weak point is still further reinforced. When this weak point tears  
20           away, then the round has already been braked virtually to rest and, in the event of a shot which may possibly follow this, the torn-away front part of the cylindrical body is mushroomed-out slightly by the round that strikes it, so that it is jammed strongly to  
25           the external sleeve and is just driven slightly forwards and into the narrowed section of the external sleeve. The forces which occur in this case and act on the muzzle thread would be able to damage this thread if the attachment device according to the invention  
30           were not able to absorb a critical proportion of these forces and to transmit them to the barrel, via the cut out in the barrel, without any damage.

          The front end face of the cylindrical body in the known safety blank firing attachment has a centring  
35           hole, which assists manufacture of the cylindrical body. However, according to the invention (Claim 4), this convenient type of production is dispensed with and, instead of this, the said front end face is continuously smooth, that is to say without any

centring hole. Radial compression of the cylindrical body at its front end is thus prevented, so that its braking in the conical narrowing of the external sleeve is still further improved.

5           In principle, it is conceivable for the outlet hole to open directly into the rear end of the annular groove, with the first pitch of this annular groove defining the weak point. However, in order to prevent the cylindrical body from tearing away obliquely, an  
10 annular groove is formed at the rear end of the spiral groove (Claim 5) which, together with the outlet hole, defines the precise position of the weak point. This prevents, in particular, the weak point tearing in to behind the weld bead, which secures the external sleeve  
15 on the cylindrical body, since, otherwise, it would no longer be possible to guarantee that a second live shot could reliably be withstood.

          This annular groove is preferably (Claim 6) designed to be considerably broader in the axial  
20 direction than the diameter of the outlet hole, and the outlet hole opens approximately centrally into the annular groove, that is to say not, for example, at the edge. This further guarantees that the weak point which is actually produced reliably remains limited to the  
25 axial region governed by the width of the annular groove.

          The intermediate section of the blind hole into which the barrel muzzle opens and in which the end circumferential flange of the internal bush is located,  
30 is preferably connected by means of a pressure-relief transverse hole to the outside, so that, for example, any gases which enter the intermediate section can be dissipated (Claim 7).

          Furthermore, it is preferred (Claim 8) for the  
35 entry into the centre hole of the internal bush to be highly countersunk or expanded conically to the rear; it is thus not only possible to introduce the round cleanly into the internal hole if any slight eccentricity should occur, but it is also possible to

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screw the cylindrical body so far onto the barrel of the handheld firearm that its muzzle end face rests against the end circumferential flange of the internal bush and fixes this so as to ensure that the internal  
5 bush tears away in front of the end circumferential flange, but the latter is locked in position so that a second round which may be fired does not strike any obstruction in the muzzle area of the barrel, deforming it and in the process damaging the muzzle.

10 In order to ensure that the propellant gases from a live shot are dissipated particularly quickly and to prevent such a shot from being driven onto the front part of the cylindrical body, four safety transverse holes (Claim 9) and/or pressure-relief  
15 transverse holes (Claim 10) are in each case provided. The great wall thickness between the outer surface and the blind hole in the cylindrical body in this case ensures that there is no risk whatsoever of the respective four holes, for their part, forming weak  
20 points.

The external sleeve is pushed onto the cylindrical body and is welded to it along its rear circumferential edge. In this case, it must be seated sufficiently tightly on the cylindrical body that the  
25 powder gases from blank cartridges flow along the spiral channel and cannot bypass this. When a live cartridge is fired, the front part of the cylindrical body is expanded, so that it is seated in the external sleeve with a strong clamped seat.

30 However, preferably (Claim 11), the external sleeve is pressed from the start with a powerful push fit against the cylindrical body, and is preferably even shrunk on; when a live cartridge is fired, the prestressing of the external sleeve counteracts the  
35 expansion of the cylindrical body and ensures that, although this expands, it does not result in tearing due to excessive deformation.

