

## Browning Automatic Rifle (BAR)

By Peter D Antill (CART Sealion Information Officer)



Author's Photo: An M1918 and an M1918A2 at the Infantry Weapons Collection, Warminster.

The Browning Automatic Rifle (BAR) was a family of weapons used by the United States and a large number of other countries during the 20th Century. The primary version was the M1918 and its variants, chambered for the .30-06 rifle cartridge and designed by John M Browning in 1917 as a replacement for the US Army's French-designed Chauchat and M1909 Benet-Mercie machineguns. Originally designed to be an automatic rifle, carried by a sling over the shoulder and fired from the hip – a concept called 'walking fire'. Over time however, the weapon gradually became to be used in a light machinegun role, especially when later variants came equipped with a bipod, although having a 20-round box was a major limitation. The M1918 is a selective fire, air-cooled, gas-operated automatic rifle, being cycled by propellant gases that are bled off through a vent in the barrel. The bolt is locked by a rising bolt lock and the gun fires from an open bolt. The bolt contains the extractor which is spring-powered while there is a fixed ejector in the trigger group. The weapon's barrel is screwed into the receiver and not easily detachable. The weapon feeds via a double-column 20-round magazine, although 40-round magazines were available when in the anti-aircraft role (up until 1927). It has a cylindrical flash suppressor fixed to the end of the barrel, a fixed wooden butt stock and closed-type iron sights, consisting of a forward post and rear leaf sight, adjustable to between 100 and 1,500 yards.

The United States entered the First World War with an assortment of foreign and domestically designed machineguns, due primarily to bureaucratic indecision and a lack of any sort of coherent doctrine as to how they were to be employed. With the declaration of war on Imperial Germany on 6 April 1917 the General Staff were told that to fight this machinegun dominated war, the US Army had a mere 670 M1909 Benet-Mercies, 282 M1904 Maxim and 158 M1895 Colt machineguns. It was eventually agreed to start a large-scale rearmament programme using domestic



designs but until they were ready, the United States would use whatever the UK and France had to offer. The weapons donated by the French were often second-rate, surplus or obsolescent and generally chambered in 8mm Lebel, complicating logistics and meaning that the infantry and the machine gunners were issued with different calibres.

John Browning with his BAR (M1918). (Source: Wikimedia Commons)

In early 1917, before the US had entered the war, Browning had travelled to Washington DC to demonstrate two automatic weapons. The first was a water-

cooled heavy machinegun and a shoulder-fired automatic rifle, then known as the Browning Machine Rifle or BMR. Both fired the .30-06 cartridge. On 27 February 1917, Browning conducted a live-fire exercise at a location outside Washington C known as 'Congress Heights', in front members of Congress, the Public, the Press and high-ranking military dignitaries. The gathered crowd was so impressed by the demonstration that he was immediately awarded a contract for the weapons, although the water-cooled machinegun underwent further testing. Additional tests were conducted by the US Army Ordnance Department in May 1917 when both weapons were accepted for service. To avoid confusion, the belt-fed, water-cooled machine gun was designated the Machine Gun, Caliber .30, M1917 while the automatic rifle was designated the Rifle, Automatic, Caliber .30, M1918. The Army placed an order for 12,000 BARs with Colt's Patent Firearms Manufacturing Company who had secured exclusive rights to manufacture the BAR under Browning's patents (Patent No. 1,293,022). However, Colt was already at full capacity producing various arms, including the Vickers Machinegun for the British Army, and requested a delay so they could expand their production facilities, with a new plant at Meriden, Connecticut. Due to the urgent nature of the requirement, the request was denied and Winchester Repeating Arms Company (WRAC) was designated the prime contractor. Winchester gave invaluable assistance in refining the final design for the BAR and correcting the drawings for mass production – one example being the change from upward ejection to right-hand side ejection.



2nd Lt Val A. Browning with an M1918 BAR. (Source: Wikimedia Commons)

Since work on the gun did not begin until February 1918, the schedule at Winchester was so hurried that the first 1,800 guns were delivered off-spec. Many components did not interchange between guns and so production was temporarily halted to upgrade the manufacturing procedures to bring the weapon up to spec. The original contract was for 25,000 guns and production was in full swing by June 1918 where they delivered 4,000 units, with 9,000 being produced in July. As it happens, both Colt and the Marlin-Rockwell Corporation began production fairly soon afterwards and while

Marlin-Rockwell was fully involved with supplying the contract to make rifles for the Belgian Government, it acquired the Mayo Radiator Company's factory to produce BARs. The first unit was delivered on 11 June and at peak output it was producing 200 weapons a day. Colt only managed to produce around 9,000 weapons by the

