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Chapter 1 : The Social History of the Machine Gun by John Ellis - Paperback | eBay

"Arguing that the history of technology is inseparable from social history in general, Mr. Ellis weighs the machine gun's impact on weaponry, warfare, and society." (New York Times).

Unlocking and removing the spent case from the chamber and ejecting it out of the weapon as bolt is moving rearward Loading the next round into the firing chamber. Usually the recoil spring also known as main spring tension pushes bolt back into battery and a cam strips the new round from a feeding device, belt or box. Cycle is repeated as long as the trigger is activated by operator. Releasing the trigger resets the trigger mechanism by engaging a sear so the weapon stops firing with bolt carrier fully at the rear. The operation is basically the same for all locked breech automatic firearms, regardless of the means of activating these mechanisms. There are also multi-chambered formats, such as revolver cannon , and some automatic weapons, including many submachine guns , the Schwarzlose machine gun etc. Design[edit] Most modern machine guns use gas-operated reloading , which taps off some of the propellant gas from the fired cartridge, using its mechanical pressure to unlock the bolt and cycle the action. The Russian PK machine gun is an example. Another efficient and widely used format is the recoil actuated type, which uses the guns recoil energy for the same purpose. Machine guns such as the M2 Browning and MG42 , are of this second kind. A cam, lever or actuator absorbs part of the energy of the recoil to operate the gun mechanism. An externally actuated weapon uses an external power source, such as an electric motor or even a hand crank to move its mechanism through the firing sequence. Most modern weapons of this type are called Gatling guns or, in reference to their driving mechanism, chain guns. Gatling guns have several barrels each with an associated action on a rotating carousel and a system of cams that load, cock, and fire each mechanism progressively as it rotates through the sequence; essentially each barrel is a separate bolt-action rifle using a common feed source. The continuous nature of the rotary action allows for an incredibly high cyclic rate of fire, often several thousand rounds per minute. Rotary guns are less prone to jamming than a gun operated by gas or recoil, as the external power source will eject misfired rounds with no further trouble, but this is not possible in the rare cases of self-powered rotary guns. Rotary guns are generally used with large rounds, 20mm in diameter or more, offering benefits of reliability and firepower, though the weight and size of the power source and driving mechanism makes them impractical for use outside of a vehicle or aircraft mount. Revolver cannons , such as the Mauser MK , were developed in World War II by the Germans to provide high-caliber cannons with a reasonable rate of fire and reliability. A recoil-operated carriage holds a revolving chamber with typically five chambers. As each round is fired, electrically, the carriage moves back rotating the chamber which also ejects the spent case, indexes the next live round to be fired with the barrel and loads the next round into the chamber. The action is very similar to that of the revolver pistols common in the 19th and 20th centuries, giving this type of weapon its name. Firing a machine gun for prolonged periods produces large amounts of heat. In a worst-case scenario this may cause a cartridge to overheat and detonate even when the trigger is not pulled, potentially leading to damage or causing the gun to cycle its action and keep firing until it has exhausted its ammunition supply or jammed this is known as cooking off , distinct from runaway fire where the sear fails to disengage when the trigger is released. To prevent this, some kind of cooling system is required. Early machine guns were often water-cooled ; while very effective, the water also added considerable weight to an already bulky design. Air-cooled machine guns often feature quick-change barrels often carried by a crew member , passive cooling fins, or in some designs forced-air cooling, such as that employed by the Lewis Gun. Advances in metallurgy and use of special composites in barrel liners allow for greater heat absorption and dissipation during firing. The higher the rate of fire, the more often barrels must be changed and allowed to cool. To minimize this, most air-cooled guns are fired only in short bursts or at a reduced rate of fire. Some designs – such as the many variants of the MG42 – are capable of rates of fire in excess of 1, rounds per minute. In weapons where the round seats and fires at the same time, mechanical

