July 27, 1937. N. BROUSSARD 2,088,503

CANNON

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Fig. 1.

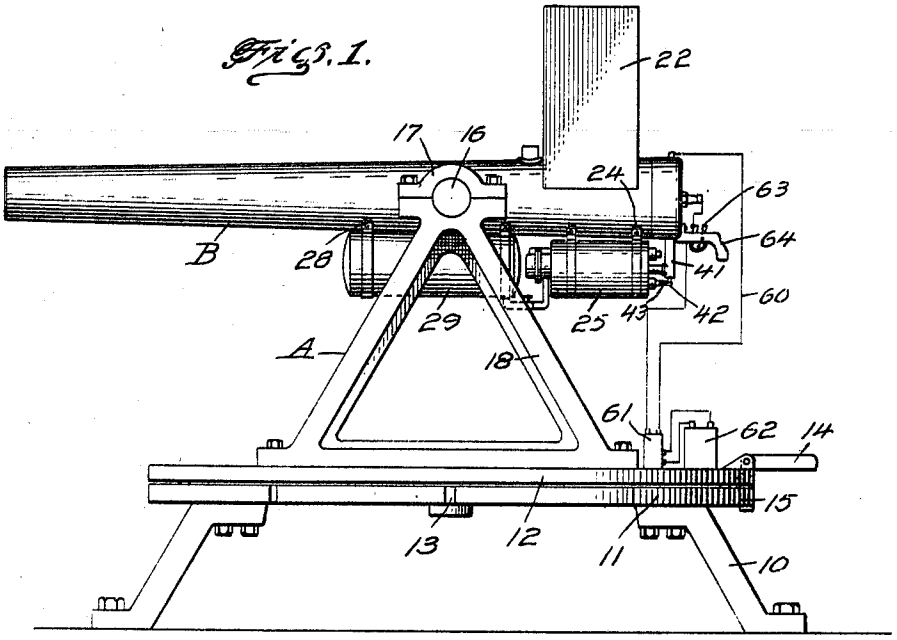


Fig. 11.

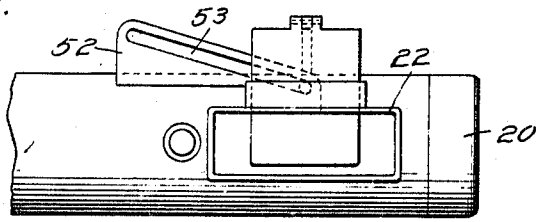


Fig. 9.

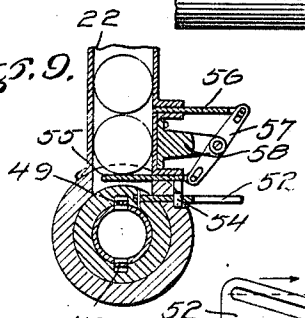


Fig. 10.

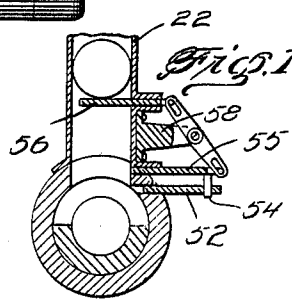
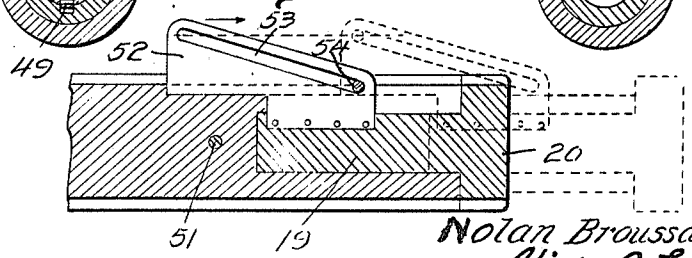


Fig. 12.



