

Pedro Castillo Pineda & Asociados
ABOGADOS

05-43929
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 05-043929-00005-0000

Fecha: 2007-09-21 16:09:49 Dep. 2020 NUECREACIONES
Tra. 11 PATENTE Y M. Ene. 379 FASE NACIONAL II
Act. 538 PETICION Folios: 2

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

División de Nuevas Creaciones

E. S. D.

Ref: EXPEDIENTE No. 05-043929
Solicitud de Patente a nombre de
R/M EQUIPMENT, INC

Como es de conocimiento de ese Despacho el extracto de la solicitud indicada en la referencia se publicó en la Gaceta de Propiedad Industrial N° 574 del 30 de Marzo de 2007.

Para dar cumplimiento al artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina, pido se examine si la presente invención es patentable.

Adjunto el recibo N° 05-11414 por concepto de la tasa respectiva.

Atentamente,

JERONIMO CASTILLO BONILLA
C.C. 79.462.057 Bogotá
T.P. 104167 C.S.Judicatura

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 05-043929- -00005-0000

Fecha: 2007-09-21 16:09:49 Dep: 2020 NUECREACIONE
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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 07 - 76,414
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CASTILLO PINEDA	CONSIGNACION	BANCO POPULAR	050-00110-6	71028053	21/09/2007	4,820,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN	404,000.00
		TOTAL :	\$ 404,000.00

: CUATROCIENTOS CUATRO MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 05-43929

EL EXTRACTO DE LA PRESENTE SOLICITUD DE PATENTE DE INVENCION

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No 574 DE

FECHA 30 DE MARZO DE 2007 EL TÉRMINO HÁBIL SEÑALADO POR LA LEY

EXPIRA EL 03 DE JULIO DE 2007

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X

White

[11] Patent Number: 4,689,911

[45] **Date of Patent:** **Sep. 1, 1987**

- [54] GRENADE LAUNCHER ATTACHMENT FOR INFANTRY WEAPON**

3,967,402	7/1976	Cooksey	42/1 F
4,539,769	9/1985	Stevens et al.	42/1 A

[75] Inventor: **Bernard C. White, Robbinsdale,
Minn.**

FOREIGN PATENT DOCUMENTS

[73] Assignee: Napco Industries, Inc., Hopkins, Minn.

308475	10/1920	Fed. Rep. of Germany	89/1.3
1901623	10/1969	Fed. Rep. of Germany	42/1 F

[21] Appl. No.: 617,264

Primary Examiner—Deborah L. Kyle
Assistant Examiner—Michael J. Carone
Attorney, Agent, or Firm—Faegre & Benson

[22] Filed: Jun. 4, 1984

[51] Int. Cl.⁴ F41C 21/18; F41F 1/06;
F41F 19/02

[52] U.S. Cl. 42/103; 42/1.06;
89/177; 89/178; 89/198; 89/43.01

[58] Field of Search 42/1 F, 1 V, 1 S, 86,
42/74, 105, 1.06, 100; 102/483; 89/1.3, 1.35,
177, 178, 198, 42.01, 43.01

