J. B. WALKER.

Flexible-Rammer for Turret-Guns.

No 68,813. Patented Sept. 10, 1867.

Fig. 1

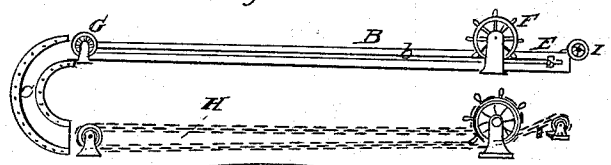


Fig. 2

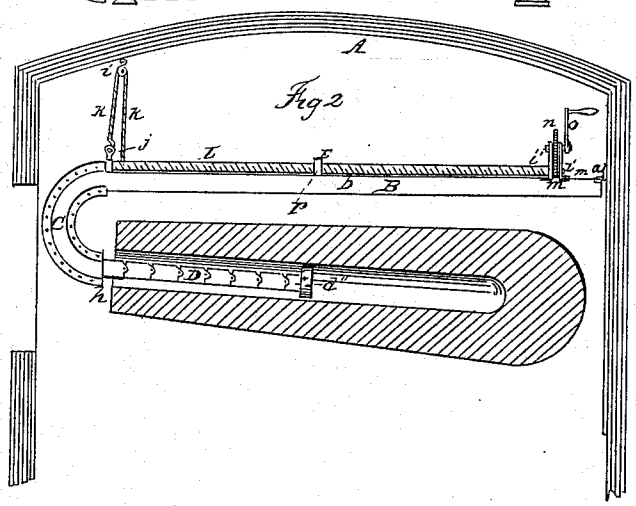


Fig. 10

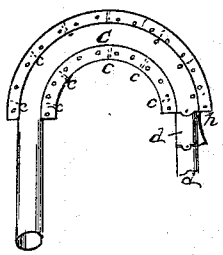


Fig. 3



Fig. 4



Fig. 5

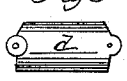


Fig. 6

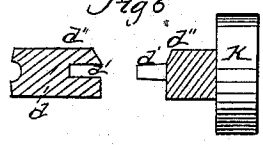


Fig. 11

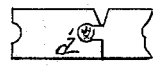


Fig. 7

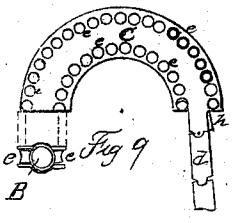
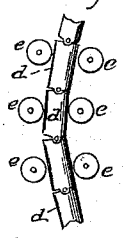


Fig. 8



Witnesses.

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Letters Patent No. 68,813, *dated September* 10, 1867.

IMPROVEMENT IN FLEXIBLE RAMMER FOR TURRET-GUNS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, Cadet J. B. WALKER, United States Military Academy, of Elizabeth, Allegheny county, Pennsylvania, have invented certain new and useful improvements in Flexible Rammer for Turret-Guns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, making part of the same, in which—

Figure 1, front view of wheel and chain for giving motion to the rammer.

Figure 2, elevation of flexible rammer and section of turret, showing the screw and cogged gearing, which can be substituted for wheel and chain.

Figure 3, side view of one section of rammer.

Figure 4, end view, and

Figure 5 top view of same.

Figure 6, detailed view of rammer-head.

Figure 7, view of curved grooved plates, showing friction-rollers, &c.

Figure 8, section showing friction-rollers in plan.

Figure 9, section showing friction-rollers in elevation.

Figure 10, plan view of lock to check the return of rammer.

Figure 11, showing ball-and-socket joint of last section of rammer projecting when all are out.

Figure 12, socket-joint for head or sponge.

The object of my present invention is to avoid the danger, difficulty, and delay experienced in loading the guns of a monitor, especially while the same is in action. The area within the turret of an ordinary monitor is so limited that not more than two feet are allowed for the recoil of the gun when the same is discharged. Therefore, to reload the gun when the monitor is in action, it is necessary to revolve the turret, in order to carry the gun to the opposite side from which it was discharged, there load, and then again revolve the turret in order to bring the gun in proper position for action. The great delay and trouble incident to this plan will readily suggest itself to any one familiar with inventions of the class to which mine belongs. Another method, and one, so far as danger and delay are concerned, equally objectionable and impracticable, is to construct the rammer in short independent sections. By this plan, when it is desired to load the gun, one of these sections is inserted and driven its entire length into the gun, it of course forcing the load toward the breech. To this section another section is secured, and the above operation is repeated, and so on until the load is forced into its proper position.

