

No. 803,387.

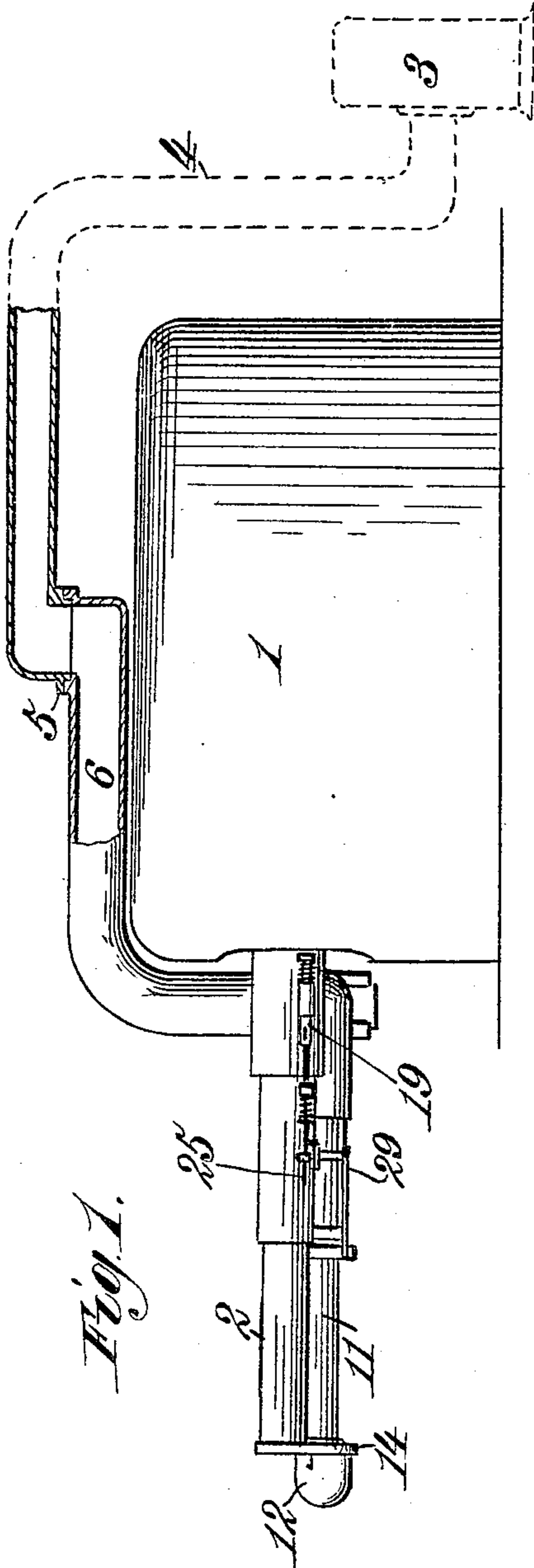
PATENTED OCT. 31, 1905.

