J. B. Woodruff.
Submarine Apps.

No. 41,736. Patented Feb. 23, 1864.

Fig. 1

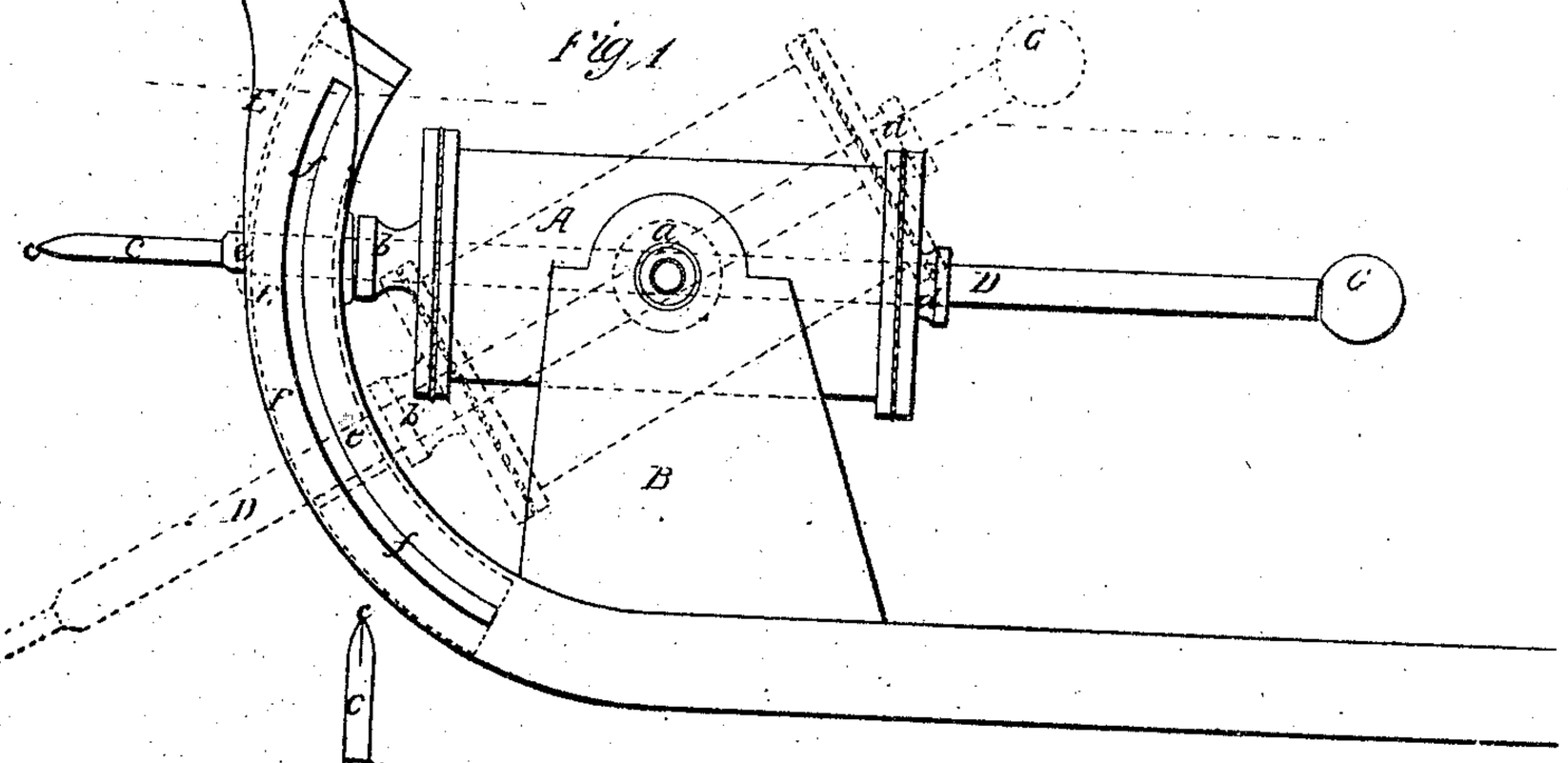


