I. J. GLERUM.

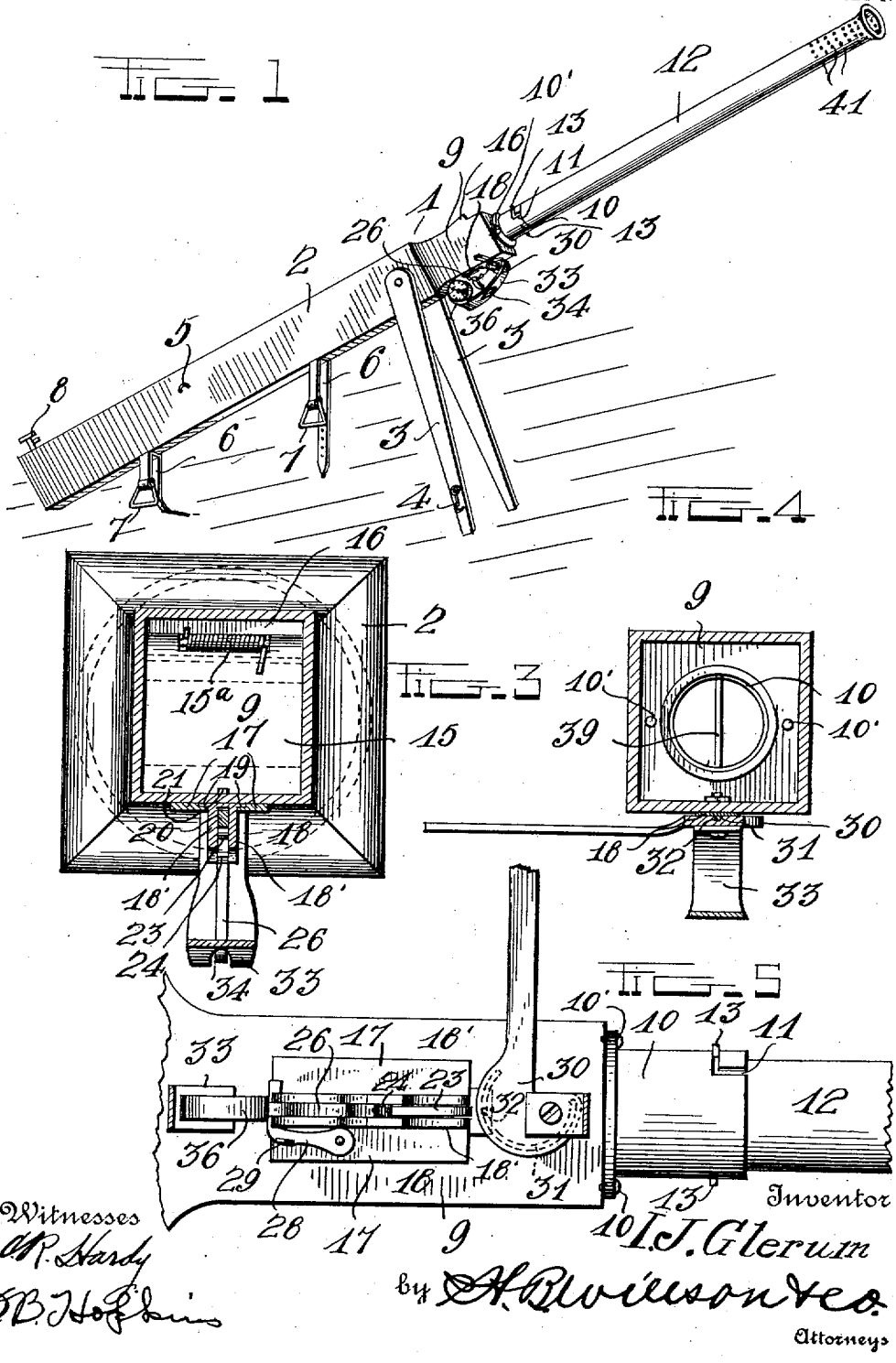
PNEUMATIC GUN FOR THROWING LIFE LINES.

APPLICATION FILED JUNE 1, 1911.

1,017,746.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.



