

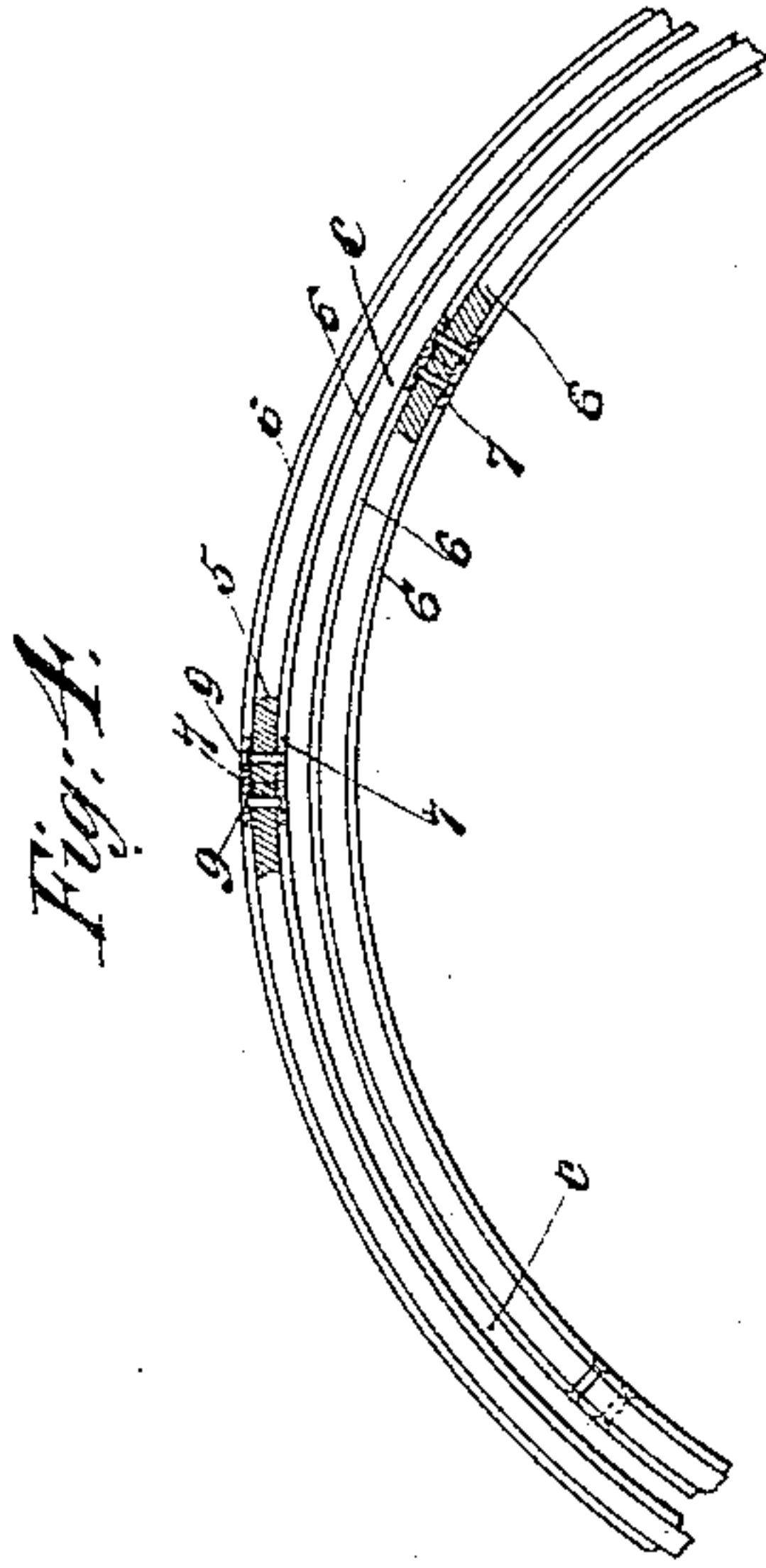
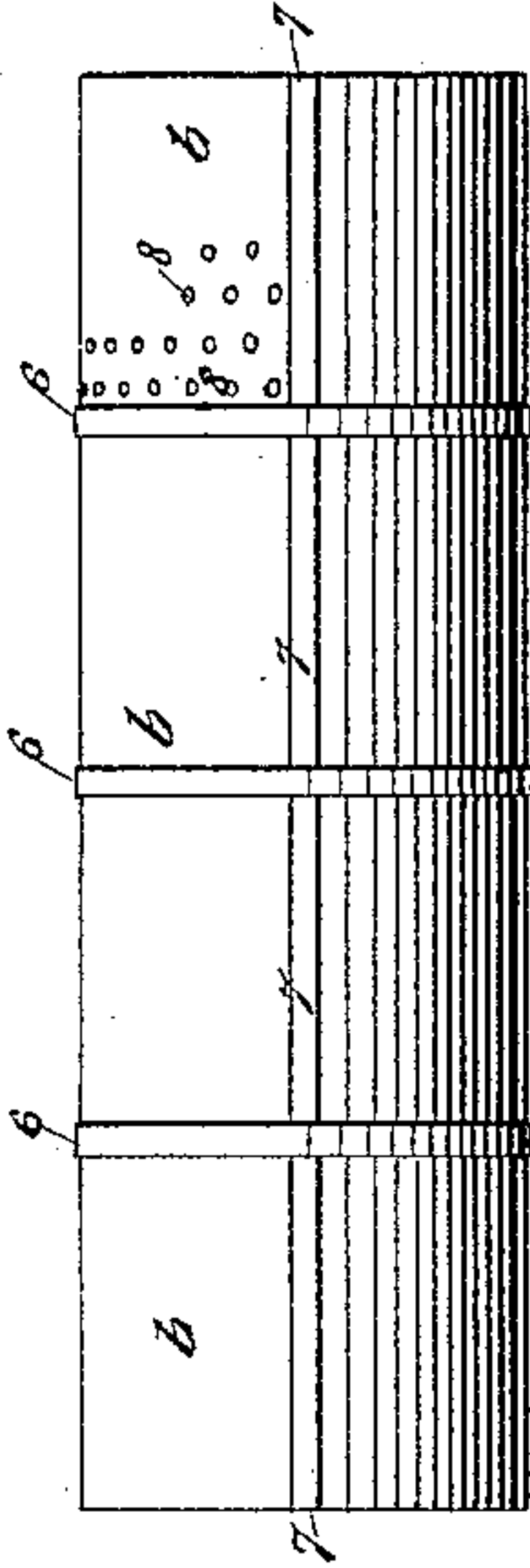
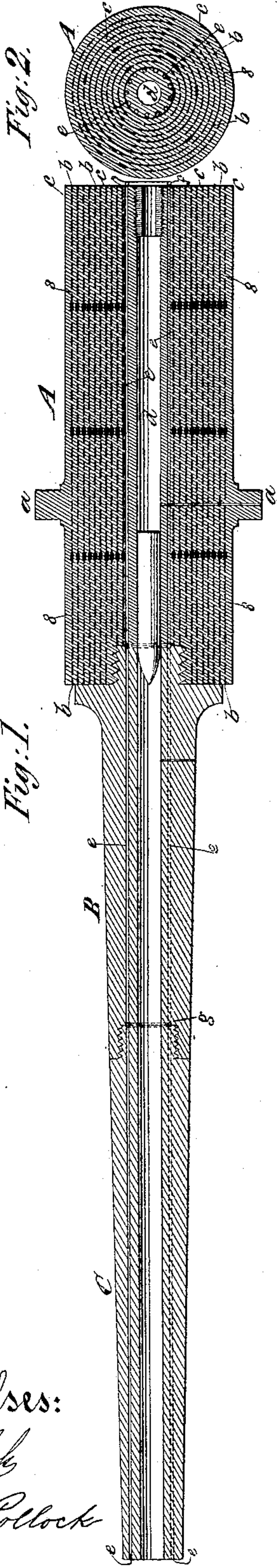
(No Model.)

