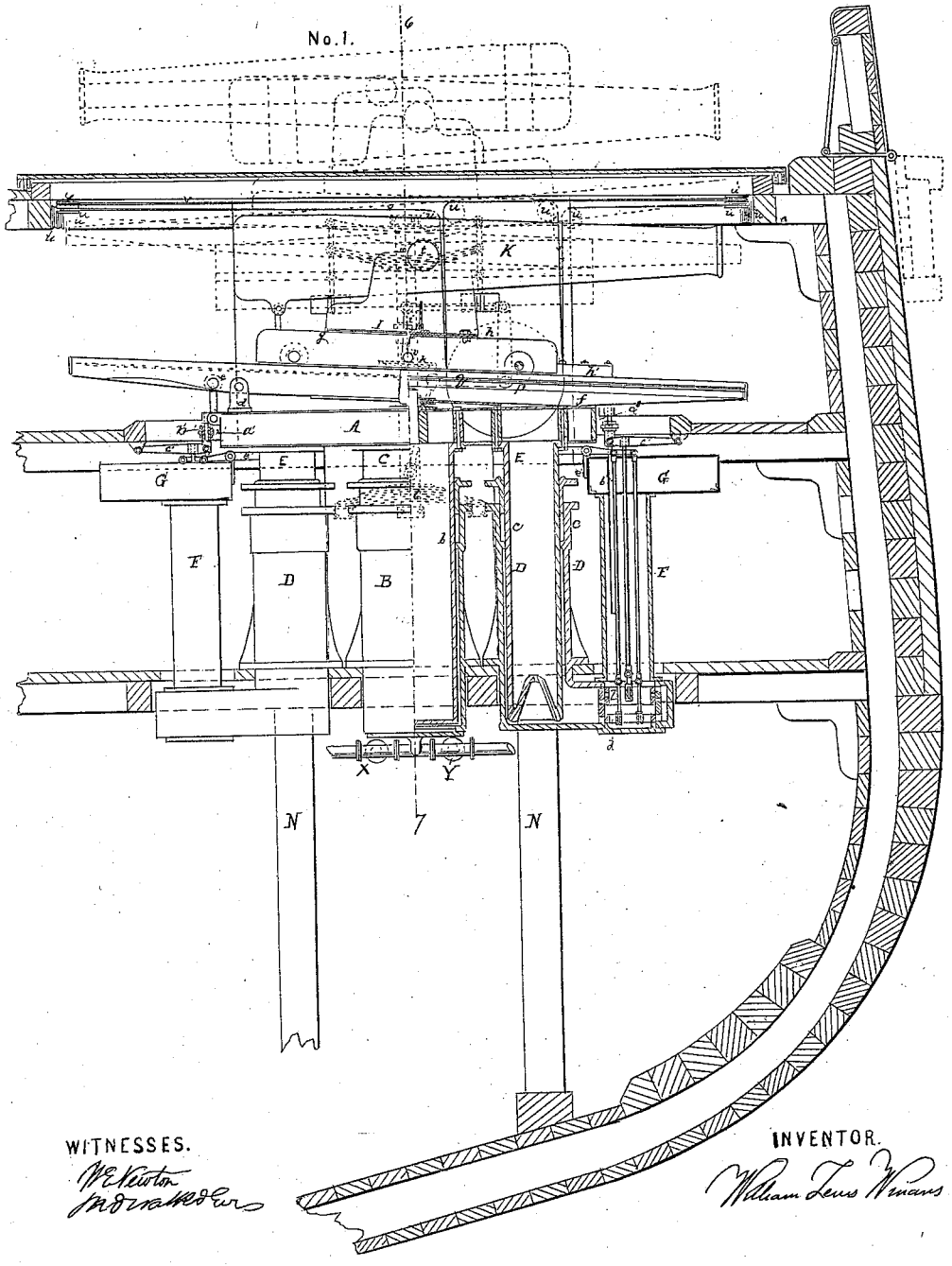
3 Sheets—Sheet 1.

W. L. WINANS.

Gun-Carriage.

No. 46,516. Patented Feb. 21, 1865.



WITNESSES.

INVENTOR.

William Lewis Winans

3 Sheets—Sheet 2

W. L. WINANS.

Gun-Carriage.

No. 46,516. Patented Feb. 21, 1865.

