

(No Model.)

W. A. BARTLETT.

PNEUMATIC CANNON.

No. 294,350.

Patented Mar. 4, 1884.

Fig. 33

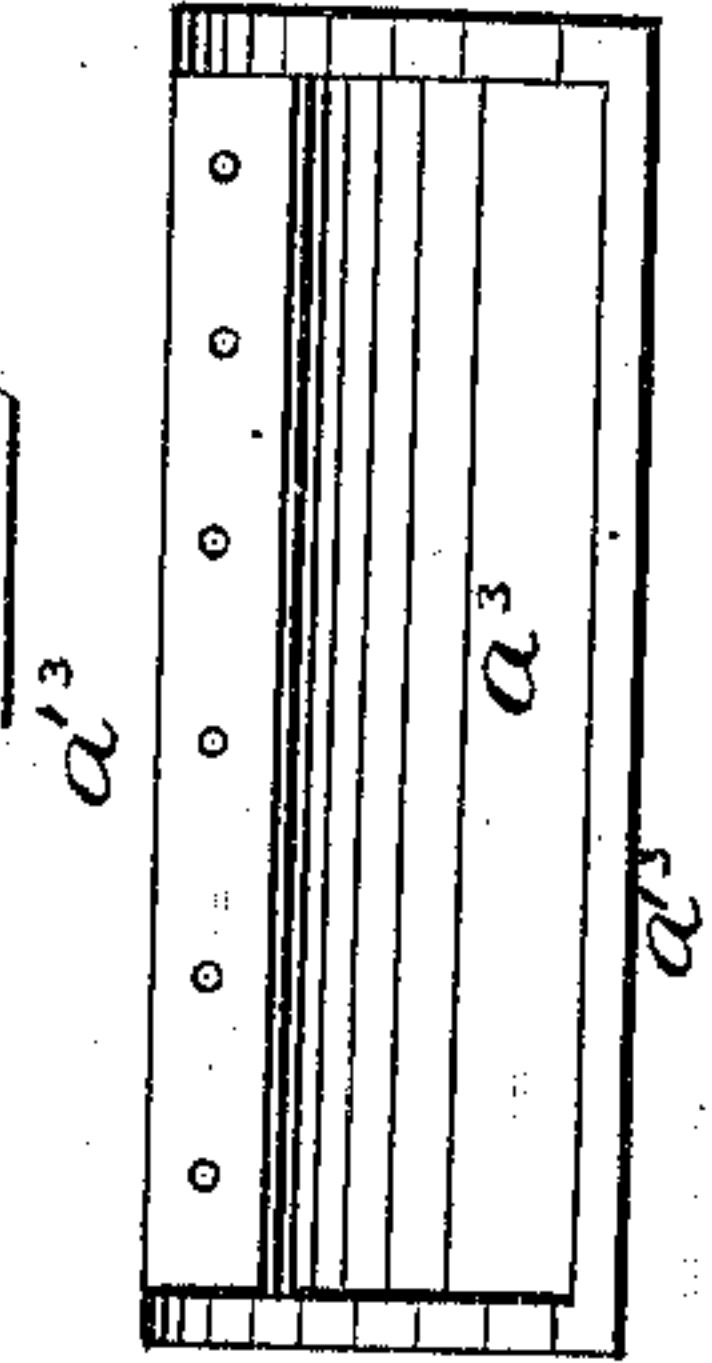


Fig. 32

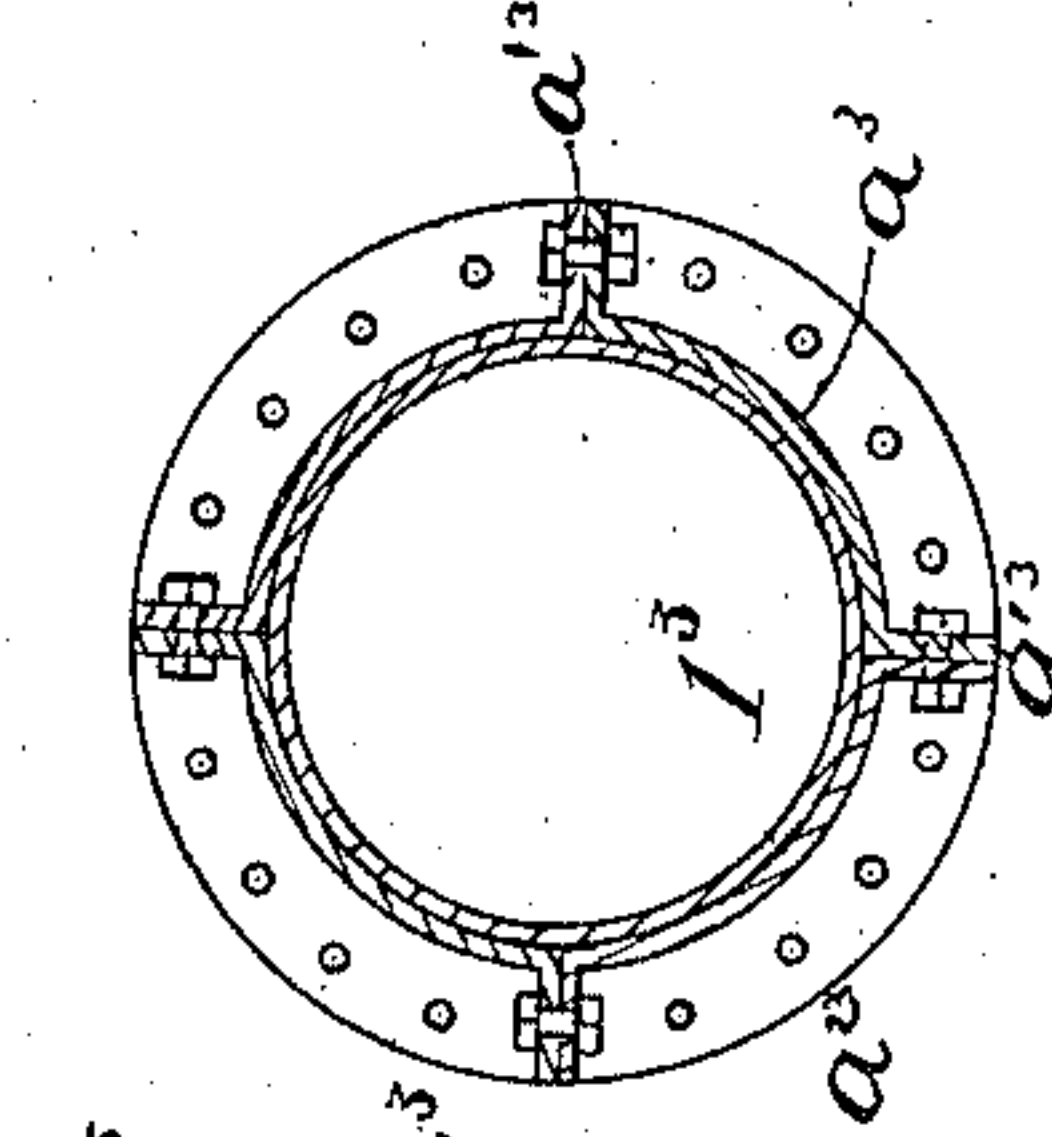


Fig. 31

