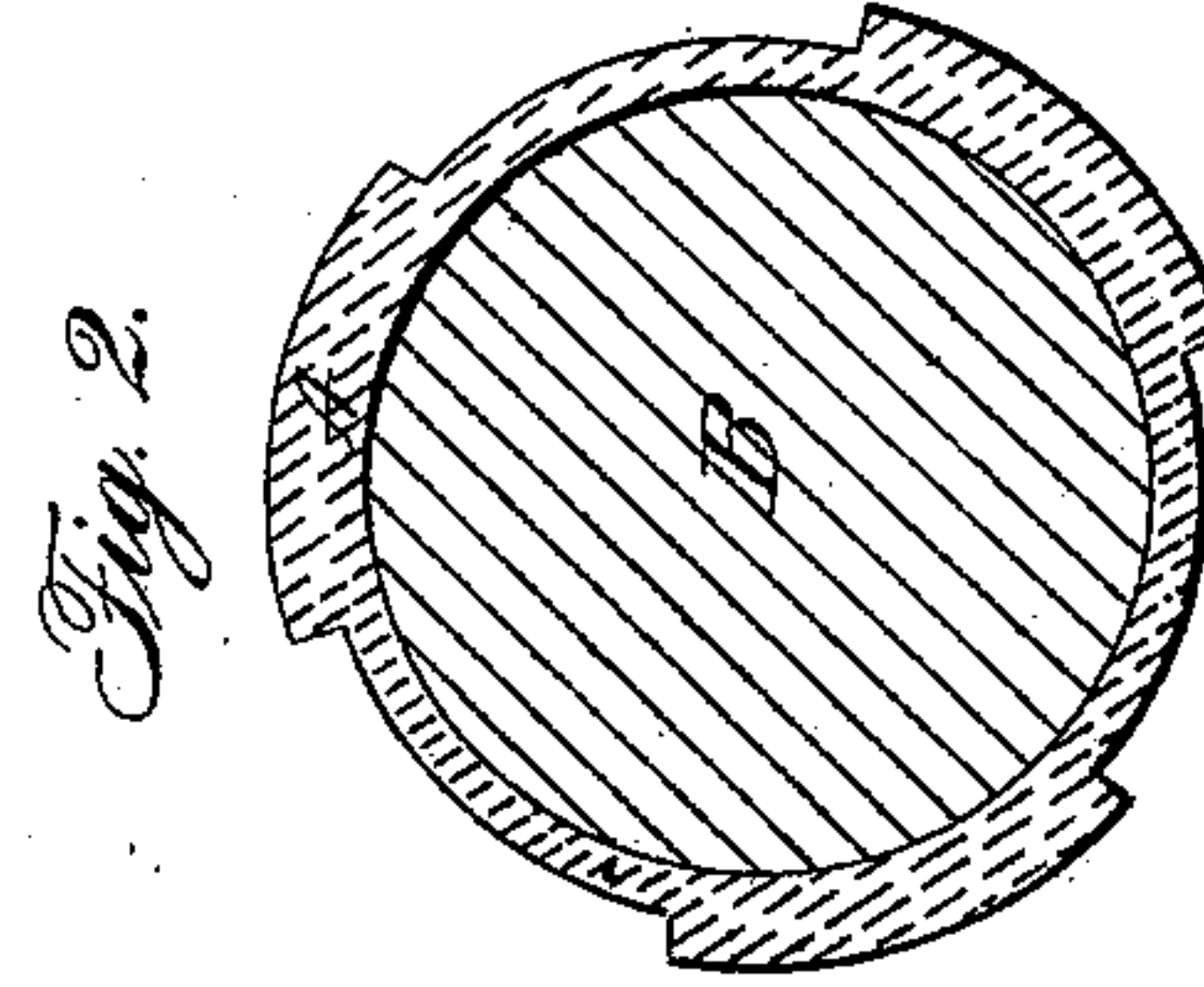