The blind hole is preferably slightly countersunk at its transition into the step, and/or the

transition of the cylindrical outer surface of the internal bush into its end circumferential flange is slightly cut in (Claim 12); this ensures that the material of the internal bush, which is deformed by the impact of a round, can be deflected at these points and can thus initiate the tearing of the internal bush at its end circumferential flange. This avoids, for example, the end circumferential flange tearing in, and blocking the centre hole. The round from a second shot could then strike the cylindrical body with its entire kinetic energy, without being braked, in the region of the step, thus striking the muzzle thread, removing the attachment device or causing it to tear off in the region of the pressure-relief transverse holes. For the same reason, only a single pressure-relief transverse hole is preferably also provided, in order not to weaken the cross section of the cylindrical body excessively, if, nevertheless, the centre hole of the internal bush were to become blocked at the location of the step after the first shot.

The internal bush is also preferably pushed into the section of the blind hole which accommodates it (Claim 13), in particular in order to increase the resistance which opposes its movement in the blind hole resulting from the impact of a shot.

As already mentioned above, the method of operation of the known blank firing attachment is to use a relatively flexible weak point to trap the live shot smoothly, and thus to avoid damaging the muzzle thread of the handheld firearm. The attachment device consists only of a wire spring which drops into the transversely running cutout in the barrel in order to prevent the blank firing attachment from unscrewing itself inadvertently.

In the case of the invention, on the other hand, the weak point is designed to be considerably more robust, so that axial forces can occur which are sufficient to damage the muzzle thread, and an attachment device which absorbs axial forces is

provided in order to avoid this damage, and is set up to absorb those axial forces which the muzzle thread can no longer withstand without damage. This results in the blank firing attachment according to the invention  
5 reliably being able to withstand a short firing shock without the muzzle thread being damaged.

However, with a suitable design, even a spring which is arranged on one side or, preferably, both sides, and is composed of a transverse-running, strong  
10 wire, is suitable for absorbing considerable axial forces, and can thus also be used within the context of the invention.

According to Claim 14, it is preferred for the attachment device to have a strong transverse bolt,  
15 which engages in the cutout, which is of complementary design and runs transversely.

Since, as already mentioned above, this transverse bolt is preferably arranged in its own retaining ring which is welded to the rear side of the  
20 cylindrical body, this allows both the cylindrical body, which actually forms the weak point, and the retaining ring, which forms the opposing bearing for the transverse bolt, each to be optimized in terms of material. Furthermore, by welding in an adjustable  
25 welding apparatus, the distance between the internal thread and the opposing bearing for the transverse bolt can be set with tight tolerances using simple means since this distance is set before the welding process, thus ensuring that the transverse bolt always rests  
30 snugly in the transverse-running cutout and is thus set up highly suitably for force transmission.

The subject matter of the invention will be explained in more detail using the attached, schematic drawing by way of example, in which:  
35 Figure 1 shows the longitudinal section through the known safety blank firing attachment, which was introduced in Sweden about 30 years ago;

Figure 2 shows a similar longitudinal section through a first embodiment of the safety blank firing attachment according to the invention;  
Figure 3 shows the muzzle of the barrel of a handheld firearm, which is associated with the blank firing attachment shown in Figure 2;  
Figure 4 shows the safety blank firing attachment from Figure 2 after firing a live shot; and  
Figure 5 shows, on a larger scale, the cylindrical body of another embodiment of the safety blank firing attachment according to the invention.

All the illustrations are enlarged, although they are not all to the same scale.

All reference symbols always denote identical or corresponding elements in the individual figures. Where reference numbers are missing in one of the figures, those of the other figures apply analogously. If elements in one of the figures are not dealt with in the following description, the description of the elements with the same reference symbols in other figures also applies to this figure.

Figure 1 shows, as the closest prior art, a blank firing attachment which was manufactured by the applicant itself and has been proven in use, particularly with regard to the high level of safety, since possible particles from blank cartridges which are ejected from the blank firing attachment during firing are braked down to a harmless speed and, if a live cartridge is accidentally fired, although its round damages the blank firing attachment, it does not damage the weapon to which it is fitted, and the round is reliably trapped.