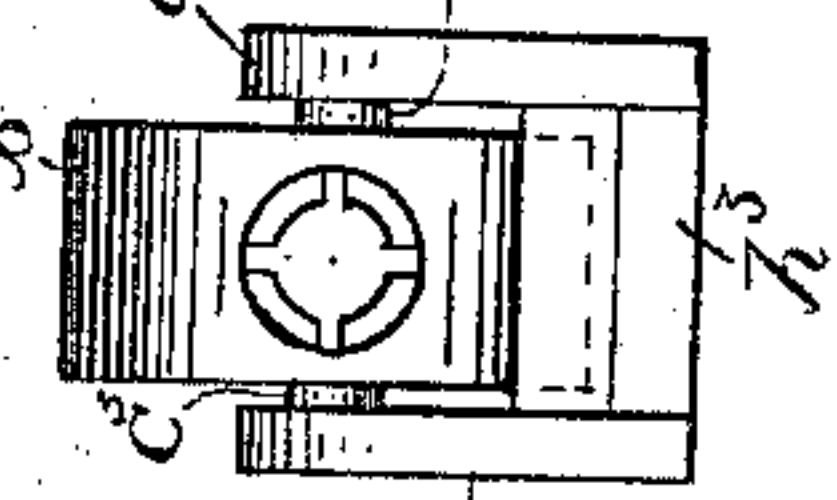


Fig. 30

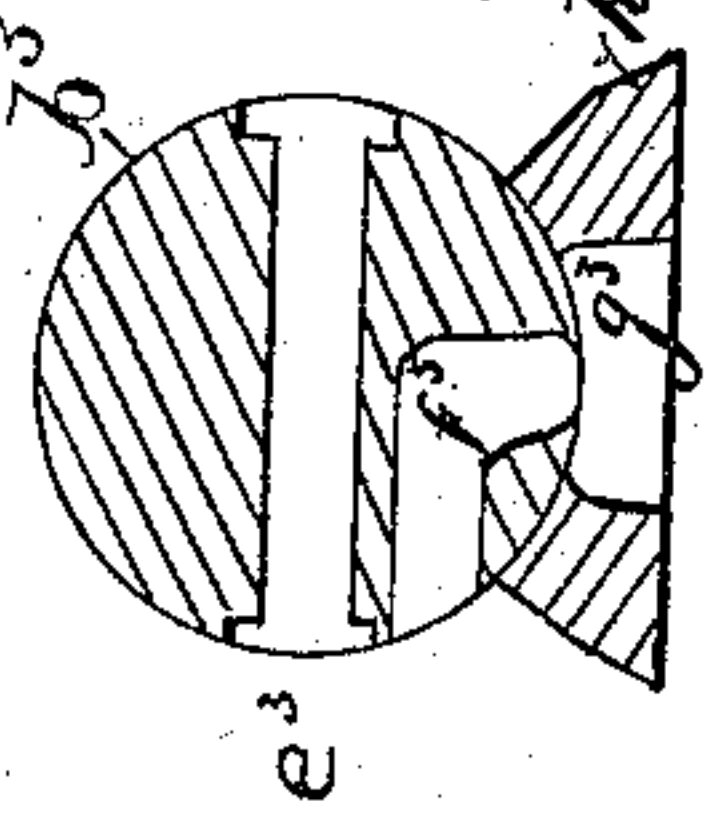


