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DEGTYAREV (DT) 7-62mm TANK MACHINE GUN

A. Blagonravov, et al

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DEPARTMENT OF THE ARMY  
U.S. ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER  
220 SEVENTH STREET NE.  
CHARLOTTESVILLE, VIRGINIA 22901

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AUTHOR: A. Blagonravov

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ABSTRACT: The 7.62-mm tank-mounted Degtyarev machine gun (DT) was first used in the 1920's on Red Army tanks. Invented by V. A. Degtyarev, it was later modified by his collaborator, Soviet designer G. S. Shpagin, to accommodate a ball mounting for tank use. Its weight without magazine is 7.5 kg; magazine capacity is 63 cartridges; its rate of fire is 500-600 rounds per minute; and its muzzle velocity is 840 m/sec.



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Historical Series \* TM /Tekhnika Molodezhi/ -- DT

edited by Hero of Socialist Labor, Academician A. Blagonravov

Hero of Socialist Labor, Honored Inventor of the RSFSR,  
S. Simonov

Hero of the Soviet Union, Colonel-General I. Chistyakov, and  
Collective Consultant -- the Central Museum of the USSR Armed  
Forces

A tank is a starkly offensive weapon equipped with everything without which it could not succeed in storming fortified enemy positions, in raids in the enemy rear areas, and in battle with enemy weapons and manpower. Strong armor protects the crew and the most vital units, and a reliable engine and tread drive give the machine excellent maneuverable qualities, but essentially the main aim of engineers in the most diverse specialties is to equip the tank with the most effective artillery and gun weaponry. Without it the machine would be converted into a strong mobile fortress, capable of surviving in the hottest parts of an engagement, but lacking the possibility of affecting its outcome in any way. Born in the flames of World War One, the tank emerged on the battlefield of course not equipped with large-caliber, long-barrel weapons. They appeared on the armored machines much later. At first the tank was equipped with 7.62-mm machine guns and small-caliber cannon.

It would seem that it would be quite simple to equip the multi-ton bulky vehicle with several machine guns. In fact, the ordinary "Maxim" began to show up on the tank and it justified its function as a mobile firing platform!

However, the tank was designed in layout very rationally, in spite of its impressive bulk. Its internal space is crammed to the limit with vital assemblies and units, and even if the goal of equipping a small fast-moving tank was assigned, perhaps no place could be found for the "Maxim" with its massive barrel cooling jacket, bulky cartridge cases, and long belts. That is why the assignment to develop a tank machine gun for the Red Army was given



7.62-mm tank machine gun  
DEGTYAREVA (DT)



Caliber .....	7.62 mm
Length .....	970 mm
Weight without magazine ..	7.5 kg
Weight of magazine without cartridges .....	1.73 kg
Magazine capacity .....	65 cartridges
Rate of fire	500-600 rounds per min
Muzzle velocity .....	840 m/sec



to Vasiliiy Alekseyevich Degtyarev, who built a successful prototype of a light machine gun. It is precisely the DP that became the main small arms of Soviet tank forces of that time.

Several years earlier an experimental prototype of the DP passed a severe test in test firings.

The proving-ground testing of the weapon amounted not only to simply firing a certain number of rounds: the toughness of the machine gun, its ability to maintain its combat and functional properties after many thousands of rounds fired were tested on the proving ground. The model also underwent so-called forced-operation testing. The barrel had to withstand hundreds of rounds without cooling, and the mechanisms had to function at high rates without lubrication. 2646 rounds were fired from the Degtyarev machine gun without any lubrication of the breech chamber and the breech block carrier.

In the tests, the weapon was loaded with cartridges whose shells had been marked with saw cuts and a check was made to see how all parts of the breech block fitted together: this was evaluated by the penetration of powder gases from without. Firing was also carried out with strengthened cartridges, whose charge built up pressures to 3200 atm in the barrel. To simulate possible conditions of machine gun use, it was placed in "dust cases" lined with fur; all vital weapon components were contaminated, and firing was again resumed. The test was assumed to have been passed if the automatic weapon worked reliably.

Of course, a test for close fire pattern and scattering was performed at the proving ground. And in this the Degtyarev machine gun gave excellent results.

By modifying the machine gun and adapting it to specific conditions, weapons specialists retained unchanged the most important components of the DP. Principally, the buttstock was remodeled, along with the weapon locking parts for firing, the magazine, and the sights. The main difficulty in the work done by scientist and comrade-in-arms of Degtyarev, outstanding Soviet designer Georgiy Semenovitch Shpagin, was devising a ball mounting: with it the weapon was secured to the tank.

Several years earlier Shpagin succeeded in designing a paired installation of two Fedorov machine guns, also intended for tank armament. The mechanism must ensure free movement of the weapon in the horizontal and vertical planes, rapid sighting on the target, and reliable locking in any position.

The mounting for the "Degtyarev" was a ball recess in the tank armor and a spherical boss restraining the machine gun itself. The installation proved to be compact and trouble-free. The massive parts of the ball mounting successfully protected the weapon from hostile fire and shrapnel in battle.

To reduce the size of the machine gun, Shpagin equipped the weapon with a sliding metal buttstock. Instead of the usual sights, a dioptric sight with adjustment in the horizontal and vertical planes was mounted on the machine gun.

In 1929 the new prototype arrived for use in the Red Army under the designation 7.62-mm tank machine gun, Degtyarev (DT).

Along with Soviet tank forces, the DT honorably passed its baptism by fire. It participated in engagements at the Chinese Eastern Railroad, was at Khalkin-Gol' and Lake Khasan, at the Karelian Isthmus, and in the battles near Stalingrad and the Kursk Arc.

In 1944 the machine gun was modernized. The recoil spring was transferred to the trigger guard grip in order not to heat up in the high barrel temperatures. Changes in the design of the machine gun made it possible to disassemble the weapon without removing from the tank ball mounting. Several parts began to be fabricated by stamping.

In 1945 the industry converted to producing the next modernized model -- the DTM. After a good 15 years of combat service by the tank-mounted "Degtyarev", the first Soviet tanks were replaced with powerful armored machines participating in the battles of the Great Patriotic War.

The DT veteran remained in use, just as other glorious examples of domestic small arms.