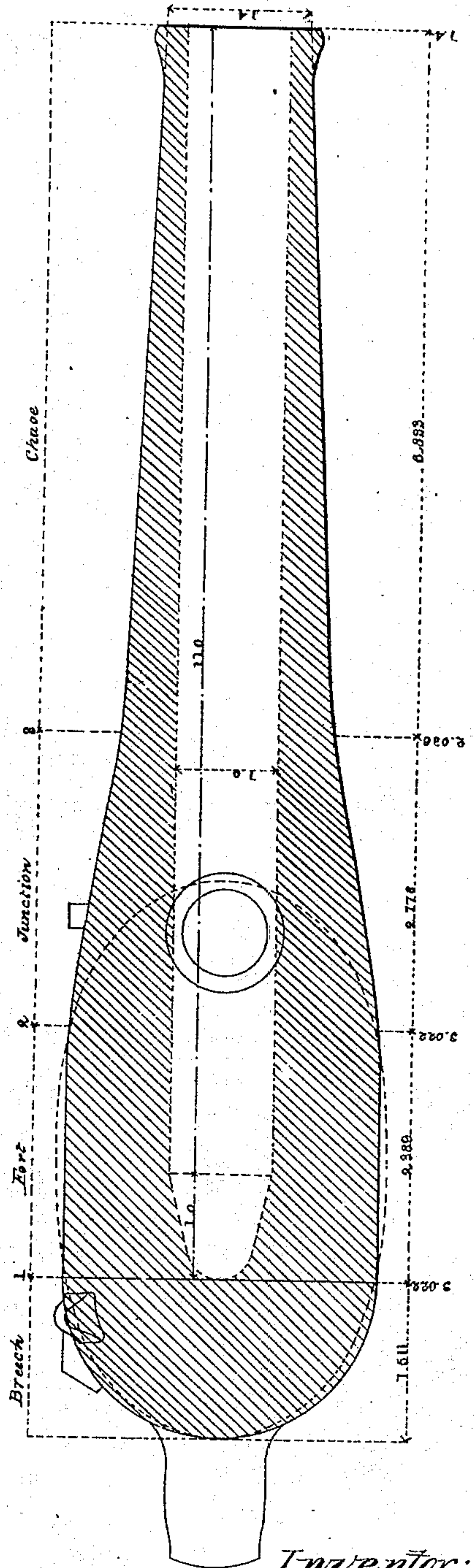
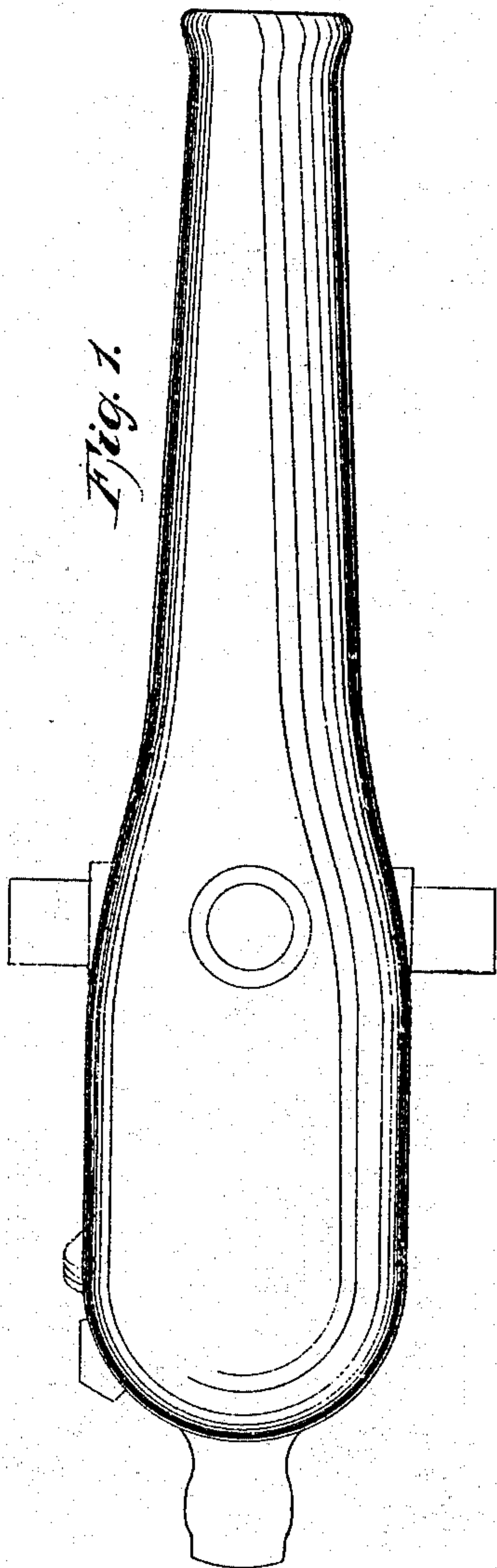


J. A. DAHLGREN.
CAST IRON ORDNANCE.

No. 32,983.