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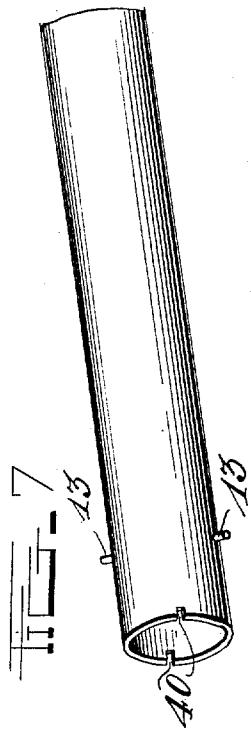

FIG. 7

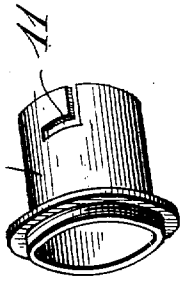

FIG. 6

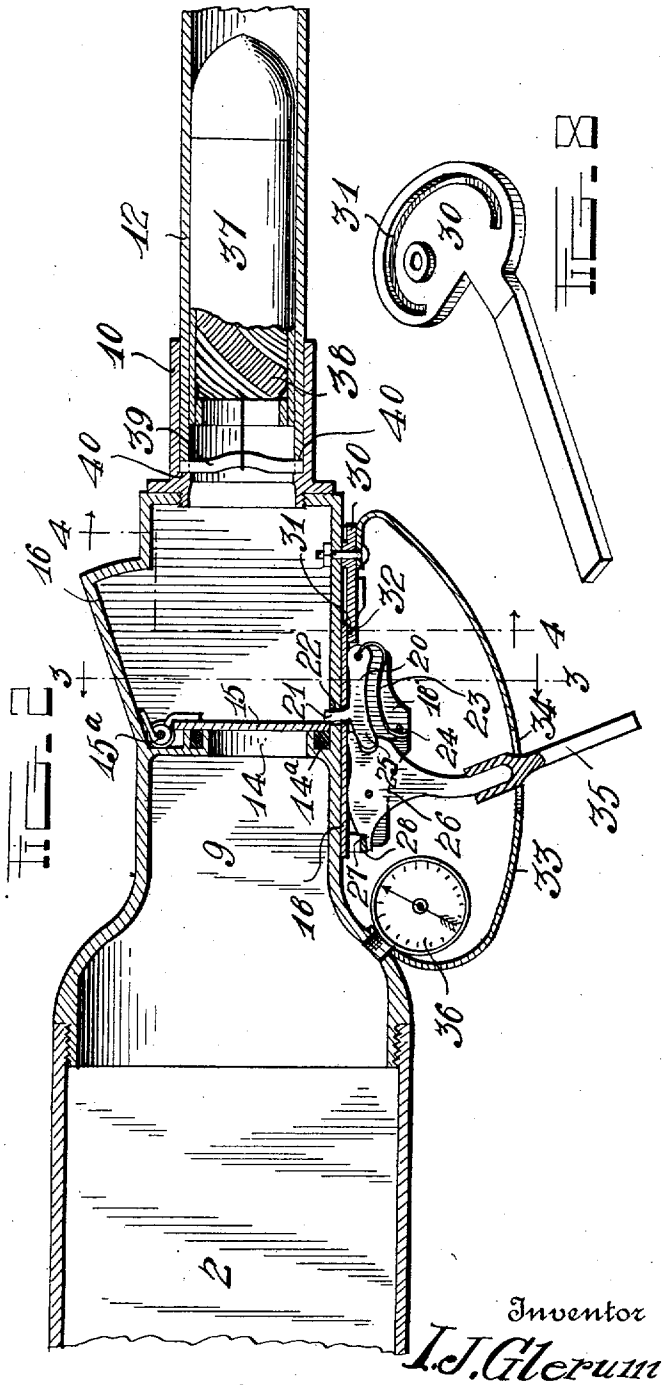

FIG. 2

Witnesses

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UNITED STATES PATENT OFFICE.

INGEBRIGT J. GLERUM, OF DEVILS LAKE, NORTH DAKOTA.

PNEUMATIC GUN FOR THROWING LIFE-LINES.

1,017,746. Specification of Letters Patent. Patented Feb. 20, 1912.