Fig. 29

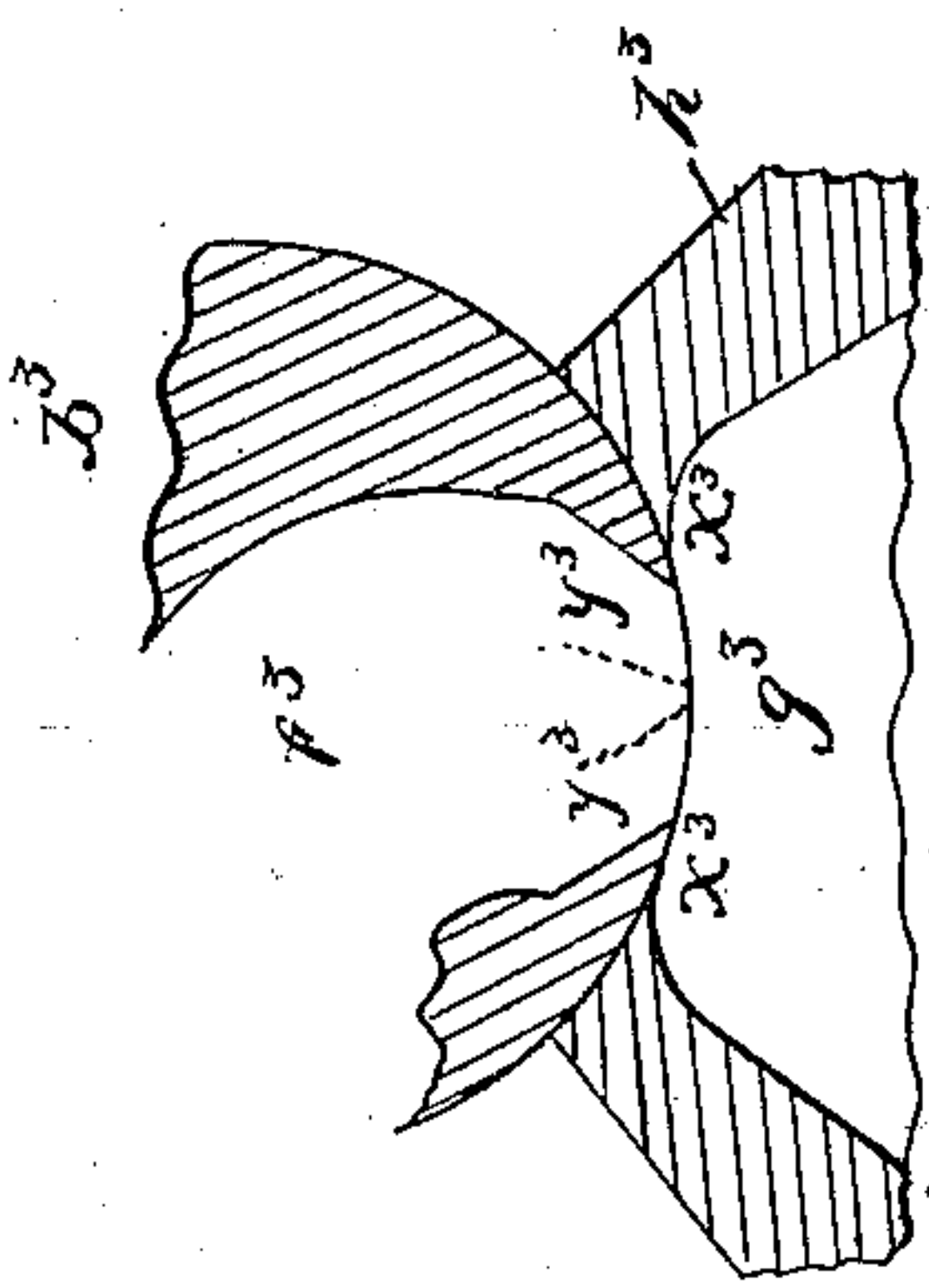


Fig. 24

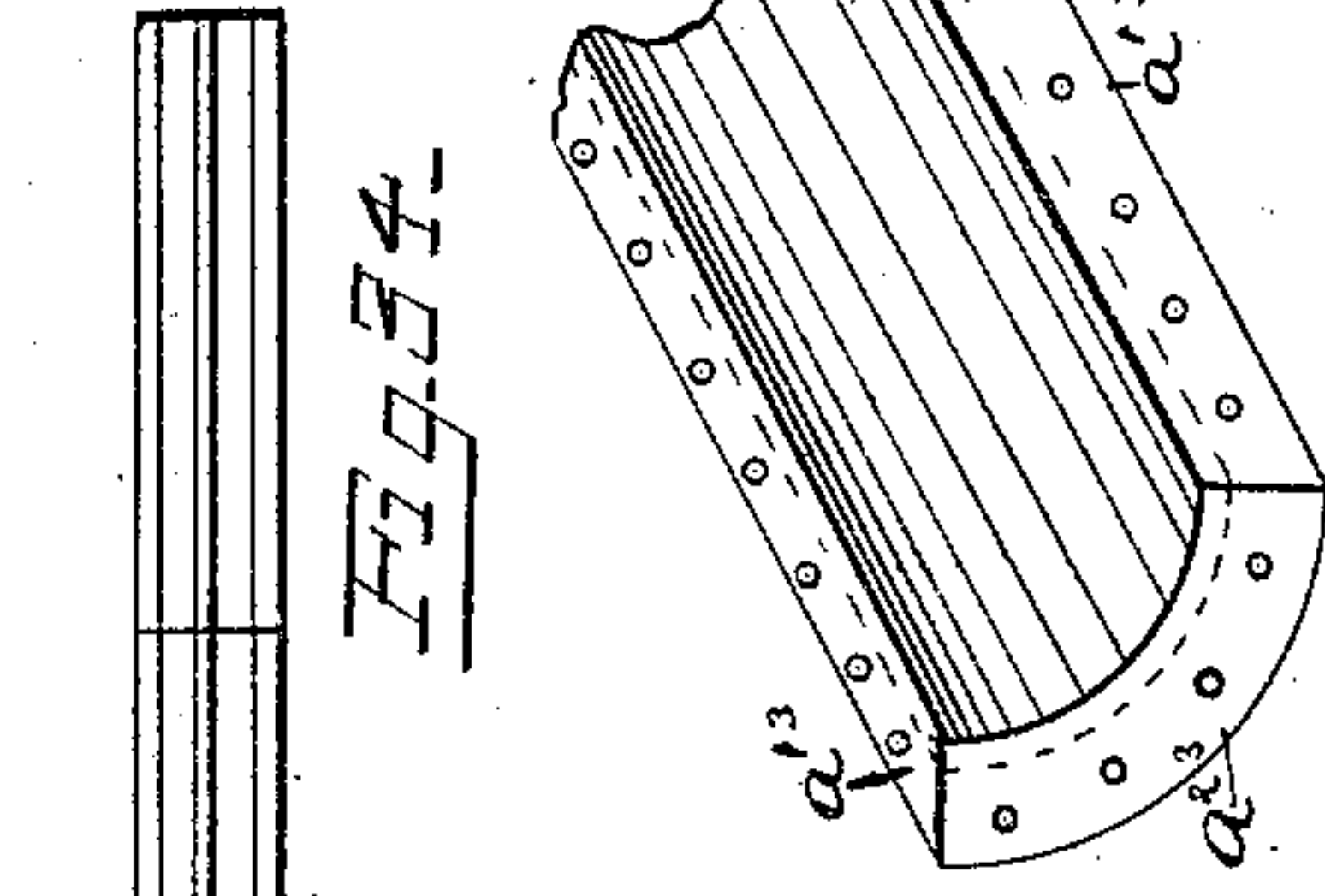