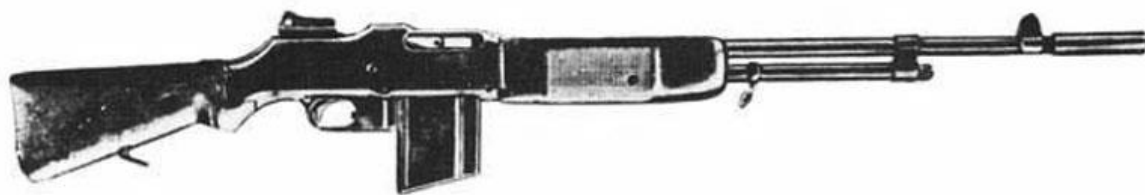
time of the armistice due to the demands of other contracts, but the three companies had had a daily output of 706 weapons and by the end of the war had produced about 52,000 weapons. Between 1918 and 1919, some 102,125 BARs were produced by Colt (16,000), Marlin-Rockwell (39,002) and Winchester (47,123). The first weapons arrived in France in July 1918 and the first unit to receive them was the 79th Infantry Division, seeing action for the first time on 13 September 1918. It was personally demonstrated by 2nd Lt Val Allen Browning, the inventor's son. It was used extensively during the Meuse-Argonne Offensive and despite being introduced very late in the war had a significant impact on the other Allies, with France ordering 15,000 to replace their Chauchat light machineguns.

During the inter-war period, a number of variants appeared. The first was the M1922 light machinegun, adopted by the US Cavalry in 1922. The main differences were the use of a heavy, ribbed barrel, an adjustable spiked bipod and a rear stock-mounted monopod, a new rear endplate fixed to the stock retaining sleeve and in 1926, the sights were changed to accommodate the new M1 .30-06 round, with a heavier 172-grain head, then coming into service for machineguns. In 1937, the M1918A1 was introduced into service. This variant included a lightweight spiked bipod attached to the gas cylinder that also had a leg-height adjustment feature and a new hinged butt plate. In late 1938, work started on another variant, this time the M1918A2, which was accepted into service in 1940. The main difference was the removal of the semi-automatic fire mode and the use of a rate of fire reducing buffer mechanism, activated by engaging the 'F' position on the selector toggle. In addition, a new bipod, with skids as feet, was added to the end of the barrel attached to the flash suppressor (which blocked the flash from the vision of the shooter), a magazine guide was added to the front of the trigger guard, the handguard was shortened, a heat shield was added to help the weapon cool and a small monopod was hinged to and could be folded into, the butt. Added to this, the rear leaf sight's scales were changed to accommodate the new M2 ball ammunition with a lighter flat-based bullet of 150-grains and had gradations ranging from 100 to 1,600 yards with a notch battle sight enabling fire up to 300 yards. In 1942, a new fibreglass butt stock replaced the wooden one and later still, a barrel-mounted carrying handle was added. Initially, M1918A2s were produced by converting older models but later on during the Second World War, production of newly-built M1918A2s was undertaken at the New England Small Arms Corporation and the International Business Machines Corporation (IBM) with a total of 168,000 new weapons being produced. Production was again re-launched during the Korean War with the Royal McBee Typewriter Corporation producing another 61,000 units – many of these had a new slotted flash suppressor fitted. The new M1918A2 was broadly similar to the older versions but could only be fired on full automatic but with a variable rate of fire. The Fire Selector Lever could be set to:

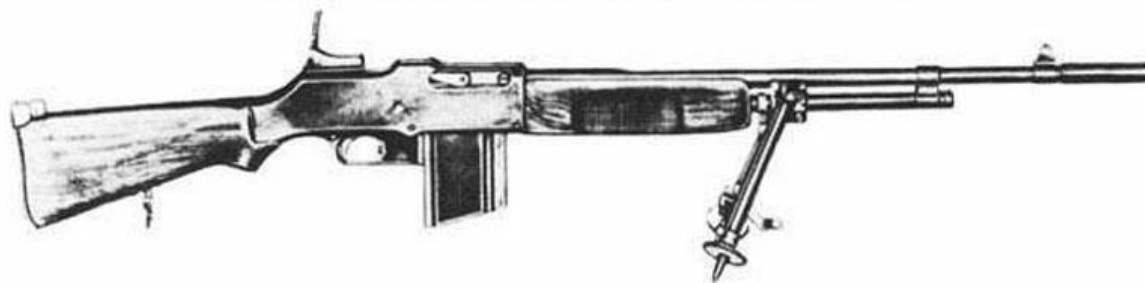
- 'S' – Safe;
- 'F' – full automatic fire but at the mechanically reduced rate – a cyclic rate (how quickly the weapon fires ammunition) of approximately 350 rounds per minute (rpm);
- 'A' – full automatic fire at the normal cyclical rate, approximately 550rpm.

