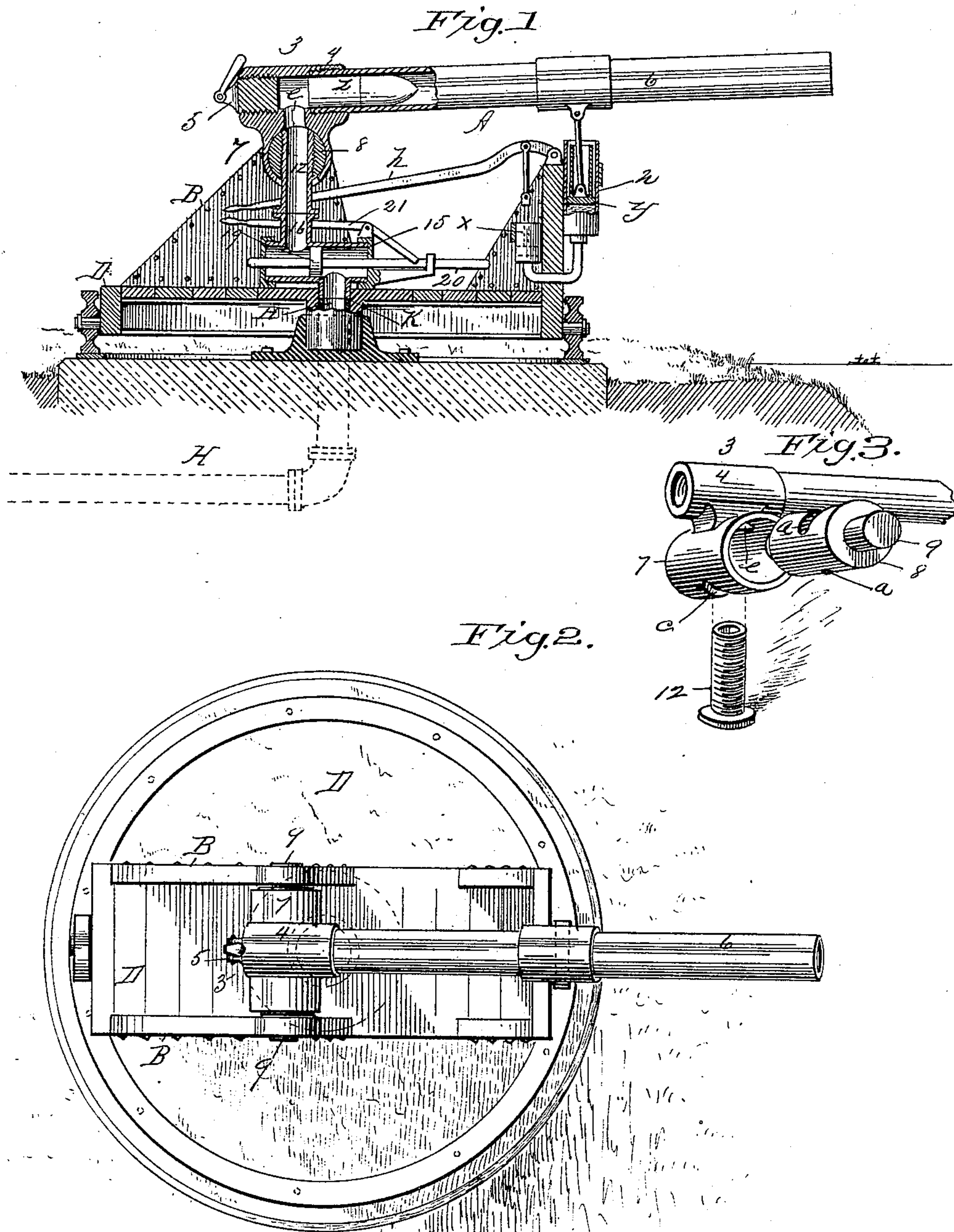


(No Model.)

R. J. GATLING.
PNEUMATIC GUN VALVE.

No. 434,662.

Patented Aug. 19, 1890.



Witnesses:

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UNITED STATES PATENT OFFICE.

RICHARD J. GATLING, OF HARTFORD, CONNECTICUT.

PNEUMATIC-GUN VALVE.

SPECIFICATION forming part of Letters Patent No. 434,662, dated August 19, 1890.

Application filed March 10, 1890. Serial No. 343,235. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. GATLING, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Valve-Operating Mechanism for Pneumatic Guns and Air-Conduits for Same, of which the following is a specification.

10 This invention relates to pneumatic guns, the object being to provide improved means for operating the air-valve for firing the gun and for conducting air to a gun of this class when mounted on a turn-table; and the in-
15 vention consists in the peculiar construction of the air-supply conduit and of the air-valve-operating mechanism, all as hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation, partly in section, of a pneumatic gun and its rotating platform having my improvements applied thereto. Fig. 2 is a plan view of said gun. Fig. 3 is a perspective view of certain detail
25 parts of the gun, hereinafter fully described.

The gun construction *per se*, herein shown and described, and certain firing devices therefor operating by a dropping gun-shield, all more especially adapted for use on ships, form the subject-matter of an application for a patent filed by me June 20, 1889, Serial No. 314,959, and some of the details of the construction of said gun other than said valve-operating mechanism and air-conduit are
35 herein shown and briefly described, in order that the operation of the same may be fully understood.