[56] **References Cited**

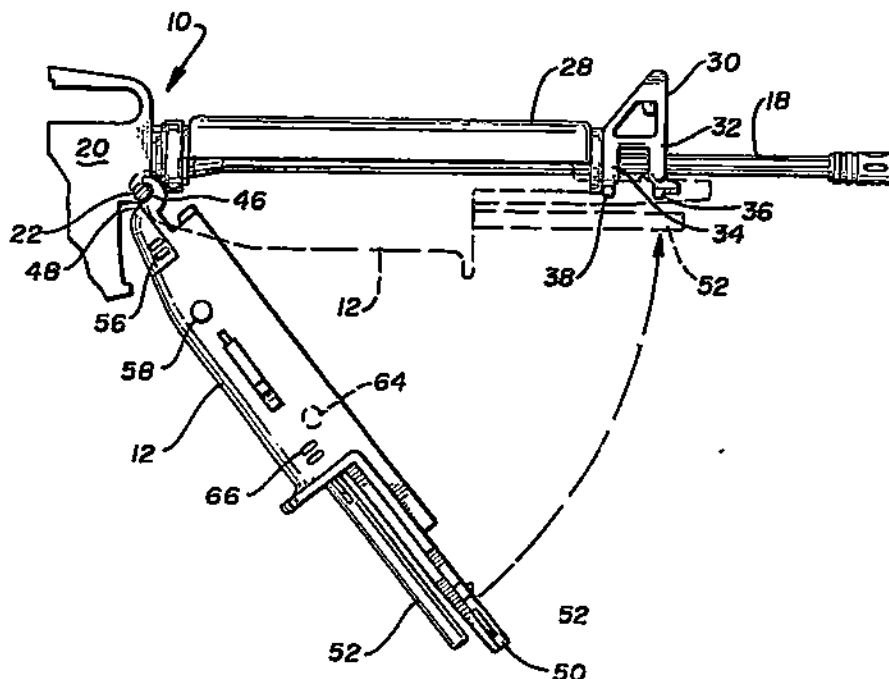
U.S. PATENT DOCUMENTS

2,422,767	8/1943	Anderson	89/198
2,883,781	4/1959	Harvey	42/1 F
2,900,877	8/1959	McClenahan	89/198
3,208,175	9/1965	Fisk	42/1 R
3,610,091	10/1971	Bernard	42/1 F
3,680,240	8/1972	Barr et al.	42/1 F
3,952,629	4/1976	Boccarossa et al.	89/14.4

[57] **ABSTRACT**

A grenade launcher and attachment for use on an infantry weapon, such as a rifle. The launcher fires grenades of the type which have a hollow tubular rear chamber slidably mounted on a guide rod and a piston head fitted into the bore of the chamber to seal an explosive charge therein and form an extensible explosion chamber. Locking elements for silently installing the grenade launcher without the use of complex tools are provided. Recoil buffering or compensation is provided to minimize the perceived recoil when grenades or other projectiles are launched from a shoulder held firing position. A detent is provided to secure projectiles on the guide tube until they are fired.

