

(No Model.)

2 Sheets—Sheet 1.

J. GRAHAM.
ORDNANCE.

No. 544,914.

Patented Aug. 20, 1895.

Fig. 1

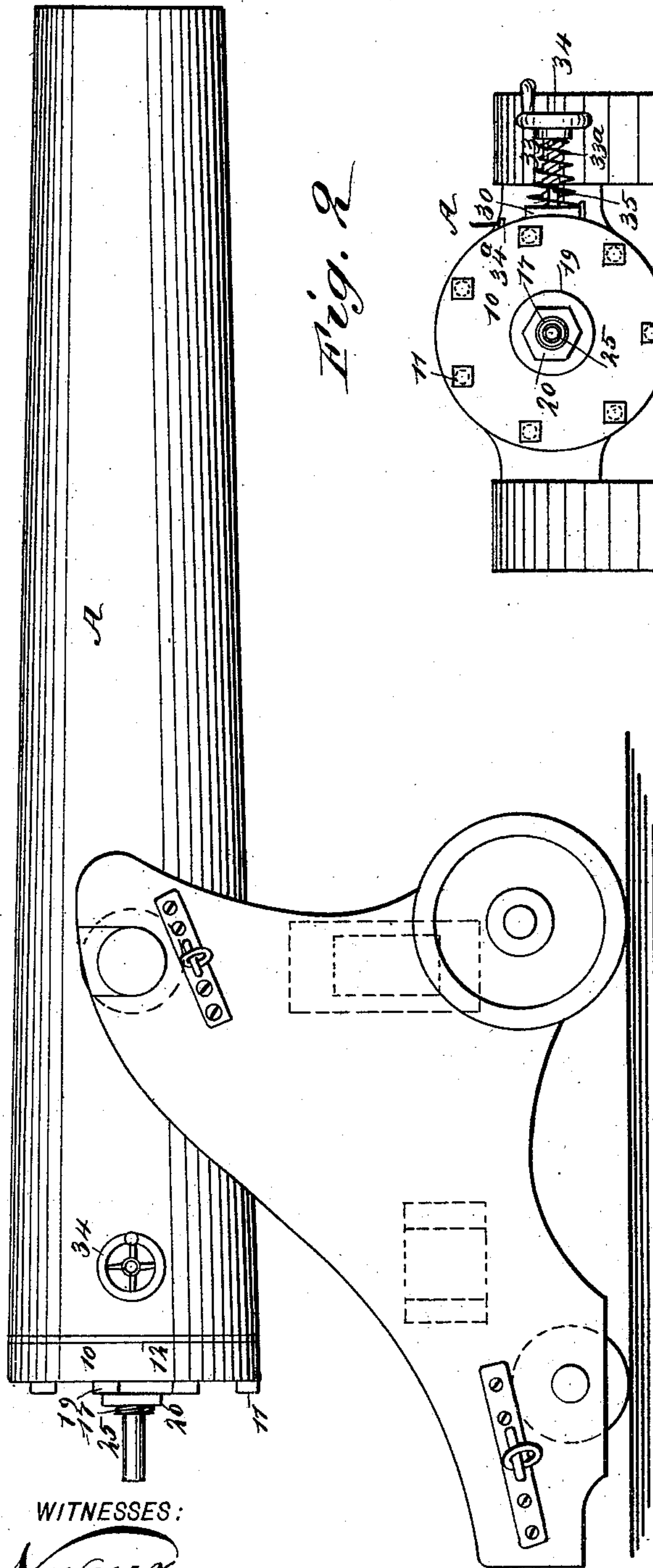
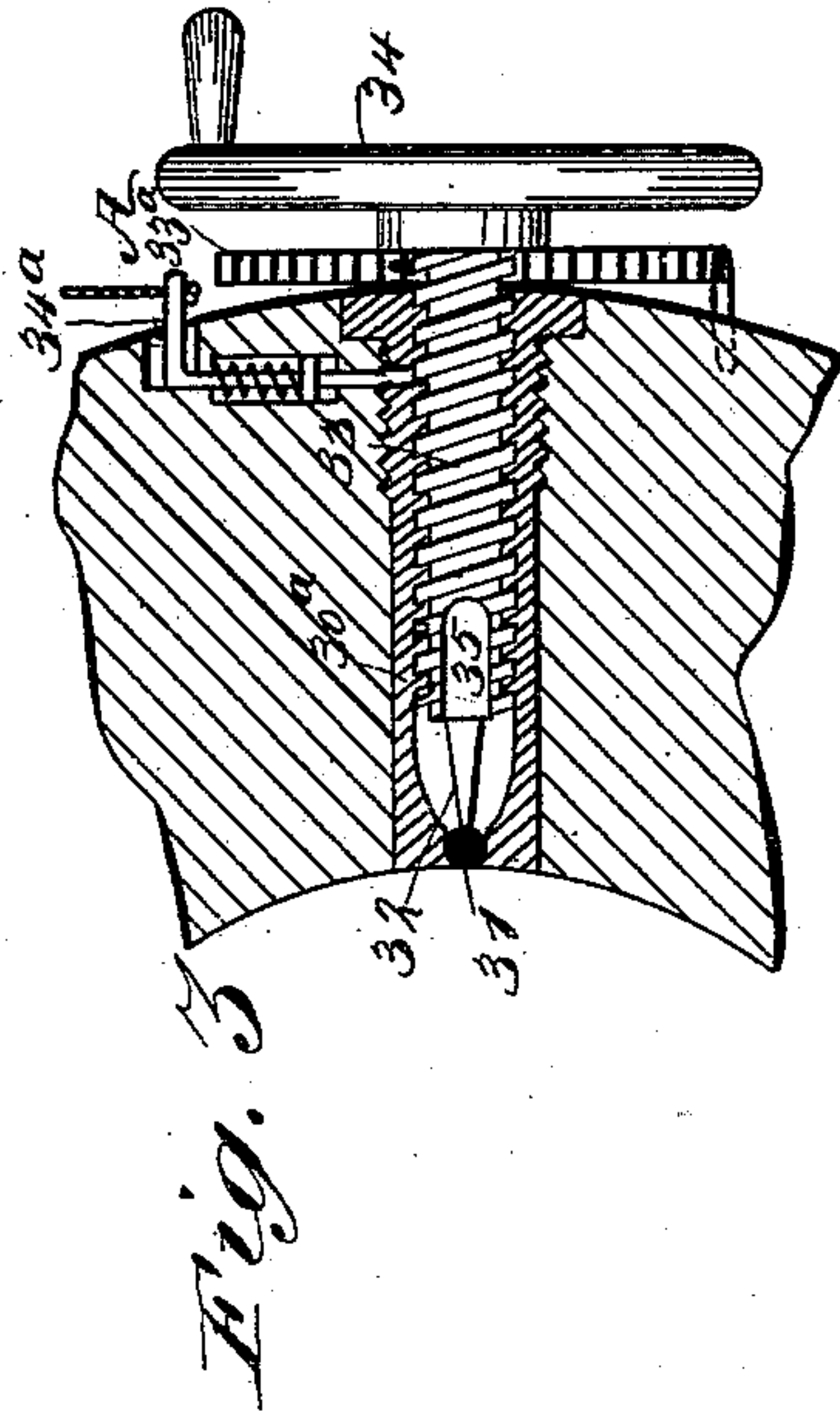
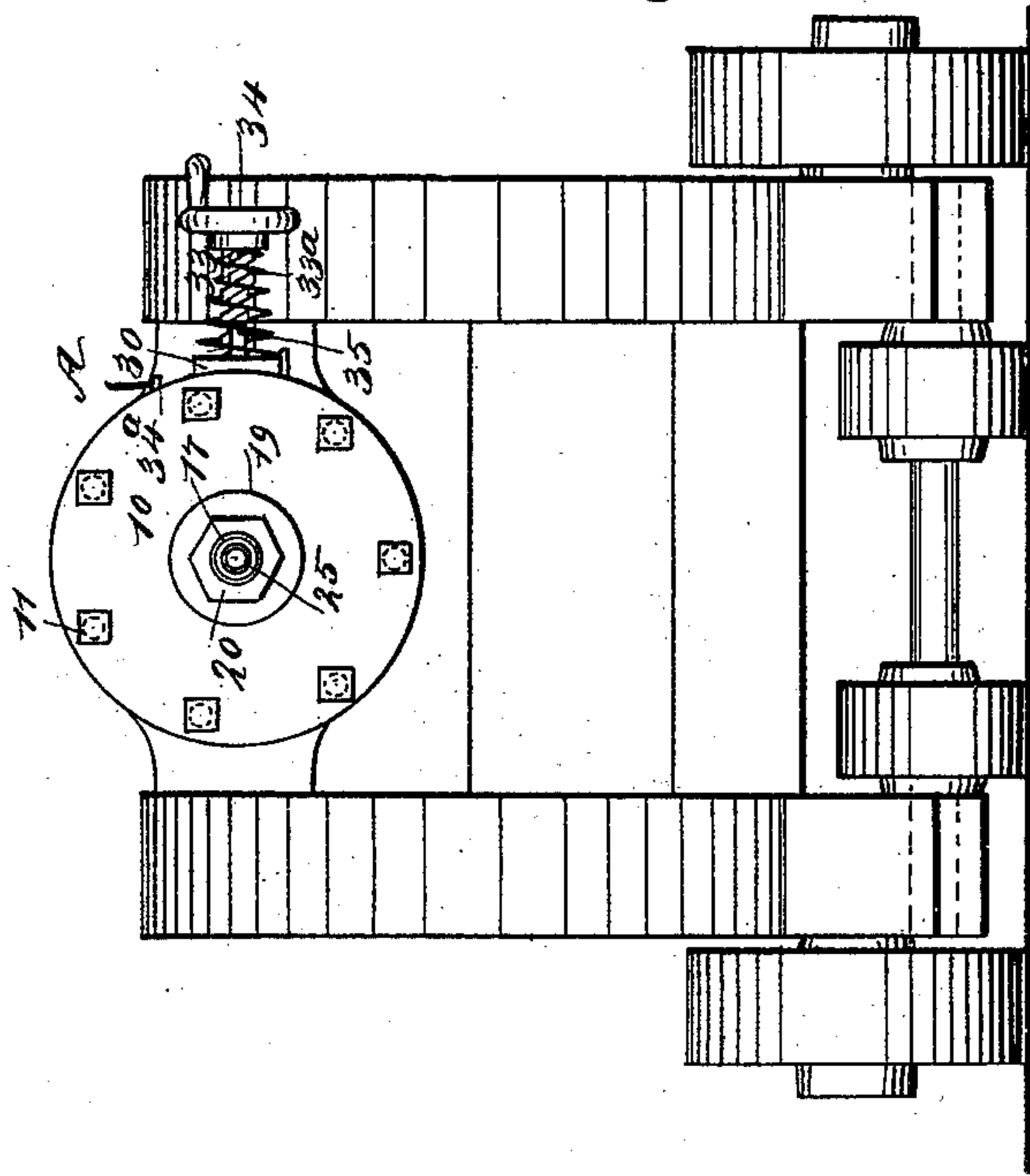