B. T. BABBITT.

ORDNANCE.

No. 316,105.

Patented Apr. 21, 1885.



Witnesses:

Benny Kef
Matthew Pollock

Inventor:

D. C. Rabbit
by his attorneys
Brown & Hall

UNITED STATES PATENT OFFICE.

BENJAMIN T. BABBITT, OF NEW YORK, N. Y.

ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 316,105, dated April 21, 1885.

Application filed January 22, 1885. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, a citizen of the United States, residing in the city and county of New York, in the State of New York, have invented a new and useful Improvement in Ordnance, of which the following is a specification, reference being had to the accompanying drawings.

This invention consists in a cannon having the rear portions, commonly known as the "chamber" and "re-enforces," constructed or composed of a series of cylinders made of rolled steel plates, and arranged concentrically one within another, and united by having either steel, iron, or other metal cast between, within, and around them, such cylinders being preferably perforated with numerous holes, through which portions of the cast metal enter to make connection between the portions between, within, and around the said cylinders, the object of such construction being to utilize in ordnance in the most advantageous manner the very great strength of rolled steel plate, and thus to obtain guns of very large caliber which, though not of great weight comparatively, will not be liable to burst, and which may be manufactured at comparatively small cost.

The invention further consists in the combination, in a cannon, of a section having a series of tubes provided within and through its walls parallel with the bore, a water-supply pipe connected with the tubes for introducing water into them for cooling the gun between its successive discharges, and a second section connected with the first-mentioned section, and also provided with tubes for water, the two sections having in their abutting ends annular grooves, through which the tubes in the two sections communicate. This feature of the invention provides for securing together two sections, each having longitudinal cooling-tubes in it, but without any particular care as to whether the sections are turned to such position that their tubes will be in line, for even if their tubes are not in line water may flow from the tubes of one section through the annular grooves, and thence to the tubes of the other sections.

