(No Model.) 2 Sheets—Sheet 1.

H. EICHBAUM.

RESERVOIR FOR PNEUMATIC GUNS.

No. 456,617. Patented July 28, 1891.

Fig. 1.

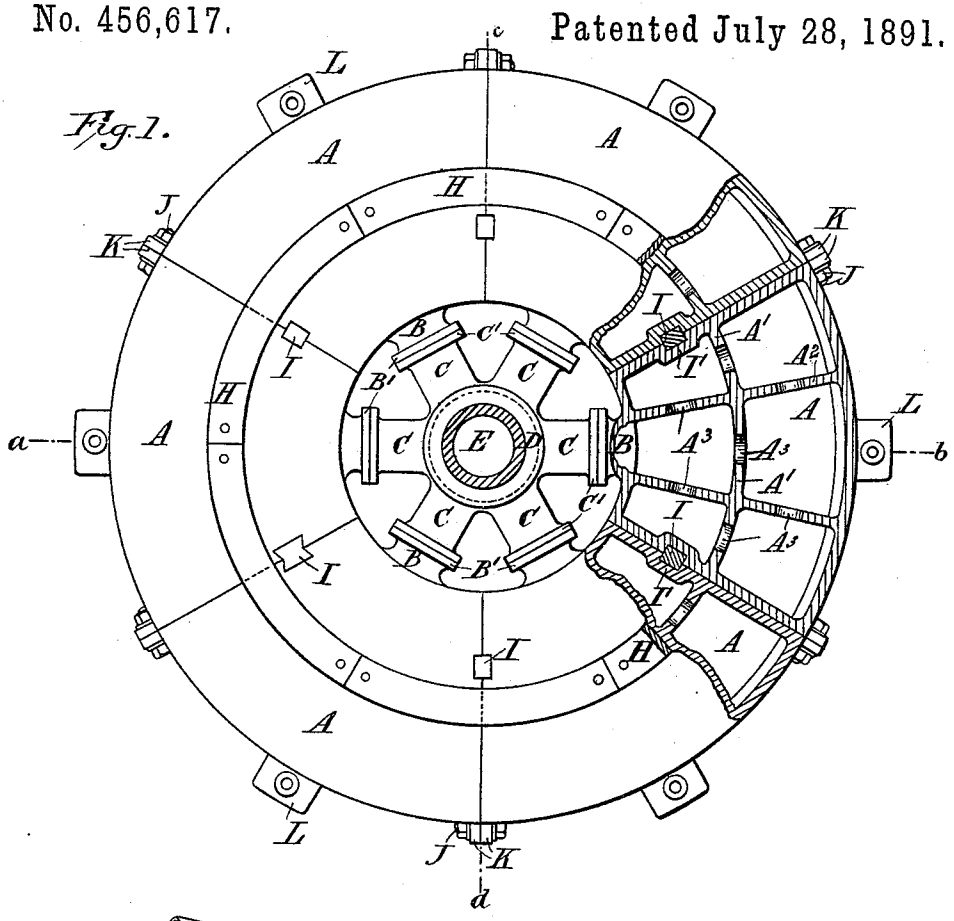
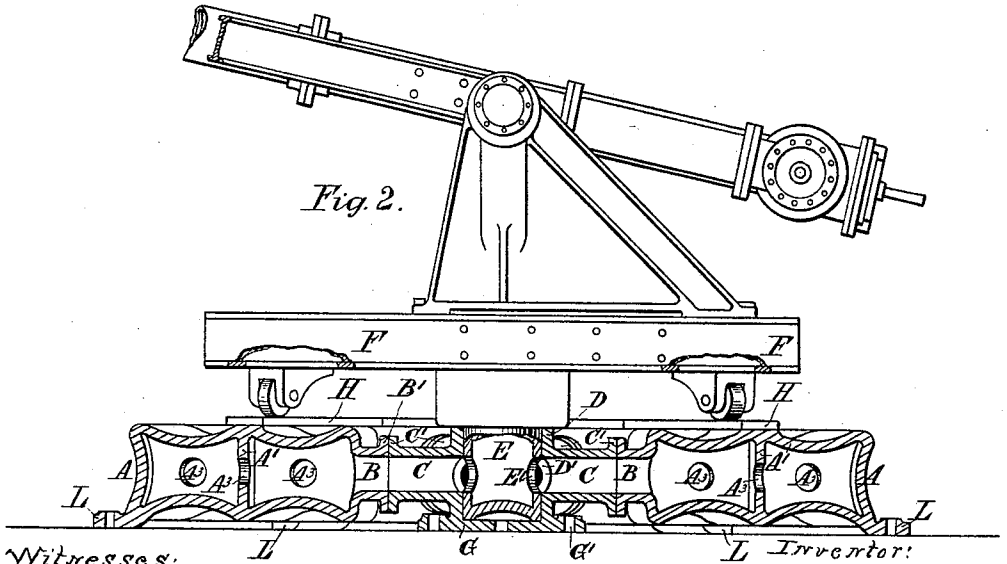