4 Claims, 19 Drawing Figures



72
72

Fig. 1

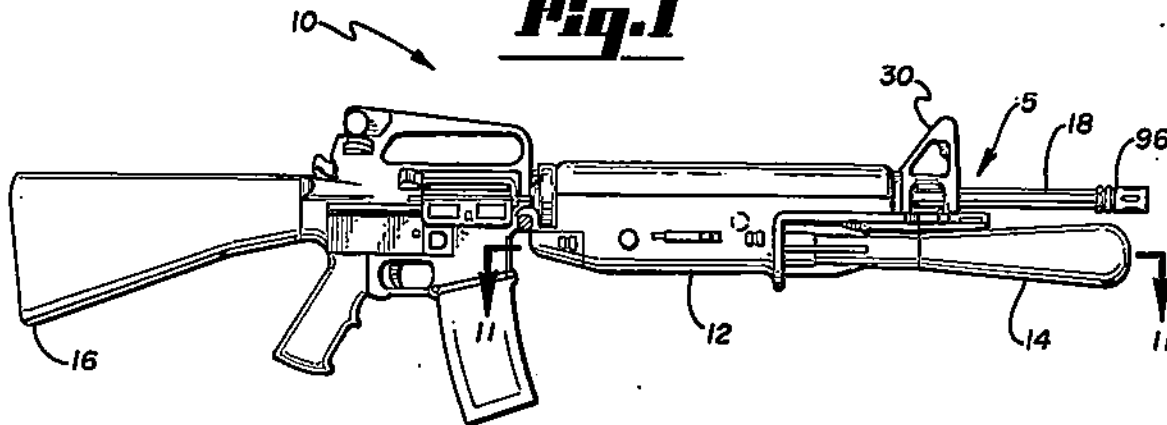


Fig. 2

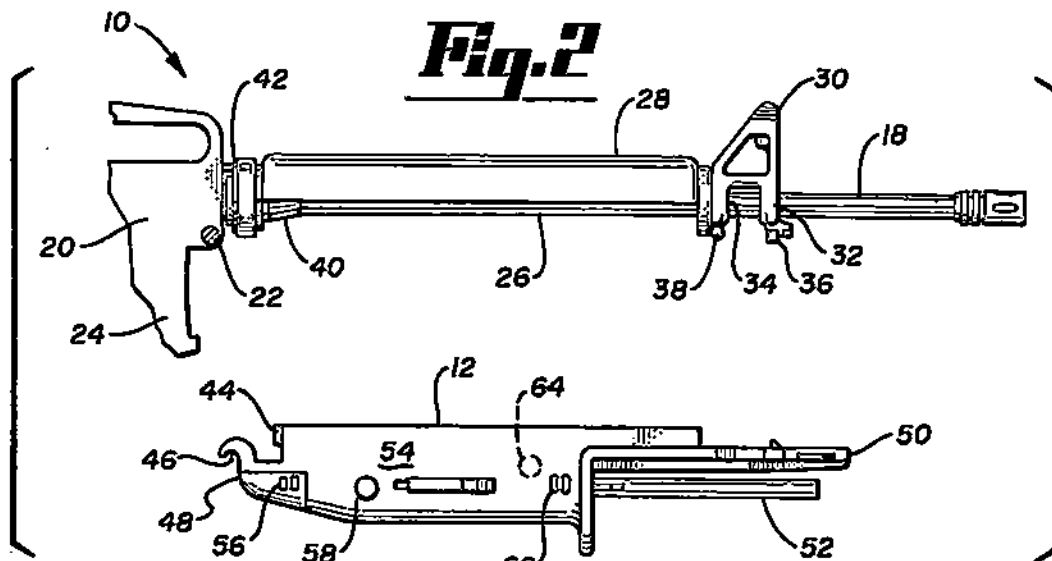
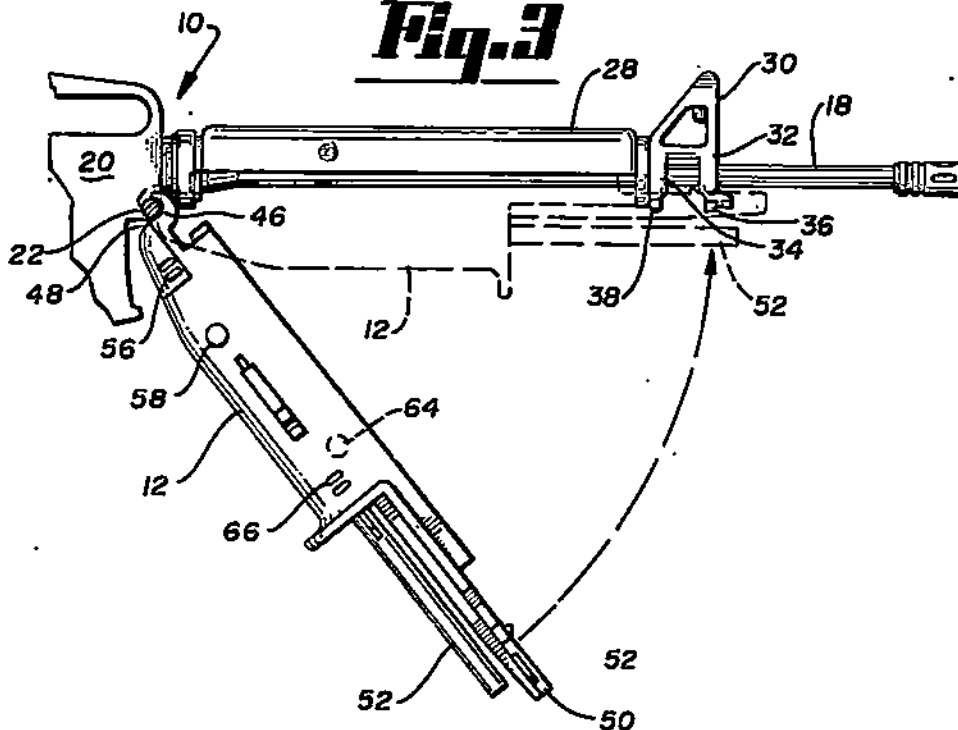


Fig. 3



motion of the guide tube bottoming out against the recoil compensating elements;

FIG. 15 is a view similar to that of FIG. 11 with the launcher attachment returned to a cocked position;

FIG. 16 is an exploded view of the representative elements of the projectile detent mechanism;

FIG. 16A is a fragmentary detail taken at 16A of FIG. 11 and is greatly enlarged; and

FIG. 17 is a vertical cross-section through the detent taken along line 17-17 of FIG. 15.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows an infantry weapon 10 upon which the projectile or grenade launcher attachment 12 has been mounted. In the preferred embodiment shown, the infantry weapon is of the type designated by the United States Government M-16A2 which is a reinforced assault rifle capable of automatic and semi-automatic fire. It can be seen that the invention disclosed herein can be adapted for use with other infantry weapons without departing from the invention of the claims. It can also be manufactured as a projectile launcher for shoulder or mortar type firing.

