

Rifle, Dry Fire Training Device (RDF)



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Product Proposal

Rifle Dry-Fire Training Device

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1. Executive Summary

The Rifle Dry Fire (RDF) training device is a mechanical dry-fire training aid and for *demonstration purposes* has been built into a replica of a M16/M4 military, or modern sporting rifle, lower receiver. This training aid has application in the U.S. and foreign militaries, federal and local law enforcement agencies, and in the civilian Modern Sporting Rifle (MSR) markets.

The design of the RDF training device enables the end user to simulate making multiple “Dry-Fire” shots with an accurate general issue trigger *feel*. Once the pre-determined number of simulated trigger pulls has been exhausted, the trigger mimics an empty magazine, or failure, forcing the end user to negotiate a re-load scenario to continue. This promotes realistic training, and is a leap ahead of what is currently available. All fire controls are in the same place to promote correct weapon manipulation techniques and muscle memory. Six independent safety features have been built into the RDF training device that eliminates the chance of a negligent discharge, and makes this a unique design. The RDF was designed by Combat Veteran’s who demanded a product like this become available. We know there is a *need* for the modern warrior to be able to train on *dynamic* marksmanship skills in any place, at any time, while maintaining a high level of safety. William Marshall and Karl Hannan, have been granted (US Patent Serial No. US 14/313,497) by the U.S. Patent office, U.S. patent no. 9,057,577 for the RDF *method* and have apparatus claims pending under Application Number 14/634,103. The RDF has received favorable review for both method and apparatus from the European Patent office and has moved forward to the European national phase.

1.1. Patent Summary

Here is a summary of the RDF patent applications, as of 6/25/2015.

U.S. Patents

US 14/313,497: issued as US patent no. 9,057,577 on June 16, 2015.

<http://patft.uspto.gov/netacgi/nph->

Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=9057577.PN.&OS=PN/9057577&RS=PN/9057577

US 14/634,103: Apparatus patent pending

European Patent

PCT/US2014/045564: pending; received favorable search report and written opinion from the EPO as to all 18 claims; national phase entry by January 9, 2016

<https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2015006208&recNum=1&maxRec=&office=&prevFilter=&sortOption=&queryString=&tab=PCT+Biblio>

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1.2. RDF Pictures



Figure 1: Rifle Dry Fire Training Device, Right Side with Chamber Block



Figure 2: Rifle Dry Fire Training Device, Left Side

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Figure 3: Rifle Dry Fire Training Device, Right Side mounted to upper receiver

2. Overview

2.1. Introduction

The Rifle Dry-Fire training device (RDF) is a copy of a rifle, carbine, or sub-machinegun lower receiver. Its design requires the end user to develop, employ and maintain proper marksmanship fundamentals and weapon manipulation skills. The RDF training device accomplishes this by accurately simulating the mechanical operations of the host weapon system. For example, the trigger mechanism has to be reset after thirty pulls of the trigger. This feature forces the end user to reload the RDF training device as they would in live fire operations. Likewise, the safety, charging handle, and magazine well are operational, yet employ safety features to negate any possibility of negligent discharge. Our design philosophy is that the RDF training device can accurately simulate all mechanical operations of a live fire lower receiver but remain incapable of firing live ammunition. This allows RDF end users to conduct safe, *realistic* weapons manipulation and dynamic dry fire training without the risk of negligent discharge, high ammunition costs, or logistics associated with sustaining marksmanship skills. All the while using the same upper receiver they would use for live fire.

With safety being critical to dry fire training, the RDF training device has multiple safety features in its design. During the installation of the RDF training device onto an upper receiver the “live fire” bolt carrier group is removed and replaced by a red plastic chamber block. The chamber block does not allow the upper receiver’s ejection port cover to close and is readily identifiable by its bright color. This design feature allows the chamber block to be visible at all times. Finally, the extension tube is blocked, thereby prohibiting the normal operation of a “live fire” bolt carrier group. With a great deal of attention given to both mechanical operations and safety concerns, the RDF training device can support a wide range of training in the military, law enforcement, and civilian sporting rifle markets.

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2.2. Abbreviations and Definitions

BRM: Basic Rifle Marksmanship instruction is initial rifle training conducted in basic military or law enforcement training programs.

HMCPM: Hannan, Marshall, and Cote Precision Manufacturing, LLC

Negligent Discharge: is the event of a firearm discharging (firing) at a time not intended by the user.