C. V. ALSOP.

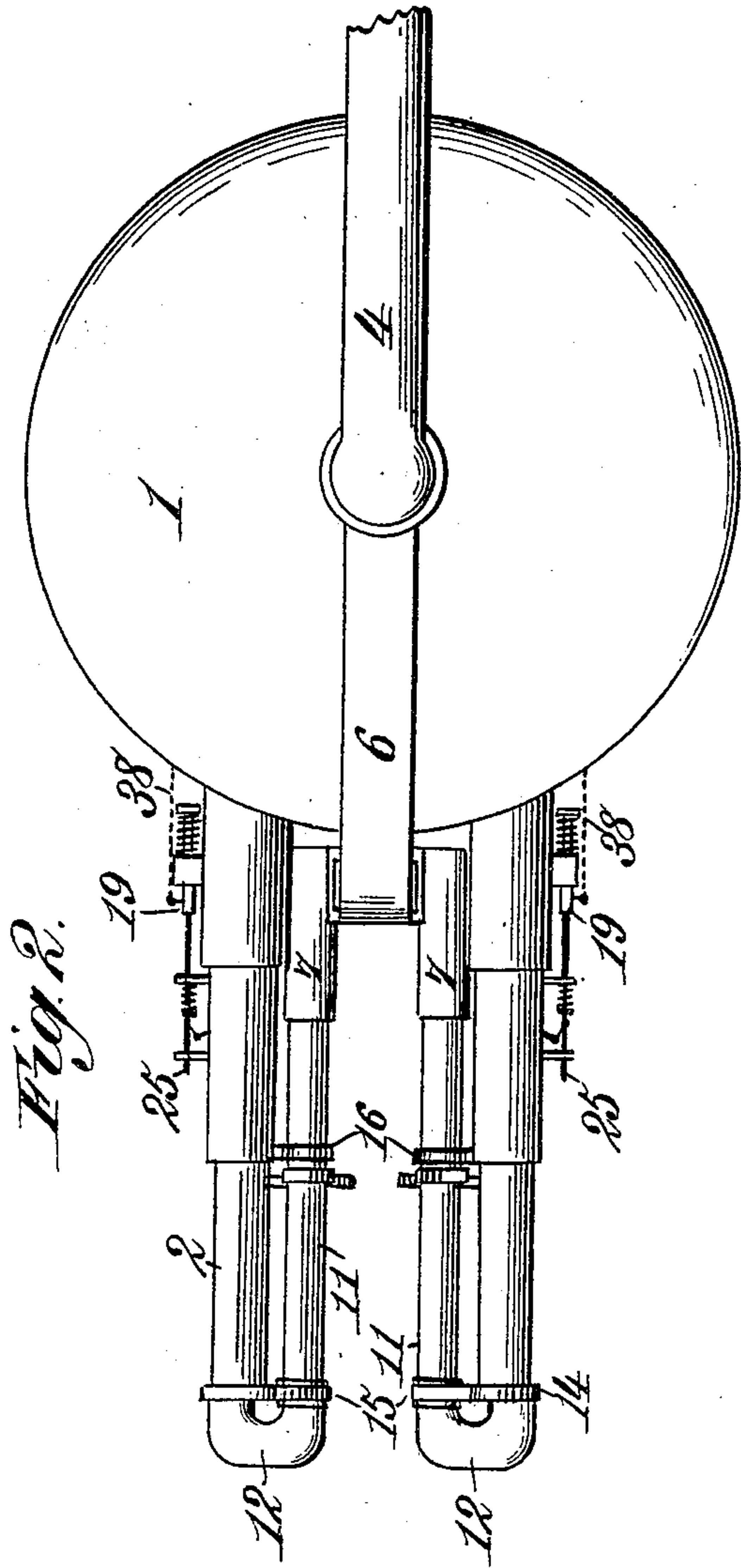
APPARATUS FOR WITHDRAWING SMOKE AND GASES FROM ORDNANCE.

APPLICATION FILED MAY 11, 1904. RENEWED SEPT. 25, 1905.