Fig. 2



WITNESSES:
C. Neveu
G. Sedgwick

INVENTOR
J. Graham
BY *Munn & Co*
ATTORNEYS.

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2 Sheets—Sheet 2.

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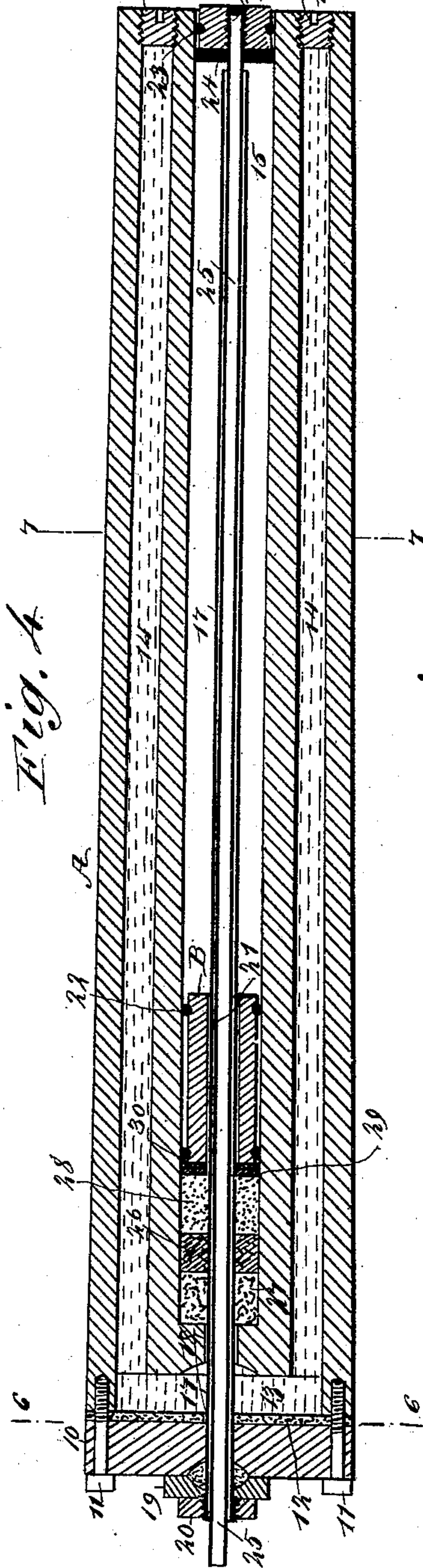