Nolan Broussard INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

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CANNON

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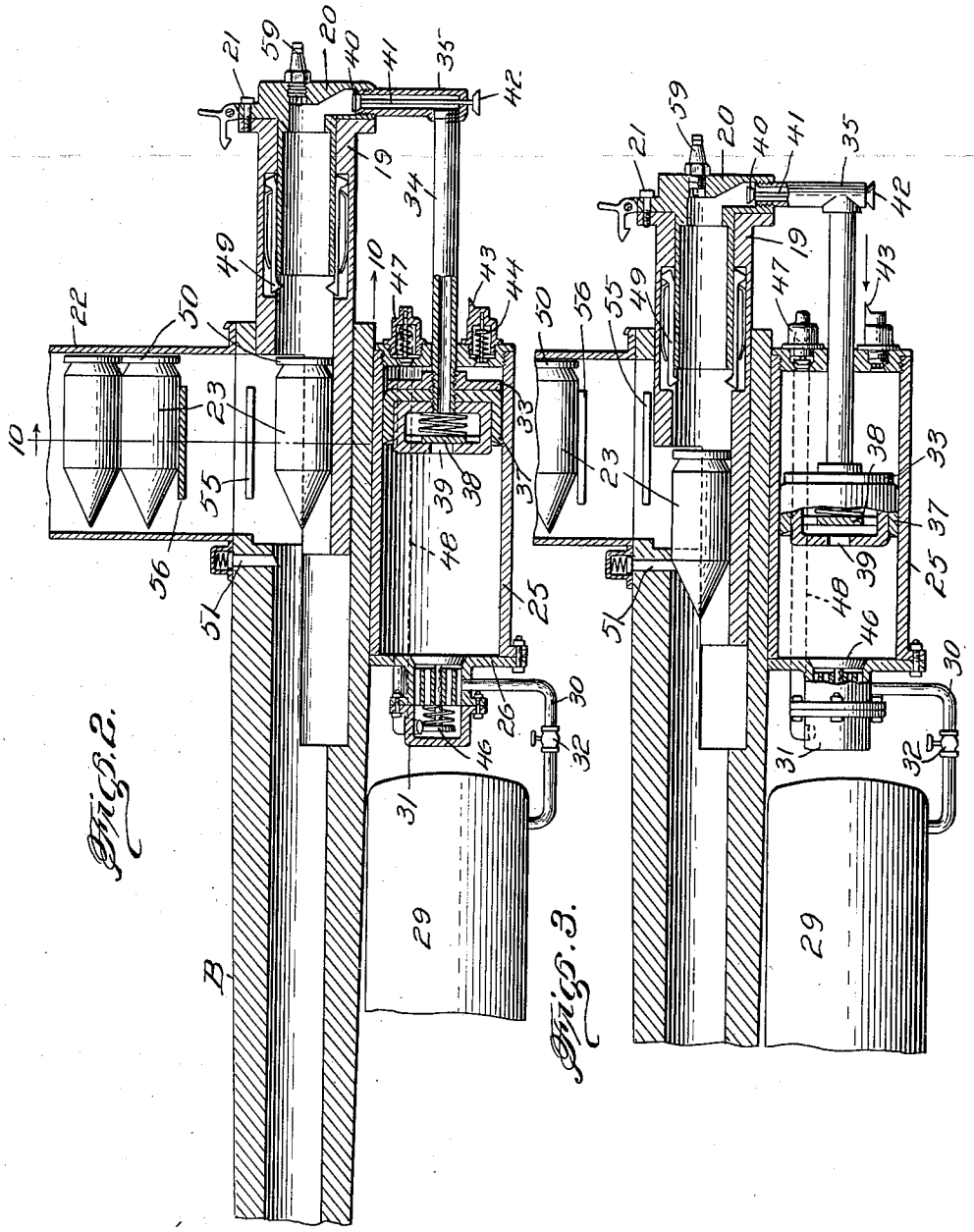


Fig. 2.

Fig. 3.

