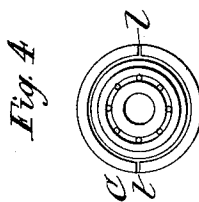
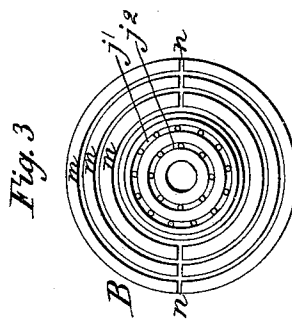
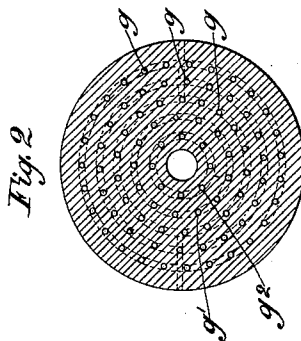
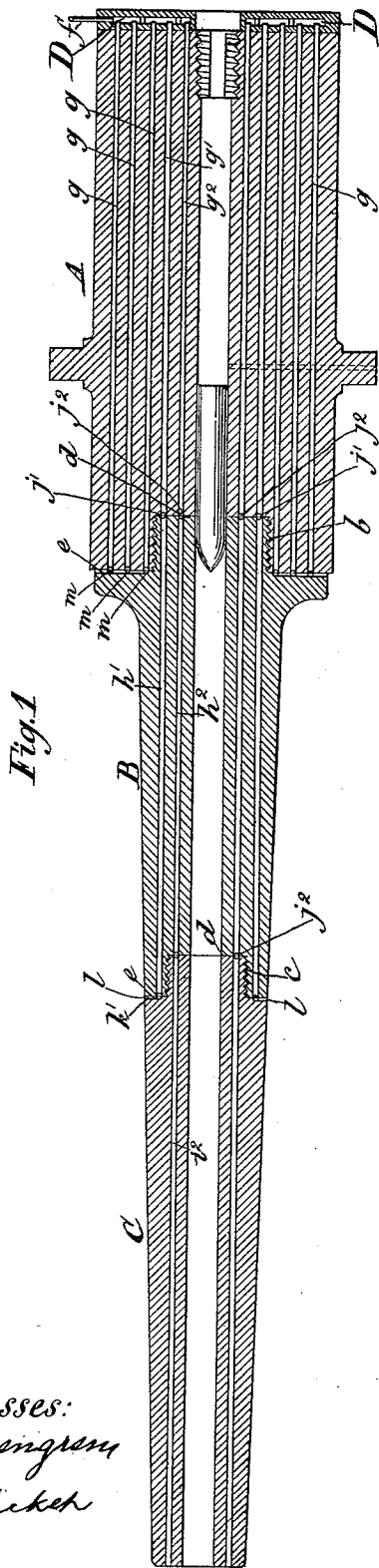


(No Model.)

B. T. BABBITT.
ORDNANCE.

No. 400,160.

Patented Mar. 26, 1889.



Witnesses:
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UNITED STATES PATENT OFFICE.

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

ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 400,160, dated March 26, 1889.

Application filed January 14, 1889. Serial No. 296,290. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of 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 relates to ordnance in and through the walls of which are provided, parallel with the bore, tubes for the circulation of water from a water-box at the breech for the purpose of cooling the walls of the gun between the successive discharges thereof, as described in my Letters Patent, No. 316,105, dated April 21, 1885. In such ordnance it is desirable, owing to the greater thickness of the walls at or near the breech as compared with the portions in front thereof, to have a greater number of water-circulating tubes in the first-mentioned portion, and when a greater number of tubes is provided in that portion the circulation of the water through the tubes farther from the bore cannot be continued through the tubes which extend through the forward and thinner portion of the walls.

The object of this invention is to provide for the circulation of water through and its escape from the tubes, which do not extend through the whole length of the gun.

I will first describe my invention, with reference to the accompanying drawings, of a cannon the length of which is made up of three sections, and will then point out the novelty in claims.

In describing the cannon its three sections will be hereinafter referred to, respectively, as the "breech-section," the "second" section, and the "third" section.

Figure 1 represents a central longitudinal section of the complete cannon. Fig. 2 represents a transverse section of the breech-section thereof. Fig. 3 represents a rear view of the second section, and Fig. 4 a rear view of the third section.