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timing is essential for operator safety, to prevent the round from firing before it is seated properly. Machine guns are controlled by one or more mechanical sears. When a sear is in place, it effectively stops the bolt at some point in its range of motion. Some sears stop the bolt when it is locked to the rear. Other sears stop the firing pin from going forward after the round is locked into the chamber. Almost all machine guns have a "safety" sear ,[citation needed] which simply keeps the trigger from engaging. From rear to front: The first successful machine-gun designs were developed in the mid-19th century. The key characteristic of modern machine guns, their relatively high rate of fire and more importantly mechanical loading, [4] first appeared in the Model Gatling gun , which was adopted by the United States Navy. Gatling also experimented with electric-motor-powered models; this externally powered machine reloading has seen use in modern weapons as well. Early rapid-firing weapons[edit] Detail of an 8-chambered matchlock revolver Germany c. One is a shoulder-gun-length weapon made in Nuremberg, Germany, circa 1500. Another is a revolving arquebus , produced by Hans Stopler of Nuremberg in 1550. Perhaps the earliest examples of predecessors to the modern machine gun are to be found in China. This was a repeating cannon fed by a hopper which fired its charges sequentially. This weapon was also hopper-fed and never went into mass production. Another early revolving gun was created by James Puckle , a London lawyer, who patented what he called "The Puckle Gun " on May 15, 1718. It was a design for a manually operated 1. According to Puckle, it was able to fire round bullets at Christians and square bullets at Turks. In 1792, Philadelphia gunsmith Joseph Belton offered the Continental Congress a "new improved gun" , which was capable of firing up to twenty shots in five seconds; unlike older repeaters using complex lever-action mechanisms, it used a simpler system of superposed loads , and was loaded with a single large paper cartridge. Volley guns such as the Mitrailleuse and double barreled pistols relied on duplicating all parts of the gun, though the Nock gun used the otherwise-undesirable "chain fire" phenomenon where multiple chambers are ignited at once to propagate a spark from a single flintlock mechanism to multiple barrels. Pepperbox pistols also did away with needing multiple hammers but used multiple manually operated barrels. Revolvers further reduced this to only needing a pre-prepared cylinder and linked advancing the cylinder to cocking the hammer. However, these were still manually operated. A detachment of French infantry with 2 Saint-Etienne Model machine guns c. 1860. This weapon used multiple barrels arranged side by side, fed by a revolving cylinder that was in turn fed by hoppers, similar to the system used by Nichols. The gun could be fired by percussion or electricity, according to the author. In his patent, Bessemer describes a hydropneumatic blowback-operated, fully automatic cannon. Part of the patent also refers to a steam-operated piston to be used with firearms but the bulk of the patent is spent detailing the former system. This weapon was a cannon that fed from a type of open-ended tubular magazine, only using rollers and an endless chain in place of springs. The weapon featured mechanized loading using a hand crank linked to a hopper above the weapon. The weapon featured a single barrel and fired through the turning of the same crank; it operated using paper cartridges fitted with percussion caps and inserted into metal tubes which acted as chambers; it was therefore functionally similar to a revolver. The weapon was demonstrated to President Lincoln in 1862. The Union Army eventually purchased a total of 54 of the weapons. However, due to antiquated views of the Ordnance Department the weapons, like its more famous counterpart the Gatling Gun, saw only limited use. The Gatling gun , patented in 1862 by Richard Jordan Gatling , was the first to offer controlled, sequential fire with mechanical loading. It first saw very limited action in the American Civil War ; it was subsequently improved and used in the Franco-Prussian war and North-West Rebellion. Many were sold to other armies in the late 19th century and continued to be used into the early 20th century, until they were gradually supplanted by Maxim guns. Early multi-barrel guns were approximately the size and weight of contemporary artillery pieces, and were often perceived as a replacement for cannon firing grapeshot or canister shot. Friberg of the Swedish army patented a fully automatic recoil-operated firearm action and may have produced firing prototypes of a derived design around 1860. The weapon was made up of four barrels placed side by side that replaced the manual loading of the French mitrailleuse with a mechanical loading system featuring a hopper containing 41 cartridges at the breech of each barrel. Although it was used effectively at times, mechanical difficulties hindered its operation