Fig. 4

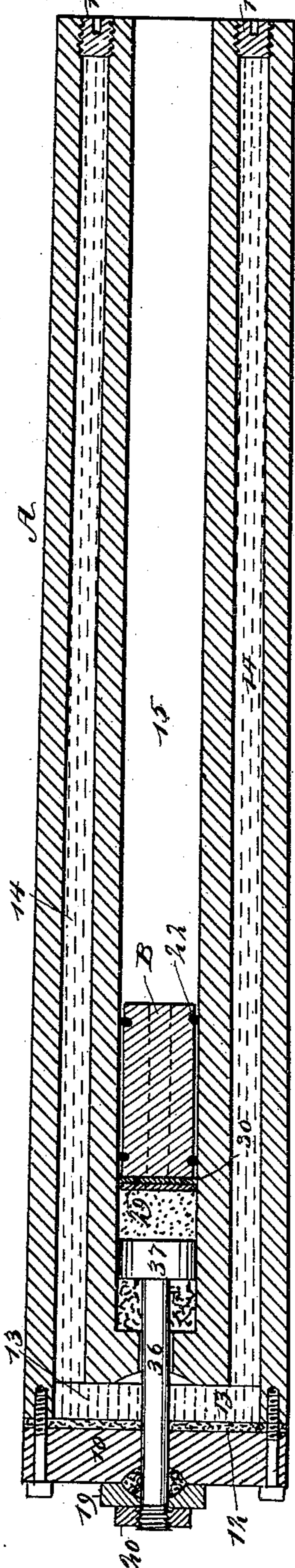


Fig. 5

Fig. 6

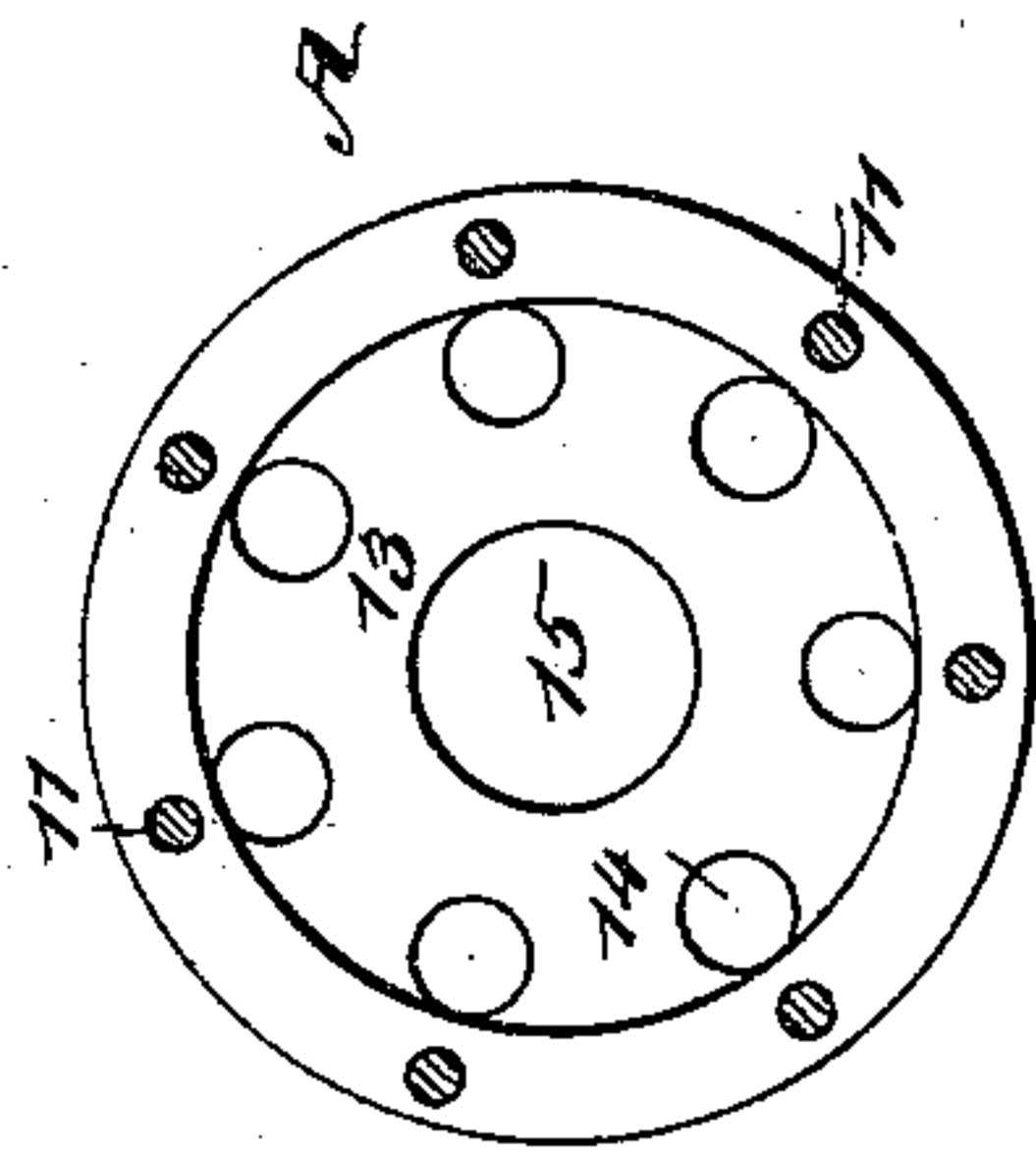


Fig. 7

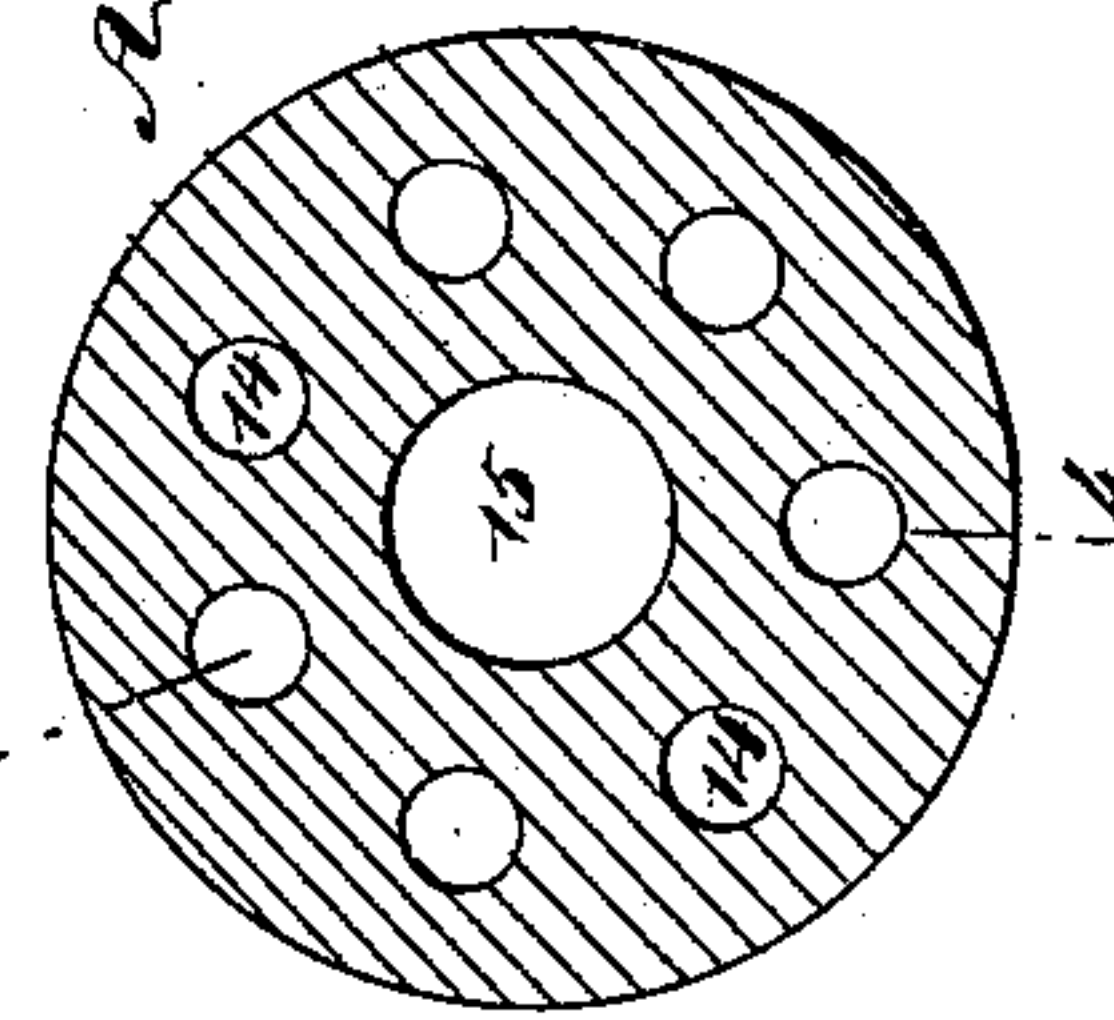
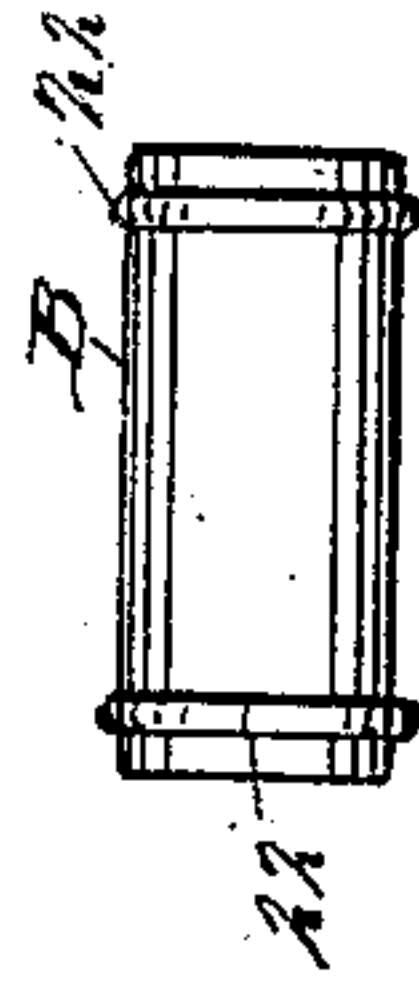


Fig. 8



WITNESSES:

C. Neveu
C. Sedgwick

INVENTOR.

J. Graham
BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN GRAHAM, OF DAVENPORT, IOWA.

ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 544,914, dated August 20, 1895.

Application filed July 5, 1893. Serial No. 479,581. (No model.)

To all whom it may concern:

Be it known that I, JOHN GRAHAM, of Davenport, in the county of Scott and State of Iowa, have invented a new and useful Improvement in Firearms, of which the following is a full, clear, and exact description.

My invention relates to an improvement in guns, and is equally well adapted for use in ordnance as in rifles or like weapons.

10 The object of the invention is to construct a gun capable of carrying a double shot, which acts, after it is fired, in the nature of a bomb or torpedo.