Application filed June 1, 1911. Serial No. 630,587.

To all whom it may concern:

Be it known that I, INGEBRIGT J. GLERUM, a citizen of the United States, residing at Devils Lake, in the county of Ramsey and State of North Dakota, have invented certain new and useful Improvements in Pneumatic Guns for Throwing Life-Lines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in pneumatic guns for throwing life lines.

One object of the invention is to provide a gun of this character having an improved construction and arrangement of instantaneously opening valve and an improved construction of trigger releasing mechanism for holding the valve in closed position to form an air tight closure for the compressed air chamber of the gun.

One object is to provide a pneumatic line throwing gun having an improved means for supporting the same in operative position, said means being adapted to be folded or collapsed to permit the gun to be readily carried.

A further object is to provide an improved construction of barrel whereby the projectile is relieved from the high pressure of the air immediately before leaving the muzzle of the barrel, thus preventing injury to the projectile.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a perspective view of my gun showing the same arranged in position for use; Fig. 2 is an enlarged central vertical longitudinal section through the air compressing chamber and breech end of the gun barrel; Fig. 3 is a cross sectional view on the line 3—3 of Fig. 2; Fig. 4 is a similar view on the line 4—4 of Fig. 2; Fig. 5 is a bottom plan view of the parts shown in Fig. 2; Fig. 6 is a detail perspective view of the breech member of the gun; Fig. 7 is a similar view of the inner end of the gun barrel; Fig. 8 is a similar view of the cam lever for forcing the valve catch into operative engagement with the valve whereby the latter is securely held in air tight engagement with its seat.

Referring more particularly to the drawings, 1 denotes my improved pneumatic line projecting gun comprising a stock 2 which is in the form of a hollow preferably rectangular air compressing chamber and is preferably of sufficient length to form a support for the inner end of the gun when the latter is arranged in position for operation. Pivotally secured to the opposite sides of the stock 2 near its inner end are supporting legs 3 which when the gun is arranged in position for use are adapted to be swung outwardly and forwardly at substantially right angles to the stock, thereby, together with the outer end of the latter, forming a support for the gun as clearly shown in Fig. 1 of the drawings. When not in use the legs 3 are adapted to be swung or folded back against the side of the stock where the same are secured by means of a hook 4 arranged thereon and adapted to be engaged with an eye 5 whereby the same are held in folded position. The stock is also preferably provided with suitable straps 6 arranged thereon as shown and adapted to be buckled around the stock of the gun. The straps 6 are provided with handles 7 whereby the gun when folded may be readily carried. The gun stock is closed in any suitable manner at its outer end and has arranged therein near said outer end a valved pump attaching nipple 8 to which is adapted to be connected any suitable form of air pump or compressing mechanism whereby air is forced into the compressing chamber of the stock. Adapted to be screwed into or otherwise detachably secured to the inner end of the stock is a valve chamber 9 having a cylindrical exteriorly threaded inner end and a reduced rectangular outer portion in the outer end of which is formed a circular threaded passage into which is adapted to be screwed a cylindrical breech block 10, said block being securely fastened by screws 10′. In the outer end of the breech block 10 are formed oppositely disposed right angular slots 11. Adapted to be inserted in and detachably engaged with the breech block 10 is the inner end of the barrel 12, said barrel having formed in its inner end oppositely disposed locking pins 13 adapted to be engaged with the right angular slots 11

in the breech whereby the barrel is securely fastened to the breech block and stock of the gun.

In the rectangular portion of the valve chamber 9 is arranged a valve seat 14 comprising an inwardly extending right angular flange the inner side of which is spaced a suitable distance from the inner walls of the valve chamber to form a recess in which is arranged a rubber gasket or other form of packing ring 14ª with which the valve 15 is adapted to be engaged to form a fluid tight closure for the air compressing chamber of the stock. The valve 15 is preferably in the form of a flat metal plate hinged at its upper edge to the upper wall of the chamber 9 and adapted to swing upwardly when released to permit the compressed air to escape from the stock to the barrel. On the upper side of the valve chamber above the space in which the valve operates is formed an upwardly projecting extension 16 into which the valve is adapted to swing when forced open by the pressure of the air after the valve has been released. The extension 16 of the valve chamber is of such size that the valve 15 will closely fit the same so that when said valve is thrown open the air in said extension will form a cushion or buffer to prevent the valve from slamming or coming into forcible engagement with the upper wall of the extension. The valve 15 is preferably provided with a coiled spring 15ª arranged as shown whereby the valve will be brought to a closed position after each discharge of the gun.