Fig. 21

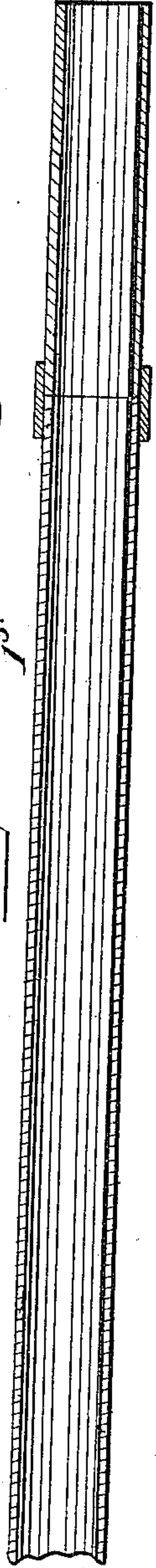
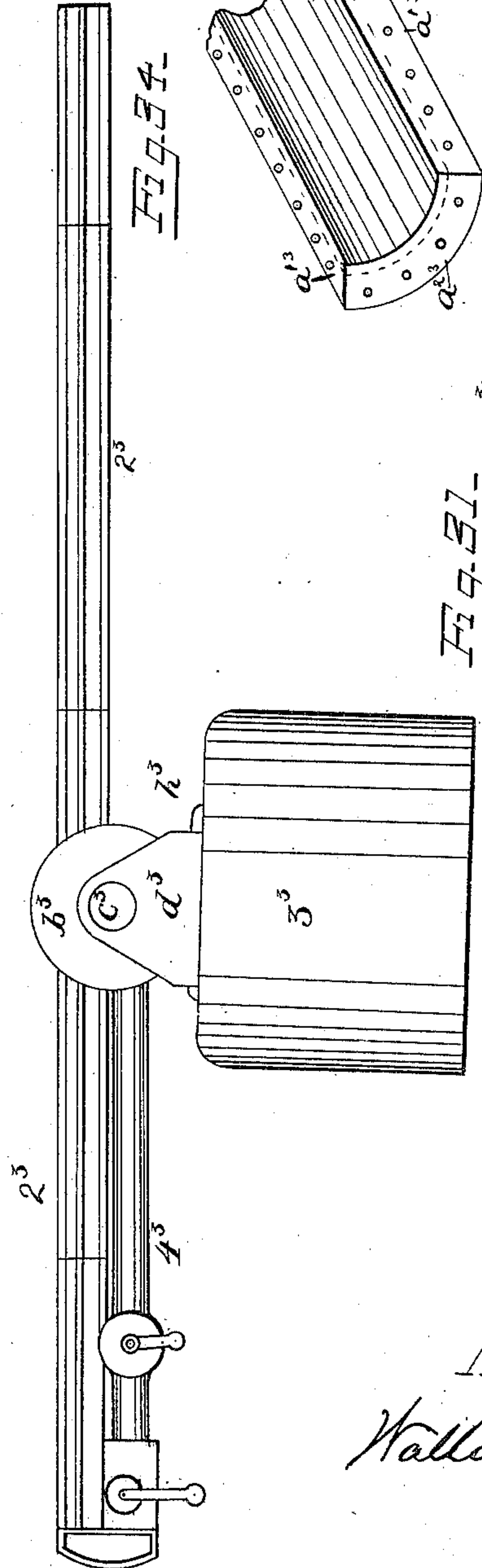