Patented Aug. 6, 1861.



Witnesses:
Jno. D. Brandt
A. B. Norton

Inventor:
Jno. A. Dahlgren

UNITED STATES PATENT OFFICE.

JOHN A. DAHLGREN, OF PHILADELPHIA, PENNSYLVANIA.

CAST-IRON ORDNANCE.

Specification of Letters Patent No. 32,983, dated August 6, 1861.

To all whom it may concern:

Be it known that I, JOHN A. DAHLGREN, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new Form for Cast-Iron Ordnance; which consists in so shaping the gun as to dispose all the metal available for the purpose about the part where the greatest if not the whole force of explosion is exerted when the gun is discharged, whereby I am enabled with a given quantity and quality of iron to make cannon which shall throw heavier projectiles and a greater aggregate weight of them than cannon constructed by the rules hitherto practiced.

In the accompanying drawings, Figure 1 represents a side elevation of a gun constructed in the improved form invented by me, and Fig. 2, represents a longitudinal section of the same.

For convenience of description I have divided the gun into four sections bounded as shown by the lines 1, 2 and 3 in Fig. 2. The part between the end of the breech and the line 1, I call the breech. The part between the lines 1 and 2 I call the fort. The part between the lines 2 and 3, I call the junction; and the part between the line 3 and the muzzle, I call the chase. The unit of measurement which I have employed for the construction of the gun is the diameter of its bore,—or, as it is generally called, the caliber of the gun; and however large or small may be the piece of ordnance which it is required to construct, the dimensions of its several parts will be expressed in multiples or fractions of its own caliber corresponding to the proportions of the gun laid down in Fig. 2, whose dimensions at important parts are denoted in units of length equal to its own caliber.

Provided that, the quantity of powder with which the new gun is to be fired bears the same relation to the weight of its projectile that exists between the powder and projectile for which the gun shown in Fig. 2, is designed; the proper weight of the projectile for which is a shell or hollow spherical ball, about three quarters of the weight of a solid spherical ball of the same caliber to be fired with about one-seventh its weight

of powder. For example, it is required to make a cannon having a bore eight inches in diameter; the following dimensions are obtained from the drawing annexed:—

	Calibers.
Length from face of muzzle to end of breech.....	13.511
Length of breech.....	1.511
“ of fort.....	2.389
“ of junction.....	2.778
“ of chase.....	6.833
“ of bore.....	12.000

By the same rule the diameters of the several sections of the gun would be:

At line 1 and 2.....	3.022
“ line 3.....	2.036
“ muzzle.....	1.400

By the same rule also the weight of the projectile and of the powder would be as follows, viz:—

Shell, empty.....	70 lbs.
Powder.....	10 lbs.

If however the weight of the charge of powder is to be materially less than one seventh to that of the shell or other projectile, then the diameters at 1 and 2 may be reduced to 2.909 calibers, and the length of breech to 1.455 calibers, and the breech may have an ellipsoidal instead of a spheroidal form. In like manner the dimensions in calibers of all the other parts may be obtained by measuring the drawing in Fig. 2.

In smooth-bored cannon the form of the breech may be hemi-spherical, hemi-spheroidal or ellipsoidal as greater or less strength is required. Strictly speaking, the surface of the fort should be curvilinear longitudinally as well as transversely. But as artillerists insist on the importance of having the means of taking a direct level aim for point blank firing, in case of injury to the sights, the fort of the gun represented in the drawings is made cylindrical the diameter being for that purpose slightly reduced between the points 1 and 2. Another deviation from strict theoretic proportions is produced by a swell about the muzzle, chiefly to protect it from liability to frac-

ture by being struck against, or by, hard bodies: this swell also answers another purpose especially useful on board ships of giving a hold for a lashing in case the gun
5 is housed.

The trunnions and other projections may be cast on, in the usual way, but the strength of the gun will be much increased if it is cast without them; and they can be attached
10 subsequently by a method, a more particular description of which is given in another patent granted to me and bearing even date herewith.

What I claim as my invention and desire to secure by Letters Patent, is—

A cast-iron gun constructed substantially according to the rule herein described; whereby the quantities of metal disposed in the different parts of the gun are proportionate, or nearly so, to the relative degrees
20 of strain exerted by the force of the exploded charge at those parts respectively.

JNO. A. DAHLGREN.

Witnesses:

JNO. D. BRANDT,
A. B. NORTON.