Fig. 2

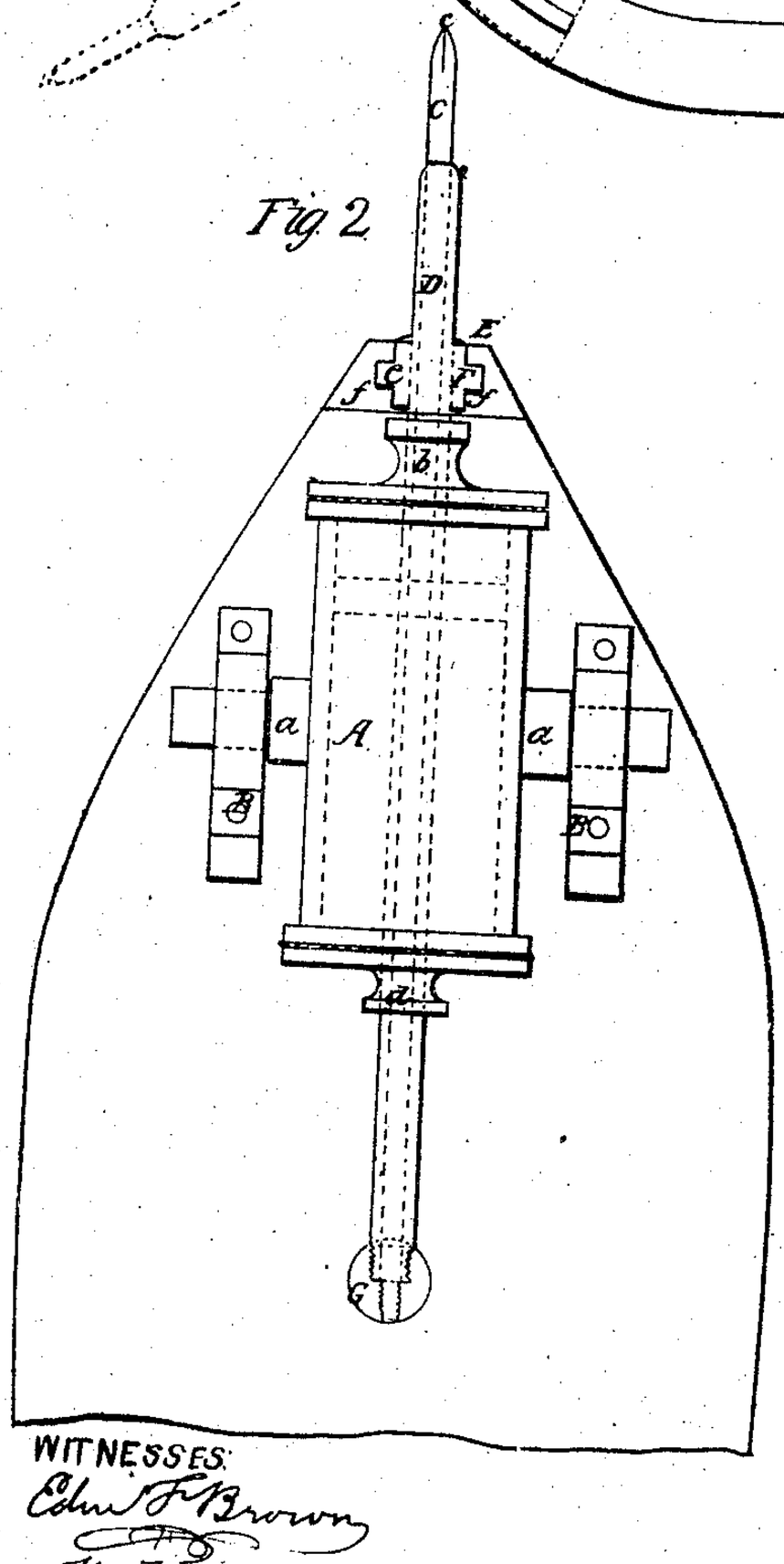
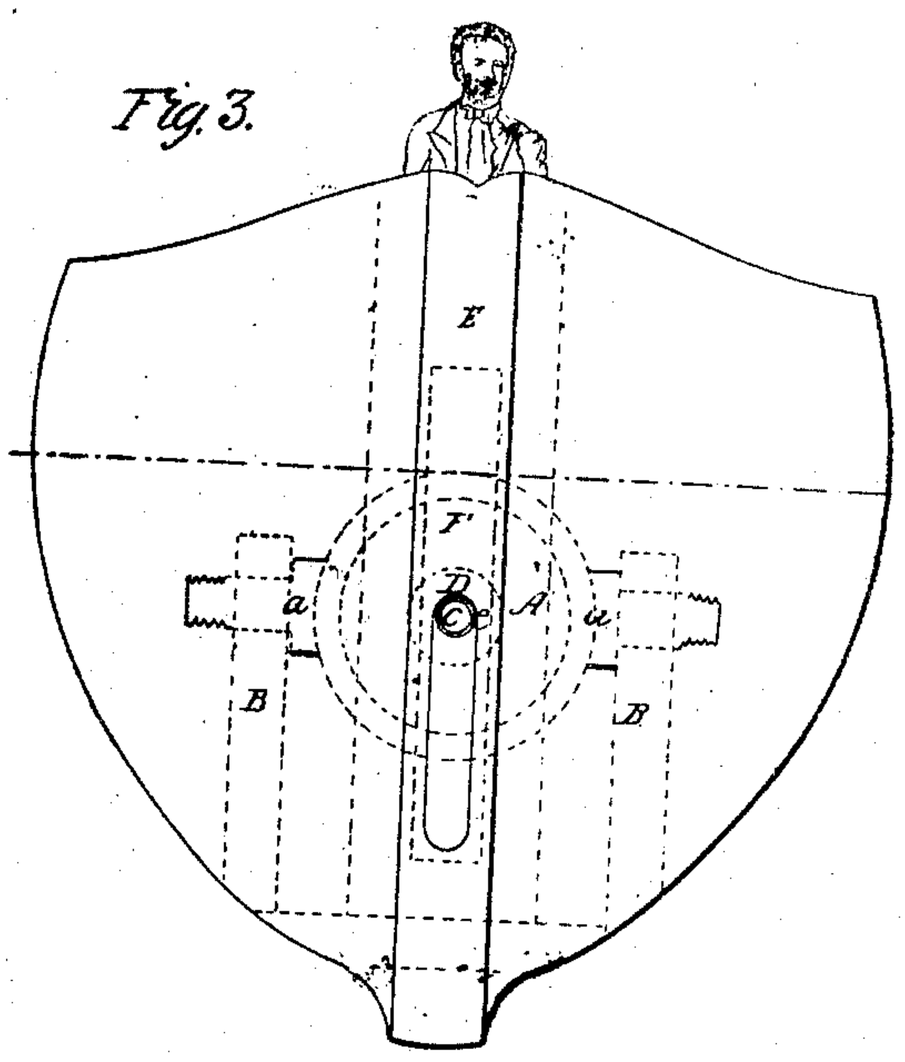