However, in the worst case, it is possible for the second round which may follow no longer to be reliably held back, and/or for parts of the blank firing attachment then to be ejected forwards.

The known blank firing attachment has a cylindrical body 7 which has a concentric blind hole 9

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drilled in it from its rear end face. This blind hole has, successively and looking forwards from the rear, an initial section 11 having a large diameter, an internal threaded section 13 having a smaller diameter, an intermediate section 15 having a diameter which corresponds to the external diameter of the internal thread, and an end section 17 having a considerably smaller diameter. The end section has a front part 17a which is adjacent to the bottom of the blind hole 9, and a rear part 17b which opens into the intermediate section 15. At the opening, the intermediate section 15 is bounded at the front by a step 19.

The initial section 11 is set up such that it can be pushed onto the muzzle region of a barrel 1 (Figure 3) such that it fits, and has at its front end an external thread 3 which can be screwed into the internal thread in the internal threaded section 13.

Four holes respectively open from the outer surface of the cylindrical body 7 into the intermediate section 15 and the rear part 17b of the end section 17, and two holes 45, 23 and 25 open into its front part 17b, which holes are arranged with mutually identical angular separation and have a respective diameter which increases forwards from the rear. A hole whose diameter corresponds approximately to that of an outlet transverse hole opens into the initial section 11.

An internal bush 27 having a central through-hole 31 and an end circumferential flange 29 at the rear end is inserted into the rear part 17b of the end section 17 of the blind hole 9, covers the safety holes 23 which open into this rear part 17b, and is supported by the front annular surface of the end circumferential flange 29 on the step 19. The rear end of the centre hole 31 is highly countersunk.

The outlet holes 25 which connect the front part 17a of the end section 17 of the blind hole 9 to a circumference of the cylindrical body 7 open into a circumferential annular groove 43, and each have a

diameter which corresponds approximately to that of the centre hole 31.

5 A thread-like spiral groove 21 extends on the outside of the cylindrical body 7, from the annular groove 43 to the front end, on which a transverse surface 41 is formed, which is chamfered all round and in whose centre a centring hole 47 is incorporated.

10 An external sleeve 33 is pushed from the front onto the cylindrical body 7 until it is adjacent, from the inside, against its front, narrowed end 35; the rear end of the external sleeve 33 is welded to the circumference of the cylindrical body 7, immediately in front of the outlet of the safety holes 23. The presence of the external sleeve 33 results in the  
15 annular groove 43 and the spiral groove 21 being developed to form a closed annular channel and a closed spiral channel, which is open only forwards and towards the annular channel.

20 A latching spring 49 is fitted at the rear end of the cylindrical body 7 and engages in a cutout in the barrel 1 of the rifle to which the blank firing attachment is fitted.

For use, the blank firing attachment is screwed onto the barrel, with the muzzle thread of the barrel  
25 engaging in the internal threaded section 13 until the latching spring 49 drops into the associated cutout on the barrel 1, and thus prevents inadvertent unscrewing. At the same time, the muzzle of the barrel 1 is seated on the rear end face of the end circumferential flange  
30 29 of the internal bush 27.

When a blank cartridge with a wooden projectile is fired, this wooden projectile is, as a rule, driven through the sub-calibre centre hole 31 in the internal bush 27, generally having already been broken up, the  
35 wood chips bounce against the bottom of the blind hole 9 and are driven by the powder gases flowing after them through the outlet holes 25, the annular channel formed by the annular groove 43, and through the spiral channel formed by the spiral groove 21. The wood chips,

which have now actually been pulverized, emerge from the spiral channel at the front end of the cylindrical body 7 and circulate with friction in the front end of the external sleeve 33, which narrows towards the front, during which process they are slowly moved forwards. Very fine wood powder then emerges at the front end of the external sleeve 33 at a low speed, together with the powder gases. Any gases which may emerge between the internal bush 27 and the barrel nozzle can escape through the pressure-relief transverse holes 45.

