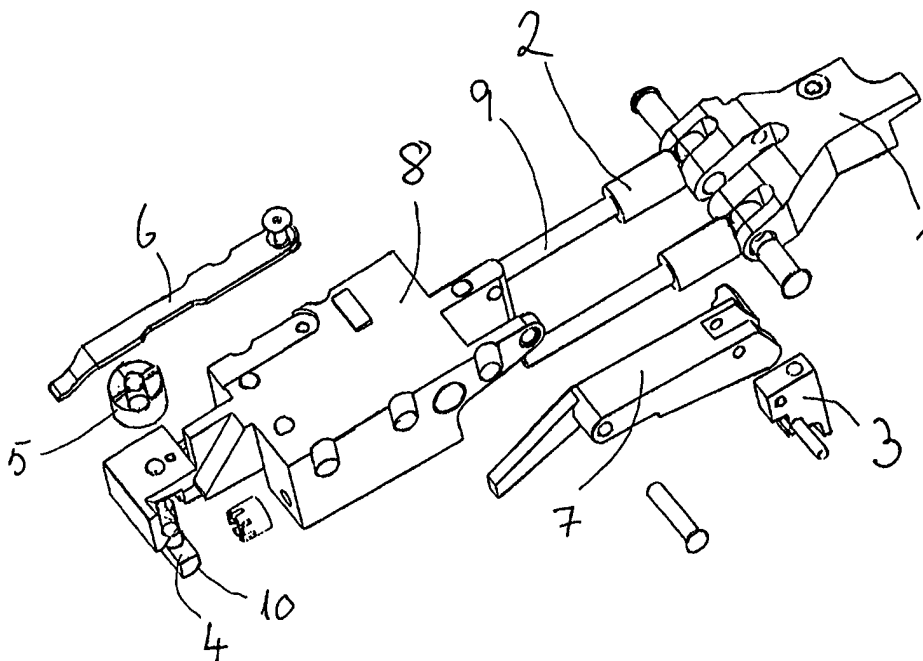




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(21) International Application Number: PCT/NO98/00084 (22) International Filing Date: 13 March 1998 (13.03.98) (30) Priority Data: 971212 14 March 1997 (14.03.97) NO (71) Applicant (for all designated States except US): VINGHØGS MEK. VERKSTED AS [NO/NO]; Boks 143 Teie, N-3106 Tønsberg (NO). (72) Inventor; and (75) Inventor/Applicant (for US only): EKEN, Oddbjørn [NO/NO]; N-3350 Prestfoss (NO). (74) Agent: TANDBERGS PATENTKONTOR AS; Boks 7085, N-0306 Oslo (NO).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>In English translation (filed in Norwegian).</i>

(54) Title: TRIGGER SYSTEM FOR RECOIL DRIVEN WEAPONS



(57) Abstract

Device for weapon preferably for firing showers of several shots for unlocking and latching the rifle bolt in the rear position to avoid heat distribution from the chamber or pipe to powder and explosives in the booster charge and/or the grenade, and to restrain firing by emptying or handling the weapon, where an activator is moving a trigger (3) in engagement with the stop flap (1) of the rifle bolt, thereby releasing the spring force of the rifle bolt forwardly where firing is performed only when the rifle bolt as well as the cover are in the locked position.

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Trigger system for recoil driven weapons

The present invention is related to a trigger system for recoil driven weapons.

5 Known trigger systems for recoil driven weapons are fired with closed rifle bolt which may cause undesired firering due to the heat in the chamber or the rifle barrel.

Known weapon embodiments comprise a stop flap having two catching grooves in the rifle bolt to maintain the rifle bolt
10 in the rear position. The stop flap normally is suspended in a buffer on one side and is therefore subject for asymmetric load.

It is an object for the present invention to provide a trigger system being secured against such undesired firering.

The above mentioned object is achieved with the trigger
15 system according to the present invention, defined with the features stated in the claims. The trigger system according to the invention fires the weapon with open rifle bolt, which means that there no longer is a cartridge in the chamber. With the trigger system according to the present invention, the charac-
20 teristic of the weapon is changed by introducing several safety devices.

