

# The V-B Rifle Grenade Launcher and Rifle Grenade

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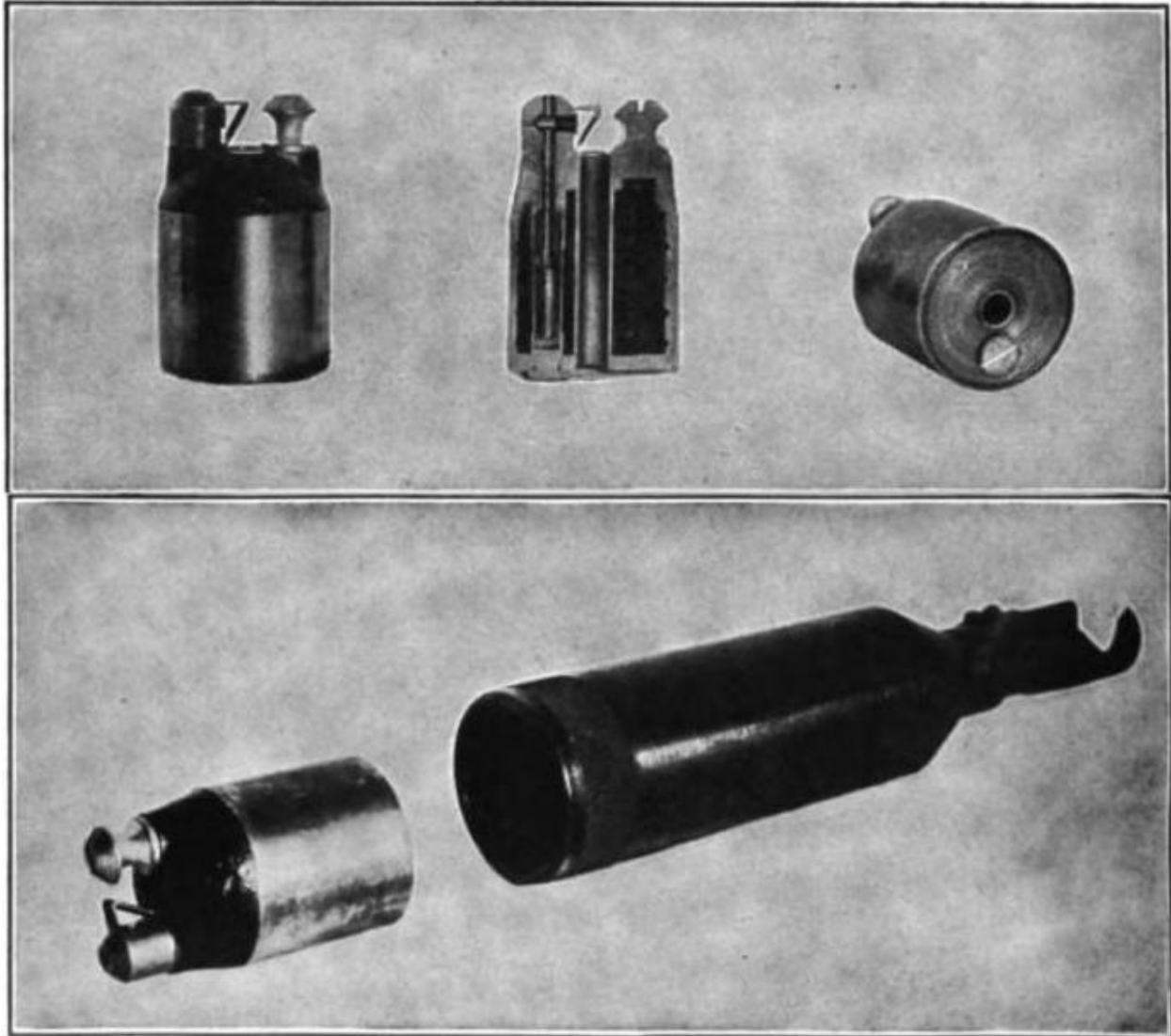
Although they were developed before World War 1, rifle grenades and grenade launchers did not come into their own until that conflict. They filled a niche for a high trajectory weapon that could engage enemy targets between the range of a hand-thrown grenade and a trench mortar. The demands of trench warfare accelerated their development and use and they became an important infantry weapon, both in offense and defense, during the First World War.