Fig. 3.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JEROME B. WOODRUFF, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVED BATTERING OR PIERCING RAM FOR NAVAL OFFENSE AND DEFENSE.

Specification forming part of Letters Patent No. **41,736**, dated February 23, 1864.

To all whom it may concern:

Be it known that I, JEROME B. WOODRUFF, of the city and county of Washington, in the District of Columbia, have invented a new and useful apparatus for coast and harbor defense, and for the purposes of naval warfare, and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 represents a side view or elevation of the apparatus placed in the bow of a boat, with its position changed in red lines. Fig. 2 shows a plan or top view of the same. Fig. 3 is a front-end view of the steam-plunger apparatus in dotted lines.

The object of my invention is to disable and capture or damage and sink the gun-boats and vessels of an enemy in time of war.

The nature of my invention consists in the application and use of steam operating direct on a piston, which is a hollow tube or shaft, through or into which is fitted a heavy stiff iron beam or shaft to operate as a plunger or a battering-ram, the same passing through a stuffing-box in a sliding segment in the bow of a boat, or in such other positions as it may be found to be of practical utility to place it, below the water-line, the cylinder being hung upon trunnions, and so arranged that the plunger can be elevated and depressed and brought to bear at different angles on the hull of a vessel when attack is made, while the power is being applied and the plunger in full operation; also, the mode of inserting and securing different shape pointed instruments in the hollow piston from the inside or rear end.

To enable others skilled in the art of constructing and operating steam-engines, I will proceed to describe the application, construction, and operation more fully, referring to the drawings, and to the letters marked thereon.

The letters indicate the like parts in each of the figures.