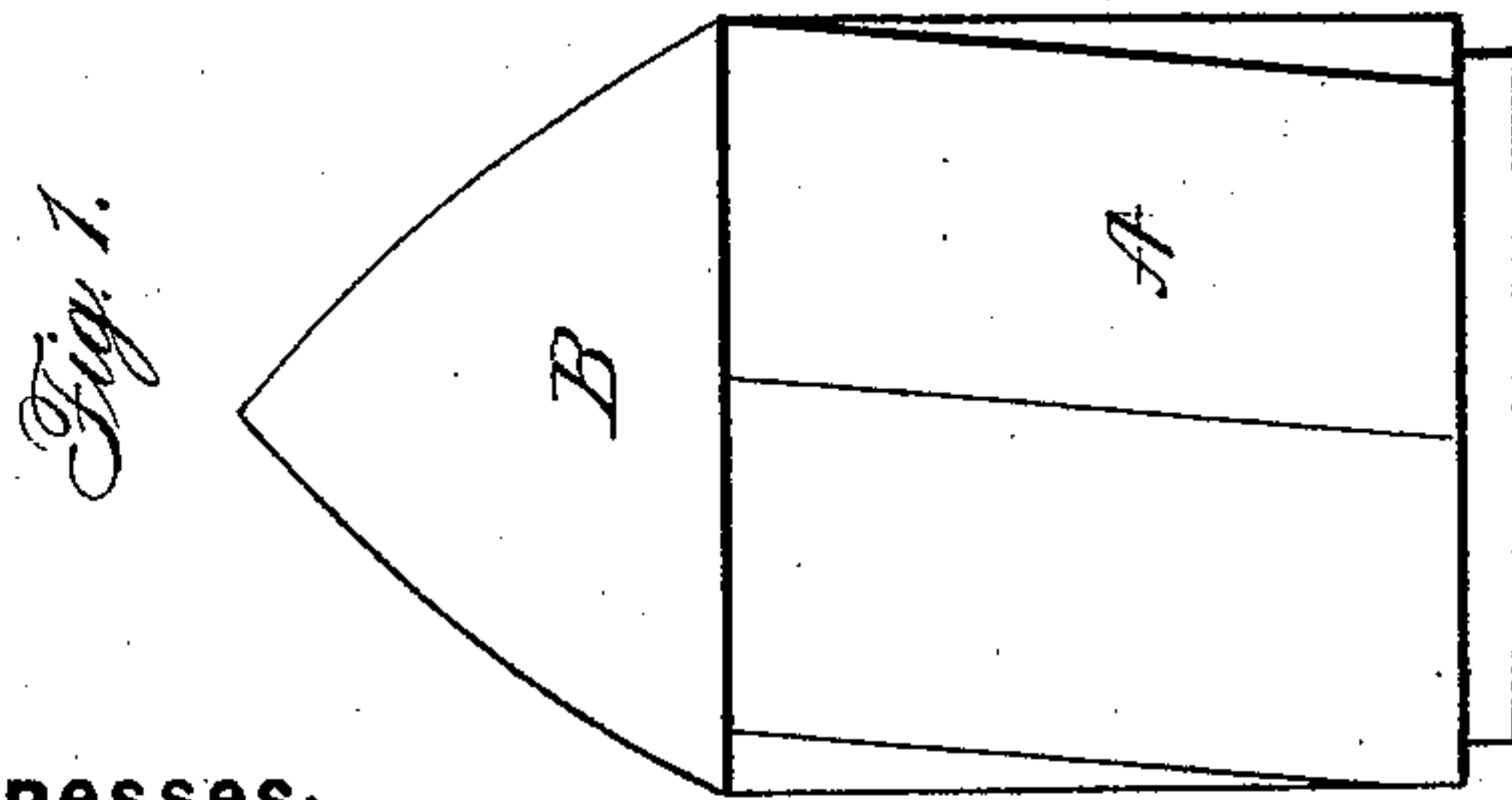