2 SHEETS—SHEET 1.



*Fig. 1.*



*Fig. 2.*

*Witnesses.*  
*Robert Everett.*  
*James L. Norris, Jr.*

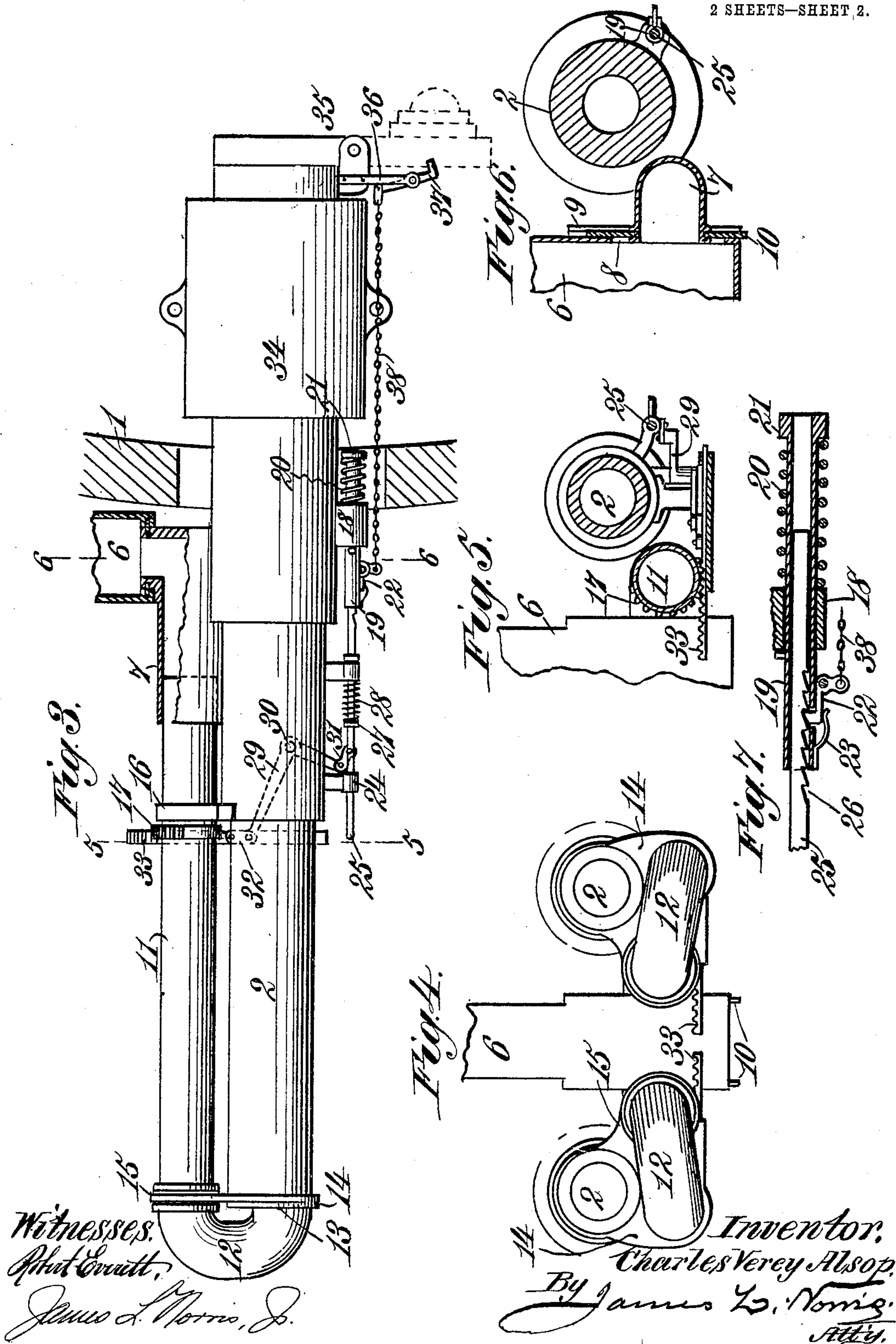
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2 SHEETS—SHEET 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

CHARLES VEREY ALSOP, OF JACKSON, MISSOURI.

## APPARATUS FOR WITHDRAWING SMOKE AND GASES FROM ORDNANCE.

No. 803,387.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed May 11, 1904. Renewed September 25, 1905. Serial No. 280,082.

*To all whom it may concern:*

Be it known that I, CHARLES VEREY ALSOP, a citizen of the United States, residing at Jackson, in the county of Cape Girardeau and State of Missouri, have invented new and useful Improvements in Apparatus for Withdrawing Smoke and Gases from Ordnance, of which the following is a specification.

This invention relates to certain new and useful improvements in ordnance, and has for its object to prevent what is known as "back-flare," as well as the discharge of noxious gases from a gun into the turret of a vessel or other confined space in which the gun may be located.

Recent events have demonstrated that with the powder now in use in the navy a highly explosive or combustible gas remains for some time in the gun after firing, and if the breech-block be opened immediately or shortly after firing there is danger of such gas blowing out through the breech and igniting any powder that may be in proximity to the gun or else, remaining in the gun, of igniting the fresh charge of powder inserted through the breech. To avoid the danger of back-flare or of having the fresh charge of powder prematurely ignited, it has been customary to allow sufficient time to elapse after each discharge for the dangerous gases to be dissipated or consumed before opening the breech-block. Where rapid firing is a desideratum, however, there is always a liability of this precaution being disregarded or in the excitement of actual combat of its being overlooked. Moreover, it frequently occurs that a certain amount of noxious gases or vapors are blown back through the gun by the wind into the turret to the great discomfort of the men handling the gun.

With the object in view, as stated, of preventing the disagreeable and oftentimes dangerous conditions above outlined the invention resides, broadly, in providing means for withdrawing from the gun immediately after firing such gases or vapors as may have remained therein without in any manner interfering with the action and rapid handling of the gun.

In order that the invention may be clearly understood, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a turret with a gun projecting therefrom and showing my invention applied thereto, a portion of the apparatus being shown in section.

Fig. 2 is a plan view of Fig. 1. Fig. 3 is a sectional plan view on an enlarged scale, the gun and certain of the mechanism being shown in elevation. Fig. 4 is a view in elevation, also on an enlarged scale, looking at the muzzles of the two guns of a turret. Fig. 5 is a section on the line 5 5 of Fig. 3. Fig. 6 is a section on the line 6 6 of Fig. 3, and Fig. 7 is an enlarged sectional detail view of a portion of the operating mechanism.