15 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

20 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

25 Figure 1 is a side elevation of a piece of ordnance constructed in connection with my invention. Fig. 2 is a rear elevation of the piece of ordnance. Fig. 3 is a detail sectional view illustrating the firing mechanism. Fig. 4 is a longitudinal section through a cannon, said section being taken practically on the 30 line 4 4 of Fig. 7. Fig. 5 is a similar section through a cannon, illustrating a slight modification in its construction. Fig. 6 is a section taken diametrically on the line 6 6 of Fig. 4. Fig. 7 is a similar section taken on the line 35 7 7 of Fig. 4, and Fig. 8 is a side elevation of the main or body portion of the ball or shot.

40 In carrying out the invention the breech-block 10 is secured upon the body A of the gun by means of bolts 11, or their equivalents, and between the body and the breech a packing 12 is located, as shown in Figs. 4 and 5. In the rear end of the body a circular chamber 13 is formed, as shown in Figs. 4, 5, and 6, and this chamber is in communication 45 with a series of longitudinal chambers 14, arranged at equal distances apart, and the said chambers are circular in cross-section and arranged in a circle around the bore 15 of the gun. The longitudinal chambers 14 50 are in direct communication with the breech-chamber 13, and all of these chambers are adapted to hold water, and are likewise

adapted to be filled when the gun is in use. The water may be emptied from or introduced into the chambers at the muzzle of the gun, 55 since the outer ends of all the longitudinal chambers are closed by screw-blocks 16 or their equivalents.

The bore 15 does not extend through the breech end of the body of the gun, as shown 60 in Figs. 4 and 5, but in the preferred form of the gun a tube 17, of stout material and rendered smooth upon its outer face, is located in the bore 15 of the gun, extending from a point adjacent to the muzzle along the center 65 of the bore and through a suitable opening 18 made in the breech end of the body. The tube 17 likewise passes through the breech-chamber 13, through the packing 12, and through the breech-block 10, and likewise 70 through a stuffing-box 19, located upon the breech-block; and the breech end of the tube 17 is threaded, and is provided with a nut 20, whereby it is held in a stationary manner within the gun. 75

The shot or ball B is of cylindrical shape, and it may be as long as in practice may be found desirable. It is provided with a central longitudinal opening 21, which extends 80 through it from end to end, and when the shot is placed in the bore of the gun the tube 17, within the bore, is passed through the opening in the shot or ball, whereby the shot is capable of sliding upon the tube, the tube fitting as snugly as possible in the shot, and 85 in order that the shot shall fit snugly to the wall of the bore it is provided, near each end, with an exterior rib or band 22 of Babbitt metal or a like material, as shown in Fig. 8. The hollow shot just described is really the 90 main section of the shot, since a second section B' is used in connection with it. This second section of the shot, when the gun is loaded, is located at the muzzle, and is provided also with a Babbitt-metal band 23, 95 (shown in Fig. 4,) and the inner face of the outer section B' of the shot is provided with a coating 24, of lead or other soft material, which engages with the wall of the bore of the gun. The section B' of the shot is made 100 fast on the end of a tube 25, and the tube 25 is made to extend through and somewhat loosely fit in the shot-supporting tube 17. The tube 25, attached to the shot-section B',

is adapted to be fired with the shot and leaves the gun constituting practically a tail for the shot, whereby the shot may be properly termed a "comet-shot." The tail-tube 25 of the shot is adapted to be filled with an explosive material, the material exploding by concussion when the shot meets with an object.

The shot-supporting tube 17, near the breech end of the bore, has firmly secured upon it a plunger 26. This plunger is fitted to the wall of the bore and the space back of the plunger is filled with a packing 27, preferably of an elastic material. In loading this form of gun the powder 28 is placed in the gun at the muzzle, for example, and forced to its seat against the plunger 26. Next a wooden wad 29 is forced against the powder, and this is followed by a second wad 30, of an elastic material—as, for example, rubber. Finally, the main section B of the shot is inserted at the muzzle and is forced down the bore to a firm engagement with the wad 30.

