A. DOBREGEANSKY.

BULLET OR PROJECTILE FOR FIREARMS.

APPLICATION FILED NOV. 29, 1913.

1,141,783. Patented June 1, 1915.

Fig. 2.

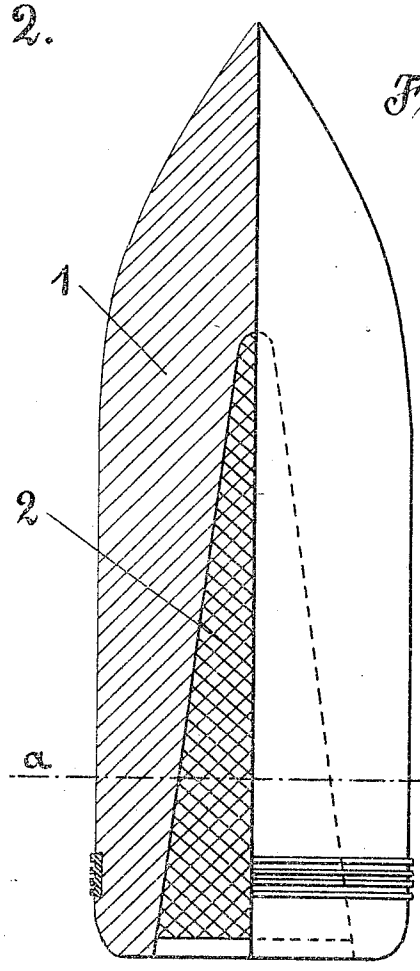


Fig. 1.

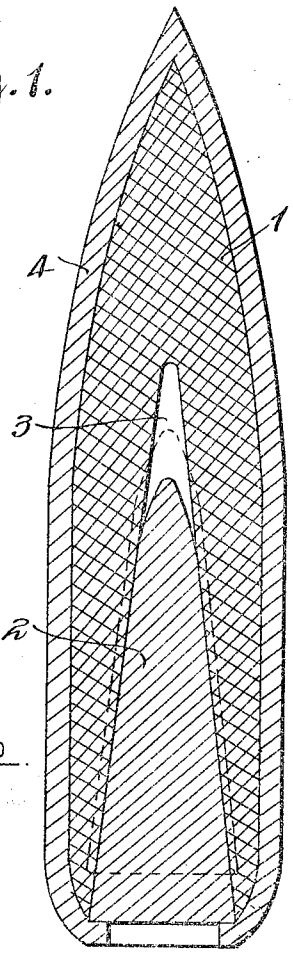
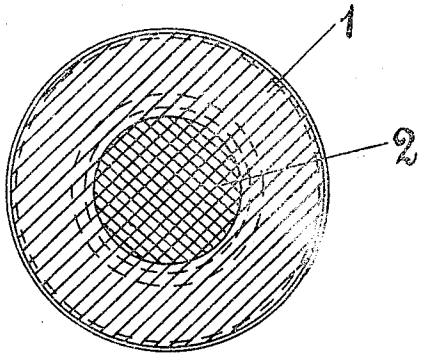


Fig. 3.



WITNESSES

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ALEXANDER DOBREGEANSKY, OF ST. PETERSBURG, RUSSIA.

BULLET OR PROJECTILE FOR FIREARMS.

1,141,783. Specification of Letters Patent. Patented June 1, 1915.

Application filed November 29, 1913. Serial No. 803,691.

To all whom it may concern:

Be it known that I, ALEXANDER DOBREGEANSKY, subject of the Emperor of Russia, and resident of St. Petersburg, Russia, colonel of the Guards-Infanterie of Russian Army, have invented new and useful Improvements in Bullets or Projectiles for Firearms, of which the following is a specification.