Referring now to the drawings, 1 indicates a turret, and 2 guns projecting through the side thereof. 3 indicates any suitable form of suction apparatus, such as a fan, and 4 a pipe connected therewith. This pipe, as shown by Fig. 1, is led over the top of the turret and is connected, as indicated at 5, to a pipe 6. The connection of the pipe 6 with the pipe 5 is such as will permit the former pipe to turn with the turret about the end of the pipe 4 as a center. The pipe 6 is extended over the front of the turret and down the side thereof and at its lower end is connected at opposite sides with two short pipe-sections 7. This latter is preferably made, as indicated by Fig. 6, by forming an elongated opening 8 in each side of the lower end of the pipe 6, on opposite sides of which are provided guides 9. These guides receive a slide 10, secured about the opening of each of the pipe-sections 7, the connection being such that the pipes 7 are rotatably secured to the slides 10, as more clearly shown by Figs. 3 and 6. It may be explained that as the pipe-sections 7 move with the guns 2 as said guns are raised or lowered the connection described will permit of the pipe-sections 7 being raised and also of being partially rotated to accommodate themselves to the movement of the gun, and at the same time the slide 10 will always cover the opening 8. Thus an air-tight connection is always maintained between the pipe 6 and the pipe-sections 7.

From now on the invention will be described in connection with one of the guns 2, as the application of the invention in each case is the same.

11 indicates a pipe which is adapted to telescope at its rear end in the pipe-section 7 and extends outward parallel with the gun 2 substantially flush with the muzzle thereof. Secured on the outer end of the pipe 11 is a curved pipe 12, which for convenience of description I will term the "mouthpiece," the outer end 13 of said mouthpiece 12 being



parallel with the muzzle of the gun. Mounted on the outer end of the gun 2 and having its outer face flush with the muzzle thereof is a guard 14, against which the end 13 of the mouthpiece 12 is adapted normally to rest and be closed thereby. The pipe 11 is suitably supported from the gun 2 to move therewith, as indicated at 15 16. Mounted on the pipe 11 is a segmental rack 17. Mounted in a bearing 18 at one side of the gun is a hollow plunger 19, which is controlled by a spring 20, located between the bearing 18 and a head 21 on the inner end of said plunger. Pivotally mounted on the outer side of the plunger 19 is a dog 22, which projects through an aperture in the side of the plunger 19 and is normally held in this position by means of a spring 23. Slidably mounted in the plunger 19 and supported in bearings 24 at the side of the gun is a plunger-rod 25, which is provided with a series of rack-teeth 26, adapted to be engaged by the dog 22. Mounted between a collar 27 on said plunger-rod and the innermost bearing 24 is a coil-spring 28, which possesses about one-half the strength of the spring 20.

29 indicates a bell-crank lever which is pivotally mounted at 30 on the under side of the gun, as shown by dotted lines in Fig. 3. One end of this bell-crank lever is connected, by means of a link 31, to the plunger-rod 25. The other end of said bell-crank lever is connected, by means of a link 32, with a rack-bar 33, which engages the segmental gear 17 on the pipe 11.

34 indicates the ordinary cylinder or sleeve in which the gun works in its recoil movement.

35 indicates the breech-block. Pivotally mounted in the outer end of an arm 36, projecting from one side of the gun near the breech thereof, is a trip-lever 37, having an outer bent end adapted to be engaged by the breech-block 35 before the same reaches its extreme open position.

38 indicates a chain or cable which connects the inner end of the trip-lever 37 with the dog 22.

The operation is as follows: The suction apparatus normally occupies the position shown in Fig. 4—that is to say, with the end of the mouthpiece 12 clear of the muzzle of the gun and resting against and closed by the guard 14. The gun being fired, in its recoil it carries back with it the pipe 11, which telescopes in the pipe-section 7. It also carries back with it the rod 25 and the hollow plunger 19. The head 21 of the latter will engage the sleeve 34 and be moved outward against resistance of the spring 20 at the same time as the rod 25 is moved inward, thereby causing the dog 22 to slide over the rack-teeth 26, and as the recoil movement ceases said dog engages in one or the other of said rack-teeth. As the gun moves outward after the recoil the

