The Model of the Wooden Gunstock of Handheld Short Barrel Bombard in Late 14 Early 15th Century From Lviv History Museum Collection

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Abstract – This article presents detailed description of the cast-iron short barrel bombard in late 14 early 15th century from Lviv History museum collection. Briefly analyzed some options of the wooden gunstock cannon, developed and described the wooden gunstock of the handheld bombard.

Key words – handheld short barrel bombard, wooden gunstock, model, Lviv History Museum.

This research is the first attempt to design and manufacture the wooden gunstock of the handheld short barrel bombard from late 14 early 15th century.

Today in Lviv History museum collections is saved cast-iron handheld short barrel bombard. LHM inventory book assigned a number 3-2838 [2.ЛІМ 3-2838](photo 1)

Photo 1. handheld short barrel bombard in late 14 early 15th century from Lviv History museum collection

Description starts with muzzle part of the barrel, numbered as the first part and then to breech barrel part and conventionally continue consecutive numbering of its parts. For the description accuracy considering the significant difference between maximum and minimum value measurements we shall indicate two values. Rings and plate diameter submitted by measuring the maximum points.

The diameter of barrel's channel on the major points is 57mm and 49 mm on the lowest points

The length of barrel's channel: 256-263mm

The length of charging camera: 55-60 mm

The diameter of charging camera: 80mm

The total length of the barrel: 275-280mm

The height of the muzzle part of the first plate is 50mm on the major point and 60 mm on the lowest one

The diameter of the first plate: 135 mm

The width of the first plate: 44-50 mm

The diameter of the muzzle cut: 130-140 mm

The second ring height is 12-20 mm

The second ring diameter is 100 mm

The third ring height is 55-57 mm

The third ring diameter is 86 mm on the lowest point and 89 mm on the major point

The height of the fourth ring is: 40-50 mm

The diameter of the fourth ring is: 245 mm

The length of octahedron breech barrel part on all facets where inflammatory hole is situated (and moving clockwise) -95 mm, the second facet-100 mm, the third facet -101 mm, the fourth facet-103 mm, the fifth facet-105 mm, the sixth facet-102 mm, the seventh facet -100 mm, the eighth facet-95 mm. The width of the facets is in the same order: the first -45-50mm, the second- 30-39 mm, the third 40-49 mm, the fourth 35-40mm, the fifth 39-49 mm, the sixth 37-47 mm, the seventh 40 mm, the eight 35-42 mm.

Base ring's diameter -108 mm

Plates diameter -110mm

Inflammatory hole's diameter -7 mm

The distance from base ring to the inflammatory hole center – 33mm

The length of pillar 10 mm

The weight -11 kg

Relatively to the central axis the cannon is distorted to 16 hour.

The cannon's body has fungus form, structurally and visually consists of five parts with rings with different diameter and length.

The barrel channel is coniform.

Gunpowder tube is cylindric and it is a little bigger in diameter than diameter of barrel's channel, the bottom of the tube is rounded on the plate.

The massive barrel consists of a thick and the largest in diameter ring which is unequal and oval. The ring as a whole gun is rough work executed.

The muzzle cut is unequal, heterogeneous structure and clearly seen metal superposition. The muzzle hole is oviform and it is located deeplier than muzzle cut. On the muzzle cut edge there is unequal rim.

The second ring on height is the smallest also unequal. The third ring has cut circular conical form.

The fourth ring has the smallest diameter. Obviously to this ring the bombard was fastened to wooden gunstock by a metal clip.

The fifth part is octal which expanding to the plate. The plate is flat.

Epigraphy, marking and any decorative ornaments are lacking.

The bombard was fastened by a metal clip to the wooden deck it is a gunstock. This element is lost.

According to the pictures and descriptions the wooden gunstock is from 1200 mm to 1800 mm in its length. There are two variants in mounting a gun: the first- cannon is fastened by a metal clip without a recess to gunstock: the second variant- the gunstock has a nest which is attached a cannon by a metal clip. In each variant the muzzle hole can be inside and outside the gunstock. [4,5,6].

For making a wooden model of gunstock we need its moke-up as a bombard is a museum exhibit and is located in Lviv History Museum. Bending cannon surface eliminates completion of clear linear drawings. So it is reasonable to use new methods, namely – laser scanning –

a technology that allows with high speed and accuracy to identify coordinates of all points on the object surface what characterized its form and shape (fig. 1).

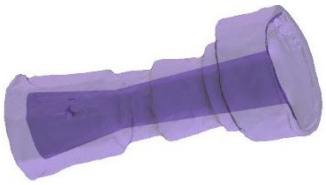

Fig. 1. The laser scanning of the model handheld short barrel bombard

The laser scanning allows 3D printing of the handheld short barrel bombard model.

Photo 2. The wooden bombard gunstock

We try to model the wooden bombard gunstock. Taking to consideration all construction peculiarities, namely- a bombard inequality, weight, shape we assume that the wooden gunstock was with a 1200 mm length nest. [11, p.55-61].

We describe a gunstock:

Overall gunstock length – 1028 mm (photo 2)

Photo 3. The gunstock head

The width of the gunstock head- bombard fixing place – 170 mm (photo 3,4)

The length of the gunstock head – 425 mm

The height:102 mm

The depth of the nest – 102 mm The length of the nest – 281 mm

The nest's width for muzzle part – 133 mm

The nest's width for breech barrel part – 102 mm

The length of the neck - 140 mm

The height- 90 mm

The length of shoulder part – 783 mm

The shoulder width in cervical part – 96 mm

The shoulder thickness near cervical part – 86 mm

The shoulder width in frontal part – 68 mm

The wooden gunstock has an oar form. A head -a part of a gunstock has a nest, which contours cannon. Shoulder part is octahedron and narrows to frontal part. Frontal part is bevel for abutment convenience. At the gunstock bottom at a 50 mm distance from frontal part there is an arch for holding convenience.

Photo 4. The gunstock head

As this cannon type was used in 14-15th centuries, most of their examplars, of their wooden parts are lost [8,9,10]. The primary source of information about this cannon component are chronicle and manuscript drawings dedicated to artillery. Based on scientific research which worked out the original source we designed the wooden gunstock of the handheld short barrel bombard end 14 – early 15th centuries from Lviv History Museum collection.

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