The drawing discloses in a exploded view, parts included in the trigger system.

In the trigger system according to the present inven-
25 tion, a stop flap 1 is suspended in two buffers 2, thereby establishing a symmetric system. The stop flap 1 of the buffers 2 absorb the forces from the rifle bolt.

The stop flap 1 is effected of a trigger 3 which is journalled on a trigger arm 7. The trigger arm is journalled in
30 a housing 8 and the stop flap likewise is journalled in the house 8 with bolts 9 and the buffers 2 therebetween.

The trigger arm 7 ensures that the stop flap 3 has two positions one of which is out of engagement thereby allowing free movement of the rifle bolt, in other words automatic firering.
35 The other position includes a maximum engagement with the hooking groove of the rifle bolt, thereby locking the rifle bolt in the rear position.

The trigger 3 is such formed that when a trigger is hold, the trigger 3 is locked with engagement with the stop flap

1 thereby ensuring that firering will not be interrupted. When the trigger is released, the rear edge of the rifle bolt will hit the trigger 3 forcing this out of engagement with the stop flap 1. The stop flap thereby is pressed to engagement with the rifle
5 bolt, capturing this in the rear position.

Firering is performed by releasing the firering pin by the trigger hook, the guiding 4 for the trigger hook thereby being pressed downwardly. An inclined surface 1 on the trigger hook guiding 4 also is used to adjust the firering moment in
10 relation to the position of the rifle bolt. This adjustment is performed by an adjustment wheel adjusting the height of the inclined surface 10 and thereby the position of the rifle bolt at the time of firering.

The locking device 6 for the trigger ensures that
15 firering is not possible when the cover of the weapon is open. The locking device is arranged in front of the stop flap 1 lock. The locking device is pressed down by the cover and brings the trigger hook guiding 4 in position for firering. The trigger locking device 6 ensures that the adjustment wheel 5 for the
20 trigger time is locked.

An activator which may be electric, hydraulic, hydraulic/pneumatic or a wire connection, moves the trigger 3 in engagement with the stop flap 1 of the rifle bolt and releases thereby the spring force forwardly where firering is performed
25 only when the rifle bolt and the cover are in the locked position.

The weapon is ensured against firering in that components being connected with the trigger parts in the rifle bolt, are brought out of position and out of reach for the transmission
30 parts when the cover for loading is opened.

With the adjustment wheel 5 or a corresponding screw, the timing of the weapon is adjusted by ensuring correct position for firering. The adjustment wheel 5 is locked in position by a trigger latch 6 or another device abutting and locking the
35 engagement with corresponding locking grooves in the adjustment wheel 5 and the locking device 6 for the trigger by the spring force of the individual parts against each other.

The weapon is ensured against firering as the stop flap 1 and the trigger 3 are locked together in a position outside

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reach for hooking of the rifle bolt as the trigger 3 has such a shape that the trigger movement will lock this into engagement with the stop flap 1 as long as forces are transmitted on to the trigger arm 7 and the trigger 3.