My invention is entirely free from all the objections and disadvantages known to exist in the arrangements above referred to, and consists—

First, in securely attaching the rammer to the turret of a monitor by means of a hinge, so that the same can be elevated or lowered as occasion requires.

Second, in constructing a flexible staff or rammer-rod, which, while it readily accommodates itself to a curve of one hundred and eighty degrees, at the same time possesses perfect rigdity while in the bore of the gun. This rigidity can be obtained either by means of a spring inserted in the joints, causing them to work on the same principle as a pocket-knife and its blade, or by means of a lock placed at the end of the tube. This lock, while it fastens the joints as they issue from the tube, releases them as they are returned. But in large rammers it will not be absolutely necessary to use either of the above methods, as the joints are only allowed to bend a few degrees, and are therefore incapable of "doubling up" to an inconvenient extent.

Third, in a simple and practical method of working the rammer within a tube and case by means of wheels and chain, or a screw, which are connected with said rammer through a suitable slide working in a slot which extends the entire length of the tube.

Fourth, in constructing the lower portion of the tube or case in a curved form, so that when the rammer is lowered the rammer-head or piston is presented directly opposite to the muzzle of the gun, and the rammer rod being flexible, the gun can be readily loaded, no matter at what angle it is placed.

Fifth, in inserting between the plates at the lower end of the tube a series of friction-rollers, both on the out and inner sides thereof, so arranged that when the rammer-rod is worked, it matters not whether it is forced out or withdrawn, the same is not only kept in constant contact with but works upon said rollers.

Sixth, in the arrangement by which I not only work the rammer-head, but also the sponge-head, for cleaning the gun. To accomplish this, either two staffs may be used, one with the rammer-head and the other with the sponge, working in independent tubes and casing, each constructed precisely similar to the one hereinafter described, or only one staff need be used, and the heads inserted and changed by means of a spring and socket. The former affords greater celerity in the operation of loading. When the staff is "rammed home" the sponge-head may be turned if necessary. To allow of this, the last joint next to the tube, while the sponge-staff is in the above-mentioned position, is connected with the one which follows by means of a ball-and-socket joint or simple swivel. This will allow of a double motion, and the part with the head attached can be readily turned.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the turret of a monitor, constructed in the usual manner. To this turret I firmly secure, by means of a hinge, *a*, the tube B, in which the flexible rammer-rod or staff D works. To the lower end of the tube B I firmly secure two curved grooved plates C C. These plates C C are open at their sides, and are firmly connected together by means of brace-rods *c c*. Between these plates C C I insert two series of friction-rollers *e e*, so arranged that they are always in contact with the rammer-rod or staff, so that it matters not whether the same is driven out or drawn in, it works on the rollers. I construct my rammer-rod or staff in sections, *d d*. These sections are slightly bevelled at their ends, which furnishes sufficient flexibility to allow them to pass readily between the curved grooved plates C C. These sections *d d* are connected together in the following manner: On one end of each section there are three lips, and on the other two of an ordinary hinge-joint. I bring the end of one with its two lips in contact with the end of another section which has the three lips, and the two lips are inserted in the recesses between the three lips; a pivot is then passed through the centre of the projecting lips, which affords a secure and perfect working joint. The sections are all united together in the foregoing manner, with the exception of the section *d'*, which is the last one required to protrude beyond the end of the plates C C. I unite this section with the one immediately in its rear by a ball-and-socket joint, which enables the portion of the rammer-rod or staff which is inserted in the bore of the gun to be revolved with facility, which is not only a great advantage, but is absolutely necessary, when the sponge-head is attached to the staff, in order that the gun may be properly swabbed. K is the rammer-head, which is firmly secured to the end of the rod or staff. I have already stated that I prefer having the rammer-head and sponge-head worked by independent rods or staffs, but when one is used the pivot at the point *d''* is removed, which frees the section to which the rammer-head is connected, and a section with a sponge attached can be secured in its stead. A slide, E, works in the slot *b* of the tube B. This slide has an eye in its inner end, in which is firmly secured the end of the rammer-rod or staff. Near the end of the tube B I secure in suitable standards the hand-wheel F. At the point of junction between the tube B and plates C C I secure the pulley-wheel G, which is also supported in suitable standards. At the end of the tube B I secure in suitable bearings the roller I. H is a chain, one end of which is attached to the slide E, and the other to the end of the rammer-rod or staff D. In the upper face of the sections *d d* there are grooves *f*, in which are secured springs *g*, which are sufficiently flexible to readily allow the rod or staff D to conform to the curvature of the plates C C, but the tendency of which is to straighten the rod or staff D as soon as it passes the ends of the plates C C. In large rammers these springs are not essential to its successful working. *h* is a spring-pawl, which is attached to either of the plates C C, and which rests in the bevelled joint between the sections of the rod or staff. To the tube B I secure at any convenient point a hook, *j*, to which I attach a suitable cord or rope, *k*, which passes over a pulley, *i*, which is attached to the top of the turret A, and by means of which the rammer is elevated or lowered, as occasion requires. When the rammer is elevated the cord or rope *k* is belayed to the turret at any convenient point. When the rammer-head and sponge-head are worked by independent rods or staffs, the entire mechanism for operating the same is precisely similar to the one described, and the two devices are hinged side by side to the top of the turret A.