*US Doughboys in World War 1 with VB Launchers on their Springfield M1903 rifles.  
Left photo – National Archives. Right photo – US Army Heritage & Education Center*

The Viven-Bessières rifle grenade launcher and rifle grenade, named after its French inventors Jean Viven and Gustave Bessier, also known as "V-B grenade", and officially referred to as the "*Viven-Bessières shell*" in French Army instruction manuals, was an infantry weapon used by the French Army from 1916 until World War 2 (and French Gendarmerie until the 1990's) and the United States Army and Marines from July 1917 until after World War 1.

The French used the V-B grenade launcher and grenade with Lebel and Berthier rifles. In the US Army it was used with both the M-1903 rifle and the M-1917 rifles. The V-B grenade launcher consists of two elements, the discharger (grenade launcher) and the projectile (rifle grenade). The discharger, or launcher, is a "cup" type that is attached over the muzzle of the rifle. The cylindrical V-B grenade was inserted into the open end of the cup and allowed to slide down to where the launcher narrowed. Unlike some other rifle grenades, regular ammunition was used to launch the V-B grenade. When a bullet was fired it passed through a hole in the grenade but the gas from the cartridge propelled the grenade out of the launcher.



*V-B rifle grenade. Top shows side, bottom and cutaway views of the grenade, bottom shows the grenade and Mark IV grenade launcher. Striker tab, activated by the bullet's passage, can also be seen.*

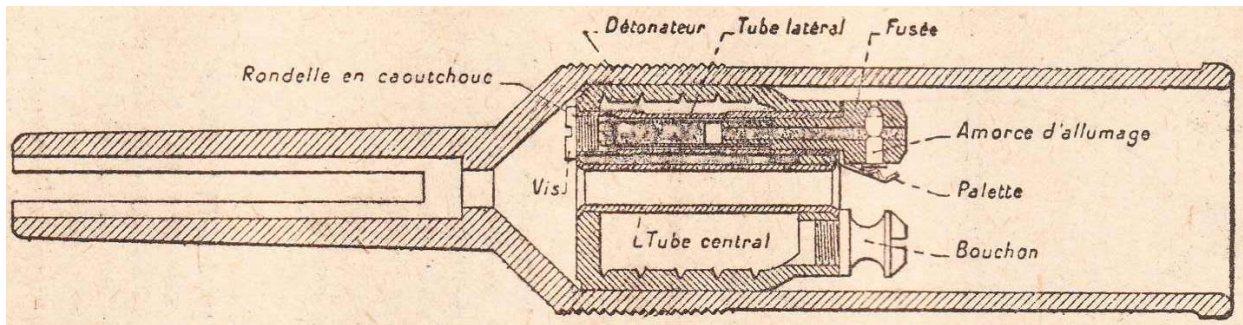
*Photo – US War Department*

The V-B launcher had both positive and negative aspects. Unlike other rifle grenades used by the United States during World War 1, such as the U.S. Babbit rod rifle grenade and the Mark I and Mark II chemical rod rifle grenades, a separate launcher was necessary. However, the V-B system could be used with standard ammunition and did not harm the rifle's bore, like the rod-type grenades did. A negative aspect of the V-B system was that the heavy recoil sometimes resulted in broken stocks. The regular firing method was to hold the rifle at a diagonal angle (towards the target) with the butt on the ground and raising or lowering the angle of the muzzle in order adjust the range.

The U.S. decided to adopt the French V-B launcher and grenade in early 1917. The Chief of Ordnance standardized it for use with the M-1903 and M-1917 on July 16 and production commenced. In the meantime, some U.S. units were equipped with Lebel's and Berthiers and gained experience with V-B launchers and grenades.

## The Launcher

The U.S. V-B launchers were essentially copies of the French launchers with minor dimensional changes to fit the U.S. rifles. The launcher has a diameter of 1.96 inches and weighs about 3.3 pounds. When not in use it is carried in a leather or canvas case. Most U.S.-made examples were manufactured by Westinghouse and stamped with an underlined W” in a circle.