Figure 1 is a central longitudinal section of a very large cannon constructed according to my invention. Fig. 2 is a transverse section of the

rear part thereof. Fig. 3 is an external longitudinal view of one of the cylinders of rolled steel plate of which the rear part of the gun is partly composed. Fig. 4 is a transverse sectional view on a larger scale, illustrating the construction and combination of the said cylinders.

Similar letters and numbers of reference indicate corresponding parts in the several figures.

The cannon represented is a breech-loader made of three sections, A, B, and C, screwed together; but no particular pains have been taken to represent the breech, as that may be constructed, fitted, and operated in any suitable manner. The sections B and C are represented as each composed of a single casting; but the construction of these sections is immaterial to my invention. The rearmost section, A, which includes the breech part, the chamber, and the re-enforces, and on which are the trunnions *a a*, is composed of the series of concentric cylinders *b b*, made up of rolled steel plates, and arranged one within another, and the cast iron, steel, or other metal, *c c*, which is interposed between and surrounds them, and also forms a lining which contains the bore *d*.

The construction of the cylinders *b b* is illustrated in Figs. 3 and 4. They are represented as of the full length of the section A, and each is made up of as many plates of rolled steel as may be required, the said plates being of as large size as they can conveniently be made—for instance, about the size of ordinary boiler-plates—the said plates being properly bent to form sections of the cylinder, and having their edges abutted together and united by riveting to them both inside and outside bands and longitudinal strips of lighter steel plate. The cylinders thus constructed are made of such relative diameter that when placed one within another within a mold there will be between them annular spaces for the reception of cast iron, steel, bronze, or other metal of a width about twice their own thickness. I propose for the largest guns to make the cylinders of steel plates of one inch in thickness, and to make the bands and strips, which form their seams, of steel plate half an inch thick, and to make the several cylinders of such relative size that the cast metal be-

tween their plates will be two inches thick, its thickness where the bands 6 6 and strips 7 7 intervene being correspondingly reduced. The perforations 8 8 in the said cylinders may be two inches diameter and six inches apart. The section A thus composed is constructed by placing the several cylinders of steel plate one within another concentrically in a mold of suitable form, and running into the said mold cast-iron or cast-steel or other metal, which fills the spaces between the cylinders and the holes therein, and also surrounds the outermost cylinder and lines the innermost one.

In Figs. 1 and 2, owing to the necessarily small scale, the thickness of the cylinders is only shown by single heavy lines, the interruptions in which indicate the perforations; but in Fig. 4 the cylinders and the bands are distinctly represented, and also the kind of joint formed by the bands and the longitudinal strips, the rivets being designated by the numerals 9 9.

In Figs. 1 and 2 the longitudinal water-tubes *e e*, passing through the walls of the gun parallel with the bore for cooling the bore, are fully shown. These tubes are arranged in a circle around the bore, as shown in Fig. 2, and are connected with an annular pipe, *f*, in rear of the breech, through which water is supplied to them by a pump or other means, the said water flowing through them and being discharged at the muzzle. These tubes may be of ordinary wrought-iron gas or steam pipe, and placed in the molds before the casting of the gun, and will be embedded in the walls of the gun by the casting of the metal around them. In a gun made of sections, as represented, communication will be formed between the tubes in each section by turning annular grooves in the abutting ends of the sections opposite the ends of the tubes, as indicated at *g* in Fig. 1.

By means of the grooves *g* free communication of the tubes *e* in one section with the tubes in another section is secured without the necessity of the tubes *e* of the two sections being in line, and hence in securing the two sections together it is not necessary to take any care that they shall be brought to such position that their tubes will be in line.

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

1. The combination, in the rear part of a cannon, of a series of concentric cylinders made of rolled steel plates and arranged one within another, and cast iron, steel, or other metal cast between, within, and around the said cylinders, substantially as herein described.

2. The combination, in the rear part of a cannon, of a series of concentric cylinders made of rolled steel plates, perforated and arranged one within another, and cast-iron or other metal cast between, within, and around the said cylinders and entering their perforations, substantially as herein described.

3. The combination, in a cannon, of a section having a series of tubes provided within and through its walls, parallel with the bore, a water-supply pipe connected with said tubes for introducing water through them for cooling the gun between its successive discharges, and a second section connected with the first-mentioned section, and also provided with tubes for water, the two sections having within their abutting ends an annular groove, through which the tubes in the two sections communicate, substantially as herein described.

B. T. BABBITT.

Witnesses:

HENRY G. BROWN,
FREDK. HAYNES.