In the described sequence, the powder gases are constrained sufficiently that the reloading mechanism of the handheld firearm can be operated without any problems by these gases.

If a live shot is accidentally fired, then the round enters the sub-calibre centre hole 31 in the internal bush 27. Due to the countersink on this centre hole, the round initially enters to the level of the front annular surface of the end circumferential flange 29. The round is now forced through the centre hole 31 and, in consequence, exerts such tension on the internal bush 27 that it tears apart and bounces together with the round against the bottom of the blind hole 9. In the process, it releases the safety transverse holes 23, and powder gases flowing on behind can escape quickly, and can thus expand. At the same time, the front part of the cylindrical body 7 tears off on the material webs between the outlet holes 25 and is driven forwards in the external sleeve 33. The torn-off part of the cylindrical body 7 comes to rest only in the narrowed, front part 35 of the external sleeve 33. The round is accordingly braked smoothly with continuous braking over a considerable distance, so that the tensile forces which are transmitted to the barrel of the associated weapon via the internal threaded section 13 and the muzzle thread due to the round being trapped are no longer sufficient to damage this muzzle thread.

However, if a second live shot is fired, it is not reliably possible to expect that this round will be trapped as well, and it is possible that the torn-off front part of the cylindrical body will then be ejected  
5 together with the (completely deformed) round forwards from the external sleeve 33, 35 (which is then expanded at the front end), and will still be able to injure personnel.

The embodiments of the invention which are  
10 described in the following text fully use the described principle of the known blank firing attachment just described, but develop its features in such a way that the blank firing attachment according to the invention is reliably able to trap at least two or three rounds.

15 Figure 2 shows the blank firing attachment in an embodiment for the 7.62 mm Nato cartridge (.308 Winchester) in a longitudinal section, Figure 3 shows the muzzle area of the barrel of the associated rifle, and Figure 4 shows the blank firing attachment after a  
20 first, live cartridge has been fired.

The blank firing attachment shown in Figures 2 and 4 is in principle constructed identically to the known blank firing attachment shown in Figure 1, and reference is made to Figure 1 for description of the  
25 construction of the blank firing attachment according to the invention; the following text explains only the differences.

The first and major difference is that the blank firing attachment according to the invention has  
30 only a single outlet transverse hole 25, whose cross section is smaller than the cross section of the spiral channel and is considerably smaller than the cross section of the centre hole. In consequence, the weak point is reinforced to a major extent; fracturing no  
35 longer takes place only as a result of the tensile load which the round applies to the bottom of the blind hole 9, but due to the multidimensional load which occurs due to the fact that the projectile edges as they are pressed apart from one another as well as parts of the

internal bush 27 deform the region of the annular groove 43 of the cylindrical body 7 radially outwards.

Since the process of tearing off the cylindrical body 7 consumes much more work than in the known blank firing attachment, the torn-off residue of the cylindrical body is no longer driven into the narrowed, front region 35 of the external sleeve 33, as in the past, but remains at the entry to this region 35. Owing to the greater strength of the weak point, the axial tensile load which occurs is considerably greater, however; only a single pressure-relief transverse hole 45 is thus provided in order to prevent the cylindrical body from tearing off or tearing in its region.

Furthermore, a retaining ring 39 is welded to the rear end of the cylindrical body, with a strong transverse bolt 37 which can move transversely and engages in a cutout 5, which is designed appropriately, in the barrel 1 (Figure 3).

The previously mentioned, high axial forces are, specifically, sufficient to damage the muzzle thread 3 if it is loaded via the internal thread of the internal threaded section 13 of the blind hole 9. The strong transverse bolt 37, on the other hand, transmits these forces via the cutout to the barrel, so that the external thread 3 and the cutout 5 are jointly, and only jointly, able by interaction to transmit these forces without causing any damage to the barrel 1, and thus to the associated rifle.

The materials from which the cylindrical body 7 and the retaining ring 39 are made are in each case optimized.