and it was ultimately abandoned shortly after the war ended. He is operating an MG 08 , wearing a Stahlhelm and cuirass to protect him from shell fragments, and protected by rows of barbed wire and sandbags. The first practical self-powered machine gun was invented in by Sir Hiram Maxim. The Maxim machine gun used the recoil power of the previously fired bullet to reload rather than being hand-powered, enabling a much higher rate of fire than was possible using earlier designs such as the Nordenfolt and Gatling weapons. Maxim also introduced the use of water cooling, via a water jacket around the barrel, to reduce overheating. The design required fewer crew and was lighter and more usable than the Nordenfolt and Gatling guns. First World War combat experience demonstrated the military importance of the machine gun. The United States Army issued four machine guns per regiment in , but that allowance increased to machine guns per regiment by . The crew are wearing gas masks. Heavy guns based on the Maxim such as the Vickers machine gun were joined by many other machine weapons, which mostly had their start in the early 20th century such as the Hotchkiss machine gun. The biggest single cause of casualties in World War I was actually artillery, but combined with wire entanglements , machine guns earned a fearsome reputation. Another fundamental development occurring before and during the war was the incorporation by gun designers of machine gun auto-loading mechanisms into handguns, giving rise to semi-automatic pistols such as the Borchardt s , automatic machine pistols and later submachine guns such as the Beretta . Machine guns were mounted in aircraft for the first time in World War I. Immediately this raised a problem. The most effective position for guns in a single-seater fighter was clearly, for the purpose of aiming, directly in front of the pilot; but this placement would obviously result in bullets striking the moving propeller. By mid , the introduction of a reliable gun synchronizer by the Imperial German Flying Corps made it possible to fire a closed-bolt machine gun forward through a spinning propeller by timing the firing of the gun to miss the blades. The Allies had no equivalent system until and their aircraft suffered badly as a result, a period known as the Fokker Scourge , after the Fokker Eindecker , the first German plane to incorporate the new technology. Interwar era and World War II[edit] As better materials became available following the First World War, light machine guns became more readily portable; designs such as the Bren light machine gun replaced bulky predecessors like the Lewis gun in the squad support weapon role, while the modern division between medium machine guns like the M Browning machine gun and heavy machine guns like the Browning M2 became clearer. New designs largely abandoned water jacket cooling systems as both undesirable, due to a greater emphasis on mobile tactics and unnecessary, thanks to the alternative and superior technique of preventing overheating by swapping barrels. MG 42 with retracted bipod The interwar years also produced the first widely used and successful general-purpose machine gun , the German MG . While this machine gun was equally able in the light and medium roles, it proved difficult to manufacture in quantity, and experts on industrial metalworking were called in to redesign the weapon for modern tooling, creating the MG . Submachine guns evolved during the war, going from complex and finely made weapons like the Thompson submachine gun to weapons designed for mass-production and easy replacement like the Sten gun. Experience in close-range city combat led to the German military desiring a weapon representing a compromise between the high fire volume of the SMG and the accuracy of a full-size rifle; after a false start with the FG 42 , this led to the development of the MP 44 select-fire assault rifle, the first weapon to be called such. Cold War[edit] A U. Experience with the MG42 led to the US issuing a requirement to replace the aging Browning Automatic Rifle with a similar weapon, which would also replace the M; simply using the MG42 itself was not possible, as the design brief required a weapon which could be fired from the hip or shoulder like the BAR. The resulting design, the M60 machine gun , was issued to troops during the Vietnam War. Ground mount This M60 machine gun is part of an XM2 armament subsystem; it is aimed and fired from the aircraft rather than directly The most common interface on machine guns is a pistol grip and trigger. On earlier manual machine guns, the most common type was a hand crank.

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Chapter 2 : The Social History of the Machine Gun : John Ellis :