The operation of the rammer is as follows: To the upper side of the slide E I secure one end of the chain H. This chain is then passed around the roller I, and then revolved once around the hand-wheel F, and thence around the pulley-wheel G, and back to the slide E, and its end secured to the under side thereof. Thus it will be seen that when the hand-wheel F is turned toward the left, the rammer is forced out of the tube B and plates C C, and when to the right, it is returned to its original position within the tube and plates.

The wheels, roller, and chain can be dispensed with, if desired, and the rammer-rod or staff can be operated by means of a screw, cogged gearing, and crank, as shown in fig. 2, where L represents the screw, which works in suitable bearings, *l* and *l'*, at the ends of the tube B. This screw L passes through the slide E, and moves the same along the slot *b* in either direction desired, this slide E regulating the movement of the rammer-rod or staff the same as when operated by the wheels, roller, and chain. When the rod or staff D is operated by the screw L, the slide E is constructed with an outer eye, *p*, on the inner surface of which is cut a female screw, the thread of which gears with the screw L. On the end of the shaft of the screw L there is a pinion-wheel, *m*, which gears with the spur-wheel *n*, to which the crank *i* is attached, and by which it is operated. The diameter of this spur-wheel *n* is about three times that of the pinion-wheel *m*, which enables me to impart to the screw L a very rapid motion. This spur-wheel *n* is supported in the following manner: The bearing *l'* of the screw extends sufficiently far to support one end of the shaft in which the wheel *n* revolves, and from the tube B extends another bearing, *l''*, which supports the other end of the shaft.

Having thus fully described my invention, what I claim therein as new, and for which I desire to secure Letters Patent, is—

1. Constructing a rammer with a flexible rod or staff, D, when the same is formed and operates substantially as described.

2. I claim the combination of the tube B, curved grooved plates C C, and rammer-rod or staff D, when the same are constructed and combined substantially as above set forth, and for the purpose specified.

3. I claim the tube B, curved grooved plates C C, and rollers *e e*, when the same are combined and arranged substantially as set forth, for the purpose specified.

4. I claim the method shown of operating the rammer-rod or staff, whether the same be accomplished by means of hand and pulley-wheels, roller and chain, or screw, spur and pinion-wheels, and crank, substantially as described, and for the purposes set forth.

5. I claim hinging the rammer to the turret, substantially as described, and for the purposes specified.

6. I claim uniting the sections for the rammer-rod at the point *d'* by a ball-and-socket joint, substantially as described, and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

J. B. WALKER.

Witnesses:

A. L NEWTON,

JOHN D. BLOOR.