The BAR found a ready export market. In 1919, Colt produced a commercial variant known as the Automatic Machine Rifle Model 1919 which had the return mechanism

installed in the butt rather than the gas tube and lacked a flash suppressor. The Model 1924 was offered for a short time and featured a pistol grip and a redesigned handguard. The Model 1925 (R75) achieved the greatest success and was based on the Model 1924 but used a heavy, finned barrel, a lightweight bipod and had dustcovers on both the magazine well and ejection port. It was produced in a variety of calibres including .30-06 Springfield, 7.65x53mm Belgian Mauser, 7x57mm Mauser, 6.5x55mm Swedish, 7.92x57mm Mauser and .303 (7.7x56mmR) British, the European calibres produced by Fabrique Nationale (FN), who also produced a version for the Belgian Army after the Second World War, the BAR Type D light machinegun. Other minor variants of the Model 1925 (R75) were the R75A light machinegun that featured a quick-change barrel, produced for the Dutch Army and the Monitor Automatic Rifle (R80) sold to the FBI in 1931 which featured a lightweight receiver and a short, lightweight 458mm (18in) barrel fitted with a Cutts compensator.



**M1918 Cal. 30.06 Browning Automatic Rifle (BAR)**



**M1918A1 Browning Automatic Rifle**



**M1918A2 Browning Automatic Rifle**

Main versions of the BAR. (Source: <https://images.app.goo.gl/2FY33Z9DjJ3EQgAHA>)

At the start of the Second World War, the US Army belatedly realised they had no portable squad light machinegun. The BAR ended up being used in that role and its success was limited due to the non-removable barrel that overheated quickly and the small magazine capacity in comparison to other genuine light machineguns such as the British Bren Gun, Soviet DP-27 and the Japanese Type 96. In addition, the A2's

rate of fire reduction mechanism proved difficult to clean and was susceptible to corrosion, especially in damp conditions. Over time and especially in the Pacific Theatre, the BAR gradually reverted to its original role – that of an automatic rifle. It was often employed at the front or rear of a patrol in a point defence position, where its fire could help in breaking contact with the enemy in the event of an ambush. In fact, many USMC examples were adapted in the field to be able to fire semi-automatically, as the Corps preferred that method of firing in certain tactical situations. Another weakness was found when ordnance personnel began to receive BARs with inoperable or malfunctioning recoil buffer mechanisms. This was traced to the soldiers' habit of cleaning weapons standing vertically on the butt, allowing cleaning fluid and gunshot residue to collect in the mechanism. On top of that, unlike the M1 Garand, the gas-cylinder was never changed to stainless steel, so quite often rusted solid if it wasn't cleaned on a very regular basis especially after using the .30-06 M2 ammunition, which up until the early 1950s, featured corrosive primers, in a humid environment.



A Swedish Kg M1921 BAR variant. (Source: Wikimedia Commons)

The members of each squad would be trained at a basic level on the BAR in the event the designated user was killed or otherwise incapacitated. Some Army squads, in trying to overcome its limited continuous fire capability, used two BAR-equipped fire teams per squad. One fire team would provide fire until the magazine was empty while the other fire team was manoeuvring / reloading, and then visa-versa. This was an early form of the tactics known as 'fire-and-movement'. Normally, an Army squad would have a twelve men organised into two fire teams, one of which would have a BAR, while a Marine squad would have thirteen men in three fire teams, each having a BAR. An Army platoon would thus have three (possibly four) BARs against a Marine platoon with nine BARs. Despite its shortcomings, if it was cleaned and maintained properly, it was a rugged and reliable weapon providing decent firepower at the squad level. During the war, the BAR saw extensive service in most branches of the US military as well as seeing service in the Korean and Vietnam Wars. Some units of the Army National Guard held onto the BAR until the 1970s and recipients of US foreign aid used the BAR well into the 1990s.

One of the more famous users of the BAR, Clyde Barrow, used a shortened version of the weapon, stolen from a National Guard armoury and the six lawmen who killed both him and Bonnie Parker on 23 May 1934, used the FBI variant of the BAR, the Monitor. International users of the BAR included Austria, Belgium, Bolivia, Brazil, Chile, Colombia, Israel, Germany (the Germans captured a number of Polish-made Browning wz. 1928 variants during the war and used them under the designation IMG 28(p)), Poland, South Korea, South Vietnam, Sweden, Turkey and the UK. The

UK imported a significant number and issued them to the Home Guard and Auxiliary Units – indeed, by the end of 1942, they had been issued somewhere in the region of 23,630 BARs. The rate of fire for British troops could have been expected to be in the region of 100 – 110 rpm allowing for magazine changes.



Men of the War Office Home Guard unit parade on the roof of their building, 15 October 1941. (Source: Photo H14697 from the IWM Collection, via Wikimedia Commons)

#### Specifications (M1918A2):

Calibre: .30-06 (7.62x63mm)  
Length: 1,215mm (47.8in)  
Length of Barrel: 610mm (24in)  
Muzzle Velocity: 860mps (2,822fps)  
Rate of Fire: Approximately 350 or 550rpm  
Feed: 20-round box magazine

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