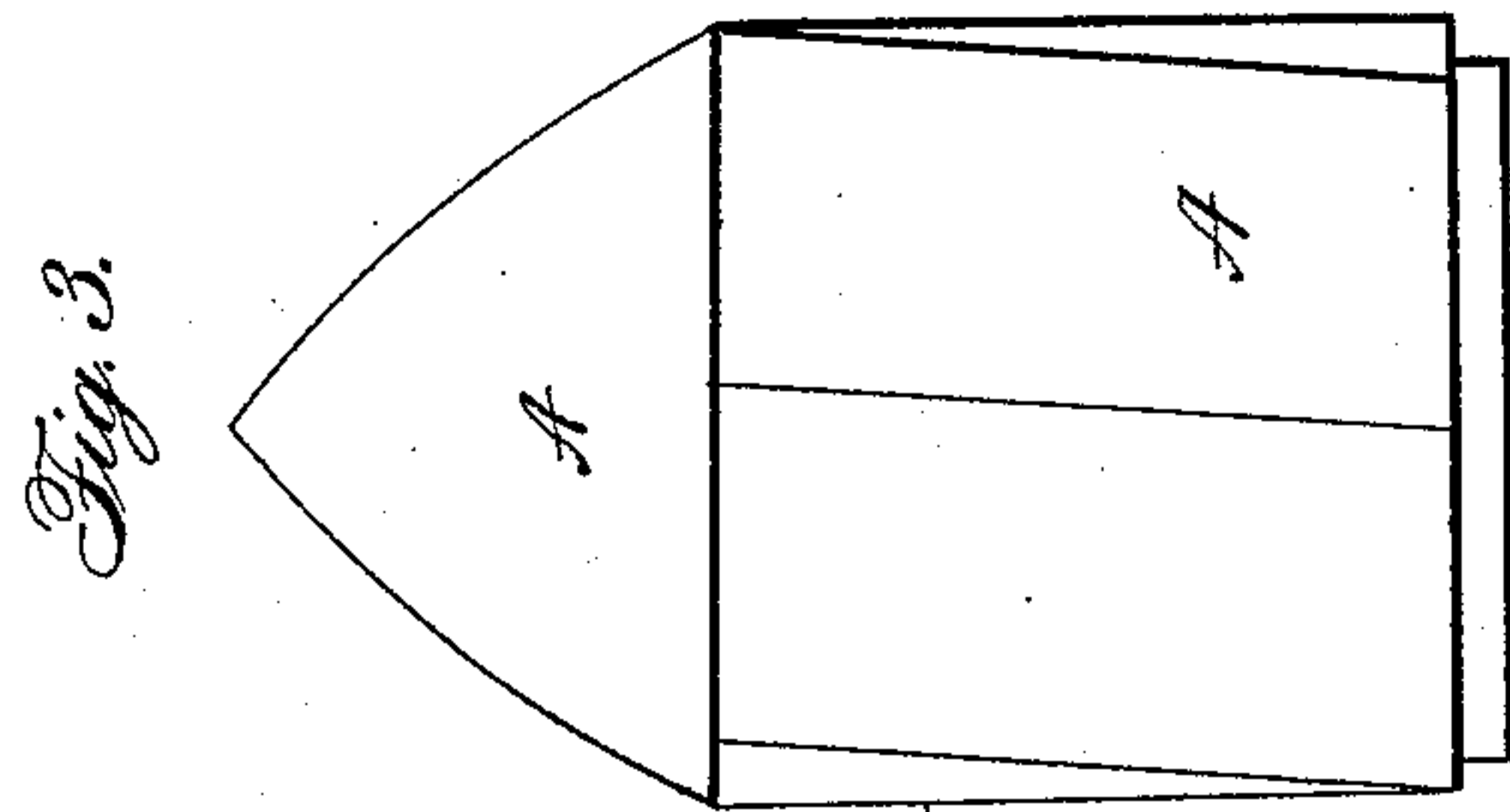
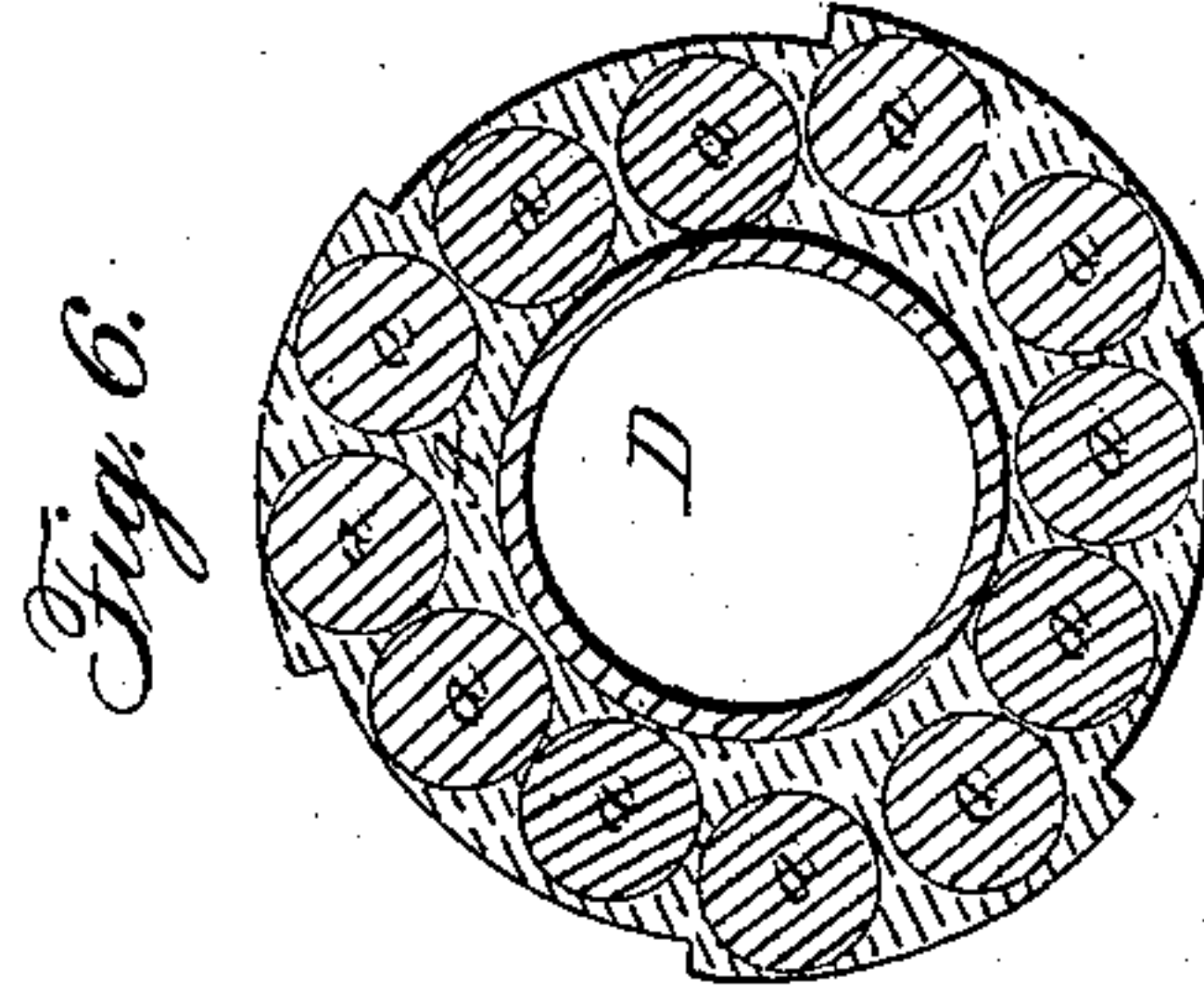