I place clear forward in the bow of a steamboat, below the water-line, a steam-cylinder, A, which may be of any desired dimensions or power, the same being balanced and supported on heavy trunnions *a a* and secured to the iron standards B B, of sufficient strength to resist ~~any~~ force that may be ever brought against them. The trunnions *a a* may serve the purpose for connecting the induction and eduction pipes, so that the steam-cylinder A will admit of the plunger C being moved up or down while the steam is on, operating it, so that the point or sharp edge *c* will strike in different places and cut or mortise a long hole vertically in water-tight compartments of any vessel that it can come in contact with; or it may be made to operate to destroy the rudders of vessels, so that they will be unmanageable.

The cylinder A may be inclined to such an angle that the plunger C *c* can be used to chop off piles so low down that vessels and gun-boats can pass over them safely, or it may be used to break up old hulks or other sunken obstructions in channels, and thereby allow the passage of gun-boats and other engines of war into harbors.

The piston D, I make a hollow shaft of large dimensions, and of such length as to extend through both heads of the cylinder A, there being a stuffing-box, *b* and *d*, at both ends. There is also another stuffing-box, *e*, through which the piston D passes out through the bow E or side of the boat. The stuffing-box *e* is secured to or made in a segment, F, the curve of which corresponds with the radius of the circle whose center is the trunnions *a a*, on which the steam cylinder A is supported, the segment F being fitted to slide in grooves *f f* water-tight and placed in the bow E, or in other suitable positions in the sides of a boat.

The sliding segment F, through which the piston D and plunger C pass out through the boat, is necessary to allow the plunger C to be changed in its position while in operation.

If desirable, for various purposes, or should it become necessary from damage or other causes, to remove the shaft or plunger C, it can be unfastened where it is secured to the inner end of the hollow shaft or piston D by a double-sized screw-nut, G, and drawn in out of the way, and another point, *c'*, or plunger inserted and secured in the same manner; or should the point *c* of the plunger, which extends out beyond the piston, get crooked or otherwise damaged, so that it could not be drawn in through the hollow piston D, the way to dispose of it is to force it out front and let it go down and insert another in its place. The points of the plunger may be sharp cutting-edges, like a cold-chisel, or pointed in any

form to best effect the purposes for which it is to be used.

There may be three or more of these engines of destruction placed in a boat—one in the bow and one on each side—so that it can be made to act upon the vessels of an enemy from any direction it can approach them. The boat on which one or more of these battering-rams are placed should be provided with sufficient propelling-power and speed to be able to overhaul any ordinary steaming or sailing craft. The plunger in the bow could first be brought to bear and carry away the rudder. A vessel thus disabled would be likely to be surrendered; but if resistance was still made, the plunger could be put in motion in passing alongside and speedily open her water-tight compartments.

With a boat constructed for the purpose, and clad with iron or steel sufficient to resist or glance off cannon-projectiles, and being provided with boilers and engine-power so as to possess a greater speed than any of the war vessels have or can well attain, owing to the armament they have to carry, it will readily be seen that by application and arrangement of the above-described apparatus, operating by steam-power, they will make the most formidable and destructive engine of naval warfare, by keeping our waters clear of privateers, capturing pirates and blockade-runners, while our coast, harbors, and cities will be protected.

In constructing boats for the purpose of using my new method of offense and defense, they would not require to be large nor cumbersome, as they would not require to carry any ordnance other than a signal-gun. Nor would they need any magazine or storeroom for ammunition, and a much smaller complement of men could manage and operate them, their fighting capacity being all in their boilers, and it is only necessary to have them large and strong. With a supply of fuel and steam up, they are always ready for action—no ammunition giving out, no dismounting of guns, and no loss of projectiles, and in close action quite sure to hit every time at the rate of from thirty to sixty times per minute.

Having thus fully described my invention, its operation, and the effects to be produced, what I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of the steam-cylinder and a hollow piston, which passes through a stuffing-box in a sliding segment, the same being fitted to move up or down in a groove water-tight, so that the plunger can be changed in its position while in operation, substantially in the manner herein described.

2. The plunger C, the same being inserted at the rear end and passing through the hollow piston D and secured in its place, to be operated by steam-power in the manner described, for the purpose of offense and defense in naval warfare, as specified.

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Witnesses:

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