In FIG. 1, a projectile or grenade 14 is shown mounted in the firing position on grenade launcher attachment 12. As will be described in more detail below, launcher attachment 12 can be utilized to fire projectiles 14, either in a high trajectory indirect mode with the butt portion 16 resting on the ground and the barrel 18 of weapon 10 oriented at an angle between approximately 30° and 60° to the ground surface or can be fired in a direct fire mode where the user rests the butt portion of weapon 10 against his shoulder and fires projectile 14 essentially along a line of sight.

The details of attachment of launcher 12 to infantry weapon 10 can be seen in FIG. 2. Launcher 12 is connected at one end to receiver 20. It is directly connected to receiver bolts 22 which are located near the forward extremity of receiver 20 and just above magazine extension 24.

The body of launcher 12 is positioned below the aft position 26 of the barrel which is covered by a top forestock or protective cover 28. Immediately forward of forestock 28 is the original equipment front sight 30. Front sight 30 is attached to forward muzzle portion 18 by a forward support portion 32 and a rear support portion 34. Immediately below forward sight support 32 is a bayonet lug 36. Immediately below rear sight support 34 is a front swivel mount 38.

The distal portion 40 of barrel 26 tapers to a larger diameter where the barrel meets breech 42.

Launcher 12 has a breech butt 44, a pair of hooks 46 which are on opposite sides of receiver 20 and a receiver butt portion 48. It also has a projecting forward tongue portion 50 for engagement with bayonet lug 36 of weapon 10. It also has a guide tube or spigot 52 which projects from housing 54.

Housing 54 includes rear vents 56. A mechanical trigger 58 is mounted on the side of housing 54, and a cocking slide 60 is mounted on a track 62 to cock the launching device. FIGS. 3 and 4 show an electrical trigger button 64. A set of forward vents 66 also projects through housing 54.

FIG. 3 shows the procedure for mounting launcher 12 on weapon 10. Hooks 46 are engaged with projecting bolts 22 on receiver 20. If the stock or regular receiver bolts 20 do not project sufficiently from receiver 20 to

adequately engage hooks 46, they can be replaced with receiver bolts having a projecting head portion to adequately engage hooks 46. The normal bottom forestock portion is removed from the weapon before launcher 12 is attached. After hooks 46 engage the heads of bolts 22, the launcher can be pivoted from the attaching position shown in FIG. 3 to the fully mounted position shown in phantom outline in FIG. 3.

The details of the detent or locking mechanism to attach forward tongue portion 50 of launcher 12 to bayonet lug 36 of infantry weapon 10 are shown in FIG. 5.

As can be seen in FIG. 5, bayonet lug 36 is attached to forward support portion 32 by a lug shoe element 68. The bottom of lug 36 has a step 70 which can best be seen in FIGS. 5 and 7.

Forward tongue portion 50 of launcher 12 has an opening 72 which receives bayonet lug 36. At the rear of opening 72 is a bias block 74. Bias block 74 is retained in opening 72 by a retaining rod 76 which is secured to forward tongue portion 50 of launcher 12. A compression spring 78 urges bias block 74 toward the forward end of tongue portion 50 in opening 72. When launcher 12 is pivoted into the fully attached position shown in FIG. 3, bayonet lug 38 enters opening 72 and forces bias block 74 rearwardly in opening 72. Bias block 74 exerts a frictional force tending to secure launcher 12 in the mounted position until the locking mechanism is actuated.

The locking mechanism includes a pair of butterfly lock arms 80 which are pivotally mounted to tongue 50 on either side of opening 72. Each butterfly arm 80 has projecting lock portions 82 which grip the sides of bayonet lug shoe 68, as shown in FIGS. 7 and 8, and prevent launcher 12 from being pivoted downwardly past the point where lock portions 82 engage step 70 of bayonet lug 36. Lock portions 82 are biased into their engaged or closed position by a compression spring 84 which urges the actuating portions 86 outwardly to pivot lock portions 82 inwardly against lug shoe 68.