Furthermore, the front transverse surface 41 of the cylindrical body 7 is designed to be continuously smooth and, unlike the known blank firing attachment, does not have a hole, so that the cylindrical body cannot be compressed at its front end if a further live shot, which is only slightly braked, strikes the torn-off front part of the cylindrical body 7.

If one considers Figure 4 and imagines how a further round is fired, then it can be seen that this expands the torn-off part of the cylindrical body at its rear end and, in the process, drives it forwards.

5 In the process, the webs between the pitches of the spiral groove 21 may be bent or pressed flat, and the external sleeve 33 is driven apart in the region of the rear end; however, the deformation of the external sleeve takes place at a sufficient distance in front of  
10 its rear end, so that the weld bead is not loaded multidimensionally, but only in tension. After the second shot, it is possible for the torn-off part of the cylindrical body to project slightly forwards out of the external sleeve 33, so that the blank firing  
15 attachment can still withstand a further live shot.

When the second and third live shots occur, the axial load on the external thread 3 of the barrel 1 is even greater than that from the first shot, so that the transverse bolt 37 and the transverse-running cutout 5  
20 in the barrel 1 must be designed such that they nevertheless introduce the axial forces into the barrel 1, without any damage, by interaction with the threaded connection.

Figure 5 shows an embodiment of the cylindrical  
25 body 7 which is designed for the .223 Winchester cartridge, whose muzzle energy is, in fact, only about 30% of the muzzle energy of those cartridges for which the blank firing attachments shown in Figure 1 (prior art) and Figure 2 are set up.

30 For this reason, the attachment device is designed as a latching spring 49 and is fitted to the cylindrical body 7 as in the case of the blank firing attachment from the prior art. However, while the absorption capability of such a latching spring 49 in  
35 conjunction with the external thread 3 would be unacceptable for the blank firing attachment shown in Figure 2, it is still sufficient for the second embodiment, since the axial forces which exceed the absorption capability of the external thread 3

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admittedly still exist with the weak .223 cartridge, but can still be absorbed by the latching spring 49.

Apart from this, the spiral groove 21 is also shorter than in the blank firing attachment shown in Figure 2, since the amount of gas which occurs with the weak cartridge is less than with the cartridge for which the blank firing attachment shown in Figure 2, or even the known blank firing attachment, is designed.

Otherwise, the construction and method of operation are identical to those of the blank firing attachment shown in Figure 2. The single outlet transverse hole 25, which opens into the flat annular groove 43, cannot be seen in Figure 5.

Patent Claims

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1. Handheld firearm having a blank firing attachment, in which case

10 a. the barrel (1) of the handheld firearm is provided at the muzzle end with an external thread (3) behind which a transversely running cutout (5) is incorporated in the outer surface of the barrel (1), and

b. the blank firing attachment has the following features:

15 b.1. an elongated, essentially cylindrical body (7), having

20 b.1.1. a central blind hole (9) which originates from its rear end facing the barrel (1) and has the following sections, starting from the rear end of the blind hole (9) and successively:

b.1.1.1. an initial section (11) which can be pushed onto the barrel (1), to the rear, over the external thread (3) on the barrel (1),

25 b.1.1.2. an internal threaded section (13) whose internal thread can be screwed onto the external thread (3) of the barrel (1),

b.1.1.3. an intermediate section (15), and

30 b.1.1.4. an end section (17) having a smaller diameter, which expands towards the intermediate section (15) forming a step (19),

35 b.1.2. at least one spiral groove (21) in the external circumference of the front end of the cylindrical body (7) originates, which like a threaded groove of [sic]

b.1.3 at least one safety transverse hole (23) which connects the outside of the cylindrical body (7) to that part (17b) of the end