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

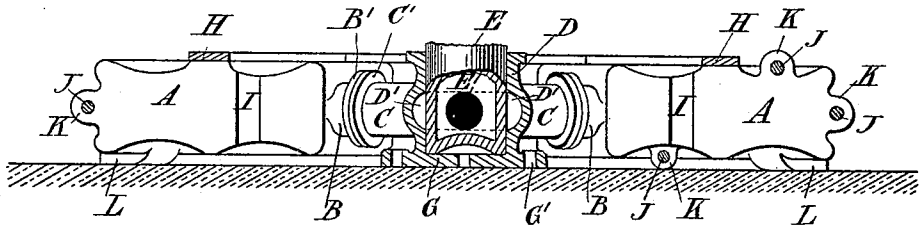
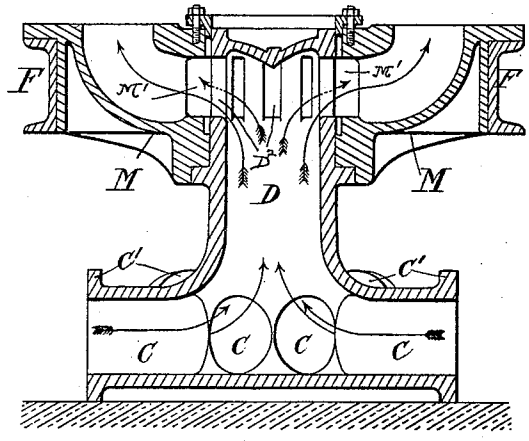


Fig. 4



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UNITED STATES PATENT OFFICE.

HENRY EICHBAUM, OF LONDON, ENGLAND.

RESERVOIR FOR PNEUMATIC GUNS.

SPECIFICATION forming part of Letters Patent No. 456,617, dated July 28, 1891.

Application filed December 11, 1890. Serial No. 374,355. (No model.)

To all whom it may concern:

Be it known that I, HENRY EICHBAUM, a citizen of the United States, at present residing at London, in England, have invented certain new and useful Improvements in or Relating to Pneumatic Guns, of which the following is a specification.

This invention relates to that class of guns or cannon from which the projectile is expelled by a charge of compressed air or gas; and the present invention more particularly relates to those guns which are of a portable or semi-portable nature, and the invention is specially designed with the object of facilitating the transfer and setting up of the gun promptly and easily.

In carrying out this invention I prefer to form a reservoir in sections, so that each section may be readily carried about. The sections may be joined together in any convenient manner and are preferably formed as segments of a circle, so that when bolted or otherwise secured together a circular reservoir of any required size is produced. This reservoir I use as the foundation for the gun, and provide it, if necessary, with a circular track upon which the gun or gun-carriage may travel in training. This track may either be upon the surface of the reservoir or outside it, in which case it would preferably be carried upon brackets extending from the reservoir. Each section of the reservoir or some of the sections may be provided with anchors, plates, or equivalent for the purpose of securing the reservoir in its position, as it is merely contemplated that a recess shall be formed in the ground of the proper size and shape, and that into this the reservoir shall be placed; or it may be built up therein, or the reservoir may be simply laid upon the ground or rock and packed up or otherwise leveled and secured, if necessary, according to the nature of the ground. Each section of the reservoir may be connected with either of its neighbors or with all the others and with the gun.

In the accompanying drawings, Figure 1 is a plan, partly in section; Fig. 2, a vertical section on the line *a b* of Fig. 1, and Fig. 3 a vertical section on the line *c d* of Fig. 1. Fig. 4 is a vertical section of a modified form of pintle.

Like letters indicate like parts throughout the drawings.

A represents the various sections of the reservoir, each, according to the arrangement shown in Fig. 1, provided with a branch B and flange B′, by which it is connected with the flange C′ of branch C of the cock-body or center D, which in the arrangement shown in the drawings assumes the form of a fixed cock body or shell, the hollow plug or pintle E of which is connected with the gun-carriage F, with which it revolves. The annular space or recess D′ traverses the center D, around the pintle E, and connecting with the interiors of all the branches C, and, being open to the openings E′ of the pintle E, establishes permanent connection between the interiors of the sections A and the hollow plug E. The pintle E is shown closed at the bottom, so as to prevent the tendency which would otherwise exist of the great pressure inside it to lift it out of the center D. The center D is provided with a base G, by which it may be securely bolted to the foundation, holes G′ being provided for the purpose.

Each section A is preferably divided by any required number of perforated midriffs or diaphragms A′ A^2, which, while greatly strengthening each section, allow by the openings A^3 of the free passage of the gas under pressure from one part to another of each section. The diaphragm A′ is preferably made, as shown in Fig. 1, to follow a circular course, by which means the rail or path H, upon which the gun-carriage travels, is well supported all round on each section.