The aft portion of launcher 12 is mounted on weapon 10 as shown in the detailed view in FIG. 6. Breech face 44 of launcher 12 rests against breech 42 of weapon 10. FIG. 4 shows the engaging surface 44 which is part of a nest 87 which has an inside contour matching the interface between barrel portion 26, tapered barrel portion 40 and the breech interface. Thus, the aft portion of launcher 12 fits snugly against the stem of barrel 26 and longitudinally directly abuts breech 42. A slot 88 in housing 54 allows clearance for the attachment element 90 to which the bottom forestock portion is mounted when the launcher attachment 12 has been removed.

FIG. 9 shows the orientation guide 92 which assists in the proper orientation of projectile 14 as it is loaded onto launcher 12. Orientation track 92 is mounted or formed on the lower side of tongue portion 50 and is aligned with barrel 18 when launcher 12 is attached to weapon 10. It is positioned slightly above and parallel to guide tube 52 so that, when projectile is mounted on the attachment by inserting guide tube 52 into the hollow portion of the body of projectile 14, orientation guide 92 will force the fins 94 of projectile 14 to align themselves on both sides of guide 92. Placing the fins in the orientation shown in FIG. 9 assures that a minimum vertical spacing can be adopted between guide tube 52 and barrel portion 18 without the possibility of a fin 94 striking barrel 18 or flash suppressor 96.

FIGS. 11 through 15 illustrate the details of the recoil compensation mechanism of launcher 12, while FIGS. 16 and 17 illustrate the detent mechanism used to secure projectile 14 to guide tube 52 before the projectile is fired.

Projectile 14 is the type of projectile shown in U.S. Pat. No. 3,610,091, for example. It has a warhead portion 98 at its tip and an aerodynamic body 100 and stabilizing fins 94. It has an axial hollowed-out portion 102 which has an internal diameter which exceeds the diameter of guide rod 52 over most of its length. At the exit point at the rear of projectile 14, the hollow portion is constricted to a reduced diameter portion 104, which is substantially equal to the outside diameter of guide tube 52. The forward end of guide tube 52 abuts piston 106 which is slidably mounted at the end of axial hollow portion 102 and encloses or seals a propellant charge 108. A primer 110 is used to ignite propellant charge 108. As charge 108 explodes or rapidly burns, the expanding gases force piston 106 rearwardly in chamber 102, and projectile 14 accelerates rapidly along guide tube 52. When piston 106 reaches constricted portion 104 of hollow chamber 102, it seals the chamber to trap the propellant gases and flames inside projectile 14, and projectile 14 moves on a ballistic path aligned with guide tube 52.

Prior to firing projectile 14, it is secured to guide 52 by latch pawls 112 which are pivotally mounted on guide tube 52 for movement between an unlatched position substantially flush with the outside diameter of guide tube 52 and a latched position where they project above the surface of guide tube 52 and engage the reduced diameter portion 104 of the hollow portion 102 of projectile 14 to prevent inadvertent removal of projectile 14 from guide tube 52 after the projectile is loaded onto launcher 12. In the embodiment shown in the drawings, three latch pawls 112 are disposed around guide tube 52, as shown in FIG. 17.

In FIG. 16A, it can be seen that pawl 112 engages a groove 114 in guide rod 52. The pawl includes a camming surface 116 which cooperates with a similar camming surface 118 of groove 114. When pawl 112 is moved longitudinally to the left from the position in which it is fully inserted in groove 114, the cooperative action of camming surfaces 116 and 118 pivot it clockwise about pivot pin 120 and lift the blade of pawl 112 into an opened or extended position projecting above the surface of guide tube 52.

Each of the pawls 112 is pivotally connected using pivot pin 120 to the end of an L-member 122 which has a projecting tab 124 which fits into a slot 126 in spanner bushing 128. The exploded view of the pawl 112 and L-member 122 and spanner bushing 128 is shown in FIG. 16. In FIG. 11, the same parts are shown in their installed form in housing 54 of launcher 12. In the position shown in FIG. 11, the detent pawl 112 is in the opened or locking position and withdrawn from groove 114. In the course of the firing process, guide tube 52 moves longitudinally into housing 54 of launcher attachment 12 and groove 114 moves under pawl 112 so that pawl 112 drops into the groove, leaving the outer surface of pawl 112 flush with the wall of guide tube 52 to unlock the projectile from the guide tube, as shown in FIG. 13. A detailed description of the movement of guide tube 52 into housing 54 of launcher attachment 12 is set forth below.