Fig. 20



Witnesses

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# UNITED STATES PATENT OFFICE

WALLACE A. BARTLETT, OF WASHINGTON, DISTRICT OF COLUMBIA.

## PNEUMATIC CANNON.

SPECIFICATION forming part of Letters Patent No. 294,350, dated March 4, 1884.

Application filed January 8, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WALLACE A. BARTLETT, residing at Washington, in the District of Columbia, have invented certain new and useful  
5 Improvements in Pneumatic Cannon, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improved pneumatic cannon, or similar guns which operate  
10 by the pressure of an elastic gas generated or contained under pressure in a receptacle or flask separate from the gun-tube.

The invention consists in certain improvements in the gun-tube; also in the mechanism  
15 by which the gun-tube is supplied from the flask, and the mechanism connecting the same; also in the mechanism by which the gun is trained.

The object of the invention is to produce a  
20 gun capable of throwing projectiles loaded with dynamite or other high explosives without danger of bursting in the gun.

In the drawings, Figure 30 represents a side elevation of the gun mounted. Fig. 31 is a  
25 longitudinal section of a portion of the gun-tube proper. Fig. 32 is a section of the gun-tube and its cruciform sleeve. Fig. 33 is an elevation, and Fig. 34 a perspective, of a section or part of the cruciform re-enforcing sleeve.  
30 Fig. 35 is a section of the trunnion-piece, and Fig. 36 an enlarged view of a portion of the same. Fig. 37 is a rear elevation of the trunnion-piece and its standards.

The gun tube or barrel is indicated by numerals 1<sup>3</sup>. This tube is made of sections of  
35 suitable length, and is peculiar in this, that no particular care is necessary to secure a perfect finish to the interior of the breech-sections, any ordinarily-smooth tubing being  
40 adapted for the purpose. The muzzle-section, however, which need not be of great length, is carefully bored out and finished internally, and may be a shade smaller in diameter than the breech-sections. The purpose of this construction is to economize in cost. As the muzzle-section is the one that gives the direction  
45 to the projectile, it is carefully finished internally. The other sections, not being exposed to the action of penetrating gases, like powder-gas, need no special adaptation for this

gun. I propose to use ordinary mandrel-drawn brass, steel, or similar tubing for all but the muzzle-section of the gun-tube. The gun-tube is not exposed to severe strains, except the bending strain due to its extreme  
55 length. The tube is therefore stiffened by an external sleeve, having flanges to give stiffness. The sleeve 2<sup>3</sup> is preferably made in sections or lengths, which lengths may be bolted together. The lengths are made up of pieces  
60  $a^3 a^3$ , which are either cast or struck up. By preference four of these pieces or quarters,  $a$ , are used to make up the sleeve, but a greater or less number may be used. The pieces  $a^3$  have a concavo-convex portion adapted to fit  
65 the exterior of the gun-tube, and have flanges  $a^{13} a^{13}$ , which are radial to the gun-tube when applied thereto. If the sleeve be made in quarters, as here represented, the quarters will be bolted together around the gun-tube by bolts  
70 extending through the flanges. It is obvious that the same cruciform shape may be secured by making the pieces half-circles instead of quadrants, the alternate flanges in such case being formed on the half-circles—that is, two  
75 of the quadrants may be made in one instead of being bolted together. The ends of the cruciform sleeve also have projecting flanges, which are sectors of circles, as shown at  $a^{23} a^{23}$ . These flanges serve as a means of securing the  
80 sections together end to end, so that the sleeve may be of any desired length.