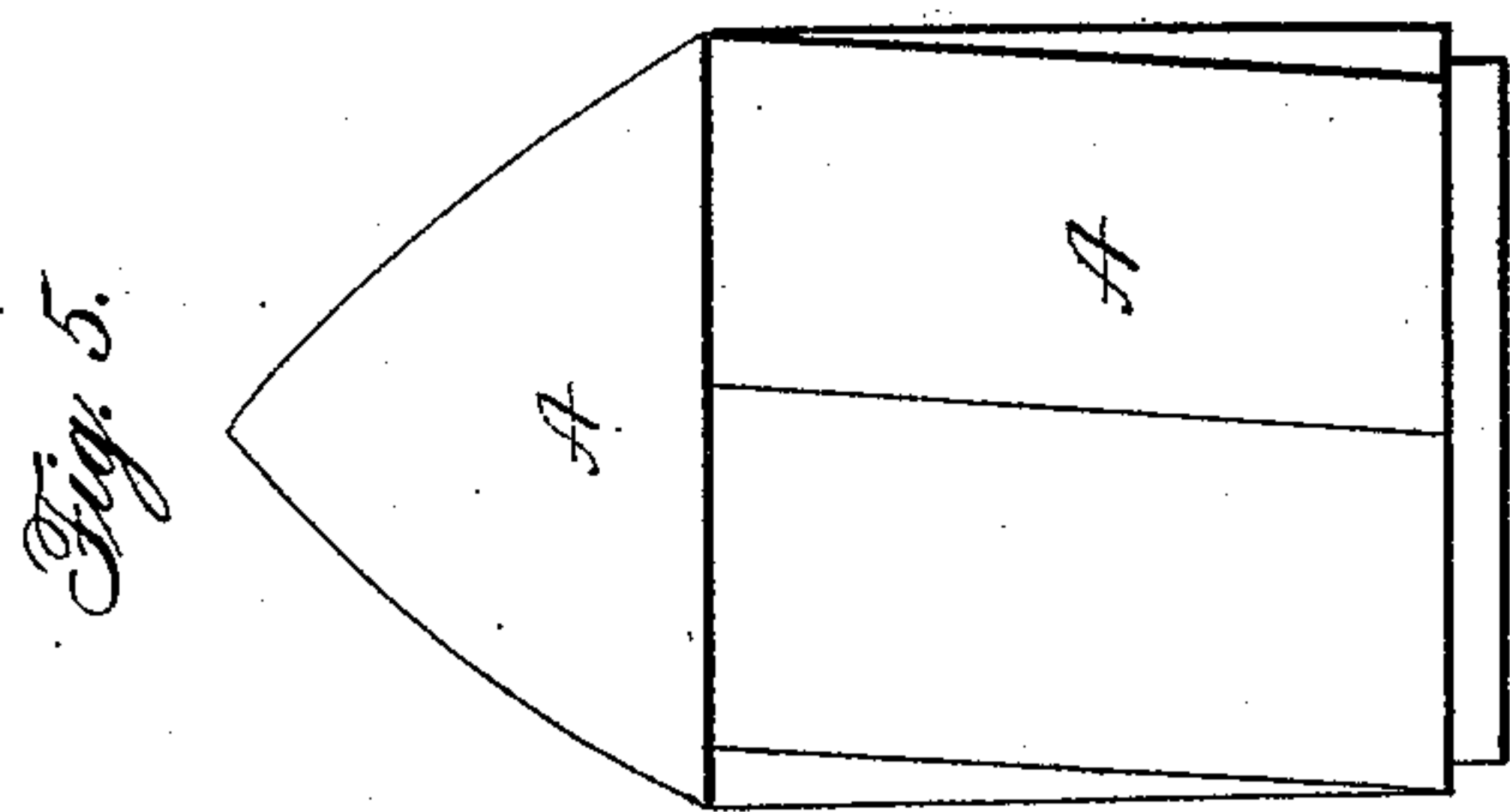