RDF training device: Rifle Dry Fire training device

USSOCOM: United States Special Operations Command

2.3. Background

The design goals of the RDF training device are to meet critical training needs in a single, low cost unit for every individual that carries a modular self-loading military or civilian rifle. Specific training needs include: marksmanship fundamentals training, weapon manipulation-training, shoot then move or shoot on the move training, and team/platoon level training. The RDF training device solves all of these training issues in a simple device that is familiar to all individuals that own or operates a military or civilian sporting rifle.

Because we are Combat Veterans we are intimately familiar with military training concepts and procedures for the M16/M4 service rifle. We are also familiar with many of the constraints that affect marksmanship training in large organizations. Multiple members of our team were Marksmanship instructors in both, the Marine Corps, Army Rangers, and Special Forces. We saw a need and for that reason, we designed the RDF training device to be a low cost training solution that requires little to no logistical support. For example, a large portion of marksmanship training is conducted at the individual or team levels. This type of training is often times conducted in or around the barracks, outside with targets hanging on a wall, in rooms or buildings. The RDF training device is perfectly suited and specifically designed to support this level of training. However, it can just as easily support formal team and platoon level training events without the use of blank ammunition.

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2.4. Standard features include:

- A. Trigger unit** which provides a realistic pull weight and length and can be tuned to simulate a rack grade military weapon, or a 2-stage trigger pull.
- B. Trigger reset** which occurs after 30 pulls thereby reinforcing the correct weapons manipulation of load, unload and reload.
- C. Operational use of the charging handle** is maintained allowing for end users can install their own unique charging handle or can utilize the mil-spec unit provided.
- D. Utilization of the end users COMPLETE upper receiver with bolt carrier removed** thereby allowing continued familiarity with sights, lasers, lights, switches and support hand placement. Critical for promoting combat readiness.

2.5. Safety Features the RDF training device has several built in safety features:

- G.** Since the RDF training device is a separate system and NOT a modified weapon the chances of negligent discharge are removed completely. Many safety features nullify the modification of the RDF training device as a functional weapon component. The receiver of the RDF training device can be colored RED, BLUE or YELLOW to denote that it is a training device. With this simple feature, trainers and users alike can tell from a distance that a training tool is being employed and can therefore reduce the worry of negligent discharge.
- H. Modified magazine well.** The RDF training device has a modified magazine well which allows the introduction of standard mil-spec magazines while at the same time prohibiting the chambering of any ammunition which may have been inadvertently left in the magazine. Note that the magazine well could be removed entirely as per manufactures/customers discretion.
- I. The receiver extension tube** has also been modified so that externally it maintains all the characteristics of the host weapon so that the users butt stock and sling can be utilized, but prohibits the introduction of an actual recoil system, and does not allow for actuation of a bolt carrier group.
- J. The trigger Group** is of a propriety design and lacks a hammer required for the striking of a firing pin and the ignition of a round of ammunition.
- K. Trigger and hammer pin holes** required for a traditional fire control group and are non-existent.
- L. Bolt Carrier Safety block** cannot accept a standard bolt carrier, bolt, or firing pin.

3. Requirements

3.1. Actors & Use Cases

The RDF training device can and will be used by individuals and organizations with various mission requirements and levels of proficiency. The use of the RDF training device will increase user proficiency by the proven use of Dry-Fire reinforcement training. In addition, due to its many safety features the RDF training device virtually eliminates the possibility for negligent discharges.

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Potential users would include military and police recruits who would train with the system as an adjunct to Basic Rifle Marksmanship (BRM). The system allows the new user to continue with the execution of BRM without having to recharge the weapon for each shot, thereby allowing them to focus their efforts on proper sight picture and trigger manipulation.

This would be a dramatic mission-enhancing tool as users could utilize the RDF training device as part of their rehearsals for “actions on the objective” and then could quickly change back to their actual weapons with no fear of missing parts or an incorrectly installed fire control system. For individual users, lack of range time can be a huge training constraint. However, the RDF training device can be used in environments such as a safe training area in your backyard, or as austere as a tent in a forward deployed arena while completely reducing chances of a negligent discharge. Dry Fire is in use every day, in every branch of service.

This is a tool that would not be left in the armory to collect dust. As Veterans of multiple combat deployments in the War on Terror, We designed this tool to fit a specific need.

RDF Part Number: 06112013-000

4. Contact Information

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