*Diagram of a French V-B launcher and grenade from a French manual*

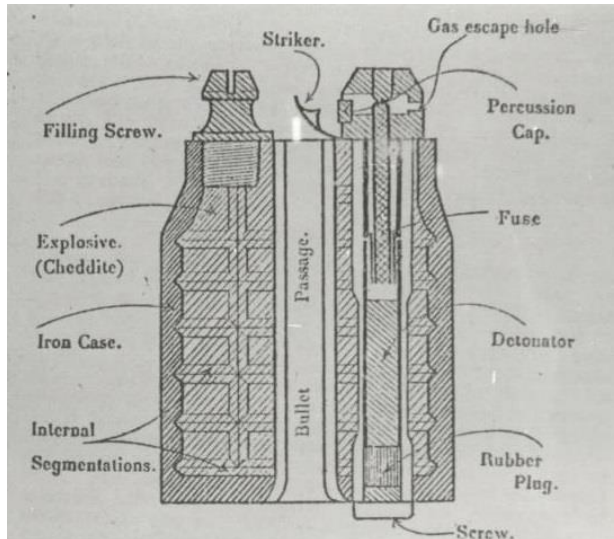
According to Bruce Canfield, U.S. Infantry Weapons of the First World War, there were five variants of the launcher that were used by the U.S.:

- Original French V-B launchers that were modified to fit on M-1903 and M-1917 rifles.
- Mark I V-B launcher for the M-1903 and M-1917 rifles. It appears that 50,000 were produced in France.
- Mark II V-B Launcher – not tested or issued.
- Mark III V-B Launcher for the M-1903 and M-1917 rifles. The rifle they were made for was stamped on the outside of the launcher body. The M-1917 launchers had a knurled band while the M-1903 launchers had a smooth cup. The rifle barrel was inserted into a straight slot and a metal shim was used to make a secure fit. The M-1903 and M-1917 shims were different lengths and marked with the designation of the rifle.
- Mark IV V-B Launcher for the M-1903 and M-1917 rifles superseded the Mark III although both were used. It differed from the Mark III primarily in that it had a spiral slot that gave a more secure fit to the rifle without the use of a shim, unlike the Mark III's straight slot and shim. Like the Mark III, launchers for the M-1917 rifle had a knurled band around the cup while the M-1903 launchers had a smooth body. The rifle designations were stamped on the launchers' bodies.

## The Grenades

The “V-B Rifle Grenade, Mark I” was similar to the original French variant but with small changes in dimensions, configuration and material. It was a high explosive fragmentation grenade that utilized a timed fuse. The grenade had two internal tubes. The central tube allows the passage of the bullet that launched the grenade. The other tube, offset to one side, contained the time fuse and detonator. The fragmentation grenades were about 2.5 inches long and 2 inches in diameter. Live grenades weighed 17 ounces. They had a range of about 93 yards when fired at an 80 degree angle and a range of 208 yards when fired at a 45 degree angle. The

grenade had a bursting radius of 70-75 yards from the point of burst. In the French army special firing racks were provided to grenadiers in order to simplify and speed range/angle of firing calculations. Since the range exceeded the bursting radius, the grenade was considered both an “offensive” and “defensive” weapon. The metal grenade bodies had a smooth outer surface and internal grooves to facilitate fragmentation.



The way it worked, the V-B grenade was placed into the cup of the grenade launcher with the fuse mechanism facing up and the rifle, butt on the ground, facing the enemy. A regular cartridge was fired and the bullet passed through the central tube of the grenade, hitting a steel striker on its way out. Gasses from the fired cartridge would propel the grenade out of the launcher. In the meantime, the striker would impact against a primer which set off the fuse. After the fuse is ignited, the grenade would explode in 8 seconds.