Nolan Broussard.
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CANNON

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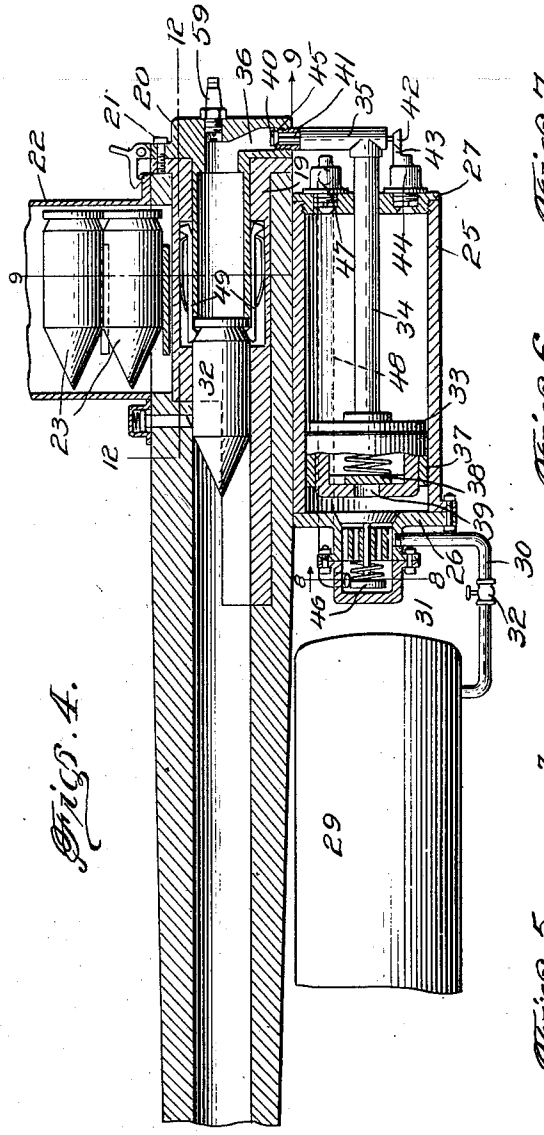


Fig. 4.

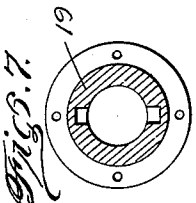


Fig. 7.

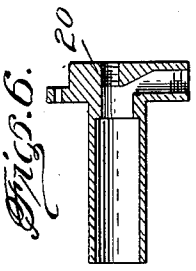


Fig. 6.

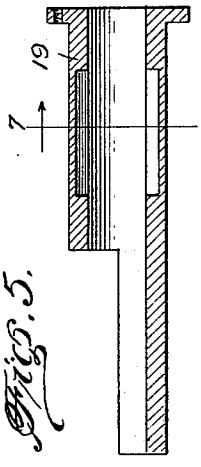


Fig. 5.

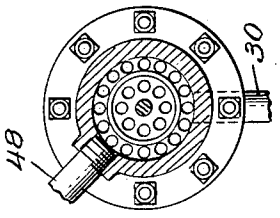


Fig. 8.

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Patented July 27, 1937 2,088,503

UNITED STATES PATENT OFFICE

2,088,503

CANNON

Nolan Broussard, Abbeville, La.

Application October 19, 1936, Serial No. 106,439

4 Claims. (Cl. 89—7)

The invention relates to guns and more especially to magazine cannons.

The primary object of the invention is the provision of a cannon of this character, wherein the projectiles are carried within a magazine and the same are automatically fed into the breech of the cannon and discharged therefrom under the action of a gas charge which is compressed and exploded by ignition, the cannon in its entirety being of novel construction and can be used on battleships or in forts.

Another object of the invention is the provision of a cannon of this character, wherein the firing thereof is controlled by a trigger and a gas charge when compressed is ignited electrically for the sending of the projectile from the cannon, the projectiles contained within a magazine are singly delivered into firing position within the breech of the cannon and there discharged, the feeding of the projectiles from the magazine being automatically effected.