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Patent Claims

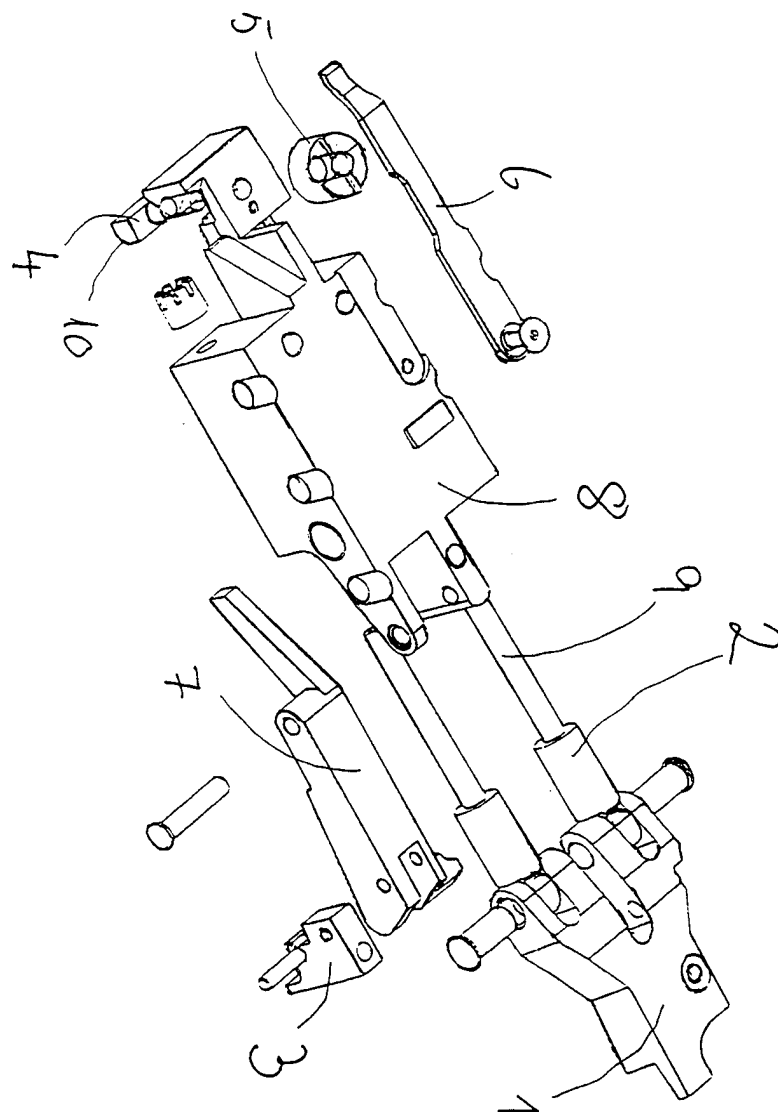
5 1. Device for weapon preferably for firering showers of
several shots for unlocking and hatching the rifle bolt in the
rear position to avoid heat distribution from the chamber or pipe
to powder and explosives in the booster charge and/or the
grenade, and to restrain firering by emptying or handling the
10 weapon, **CHARACTERIZED IN** an activator moving a trigger (3) in
engagement with the stop flap (1) of the rifle bolt, thereby
releasing the spring force of the rifle bolt forwardly where
firering is performed only when the rifle bolt as well as the
cover are in the locked position.

15 2. Device according to previous claim, **CHARACTERIZED IN**
the weapon being secured against firering by components operating
trigger parts in the rifle bolt being brought out of position and
reach for the transfer parts when the cover is opened for
loading.

20 3. Device according to previous claims, **CHARACTERIZED**
IN an adjustment wheel (5) or a screw for adjustment of the
timing of the weapon, besides bringing this in the position for
firering also locks an adjustment device respectively a latch (6)
for the trigger in the position as the adjustment wheel or the
25 device abut and are locked in engagement with their locking
grooves by the individual spring force of the parts, towards each
other.

 4. Device according to previous claims, **CHARACTERIZED**
IN the weapon is secured against firering by a stop flap (1) and
30 the trigger (3) being locked together in a position without reach
for hooking by the rifle bolt as the trigger (3) has such a shape
that a trigger movement locks the trigger (3) in engagement with
the stop flap (1) as long as forces are supplied to the trigger
arm (7) and the trigger (3).

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 98/00084

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: F41A 19/00 // F41A 17/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: F41A, F41C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0189647 A1 (A/S KONGSBERG VÅPENFABRIKK), 6 August 1986 (06.08.86) --	1
A	US 5149898 A (M.G. CHESNUT ET AL), 22 Sept 1992 (22.09.92) -- -----	1

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Date of the actual completion of the international search

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Patent document cited in search report			Publication date	Patent family member(s)		Publication date
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US	5149898	A	22/09/92	EP	0428292 A	22/05/91
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