- section (17) of the blind hole (9) which is adjacent to the intermediate section (15), and
- 5      b.1.4.      an outlet transverse hole (25) which connects the spiral groove (21) to a connection between the front part (17a) which is adjacent to the closed end of the blind hole (9), of its end section (17), and
- 10      b.2.      an internal bush (27) having an end circumferential flange (29) and a centre hole (31) which is smaller than the calibre of the barrel (1), in which case
- 15      b.2.1.      the internal bush (27) is seated in that part (17b) of the end section (17) which is adjacent to the intermediate section (15),
- b.2.2.      in this case covers the safety transverse hole (23) and
- b.2.3.      is seated with the end circumferential flange (29) on the step (19),
- 20      b.3.      an external sleeve (33), which
- b.3.1.      is pushed onto the front part of the cylindrical body (7), which faces away from the muzzle of the barrel (1), and in this case covers the spiral groove (21) forming a spiral channel,
- 25      b.3.2.      ends in front of the safety transverse hole (23) at the rear end,
- b.3.3.      is welded to the cylindrical body (7), and
- b.3.4.      is tapered at the front end (35) and in this case projects forwards beyond the cylindrical body (7), and
- 30      b.4.      an attachment device (37) which is fitted to the cylindrical body (7) in the rear end region of the cylindrical body (7), which can be pushed over the barrel (1), and is set up in order to engage in the transversely running cutout (5) on the barrel (1),
- 35      characterized in that

- c) the cross section or overall cross section of the outlet transverse hole or holes (25) is less than the cross section of the centre hole (31) in the internal bush (27), and
- 5 d) the attachment device (37) is set up to absorb axial forces.

2. Handheld firearm having a blank firing attachment according to Claim 1, characterized in that the attachment device (27) is arranged in its own  
10 retaining ring (39) which is fitted, preferably welded, to the cylindrical body (7) at the rear end of the cylindrical body (7).

3. Handheld firearm having a blank firing attachment according to one of Claims 1 or 2,  
15 characterized in that only a single outlet hole (25) is provided.

4. Handheld firearm having a blank firing attachment according to one of Claims 1 to 3, characterized in that the cylindrical body (7) has a  
20 front end face which forms an uninterrupted, continuous transverse plane.

5. Handheld firearm having a blank firing attachment according to one of Claims 1 to 4, characterized in that the spiral groove (21) opens at  
25 its rear end into an annular groove (43) into which the outlet hole or holes (25) opens or open.

6. Handheld firearm having a blank firing attachment according to Claim 5, characterized in that the axial width of the annular groove (43) is at least  
30 twice the diameter of the outlet hole or holes (25).

7. Handheld firearm having a blank firing attachment according to one of Claims 1 to 6, characterized in that at least one pressure-relief transverse hole (45) connects the outside of the  
35 cylindrical body (7) to the intermediate section (15) of the blind hole (9).

8. Handheld firearm having a blank firing attachment according to one of Claims 1 to 7, characterized in that the opening (which faces the

internal threaded section (13)) of the centre hole (31) in the internal bush (27) is expanded conically, to be precise preferably up to about the diameter of a round which is fired in the barrel (1).

5 9. Handheld firearm having a blank firing attachment according to one of Claims 1 to 8, characterized in that four safety transverse holes (23) are provided, which are distributed uniformly around the circumference.

10 10. Handheld firearm having a blank firing attachment according to one of Claims 7 to 9, characterized in that four pressure-relief transverse holes (45) are provided, which are distributed uniformly around the circumference.

15 11. Handheld firearm having a blank firing attachment according to one of Claims 1 to 10, characterized in that the external sleeve (33) is seated with a push fit on the cylindrical body (7), and is preferably shrunk onto the cylindrical body (7).

20 12. Handheld firearm having a blank firing attachment according to one of Claims 1 to 11, characterized in that the opening of the end section (17) of the blind hole (9) is countersunk on the step (19), and/or in that a circumferential groove is cut in  
25 on the outer circumferential surface of the internal bush (27), at the attachment of the end circumferential flange (29).

13. Handheld firearm having a blank firing attachment according to one of Claims 1 to 12,  
30 characterized in that the internal bush (27) is pushed into the end section (17) of the blind hole (9).

14. Handheld firearm having a blank firing attachment according to one of Claims 1 to 13,  
35 characterized in that the attachment device has a transverse bolt (37) which is set up to engage detachably in the cutout (5) which is of complementary design and runs transversely.