My invention has for its object the increasing of the accuracy of aim and the projectile's initial velocity, without increasing the maximum permissible pressure of powder gases in the barrel of hand fire arms. Besides this, the construction of the bullet permits it, to maintain, to a great extent, the speed when flying, by which the utmost piercing capacity of the bullet is conditioned. All their ballistic qualities are attained because of the fact, that the center of gravity of the bullet is transferred nearer to its head portion and the core of the bullet is made out of two metals: a heavy and soft metal (lead, for instance), and light and hard metal (duraluminium, for instance). Both parts of the core are connected by means of a general hard covering, the core and the covering being contracted at the extremity.

In the drawings:—Figure 1 is a longitudinal section of a bullet constructed in accordance with the invention, and designed for Russian 3-line rifles of the 1891 model, Fig. 2 is a front view of another embodiment of the invention designed for guns, and Fig. 3 is a section on the line *a*—*b* of Fig. 2.

In the lead core 1 is made a long central cavity, into which the cone 2 made of duraluminium is inserted. The height of this cone 2 is calculated in such a manner, that the air chamber 3 should remain between it and the lead core.

The core is covered, as usual, by a nickel covering 4, which, bending over at the back, firmly fastens both parts of the core. The rear end of the bullet, as is seen from the drawing, is somewhat contracted. Owing to such a construction, the center of gravity of the bullet is in the front half of it, near the head portion, by which means its stability when flying is conditioned.

On firing, the cone 2 is pushed by the pressure of the powder gases to the front (as is shown in dotted lines) in the lead core, the rear part of the latter and the portion of the covering 4, which adjoins it, expanding to the sides, tightly pressing to the riflings in the barrel. In its movement the cone 2 meets a resistance of air contained in the chamber 3, which, forming an air cushion, prevents the cone 2 being pushed farther than a certain limit. Owing to this fact, the excessive opening of the portion 1 and the covering 4 is avoided, as well as the superfluous pressing of these parts to the riflings, as is the case with ordinary bullets, in which the powder gases expand the rear end of the core and the covering of the bullet directly.

Owing to such a construction, on firing with the proposed bullet, smaller maximum pressures are obtained than when firing with the ordinary bullet. The contracting of the rear end of the bullet aids the free flow of the air and decreases the vacuum space behind the bullet and therefore helps to attain a smaller resistance of air in the flight of the bullet and consequently preserves its speed.

Tests effected with firing the proposed bullet from a 3-line rifle at the Imperial Tula Cartridge Works in Tula, have proved, that the initial speed with a standard charge attained on an average up to 883 meters per second, with a maximum pressure of 2580 atmos. At the same time, owing to the stability of the bullet when flying, the declination from the average velocity did not exceed 17 meters per second. Such results give reason to expect, that, by somewhat increasing the weight of the charge, an initial velocity up to 900 meters per second may be obtained when firing with the proposed bullet, at a maximum pressure, not exceeding the limit of 3200 atm. established for 3-line rifles.

It is obvious, that the method of transferring the center of gravity nearer to the head portion, used in the construction of the proposed bullet, may also be made use of for gun projectiles maintaining the same ballistical qualities, which are conditioned by the arrangement of the center of gravity at the head portion of the bullet. When constructing such projectiles, the chamber 3 becomes superfluous, as in the projectile the obturation is attained by means of bands. Owing to this fact, it is sufficient for manufacturing the proposed projectiles, to only drill a central cone (about ⅔ of the length of the projectile) in the ordinary projectile

and to fill it with a light metal (aluminium, for instance).

What I claim is:

A projectile for fire arms, composed of a core of soft heavy metal having a central longitudinally extending substantially conical chamber opening at the base, and a cone of light hard metal inserted in the chamber, the height of the cone being less than the depth of the chamber to form an air chamber at the inner end of the chamber and between the cone and the core, and a covering for the core, said covering having an inward extension at the base of the core and engaging the base of the cone to hold the cone in place, the cone being adapted to be driven farther into the cavity by the explosion of the charge to limit the capacity of the air chamber, to protect the cone against bending when it strikes an obstacle, and to prevent the exit of the heated gases of the explosion by the radial expansion of the projectile.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDER DOBREGEANSKY.

Witnesses:

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H. A. LOVIAGUINE.