A further object of the invention is the provision of a cannon of this character, wherein the mount therefor is susceptible of adjustment so that the cannon can be aimed at its target with accuracy and without excessive labor on the part of the gunner.

A further object of the invention is the provision of a cannon of this character, wherein the gas is stored within a tank and is drawn into the feed chamber, there mixed with the proper proportion of air from without and thence delivered into the breech end of the cannon where it comes under compression and electrically ignited, the ignition being manually controlled and such cannon is susceptible of rapid fire as the projectiles are automatically and singly delivered thereto.

A still further object of the invention is the provision of a cannon of this character, which is comparatively simple in its construction, thoroughly reliable and effective in its operation, readily and easily handled, assured of accuracy in the firing thereof, strong, durable, and inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of a cannon constructed in accordance with the invention.

Figure 2 is a fragmentary vertical longitudinal sectional view thereof.

Figure 3 is a view similar to Figure 2 showing the projectile in position for the firing thereof on the closing of the breech of the cannon.

Figure 4 is a view similar to Figure 3 showing the breech completely closed and the projectile ready for discharge.

Figure 5 is a longitudinal sectional view of the breech block removed from the cannon.

Figure 6 is a vertical longitudinal sectional view through the head for the breech block and removed.

Figure 7 is a sectional view on the line 7—7 of Figure 5 looking in the direction of the arrow.

Figure 8 is an enlarged sectional view on the line 8—8 of Figure 4 looking in the direction of the arrow.

Figure 9 is a sectional view on the line 9—9 of Figure 4.

Figure 10 is a view similar to Figure 9 showing the parts shifted from the position shown in Figure 9.

Figure 11 is a fragmentary top plan view of the cannon.

Figure 12 is a fragmentary sectional view on the line 12—12 of Figure 4.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, A designates generally a mount for a cannon B and this mount includes a stand 10 having at its top 11 a turn table 12 swinging in a horizontal plane on an arbor 13 which is fitted in the top 11 of said stand centrally thereof. The turn table 12 is of disk form and carries a hand operable latch 14 engageable with keeper spaces as at 15 provided peripherally in the top 11 of said stand so that in this manner the table 12 can be locked or latched in its shifted or adjusted position.

The cannon B has each trunnion 16 at opposite sides thereof fitted in a bearing 17 of an upright 18 which rises from the table 12 and is bolted or otherwise made secure thereto thus the cannon B is susceptible of vertical rocking or swinging movement. By the mount A for the cannon B the same can be aimed in a convenient manner for the firing thereof.

Fitting the breech end of the cannon B is a slidable breech block 19 adapted for opening and closing movements. This block 19 has detachably fitted at its outer end a cap or end head 20 which is bolted or otherwise secured at 21 to said block. The breech block 19 when in open position

establishes communication between the cannon B and a magazine 22 which rises from the top of said cannon and is of a size or capacity to accommodate a determined number of projectiles 23 so that the lowermost projectile of the series within the magazine will drop into firing position within the cannon and be held within the breech block 19 when closed in a manner presently described.

Beneath the breech end of the cannon B and held fixed thereto by brackets 24 is a piston cylinder 25 having the end heads 26 and 27, respectively. Also beneath the cannon B and held fixed thereto by brackets or straps 28 is a gas tank 29 from which leads a gas delivery or supply pipe 30 into a valve casing 31 carried by the end head 26, the pipe 30 being fitted with a hand operable cut-off valve 32 of conventional kind.

Working within the cylinder 25 is a reciprocating piston 33 having a hollow stem 34 connected with an elbow 35 which leads into the breech cap 20 provided with a passage 36 opening into the breech block 19. The piston 33 forms a cage 37 for a return check valve 38 for a port 39. This valve 38 on the stroke of the piston 33 in one direction is unseated from the port 39 permitting a mixture of air and gas as a charge through the stem 37, elbow 35 into the breech block 19 rearwardly of the projectile 23 in firing position therein and this charge is under compression on such admission. The elbow 35 has fitted therein a cut-off valve 40, its stem 41 being extended outside of the elbow and terminates in a seating knob 42 arranged in the path of a striker 43 built on a valved air intake 44 carried by the head 27 so that when the piston 33 has completed a stroke in one direction for the delivery of a mixture of gas and air under compression through the elbow 41 into the breech block 19 the said valve 40 will be automatically seated at 45 thus closing such elbow 41 and checking return of the mixture therethrough from the said breech block.