The firing of the projectile occurs when propellant charge 108 is ignited. This ignition can be achieved by

either actuating the mechanical trigger 58 or the electrical trigger 64. When the electrical trigger 64 is utilized, an electric potential is applied to a tubular electrical conductor 130 which forms an inner lumen of the guide tube 52 and is insulated from the majority of the rod of the guide tube by an insulating jacket 132 coaxial to tube 130 and guide tube 52. If electrical firing is to be initiated, an electrical potential is applied between conductor 130 and the body of guide tube 52. Electrical connector 130 is electrically connected to the outside of electrical connector 134 which is in contact with primer 110. The portion of electrical connector 134 which is in contact with piston 106 is insulated. Thus, the portion of primer 110 which is in contact with electrical connector 134 is at one potential, while the case of primer 110 is in contact with piston 106 and thence to the body of guide tube 52. The primer can thus be fired electrically to initiate the ignition of the propellant charge 108.

Ignition of propellant charge 108 can also be initiated mechanically by driving firing pin 136 through the lumen in conductor 130 against electrical connector 134 and forcing that element against primer 110 which also serves as a percussion initiated primer to ignite propellant charge 108.

When the propellant is initiated and the parts are in the relationship shown in FIG. 11, piston 106 begins to move to the left as propellant 108 rapidly burns. Since the projectile at this point is firmly held by detents 112, the only element capable of movement to permit piston 106 to continue to move is guide tube 52 which moves to the left and into housing 54 of launcher 12. As guide tube 52 moves to the left, the detents are released and the movement of piston 106 against guide tube 52 rapidly propels projectile 14 from the end of guide tube 52 and into ballistic flight.

Guide tube 52 is mounted for a limited degree of longitudinal movement relative to housing 54. Recoil compensating means contained within housing 54 restrain the longitudinal movement of guide tube 52 and spread the inertial impulse over an extended time period to reduce the perceived recoil felt by a user firing the weapon with only shoulder support.

The mechanical triggering of the weapon is accomplished by moving the firing pin which traverses the entire central core of guide tube 52 so that it strikes electrical connector 134 and drives it into percussion primer 110. The pin is driven forwardly by a spring 136 enclosed within a chamber 138 which extends axially along a portion of the length of guide tube 52. Spring 136 bears on a projecting cylindrical member 140 which is axially movable within chamber 138. A projection 142 of member 140 depends downwardly and projects through slot 62 through housing 54. A pivotally mounted sear 144 is connected to projection 142 and is held in place by a pivotally mounted pawl 146 which is, in turn, pivotally connected to a pivotally mounted trigger 148 which has a projecting button 58. Depressing trigger button 58 pivots trigger link 148 about its pivot point and moves the left projection of pawl 146 downwardly to lift the right hook portion of pawl 146 from sear 144 allowing compression spring 136 to drive projection 140 and firing pin 136 to the right to ignite percussion primer 110. Various safety mechanisms can be provided to avoid inadvertent firing of the weapon by depressing trigger button 58.

Guide tube 52 is normally biased into the position shown in FIG. 11 by a sleeve 150 which is urged by a compression spring 152 against a projecting shoulder

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES

202084

Bogotá, D.C.

Abogado

JERONIMO CASTILLO BONILLA

Apoderado

ASUNTO

Radicación 05 - 43929
Trámite 011
Evento 379
Oficio 5689
Folios 007

Patente de Invención

☒

Patente de Modelo de Utilidad

☐

Via Nacional

☐

Via PCT (fase nacional)

☒

Cap. I

☐

Cap. II

☒

No. Sol. Internacional

PCT/US2003/032312

Fecha de Presentación Internacional 10/10/2003

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

1.1. Descripción: Folios 35 a 42

1.2. Reivindicaciones: Folios 43 a 45

1.3. Dibujos: Folios 46 a 49

2. Objeto de la invención

Título de la solicitud: "DISPOSITIVO DE BLOQUEO DEL CERROJO DEL CAÑÓN".

El problema planteado en esta solicitud es que para reducir al mínimo el potencial de desenganche del cañón cuando se pone inadvertidamente la mano en, sobre, o entre dicho cerrojo del cañón se usa un blindaje, que entre otras cosas es incomodo de manipular cuando, además hay que cargar una ronda y/o expulsar un casquillo.