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Illustration of the Maxim Gun in Brockhaus and Efron Encyclopedic Dictionary The mechanism of the Maxim gun employed one of the earliest recoil-operated firing systems in history. The idea is that the energy from recoil acting on the breech block is used to eject each spent cartridge and insert the next one, instead of a hand-operated mechanism. This made it vastly more efficient and less labor-intensive than previous rapid-firing guns, such as the Mitralleuse , Gatling , Gardner , or Nordenfelt , that relied on actual mechanical cranking. The Maxim gun design was provided with water cooling , giving it the ability to maintain its rate of fire for far longer than air-cooled guns. The disadvantage of this was that it made the gun less flexible in attack than the lighter air-cooled weapons, being heavier and more complex, and requiring a supply of water. Trials demonstrated that the Maxim could fire rounds per minute. A lone soldier could fire the weapon, but it was usually operated by a team of men, usually 4 to 6. Apart from the gunner, other crew were needed to speed reload, spot targets, and carry and ready ammunition and water. Several men were needed to move or mount the heavy weapon. A blue plaque on the Factory where Maxim invented and produced the gun is to be found in Hatton Garden at the junction with Clerkenwell Road in London. More a publicity stunt than a serious military contribution, in view of the main financier of the expedition, William Mackinnon , "merely exhibiting" the gun was likely to "prove a great peace-preserver". The same prototype was brought back to central Africa by Frederick Lugard , where it played an instrumental role in the establishment of a British protectorate over present-day Uganda then Buganda , which is a strong testament to the sturdiness and reliability of the weapon and its prototype. This was a civilian volunteer defence unit on the then-British island. During the Battle of the Shangani , soldiers fought off 5, warriors with just five Maxim guns. It played an important role in the swift European colonization of Africa in the late 19th century. The extreme lethality was employed to devastating effect against obsolete charging tactics, when native opponents could be lured into pitched battles in open terrain. Whatever happens, we have got The Maxim gun, and they have not. Modern historical accounts suggest that, while it was effective in pitched battles, as in the Matabele war or the Battle of Omdurman , its significance owed much to its psychological impact. A larger-calibre version of the Maxim, firing a one-pound shell, was built by Maxim-Nordenfeldt. Soldiers generally held a great mistrust of machine guns due to their tendency to jam. In the version of his book *Small Wars*, Charles Callwell says of machine guns: In October that year, he placed an order of rifle-calibre Maxims [11] using the same. Wolseley had previously led military excursions in Africa the Ashanti war and the Gordon Relief Expedition in 1885 and had a reputation for being a strong subscriber to military innovation and reform, which he demonstrated in Africa. There he used machine guns, explored other unconventional ideas, and founded an Egyptian camel corps. Russo-Japanese War[edit] In , the Imperial Japanese Army purchased a number of Maxims but later decided to standardize on the Hotchkiss machine gun. The Imperial Russian Army likewise purchased 58 Maxim machine guns in and contracted with Vickers in to manufacture the design in Russia, although manufacturing did not start until The British Vickers machine gun was an improved and redesigned Maxim, introduced into the British Army in and remaining in service until Production took place at Erith in Kent, and some models were fitted to early biplanes also fabricated there. It also saw use during the Russian Civil War , which followed the Revolution in A picture of the period depicts a Maxim gun mounted on a tachanka , a horse-drawn carriage, along with the gunner, firing backwards at a pursuing White Army regiment. Anarchists attribute this mobile setup to Nestor Makhno. Model and Model Maxims were used for testing, which lasted for years but not continuously. The gun was finally adopted in as the Maxim Machine Gun, Caliber. By the time Colt began production in which was also the last year orders were placed for the guns , a total of 90 Ms were made by Vickers. Colt made their machine guns for the new. A total of M Maxims were manufactured.

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M Maxims were issued to infantry companies and cavalry. Each company had four guns with associated tripods, ammunition, and 20 mules to transport the heavy guns. During World War I, it remained in the U.

Chapter 3 : THE GUN | THE GUN.

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Chapter 4 : Maxim gun - Wikipedia

The social results of the rise of the machine gun (as a subset to the spread of war itself) are staggering, and affect gun people and non-gun people; therefore they are worth thinking about, as we really do all live in the same world.

Chapter 5 : The Social History of the Machine Gun by John Ellis

The social history of the machine gun, by John Ellis was a good book. It started with the first guns that inspired the machine gun, such as the organ gun, and went all the way to one of the more amazing modern guns, the Vulcan.

Chapter 6 : The Social History of the Machine Gun

"The Social History of the Machine Gun PDF Summary" In , just as the American Civil War got under way, the world had the unfortunate privilege to experience for the first time the monstrosity on this photograph.

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Chapter 8 : THE SOCIAL HISTORY OF THE MACHINE GUN

Bring out the big Guns - The Browning M Cal and MG Machine Guns.

Chapter 9 : ISBN - The Social History of the Machine Gun Direct Textbook

The rest of the book deals with such The Social History - of the Machine Gun by John Ellis rial to the Machine Gun Corps at Hyde.