The valve casing 31 has arranged therein a gas inlet valve 46 which is automatically operated on the suction stroke of the piston 31 for the admission of gas from the tank 29 through the pipe 30 into the cylinder 25 so that this gas admitted can be placed under compression on the reverse stroke of the piston 33 and the delivery of the said compressed gas into the breech block 19 for a discharging charge for sending the projectile 23 from the cannon B when ignited in a manner presently described.

The head 27 has fitted thereto an air delivery valve 47 common to an air supply pipe 48 leading into the valve casing 31 so that air admitted through valve 44 into the cylinder 25 will be pumped through the pipe 48 into the valve casing 31 and there mixed with gas delivered thereto for a proper mixture for exploding under ignition when compressed and charging the breech block 19 within the cannon B.

The breech block has fitted therein diametrically opposed friction latches 49 for engaging the flanged heel end 50 of the projectile 23 when received within this breech block to hold the same when subjected to the mixture under compression delivered into the breech of the cannon B until the charge is ignited for the firing of the projectile from the cannon in a manner presently described.

Immediately forwardly of the location of the magazine 22 is a spring pressed latching bolt 51 which engages the nose of the projectile 23 when delivered into the breech block 19 to avoid the advancement of such projectile during the closing of the breech block and until latched by the latches 49 interiorly of said block for the holding of the projectile in position to be fired when the charge under compression has been exploded within said breech block.

Carried by the breech block 19 is a projecting cam slot wing 52 having the diagonally disposed cam acting slot 53 in which plays a lug 54 carried by one of a pair of horizontally shiftable alternately movable gates 55 and 56, respectively, these being operatively connected with a rocker lever 57 pivoted on a hanger 58 carried by the magazine 22 and these gates work through suitable clearances in the said magazine for effecting the automatic single feed or delivery of projectiles 23 from within the magazine into the breech block 19 for a single firing operation of the cannon. The gates 55 and 56 reversely operate alternately under the action of the lug 54 working within the slot 53 in the wing 52 on the opening and closing of the breech block 19, this being apparent in Figures 9, 10 and 12 of the drawings.

Fitting the cap 20 of the breech block 19 is an electric spark plug 59 adapted for ignition of the charge under compression within said breech block or cannon. This spark plug 59 is arranged within an electric circuit 60 including a sparking coil 61 and a battery 62, respectively, the circuit being normally open and is closed by a switch 63 trigger operated within a pistol stock 64 which is carried by the cap 20 of the breech block 19. The trigger of the switch 63 is manually operated to close the circuit for the ignition of the charge within the breech block 19 by the spark plug to send the projectile 23 in firing position within the cannon B therefrom.

The breech block 19 when closed can be latched against opening movement under the explosion of the charge within the cannon in any suitable manner, preferably by a releasable latching device (not shown).

In the operation of the cannon when the breech block 19 is open a single projectile 23 is lowered into the breech end of the cannon and held against advancement therein by the latch 51 until the breech block 19 has been closed whence the latches 49 hold such projectile 23 in charging position. The opening of the breech block 19 draws into the cylinder 25 a mixture of gas and air and when such block is closed the mixture is compressed and delivered into the closed breech block 19 rearwardly of the projectile 23 in charging position therein. Now when the mixture under compression within the breech block 19 is ignited the projectile is sent from the cannon B, the ignition of the firing charge being had by the spark plug 59 and the latter is controlled by the trigger switch 63 which is manually operated.