Similar letters of reference designate corresponding parts in all the figures.

A designates the breech-section, B the second section, and C the third section. These sections are represented as screwed together by screw-threaded projections *b c* on the sec-

ond section, B, and third section, C, screwing, respectively, into female screw-threads provided, respectively, in the breech-section A and second section, B. The ends of the screw-threaded projection *b* on the second section meet the corresponding portion of the breech-section A with closely-abutting faces *d*, and the shouldered portion of the said second section, B, outside its screw-threaded projection meets the corresponding front end of the breech-section A with closely-abutting faces *e* in such manner that perfectly-tight joints are formed both at *d* and at *e*. The second and third sections come together with abutting faces *d* and *e*, precisely similar to those between the breech-section and the second section.

At the rear end of the breech-section is a water-box, D, which covers the entire breech, but which in case of a breech-loading cannon such as is represented has a central opening for the passage of the breech-piece and for loading the gun. This water-box, which is provided with an inlet-pipe, *f*, for the entrance of cold water, is connected by water-tight joints with the water-tubes *g g' g''*, which are provided in the breech-section A, running parallel with the bore thereof.

The second section has provided in its walls tubes *h h'*, parallel with the bore, and the third section, C, has tubes *i* provided in it parallel with the bore. The tubes in the several sections are arranged in circles concentric with the bore. The tubes *h' h''* in the second section are arranged in circles corresponding in circumference with the circles in which the inner tubes, *g' g''*, of the breech-section A are arranged, and the tubes *i* in the third section are arranged in a circle corresponding in circumference with those in which the innermost tubes, *g'' h''*, of the breech-section and second section are arranged. In order to form communication between the tubes *g'' h'' i* without the necessity of the said tubes in the several sections being exactly in line with each other, circular channels *j* are provided between the abutting faces *d*, the circumference of the circles of the said channels corresponding with those of the circles of the tubes *g'' h''* and *h''*. In this way circulation is provided from the water-box D at the breech through

the tubes h^2 i^2 to and through the muzzle of the gun.

A circular channel, j' , is provided between the abutting faces $d d$ of the breech-section and second section to form communication between the tubes g' and h' . A circular channel, k' , is provided between the abutting faces e of the second and third sections, the circumference of this channel corresponding with that of the circles of the tubes h' , and from this circular channel k' are provided one or more lateral channels, l , extending to the outer edge of said abutting faces for the escape of the water that circulates from the water-box through the tubes $g' h'$ of the breech-section and second section without circulating through the third section.

Circular channels m , corresponding in circumference with the circles in which the several tubes g are arranged, are provided between the abutting faces e of the breech-section and second section, and these channels are all connected by lateral channels n , which also extend outward to the edges of said abutting faces e , and form outlets at the sides of the gun for the water which has circulated through the outer tubes, g , of the breech-section. The channels $k' l$ and the channels $m n$ provide for the escape of the water from those tubes which are not continued or made to communicate through the whole length of the walls of the gun. It is obvious that the outer tubes of the breech-section and second section could not be so continued or made to communicate. The several circular channels between the abutting faces are formed by grooving the said faces. These grooves may be made in only one of any two abutting faces or in both faces.

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

1. The combination, in a cannon, of a breech-section having a series of tubes provided within and through its walls parallel with the bore, a water-box at the breech communicating with said tubes for introducing water through them for cooling the cannon, and a second section connected with the first-mentioned section in front thereof, the two sections having between their abutting faces channels communicating with said tubes and lateral channels for the escape of the water at the side of the cannon, substantially as herein described.

2. The combination, in a cannon, of a breech-section having a series of tubes provided within and through its walls parallel with the bore, a water-box at the breech communicating with said tubes for introducing water through them for cooling the cannon, a second section connected with the first-mentioned section and also provided with tubes for water, and a third section connected with said second section, the first and second sections having between their abutting faces channels through which the tubes in both communicate, and the second and third sections having between their abutting faces channels communicating with the tubes of the second section and lateral outlet-channels for the escape at the side of the gun of the water which has circulated through the tubes of the first and second sections, substantially as herein described.

BENJAMIN T. BABBITT.

Witnesses:

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