The gun-tube passes through a trunnion-piece,  $b^3$ , which has trunnions  $c^3$ , which have  
85 bearings in standards  $d^3$ . The trunnion-piece is a disk, or a part of a disk or cylinder, having axial trunnions projecting therefrom, and is perforated diametrically, or nearly so, as at  $e^3$ , for the passage of the gun-tube. The sleeve may be stepped in the trunnion-piece, or may  
90 pass through it, the flanges being in such case suitably constructed; or the trunnion-piece may have projecting wings, to which the gun-tube support or sleeve may be fastened. Below the perforation for the gun-tube the trunnion-piece has a perforation forming an angular  
95 passage-way, like an elbow, as shown at  $f^3$ . This elbow serves as a connecting-passage from the space  $g^3$ , which communicates with the flask 3<sup>3</sup>. The supply-pipe 4<sup>3</sup> connects with  
100



the outer end of this elbow, and leads to the breech of the gun-tube, either through the breech-block, as represented, or in other suitable manner, as described in other applications of even date herewith. The trunnion-piece  $b^3$  thus forms a movable or rotatable joint, through which there is communication from the flask to the supply-pipe, and so to the breech of the gun. To secure a tight joint, the edges of the supporting-piece  $h^3$  are made thin, so that the gas-pressure at the points  $x^3$  serves to seal the joint tightly. The lower edge of the passage  $f^3$  is also undercut, so that if the gun is swung so far on its trunnions as to pass the edge  $y^3$  beyond the edge  $x^3$  the back-pressure of the gas in the passage  $f^3$  will cause the edge  $y^3$  to act as a gas-check and close the joint against leakage.

The air-flask represented is merely a cylindrical reservoir, into which compressed air may be forced in any suitable manner, preferably through a bottom pivot. The flask thus serves as a gun-carriage, and may be turned on its pivot to train the gun, or the part  $h^3$  may revolve on top of the flask, the joint being suitably packed.

The gun is intended to be loaded by placing a projectile in the breech, and discharged by the sudden opening of the valve which closes the passage from the flask to the gun-tube.

The gun may be trained in any suitable or usual manner, as by a screw or by a shoulder-piece.

The gun-tube may be adjusted with relation to the inclosing-sleeve, if necessary, by set-screws, wedges, or by suitable packing. For a more particular description of modes of adjustment see other applications filed by me of even date herewith.

I claim—

1. The barrel or tube of a pneumatic can-

non made in sections, the breech-sections of ordinary tubing, (not bored out,) and the muzzle-section of bored and finished tubing, substantially as described.

2. The combination, with a gun-tube, of an inclosing-sleeve divided longitudinally into sections, and having radial flanges, and mechanism by which the flanges are secured together, substantially as described.

3. The trunnion-piece having tubular connection with the gas-flask and with the gun-tube, substantially as described, the gun-tube supported by said trunnion-piece, and a strengthening-sleeve for said gun-tube, having a bearing on said trunnion-piece, all in combination, substantially as set forth.

4. The combination, with a gun-tube, of an inclosing-sleeve composed of sections having radial and annular flanges adapted to be united, substantially as described.

5. The combination, with a gun-tube, of a strengthening-sleeve composed of four parts, each having a concavo-convex portion and side and end flanges, as described, which parts, when united, form a cruciform sleeve, substantially as described.

6. The combination, with the air-flask, of the trunnion-piece which supports the gun-tube and supply-pipe, substantially as described, said flask connecting with the trunnion-piece through a chamber,  $g^3$ , in part  $h^3$ , which part has edges  $x^3$ , made thin to serve as gas-closing joints, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WALLACE A. BARTLETT.

Witnesses:

PHILIP HAWLEY,  
C. W. BROWN.