The firing mechanism is shown in detail in Fig. 3, and it consists of a chamber 30^a, which is conical at its inner end and is in communication at that point with that portion of the bore of the gun in which the powder is located, the chamber entering the bore just back of the main body of the shot, so that the powder is ignited just back of the shot and burns in direction of the breech, thereby insuring the explosion of the entire charge of powder. In the extreme inner or conical end of the chamber 30^a a small pocket is formed for a cap 31, of fulminate or other highly explosive material, and usually the cap is made round or in pellet form, as is likewise shown in Fig. 3. The firing-pin 32 is adapted to be brought into violent contact with the cap and the pin is provided with a threaded shank 33, which is screwed into the chamber for the greater portion of its length, the shank being provided with a hand-wheel 34 at its outer extremity, or a like device may be used, and the inner end of the shank is provided with a pocket 35, made in one of its sides, so that when the shank is screwed outward and the pocket is exposed the cap may be placed in the pocket and will roll to its seat adjacent to the powder-charge. A spring 33^a is attached to the body of the gun and to the firing-pin 32, as shown in Figs. 2 and 3, the spring being wound around the pin, and a spring-controlled latch 34^a is located in a suitable recess produced in the body of the gun, which latch is adapted for engagement with the threaded portion of the firing-pin. When the pin is screwed outward, the spring 33^a is placed under tension, and when a firing is to be effected the latch 34^a is withdrawn from engagement with the firing-pin and the spring 33^a will act to quickly and violently force the firing-pin inward until its point is brought into exploding contact with the cap, as shown particularly in Fig. 3. As soon as the charge is exploded, the body-section of the shot will

be forced along the bore of the gun and the pressure of air created by the body-section will force the outer section B' from the gun before it is reached by the body-section; but as soon as the body-section overtakes the outer section of the shot the two will contact so violently that the soft-metal facing 24 of the outer section of the shot will be indented and will serve to bind the two sections together, causing them and the ball to travel in close company to their destination. As soon as the shot strikes an object the concussion will explode the charge contained in the tubular tail of the shot.

If in practice it is found desirable, the supporting-tube 17 may be omitted from the body of the gun, as shown in Fig. 5, and in its place a solid rod 36 be employed, which is passed through the breech-block and secured, the rod carrying at its inner end a plunger 37, and the shot used may be either a solid shot or a hollow one, and in this event the outer section of the shot may be omitted. A shot having an opening through it will travel farther and faster than an entirely solid one, as it will not meet with as much resistance in its passage through the air.

A gun constructed as above set forth is not liable to burst by expansion and contraction, by reason of the water being evenly disposed throughout all parts and connected, and by reason of the recoil of the breech, when the powder is ignited, giving an even pressure on all parts of the gun. The water is also intended to keep the metal at a uniform heat, and the water may be changed in a few seconds at any time. The gun is also rendered lighter than ordinary guns when not in use, as at that time it need not contain water. On this principle guns of any desired caliber may be constructed.

By reason of the powder being ignited in or next to the projectile and burned backward a more complete combustion of the entire charge is secured, thereby utilizing its entire force or as much as it is possible to obtain.

The bore of the gun is made smooth, as is likewise the outer face of the supporting-rod. The weight of the shot is sustained by this rod and, therefore, the shot has but little friction with the inner wall of the gun.

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

1. In a gun, the combination with a barrel of a sectional shot, one section having a longitudinal opening and fitting as usual in the barrel, and the other section fitting in the muzzle of the barrel and provided with a tube adapted to be filled with an explosive, substantially as described.

2. In a gun, a barrel having a tube held centrally within its bore, the said tube extending from the breech nearly to the muzzle, in combination with a shot having an opening through it and sliding upon said tube, and a second shot fitting in the muzzle of the gun

and provided with a tube projecting into the tube of the barrel, substantially as described.

3. In a gun, the combination with a barrel provided with a tube held centrally in its bore, the said tube extending from the breech
5 nearly to the muzzle, of a shot having an opening through it and fitting upon the said tube, and a second shot held in the muzzle of the barrel and provided with a tube project-

ing into the tube of the barrel and adapted to be filled with an explosive, said second shot being provided at its inner face with a soft metal facing, substantially as herein shown and described.

JOHN GRAHAM.

Witnesses:

CLAUS WULFF,
ANNA WULFF.