In the drawings, A is the gun mounted upon a suitable trunnion-frame consisting of
40 two metallic uprights B B, and the latter are fixed and supported on a turn-table D, having suitable pivot and roller supports, as shown, above a suitable base, which is represented as placed on an earth-work on the
45 coast.

It is understood that wherever said gun may be located there will be provided suitable engines and air-compressing mechanism for supplying said gun with air under a high
50 pressure for the purpose of discharging projectiles therefrom.

The said pneumatic gun consists of the

breech-piece 3, cast, preferably, from steel or gun-metal, having a cylindrical body 4, in which is screwed the breech-block 5 and in
55 its opposite end the gun-tube 6, and a hollow cylinder 7, extending at right angles to said cylindrical body 4, which, together with a solid metal cylinder 8, (excepting a transverse perforation *a* therethrough,) constitutes
60 the rolling support for the breech of the gun in place of the trunnions usually provided therefor. The said hollow cylinder 7 has an opening *c* through its lower side and a similar opening *e* through its upper side, (said
65 openings *c* and *e* being about midway between its ends,) which extends from the interior of the cylinder 7 through the side of the cylindrical body 4, communicating with the interior of the latter, and from the latter
70 with the said gun-tube 6, which is screwed or otherwise secured thereto. The operative position of the said cylinder 8 is within the cylinder 7, as shown in Figs. 1 and 2, and when
75 so placed the perforation *a* through it transversely registers or is in line with the said openings *c* and *e* through the opposite sides of said cylinder 7, and on the opposite ends of the said cylinder 8 project two trunnions
80 9, which support, in connection with the said uprights B, of metallic construction, the breech portion of the gun, the said trunnions 9 entering proper circular perforations in said uprights, as shown. The said cylinder 8 and
85 hollow cylinder 7 are so fitted, the former within the latter, that the breech-piece 3 and the gun-tube connected therewith may have a suitable free oscillating movement on said cylinder 8 to provide for the requisite elevation and depression of the gun, the said cyl-
90 inder 8 being so fixed in the uprights B and by its connection with an air-conduit, as below described, that it is perfectly rigid and can have no oscillating or rocking motion. A tube 12, for conducting compressed air
95 through the said cylinder 8 and thence through the said opening *e* to the interior of the breech-piece 3 of the gun, is screwed into or otherwise secured to said cylinder, the
100 said tube 12 being secured to the cylinder 8 after the latter shall have been placed in the hollow cylinder 7 by passing the end of said tube through the opening *c* in the under side of said cylinder 7, the latter-named opening

being made somewhat larger than the external diameter of the tube 12, in order to permit the cylinder 7 and the breech-piece of the gun to have the necessary oscillating motion on the cylinder 8; but this motion is never sufficient to materially interfere with the area of the air-conducting passage *e*, above mentioned, through which air passes to the interior of the said breech-piece.

Compressed air for discharging a projectile from the within-described gun is conveyed from any suitable air-compressing mechanism through a conduit H into a cylindrical valve-box 15, said valve-box having on its upper side a short conduit 16, communicating with said tube 12, having a flange-connection by one end, by means of suitable bolts, with said tube 12, as shown. The vertical portion of said conduit H passes through the pivot-block of the turn-table D, and its extremity is fitted tightly against the adjoining end of a short air-conduit under the valve-box 15, at K, Fig. 1, and hence there is maintained a free air-passage from the conduit H into the valve-box regardless of the position of the turn-table and gun. The said valve-box 15 is provided with a valve 19, fixed on a stem 20, having bearings in the opposite ends of said box, the said valve being shown in a position in Fig. 1 which obstructs the passage of compressed air from said conduit H through the valve-box and the said conduit 16 and tube 12 into the gun, said valve being held in that position prior to the discharge of the gun by a lever 21, pivotally hung to the end of said valve-box or other fixed point, and having one end engaging with a notch in said valve-stem 20, as shown, whereby the valve is retained in the above-mentioned position. The said lever 21 has its free end extending preferably rearward, as shown, and said end may be grasped conveniently by an operator and swung downward, thereby disengaging the opposite end thereof from said valve-stem and leaving it and the valve free to slide by

air-pressure and open a free passage between the conduit H and the interior of the breech-piece 3 by way of the conduits 12 and 16, thus bringing the force of air-pressure behind an explosive projectile *z* in the gun to discharge the same. Said projectile may be provided with any suitable percussion-fuse to cause its explosion upon striking an object. The said gun, having the above-described oscillatory motion on the fixed cylinder 8, may have its muzzle elevated or depressed by any suitable mechanism, one means for elevating the gun being shown in the drawings, which consists of a pump *x*, having a suitable connection with a cylinder *n*, the latter and the pump being supplied with any suitable liquid, a piston *y*, having a movement in said cylinder *n*, induced by the movement of said liquid, and a connection between the piston *y* and the gun, as shown, whereby the movements of said piston are imparted to the gun. Said pump is operated by a hand-lever *h* or other suitable means.

What I claim as my invention is—

1. Means for discharging a pneumatic gun, consisting of a valve-box connected by an air-conduit with said gun, a valve supported in said box, and a hand-lever holding said valve in a position between the air inlet and outlet of said box, one end of which lever may be grasped by an operator to disengage its opposite end and free the valve, combined and operating substantially as set forth.
2. A pneumatic gun, a turn-table on which said gun is mounted, having a central pivotal support, a valve-box between said table and gun, having a fluid-connection with the breech of said gun, and an air-supply pipe passing through said pivotal support and conducting compressed air to said valve-box, combined and operating substantially as set forth.

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Witnesses:

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