Various means may be employed for connecting the sections together, bolts being generally used for the purpose. As, however, it is desirable that a key of some sort should be introduced so as to securely lock together the contiguous faces of the sections, a key I is shown in the drawings for this purpose, the surrounding portions of the sections being thickened at I′ to provide a socket for the key. It will be seen that this key serves two purposes. In the first place, it prevents either section being moved out radially away from the pintle without the other going too, and since these sections are radially disposed and are drawn in toward the center by the bolts

which fasten them to the pintle, the keys, by preventing such radial movement, also prevent the contiguous faces of the sections from separating. The keys and the recesses in which they fit may be dovetailed, if desired, as shown in Fig. 1. In some cases these keys might be sufficient, therefore, to hold the sections together; but it is desirable to prevent any possibility of straining or breaking, and bolts J, passing through flanges K, may with advantage be used for this purpose, and may also be placed on suitable flanges above and below the sections as well as upon the periphery, as shown in Fig. 1. The flanges L upon the sections serve for the holding-down bolts, which secure the sections directly to the foundation.

It will be understood that the reservoir can, if desired, be made all in one piece or built as a single reservoir, especially for small sizes; but for the reasons stated in the commencement of this specification I generally prefer to make it of sections more or less independent one of the other. These sections of the reservoir may be made in any convenient manner and of any suitable material, preferably by casting in iron or steel.

Some difficulties present themselves in the construction of the sectional reservoir and the making of the necessary tight joints. I prefer, therefore, to make it of an even number of sections—say, for example, six—and divide it practically into two, each half, composed of three sections, being practically complete in itself. In some cases the sections of each half may be fitted and bolted together at the works or factory and transported bodily to the place where the gun is to be fitted up; but generally the jointing is so arranged that, if necessary, all the sections can be bolted up in their proper places. A convenient arrangement is to have two sections which at their inner ends are bolted and jointed to the pintle or to a central casting or piece which carries the pintle. These two sections would be the only ones directly communicating with the pintle; but each of these two sections would have connected to and communicating with it one of the other sections, so that each of the above-described complete halves of the reservoir would consist of the central section, which communicates with the pintle, and two other sections, one on each side of the central one communicating with the central section, but not otherwise communicating with the pintle.

It will be readily seen that various modifications in the construction of these portable reservoirs may be made without in any way departing from the spirit of the invention, and I will indicate a few of these.

In the drawings, Figs. 1 to 3, the plug or pintle E is inside the cock-body or center D and is connected with the gun-carriage. This arrangement could be varied by making the pintle the fixture and fastening the center to the gun-carriage, so as to revolve with it. This arrangement is shown in Fig. 4, where the pintle D is a fixture and connected to the reservoir, and the cap or yoke M, to which the gun-carriage F is secured, turns upon it, openings D^2 and M′ being provided for the passage of the air to the gun; or, instead of the arrangement of plug and cock, orifices in a horizontal top face could be provided, communicating with a corresponding annular orifice or annular or other orifices in or in connection with the gun-carriage, and this working-face, instead of being a plain horizontal face, as above described, might be a V-shaped projection fitting into a V-shaped annular channel. The sections, instead of forming, as in the drawings, an annular reservoir with an open center connected by the branches of the center or pintle, could be carried right up to the center, thus providing increased capacity in the reservoir. The design illustrated, however, is considered to be a more practical way of carrying the invention into effect.

I claim—

1. In a sectional reservoir for a pneumatic gun, the combination, with the center having branches by which it connects with the reservoir-sections, and a central space or opening through which it connects with the gun or gun-carriage mounted thereon, of a series of reservoir-sections arranged around the center and connected with the branches thereof, substantially as described.

2. A sectional annular reservoir for a pneumatic gun, consisting of a number of reservoir-sections, each in the shape of a segment of a circle, the sections being joined together to form the annular reservoir, and a center having branches to which the segmental sections are connected, substantially as described.

3. A sectional annular reservoir for a pneumatic gun, consisting of a series of sections, each in the shape of a segment of a circle, each section being independent of all the others and joined together to form the annular reservoir, and a center having a branch connected to each section, substantially as described.

4. A sectional annular reservoir for pneumatic guns, consisting of a number of reservoir-sections in the shape of a segment of a circle, each section being provided with a perforated diaphragm, also a segment of a circle, and adapted to strengthen the segment and support the track of the gun-carriage, substantially as described.

5. In a sectional annular reservoir for pneumatic guns, the combination, with a contiguous segmental reservoir-section, of means for securing the sections together to form the annular reservoir, substantially as described.

6. In a pneumatic gun, the combination, with the reservoir, of the track or path for the gun-carriage secured directly upon or to or forming part of said reservoir, substantially as described.

7. The combination, with the reservoir, of a pneumatic gun consisting of a number of sec-

tions joined together to form the reservoir, and a gun mounted on and supported upon said reservoir, substantially as described.

8. The combination, with a sectional annular reservoir having interior flanges, of a center provided with radiating branches having corresponding flanges by which the sections may be united to the center, substantially as described.

9. A sectional annular reservoir for pneumatic guns, consisting of a number of segments, each segment being divided into a number of compartments connected to each other by openings and having a branch B, and a center having a number of branches C arranged to be connected with the branches of the segments, the center also having a hollow cock-body, and a pneumatic-gun carriage, the pintle of which fits said hollow cock-body, substantially as described.

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

HENRY EICHBAUM.

Witnesses:
HARRY B. BRIDGE,
HAROLD WADE.