Arranged on the lower side of the valve chamber are guide plates 17 between which is slidably mounted a trigger and valve catch supporting member 18, said member comprising parallel bearing plates 18′ integrally connected together at their inner edges and having formed on said inner edges integral laterally extending guide flanges 19, which are adapted to slidably engage the guide plates 17 on the valve chamber as shown. Pivotally mounted between the bearing plates 18′ is a valve catch 20 having on its free end an inwardly extending finger 21 which projects through a slot 22 formed in the lower side of the valve chamber and is adapted to engage the outer side of the valve 15 and to hold the latter in air tight engagement with its seat. The catch 20 is provided with a spring 23 one end of which is secured to the pivoted end of the catch and the other end of which is engaged with a cross pin 24 arranged between the bearing plates 18′ as shown. On the free end of the catch 20 is also formed a releasing finger 25 with which is adapted to be engaged the notched outer end of a bell crank shaped trigger 26 which is pivotally mounted between the bearing plates 18′ as shown.

In the pivoted end of the trigger 26 is formed a locking notch 27 with which is adapted to be engaged a safety catch 28, said catch comprising a right angularly formed plate pivotally secured at one end to the lower side of the valve chamber and adapted to have its free end swung into engagement with the notch 27 in the trigger whereby the latter is prevented from being casually operated to release the valve holding catch. The safety catch or stop plate 28 is provided on its outer edge with a releasing lug 29 whereby the same may be readily swung into and out of engagement with the trigger.

In order to force the valve 15 into air tight engagement with the packing or gasket in the valve seat 14, I provide a cam lever 30 which is pivotally connected to the under side of the valve chamber in advance of the forward end of the catch supporting member 18. The head of the lever 30 has formed therein a cam slot 31 which is adapted to be engaged with a stud 32 formed on the adjacent end of the member 18 whereby when said cam lever is swung around in the proper direction the member 18 together with the catch 20 and trigger 26 will be forced rearwardly thus causing the finger 21 on the catch to force the valve into air tight engagement with the side and to hold the valve in this position against the pressure of the air in the air compressing chamber of the stock until said catch is released or swung downwardly by the trigger and the finger 21 on the catch thus disengaged from the valve. After the valve has been released and the projectile thrown from the gun, the cam lever may be released and the member 18 slipped forwardly in the guide plates 17 thus permitting the valve to again close and the catch to be engaged therewith. Arranged below the trigger and catch supporting member and secured at its opposite end to the lower side of the valve chamber is a trigger guard 33 having formed therein below the trigger a slot 34 through which is adapted to be inserted an extension trigger or bar 35 the inner end of which is adapted to be engaged with the trigger 26 whereby the latter may be operated from a distance when desired. Arranged in the rear portion of the guard 33 and protected thereby is an air pressure gage 36 which is connected in any suitable manner with the air compressing chamber of the gun as shown.

Adapted to be inserted in the breech end of the gun barrel 12 is a line carrying projectile 37 in the hollow inner end of which is arranged the line 38, said line being coiled or wound in balls and arranged in the inner end of the projectile in any suitable manner. The inner end of the line when thus arranged in the projectile is preferably secured to a line fastening bar 39. The bar 39 is arranged across the inner end of the barrel

and has its ends engaged with notches 40 formed in the inner end of the barrel whereby said bar is securely fastened and holds the inner end of the line. The outer end of the gun barrel 12 has formed thereon for a suitable distance a series of perforations 41 by means of which the projectile is relieved of the high pressure of the air, as the projectile is leaving the muzzle of the barrel thus preventing the air from tearing or otherwise injuring the projectile.