spring 20, being stronger than the spring 28, will prevent the plunger 19 from moving outward and the dog 22 will consequently hold the rod 25, so that the spring 28 will be compressed and the bell-crank lever will be turned to one side, thus moving the rack 33 laterally, the engagement of which with the segmental gear 17 will cause the pipe 11 to turn and throw the end 13 of the mouthpiece 12 upward and over the muzzle of the gun 2. The suction device 3 being in operation, the suction will thereby be produced in the gun, and as soon as the breech-block 35 is open any vapors or gases in the gun 2 will be drawn through the mouthpiece 12 and the pipe 11, the pipe-section 7, and the pipe 4 and discharged from the suction apparatus 3. As the mouthpiece of the suction apparatus is thrown over the muzzle of the gun automatically by the recoil of the gun and as this occurs almost immediately after the discharge, it follows that the breech-block can be opened as soon as the gun comes to rest, thus avoiding any delay and facilitating the rapidity with which the gun may be fired. This is due to the fact that the suction is set up in the gun before it will be possible to open the breech-block, and as soon as the breech-block is opened the gaseous contents of the gun start to travel toward the muzzle under the influence of the suction set up in the pipe 11, and therefore all back-flare or back travel of such gaseous contents is prevented. Furthermore, it is obvious that as the mouthpiece 12 covers the muzzle of the gun it will be impossible for the wind to blow any of the noxious vapors back in the turret. As the breech-block 35 is opened its face will engage the bent end of the trip-lever 37, and thus exert a pull upon the chain 38, which in turn will throw the dog 22 outward from engagement with the teeth 26 of the plunger-rod 25, allowing the spring 28 to move said plunger-rod outward thereby through the bell-crank lever 29, the rack-bar 33, and the segmental gear 17, returning the mouthpiece 12 to the position shown in Fig. 4—that is to say, clear of the muzzle of the gun, with its open end resting upon and closed by the guard 14.

The benefits to be derived from my invention have been sufficiently set forth in the above description of the same and it only remains to state that I do not limit the invention to the mechanism herein shown and described for turning the pipe 11 with its mouthpiece 12, as any other suitable mechanism which may be found desirable for this purpose may be substituted for that shown and described. Also the invention is not limited to any special means for creating a suction in the pipe 11.

Having thus fully described the invention, what I claim as new is—

1. In combination with a gun, means mov-



able into and out of communication with the mouth thereof for creating suction at the muzzle of the gun.

2. In combination with a gun, means for  
5 creating suction, and automatically-operated means for causing such suction to become effective at the muzzle of the gun after firing.

3. In combination with a gun, means rendered operative by the recoil movement of  
10 the gun for creating suction at the muzzle thereof after firing.

4. In combination with a gun, means actuated by the recoil of the gun for covering the muzzle thereof after firing.

15 5. In combination with a gun, means actuated by the recoil of the gun for covering the muzzle thereof after firing, and controlled by the breech-block for uncovering the muzzle.

20 6. In combination with a gun, a member automatically operated to cover the muzzle of the gun after firing, and means for actuating said member to uncover said muzzle.

25 7. In combination with a gun, a member automatically operated to cover the muzzle of the gun after firing, and automatic means, controlled by the breech-block in the opening movement of the latter, for actuating said member to uncover said muzzle.

30 8. In combination with a gun, a suction apparatus, means actuated by the recoil of the gun for throwing said apparatus into communication with the muzzle of the gun, and means for moving said apparatus clear of the muzzle.

35 9. In combination with a gun, a conduit automatically operated from the recoil of the gun to cover the muzzle thereof after firing,

means for moving said conduit clear of the muzzle, and means for creating suction in said conduit.

10. In combination with a gun, a conduit,  
40 means for placing said conduit in communication with the bore of the gun, and means for creating suction in said conduit to draw therethrough the gases remaining in the gun  
45 after firing.

11. In combination with a gun, a conduit, means for placing said conduit in communication with the muzzle of the gun, and means  
50 for creating suction in said conduit to draw therethrough the gases remaining in the gun after firing.

12. In combination with a gun, a rotatable suction-pipe having a mouthpiece, means actuated by the recoil movements of the gun  
55 for turning said pipe to bring its mouthpiece over the muzzle of the gun, and means for turning said pipe to uncover the muzzle.

13. In combination with a gun, a guard provided at the muzzle thereof, a rotatable  
60 suction-pipe having a mouthpiece normally closed by said guard, means actuated by the recoil movements of said gun for turning said pipe to bring its mouthpiece over the muzzle  
65 of the gun, and means for turning said pipe to uncover the muzzle.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES VEREY ALSOP.

Witnesses:

BRUCE S. ELLIOTT,  
ELLEN G. McCORMIC.