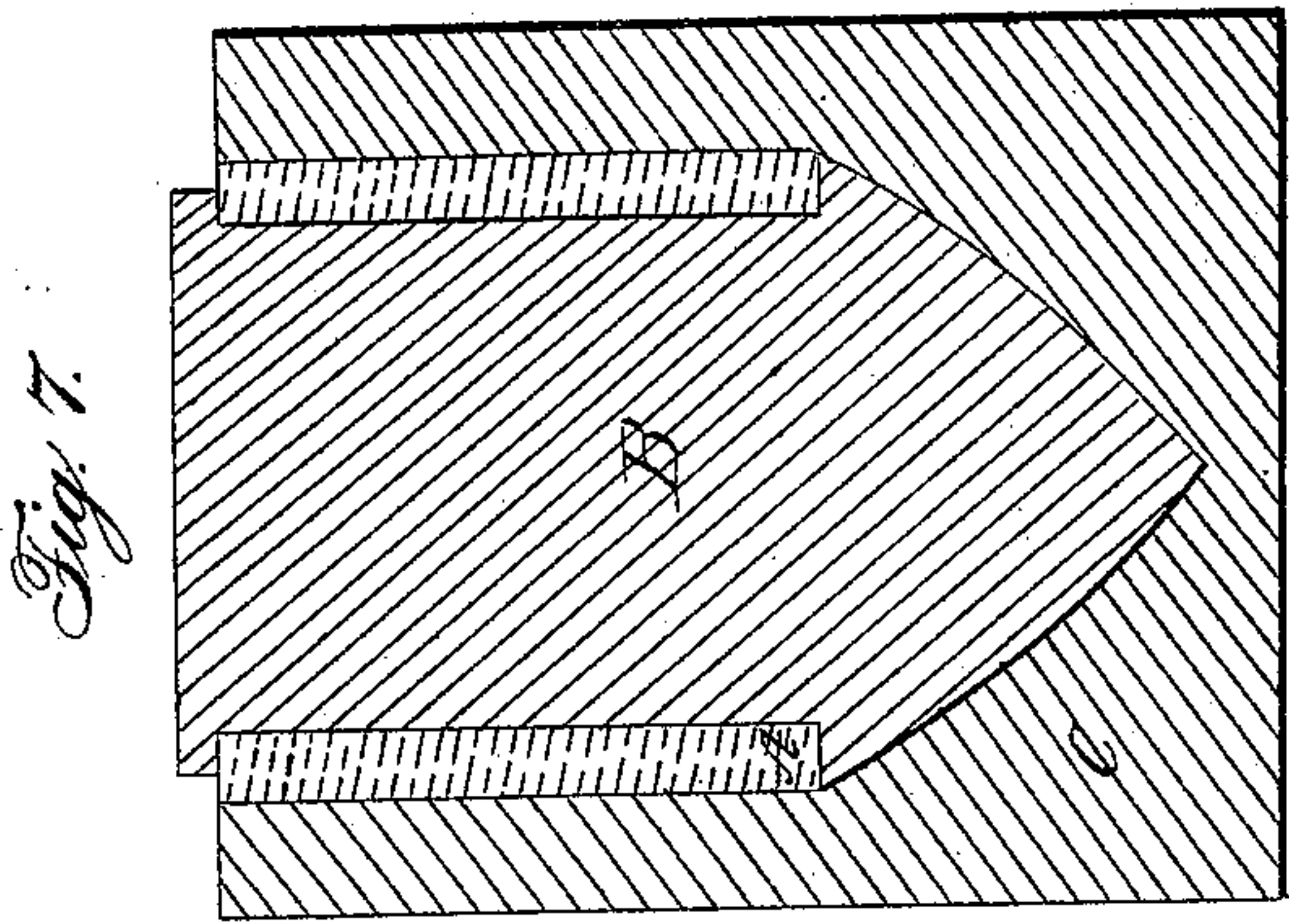