A line throwing gun constructed in accordance with my invention may be employed for throwing a line from the shore or from a vessel to a wreck or to throw a line to the upper part of a burning building, and may also be used in connection with the stringing of telegraph or telephone wires where it is impossible to reach the places by climbing. The gun may also be effectually employed by prospectors and mountain climbers for throwing lines over points which are otherwise inaccessible.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having thus described my invention, what I claim is:

1. In a gun of the character described, an air compressing chamber, a valve chamber connected therewith, a pressure retaining valve mounted in said valve chamber and adapted to retain the pressure of air in said air chamber, a catch adapted to be engaged with said valve to hold the same in closed position, a trigger adapted to release said catch, means to actuate said catch whereby the valve is forced into air tight engagement with its seat, a breech detachably engaged with said valve chamber, and a barrel detachably engaged with said breech.

2. In a pneumatic line throwing gun, a stock having arranged therein an air compressing chamber, a valve chamber detachably secured to the inner end of said air compressing chamber, a pressure retaining valve arranged in said valve chamber, a pivotally mounted slidably supported catch adapted to be engaged with said valve, a similarly mounted and supported trigger adapted to release said catch, means to slide said catch into forcible engagement with said valve whereby the latter is held in position to form an air tight closure for said air compressing chamber, a breech detachably engaged with the outer end of said valve chamber, a barrel detachably engaged with said breech, a foldable means to support the gun in operative position, handle attaching straps adapted to be engaged with the stock of the gun when said supporting means are in folded position, and carrying handles secured to said straps whereby the gun may be carried.

3. In a gun of the character described, a stock having arranged therein an air compressing chamber, a valve chamber detachably secured to said air compressing chamber, a breech detachably secured to said valve chamber, a barrel detachably secured to said breech, said barrel having formed in its outer end a series of perforations, a line carrying projectile adapted to be discharged from the barrel of the gun by the pressure of the air from said air compressing compartment, said projectile being relieved from the pressure of the air by the perforations in the end of the barrel and immediately before the projectile leaves said end of the barrel, a valve to control the pressure of air in said air compressing compartment, and means to release said valve.

4. In a gun of the character described, a stock having arranged therein an air compressing chamber, a valve chamber detachably secured to said air compressing chamber, a breech detachably secured to said valve chamber, a barrel detachably secured to said breech, a line carrying projectile adapted to be engaged with the inner end of the barrel, a line suitably arranged in said projectile, a line holding bar adapted to be detachably secured in the inner end of the barrel to hold the inner end of the line, a valve arranged in said valve chamber, to control the air in said air compressing chamber, an extension formed on said valve chamber and adapted to receive the valve when forced open by the pressure of the air in said compressing chamber, said valve being adapted to closely fit said extension whereby the air in the latter will form a buffer to cushion the valve, means to hold said valve in closed position against the pressure of the air in said air compressing chamber, and a trigger adapted to release said valve.

5. In a pneumatic line throwing gun, a stock having arranged therein, an air compressing chamber, a valve chamber detachably secured to said stock and air compressing chamber, a breech secured to said valve chamber, a barrel detachably secured to said breech, a valve seat arranged in said valve chamber, a hingedly supported valve adapted to be engaged with said seat, a slidably mounted catch and trigger supporting member, a valve engaging catch pivotally mounted in said member and adapted to be engaged with said valve to hold the same in closed position, a catch releasing trigger pivotally mounted in said sliding member, and a cam lever adapted to force said mem-

ber in the proper direction to cause the catch carried thereby to hold said valve in fluid tight engagement with its seat until said catch is actuated by the trigger to release the valve.

6. In a pneumatic line throwing gun, a stock having arranged therein an air compressing chamber, a pressure gage connected with said chamber, a valve chamber connected with said stock and air compressing chamber, a barrel, means to detachably secure the same to said valve chamber, a valve seat arranged in said valve chamber, a valve adapted to engage said seat, a catch adapted to engage said valve to hold the same in fluid tight engagement with its seat, a pivotally mounted catch releasing trigger, a stop plate adapted to be engaged with said trigger whereby the latter is locked and prevented from actuating said catch, a trigger guard arranged over said catch and trigger and said air pressure gage whereby said parts are protected, and an extension adapted to be engaged with said trigger whereby the latter may be operated from a distance.

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

INGEBRIGT J. GLERUM.

Witnesses:

ARTHUR E. PARSHALL,

M. E. REARDON.