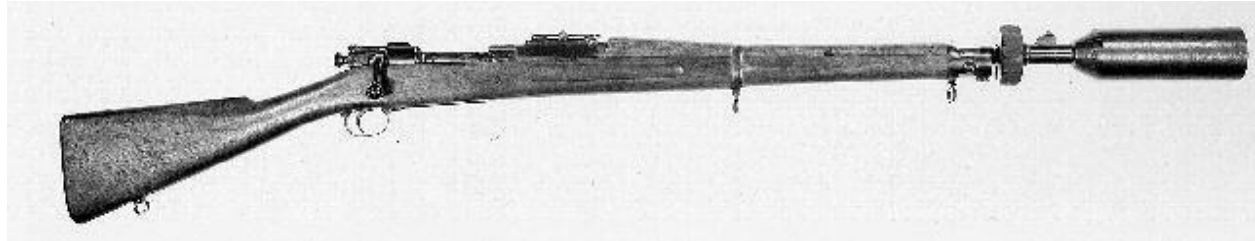
*Diagram of Interior of a V-B Mark I fragmentation grenade. Photo – US Army*

In addition to the V-B fragmentation grenades (painted gray) there were also dummy and practice grenades (painted red). The practice grenades were the same shape as the fragmentation grenade while the dummy grenade had an “hourglass” shaped body. V-B phosphorous, incendiary and message grenades were tested but never issued.

### **Use and Problems**

Initially, there were problems with the American-made V-B launchers and grenades. These were primarily due to lack of foresight on the part of American ordnance officers who had not given adequate thought to the differences between French 8x50mmR and American M1906 .30 caliber ammunition. Problems with the launcher were due to the higher pressures generated by the American .30-06 cartridge which resulted in significantly increased recoil and stresses. The American cartridge had a maximum pressure of 60,200psi while the French cartridge’s maximum pressure was 46,412psi. To relieve the pressure about half the V-B launchers had two vent holes drilled in the base of the launcher. A related problem impacted the grenade itself. In the rush to get the V-B launchers and grenades made and put into service insufficient thought was given to the differences in design between the French “Balle M am” 8mm, (.327 inch diameter) 198-grain boat-tailed cupronickel jacketed spitzer bullet and the American .30 caliber (.308 inch) 150-grain flat-based cupronickel jacketed spitzer bullet. A truncated testing regimen exacerbated the issue since it failed to reveal the problem. The U.S. bullet would split and break up as it passed through the central tube of the grenade, with the potential for catastrophic results. The Mark I grenade was redesigned to eliminate the problem but about 3,500,000 already completed V-B grenades had to be “salvaged.”

Contracts with eight companies for over 30 million improved Mark I V-B grenades were approved and by the end of October 1918 production had reached about 250,000 per day in preparation for the planned 1919 "Grand Offensive." However, the Germans surrendered and at the time of the Armistice there were 20,000,000 V-B grenades in the U.S. waiting for shipment to the Western Front.



*M-1903 with experimental V-B grenade launcher attached to muzzle. The launcher appears to be a modified first type Westinghouse launcher that has been altered to accept a large threaded ring that would more securely attach the launcher to the muzzle of the rifle, as well as add a weight to the rifle to help overcome excessive recoil from launching a grenade.*

*Photo – Springfield Armory*

While far from perfect, the V-B launcher and rifle grenade were possibly the best rifle grenade system of World War 1. Although there were some negative reports, especially with the earlier V-B launchers and grenades, on the whole the V-B launchers and grenades gave good service. They were often used with telling effect against German occupied trenches and machine gun emplacements.

The V-B launcher was standard issue in the U.S. army for a short time after the war but was regarded as more of a pyrotechnic discharger than a grenade launcher. They were declared surplus and large numbers were sold for scrap metal in the 1930's and 40's, although, according to Bruce Canfield, the U.S. Marines reportedly used them in the early days of World War 2. They remained in French service during World War 2 and the French Gendarmerie used them until the 1990's. Today, U.S. V-B grenade launchers for the M-1903 and M-1917 rifles in any condition are scarce and often very expensive. At a recent Rock Island Auction (December 1-3, 2017) a Remington M-1917 equipped with a Viven-Bessières Mark IV Rifle Grenade Launcher sold for \$4,025. Both rifle and launcher came from the Bruce Canfield collection. Inert V-B Mark I fragmentation grenades are more common, although many are missing all or part of the fuse mechanism.