J. ABSTERDAM.
Coating Projectiles.

No. 36,132.

Patented Aug. 12, 1862.



Witnesses:

H. D. Weeks
P. C. Mott

Inventor:

John C. Absterdam

UNITED STATES PATENT OFFICE.

JOHN ABSTERDAM, OF NEW YORK, N. Y.

IMPROVED COMPOSITION FOR COVERING PROJECTILES.

Specification forming part of Letters Patent No. 36,132, dated August 12, 1862.

To all whom it may concern:

Be it known that I, JOHN ABSTERDAM, scientific and mechanical engineer, of the city, county, and State of New York, have invented a new and useful Composition for Coating, Covering, Banding, and Cementing Cannon-Projectiles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 represents an elongated rifled-cannon projectile coated or banded with my composition. Fig. 2 represents a cross section of the same. A is the composition. B is the projectile.

Fig. 3 represents an elongated cannon-projectile which I denominate the "conglomerate solid shot," made of grape-shot or slugs cemented together with my composition. Fig. 4 represents a cross-section of the same. A is the composition. *a a* are the grape-shot or slugs.

Fig. 5 represents an elongated cannon-projectile which I denominate the "conglomerate hollow shot," made of grape-shot or slugs with a metallic tube in the center, all cemented together with my composition. Fig. 6 represents a cross-section of the same. A is the composition. *a a* are the grape-shot or slugs. D is the metallic tube. This metallic tube, in the interior of the projectile, serves as a chamber to receive the powder to explode the conglomerate projectile.

Fig. 7 represents a longitudinal section of an elongated projectile, of a mold, and my composition, showing the manner of coating or banding the projectile. I first set the mold upright and place the projectile in an inverted position in the mold. I then pour the melted composition therein around the projectile. That part of the projectile which is to be coated or banded must be smaller in diameter than the inner diameter of the mold. A is the composition. B is the projectile. C is the mold, which in its inner diameter is a cross-section of the gun for which the projectiles are to be used.

The nature of my invention consists in coating, covering, banding, and cementing cannon-projectiles with a composition made of sulphur, plumbago, steatite, asbestos, and metallic oxides and sulphurets and other earthy