Para solucionar este problema técnico la solicitud en estudio proporciona un dispositivo de bloqueo del cerrojo del cañón de un lanzagranadas que cubre la necesidad de un seguro del cerrojo del cañón que tenga un diseño útil y confiable y que este ventajosamente en capacidad de retro-adaptarse fácilmente en un lanzagranadas existente.

El objeto de la presente invención se lleva acabo de acuerdo con las características

reivindicadas en las reivindicaciones independientes 1, 14 y 15 (43 a 45)

Clasificación Internacional de Patentes (IPC): F41C27/00, F41C 27/06.

3. Determinación del Estado de la Técnica

Se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a 2003/10/10, que pueden afectar la patentabilidad del objeto de la presente solicitud, encontrándose:

Nº	Documento	Título	Fecha de Publicación
D1	US4689911	Grenade launcher attachment for infantry weapon	Sep 1, 1987

4. De la solicitud de Patente

4.1. Reivindicaciones (artículo 30 D 486)

Se observa que el objeto de la solicitud al ser de un dispositivo de bloqueo, debería llevar solo una reivindicación independiente; y no tres como es el caso actual, en donde la 1, menciona un dispositivo; la 14 un seguro y la 15 un lanzagranadas; se sugiere fusionarlas, mencionando únicamente el dispositivo de bloqueo.

Se sugiere que en el preámbulo estén todas aquellas partes que ya se encuentran ampliamente divulgadas en el estado de la técnica, y seguido de la frase **"CARACTERIZADO POR"** mencione específicamente la invención, mostrando la forma, disposición, ubicación, construcción de cada una de las partes y como se acoplan entre sí; de modo que se pueda determinar en la reivindicación el alcance de la protección ya que las características que esta mencionando actualmente son conocidas ampliamente en el estado de la técnica.

Se aconseja en todo el capítulo reivindicatorio hacer una referencia por medio de paréntesis "()" inmediatamente después de hablar del elemento, sin hacer ningún otro tipo de alusión o mencionar la figura directamente, para facilitar su comprensión.

5. Análisis de patentabilidad (artículo 14 D 486)

5.1. Novedad (artículo 16 D 486)

Teniendo en cuenta que el documento **US4689911** (mencionado de ahora en adelante como **D1**), que se refiere a: un **"Grenade launcher attachment for infantry weapon"** como se muestra a continuación:

Al comparar elemento por elemento de la invención tal como está definido en las reivindicaciones independientes 1, 14 y 15 con el documento **D1**: vemos que el dicho documento contiene todas las características técnicas:

- o Un cuerpo que tiene porciones extremas opuestas. Ver **D1** Capítulo descriptivo, elementos (10-12-52-100) y Figuras 1 a 16.
- o Una primera porción extrema opuesta de dicho cuerpo incluye una placa de bloqueo, adaptado dicho dispositivo de bloqueo para asegurarse a caja de mecanismos de un lanzagranadas. Ver **D1** Capítulo descriptivo, elementos (10-58-80-82) y Figuras 1 a 16.

- 77
- o Un cerrojo del cañón de un lanzagranadas, comprendiendo dicho seguro una placa de bloqueo y un elemento alargado que se proyecta de una porción de la misma, de modo que defina una bifurcación entre dicho elemento alargado y un borde lateral de dicha placa de bloqueo. Ver D1 Capítulo descriptivo, elementos (10-58-80-82) y Figuras 1 a 16.
 - o Una caja de mecanismos de un lanzagranadas. Ver D1 Capítulo descriptivo, elementos (10-12) y Figuras 1 a 16.
 - o Un cañón en acoplamiento operativo con un ensamble de caja de mecanismos. Ver D1 Capítulo descriptivo, elementos (10-12-18) y Figuras 1 a 16.

Realizada la comparación del documento D1 con la presente solicitud de patente de invención, se observa que dicho documento contiene todas las características técnicas de las reivindicaciones independientes 1, 14 y 15; con lo cual quedaría desvirtuada la novedad de esta.

6. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

Nº	Documento Nº	Reivindicaciones Afectadas	Requisito que Afecta
D1	US4689911	1 a 15	Novedad

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única Nº 10 de 2001.


ALIX CARMENZA CÉSPEDES DE VERGEL
 Jefe de División de Nuevas Creaciones

15 MAYO 2009

El anterior requerimiento fue notificado por fijación en lista, de fecha _____

CONCEPTO TÉCNICO No. 651	EXAMINADOR TÉCNICO Código No. 84
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