The air for mixing with the gas on admission to the cylinder 25 is taken from the atmosphere through the air inlet valve 44 and thence through pipe 48 into the valve casing 31 which serves as a mixing chamber for the proper mixture of gas and air on entrance or feed to the cylinder 25 to be subsequently placed under compression by the piston 33 working therein.

The breech block 19 is opened and closed in any suitable manner either manually or automatically as may be found desirable.

What is claimed is:

1. A cannon comprising a barrel having an

open breech end, a piston cylinder fixedly connected exteriorly to the barrel at its breech end, an ammunition magazine communicative with the barrel next to its breech end, a breech block slidably fitting the breech end of said barrel for opening and closing the said magazine, friction latches fitting said breech block for engaging ammunition from the magazine and holding the same in firing position in said block, means in the barrel for urging the ammunition into engagement with the latches on closing movement of the breech block, a piston working within the cylinder and having a stem connected with the breech block and forming a charge passage from the said cylinder to the said breech block, inlet and outlet valves built to the said cylinder, means for supplying gas into the cylinder at opposite sides of the piston therein through said inlet valves, a return check valve within the piston stem and automatically latched closed on the closing of the breech block, and ignition means fitting the breech block for igniting a firing mixture therein when the breech block has been closed.

2. A cannon comprising a barrel having an open breech end, a piston cylinder fixedly connected exteriorly to the barrel at its breech end, an ammunition magazine communicative with the barrel next to its breech end, a breech block slidably fitting the breech end of said barrel for opening and closing the said magazine, friction latches fitting said breech block for engaging ammunition from the magazine and holding the same in firing position in said block, means in the barrel for urging the ammunition into engagement with the latches on closing movement of the breech block, a piston working within the cylinder and having a stem connected with the breech block and forming a charge passage from the said cylinder to the said breech block, inlet and outlet valves built to the said cylinder, means for supplying gas into the cylinder at opposite sides of the piston therein through said inlet valves, a return check valve within the piston stem and automatically latched closed on the closing of the breech block, ignition means fitting the breech block for igniting a firing mixture therein when the breech block has been closed, and means for operating the ignition mechanism.

3. A cannon comprising a barrel having an open breech end, a piston cylinder fixedly connected exteriorly to the barrel at its breech end, an ammunition magazine communicative with the barrel next to its breech end, a breech block slidably fitting the breech end of said barrel for opening and closing the said magazine, friction latches fitting said breech block for engaging ammunition from the magazine and holding the same in firing position in said block, means in the barrel for urging the ammunition into engagement with the latches on closing movement of the breech block, a piston working within the cylinder and having a stem connected with the breech block and forming a charge passage from the said cylinder to the said breech block, inlet and outlet valves built to the said cylinder, means for supplying gas into the cylinder at opposite sides of the piston therein through said inlet valves, a return check valve within the piston stem and automatically latched closed on the closing of the breech block, ignition means fitting the breech block for igniting a firing mixture therein when the breech block has been closed, means for operating the ignition mechanism, and means for latching the breech block closed.

4. A cannon comprising a barrel having an open breech end, a piston cylinder fixedly connected exteriorly to the barrel at its breech end, an ammunition magazine communicative with the barrel next to its breech end, a breech block slidably fitting the breech end of said barrel for opening and closing the said magazine, friction latches fitting said breech block for engaging ammunition from the magazine and holding the same in firing position in said block, means in the barrel for urging the ammunition into engagement with the latches on closing movement of the breech block, a piston working within the cylinder and having a stem connected with the breech block and forming a charge passage from the said cylinder to the said breech block, inlet and outlet valves built to the said cylinder, means for supplying gas into the cylinder at opposite sides of the piston therein through said inlet valves, a return check valve within the piston stem and automatically latched closed on the closing of the breech block, ignition means fitting the breech block for igniting a firing mixture therein when the breech block has been closed, means for operating the ignition mechanism, means for latching the breech block closed, and means for regulating the gas supply to the cylinder.

NOLAN BROUSSARD.