substances, or made only of sulphur and plumbago; or made only of sulphur and steatite, or of sulphur and asbestos, and is capable of being melted and remelted in a liquid state, if required, which composition, being of a lubricating nature, will permit the projectile to be fired with a very light friction against the inner circumference of the gun; and if the gun is rifled it will cause less wearing of the grooves than the projectiles having a metallic surface, thereby lessening the danger of bursting the gun, and, as the composition possesses refrigerating properties, will assist in preventing the gun from heating.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I take any desired quantity of sulphur and submit it to the action of heat in an iron ladle or any other suitable vessel. As soon as the sulphur is melted, I add to it any desired quantity of powdered plumbago and steatite, also a few drops of oil, (a very good proportion of the materials are ten parts, by weight, of sulphur and five parts or less of plumbago, or ten parts of sulphur and five parts or less of steatite, or ten parts of sulphur, two parts of plumbago, two parts of steatite, one part of metallic oxides or sulphurets,) and stir the whole together. When the mixture has assumed the consistency of a thick paste, I knead it well for several hours with an iron or wooden rod, increasing the heat gradually until the whole is completely incorporated. I then take the ladle or pot from the fire and let it rest. In losing heat the composition becomes liquid, which, if to be used immediately, I pour it in the mold around the projectile. If not required for immediate use, I run it into ingots or bars, ready to be remelted when required for use. In melting the sulphur it is beneficial to add to it a few drops of oil. In order to harden the composition, I add to it, while in a state of fusion, metallic oxides, sulphurets, and dry paints.

By using a large proportion of sulphurets I am enabled to make a composition that will stand a high degree of heat. When desired that the composition should be tough, I pour it, while in a state of fusion, into cold or hot water, then remelt it again; and when desired that the composition should be brittle, I employ a larger proportion of sulphur than other-

wise and submit it to less heat. In order to coat or band the projectiles with my composition, I first construct a mold, which in its inner diameter is a cross-section of the interior of the gun. It can be made of one single piece of metal or in segments. If the inner circumference of the gun is rifled or planed, I rifle or plane the inner circumference of the mold similar to the cross-section of the interior of the gun. The mold may be a trifle smaller in its inner diameter than the inner diameter of the gun, in order to facilitate loading. Having thus constructed the mold, I place it upright on a stand, and introduce the projectile therein in an inverted position, as seen at Fig. 7. I then pour the melted composition in the mold around the projectiles. As soon as the composition becomes hard, if the mold is made in segments, I open it and take out the projectile, which is found coated or banded similar in form to the cross-section of the interior of the gun. If the mold is made with a solid circumference, I force the projectile out by means of screw or hydraulic pressure. I generally cast the elongated iron projectiles with a circular cavity or groove around its circumference of a sufficient depth and width, according to the thickness and width of the band that may be required around the projectile. In placing the projectile within the mold, a circular channel is formed between the circular cavity of the projectile and the inner circumference of the mold, which I fill with the melted composition, and a band is formed adhering so strongly to the projectile as to become a part of the same. I oil the interior of the mold in order to prevent the composition from sticking to the same. When desired to manufacture conglomerate solid shot, I fill the mold with heated grape-shot or slugs and pour the melted composition therein, which fills the space between the grape-shot or slugs, thereby cementing the whole together into one projectile having its exterior form similar to the interior of the mold.

In manufacturing hollow conglomerate shot, I first place a tube or chamber in the center of the mold. I then introduce the heated grape-shot or slugs around the tube or chamber and pour therein the melted composition, which, on becoming cold, the whole is found firmly cemented together into one hollow projectile,

which may be used advantageously as a substitute for shells, especially in firing at a distance too great for grape and canister. This hollow conglomerate shot can be used in firing at a long range, which, in exploding, the grape shot or slugs will scatter to such a radius and produce more execution than can be obtained with grape and canister in firing at a short distance. I make also this kind of conglomerate shot for mortars, to be used instead of bombs. In the same manner I also make conglomerate balls for the use of small fire-arms by using buck-shot or slugs instead of grape-shot. All these conglomerate projectiles I intend to secure by Letters Patent, for which I will make application hereafter.

By making the solid conglomerate shot with a brittle composition, it will break and scatter instantaneously upon leaving the mouth of the gun, which in that case may be employed instead of grape and canister. In making the same solid shot with a hard composition, it will break and scatter only upon striking the object against which it is directed.

The hollow conglomerate shot I provide with the same kind of fuse such as are now used for shells.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A composition of sulphur and plumbago for coating, covering, banding, and cementing cannon, mortar, and small fire-arm projectiles, substantially as described.

2. A composition of sulphur and steatite for coating, covering, banding, and cementing cannon, mortar, and small fire-arm projectiles, substantially as described.

3. The employment of sulphur, in combination with mineral or earthy substances, to form a material or composition for coating, covering, banding, and cementing cannon, mortar, and small fire-arm projectiles, substantially as described.

In witness whereof I have hereunto set my hand and signature this 11th day of June, 1862.

JOHN ABSTERDAM.

Witnesses:

HENRY D. WALKER,
EZRA A. DOW.