Fig 4

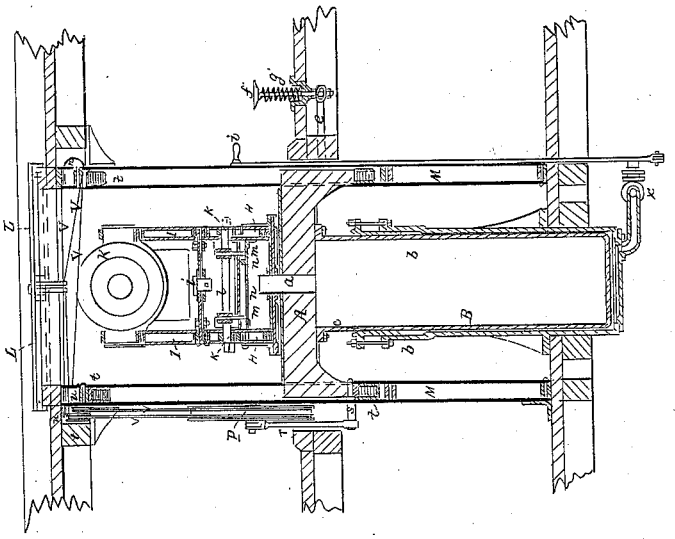
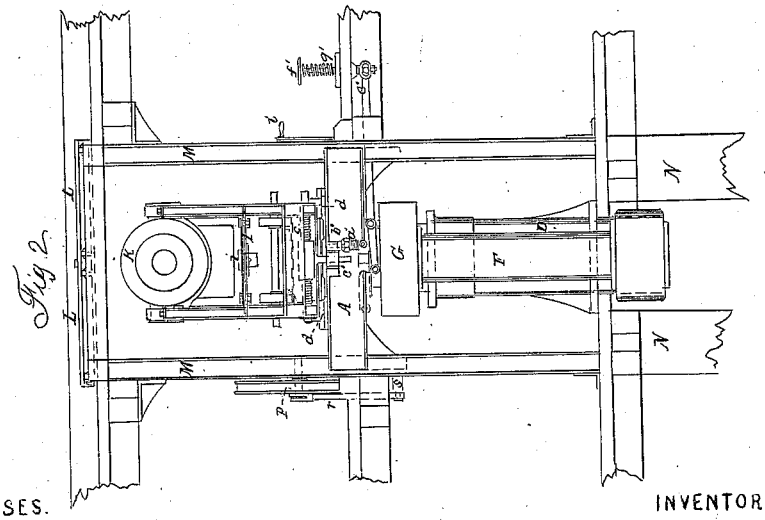


Fig 2.



WITNESSES.

W. W. Newton

Edward Rodgers

INVENTOR.

William Lewis Winans

3 Sheets—Sheet 3.

W. L. WINANS.

Gun-Carriage.

No. 46,516. Patented Feb. 21, 1865.

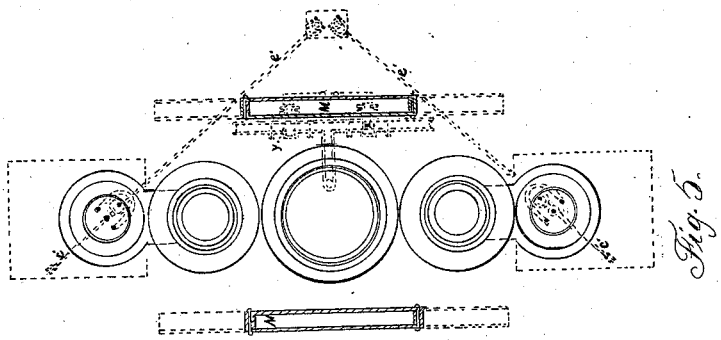


Fig. 2.

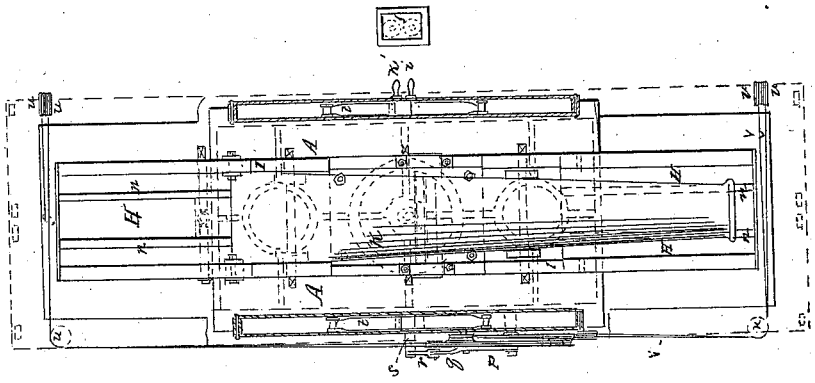


Fig. 3.

WITNESSES.

A. R. Newton

Fred'k Kessler

INVENTOR.

William Lewis Winans

UNITED STATES PATENT OFFICE.

WILLIAM LOUIS WINANS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN OPERATING ORDNANCE ON GUN-BOATS, &c.

Specification forming part of Letters Patent No. **46,516**, dated February 21, 1865.

To all whom it may concern:

Be it known that I, WILLIAM LOUIS WINANS, of Baltimore, Maryland, United States of America, have invented improvements in the manner of mounting and maneuvering cannon or ordnance on ships or vessels of war and floating batteries; and I do hereby declare that the following is a full and exact description of my said invention.

The first and principal objects of this improvement are to do away with the necessity for port-holes or embrasures in the sides of vessels of war and floating batteries, through which to fire cannon, and more perfectly to protect the men, cannon, and other contents, as well as the interior parts of vessels of war and floating batteries, than is practicable by any system yet employed or before known. These objects are attained by raising the cannon from a place of security below the upper deck or from behind the bulwarks of a vessel of war or floating battery, just before firing it, to such a height as may be necessary to give it the proper direction and clear the decks and water-ways or bulwarks of the vessel or floating battery, and so soon as it shall be discharged by lowering it to its place of security below deck or behind bulwarks, as the case may be, to be reloaded and prepared for refiring. One mode of performing these operations with certainty and facility is shown by the drawings hereto annexed, and above referred to as making a part of this specification.

Of the drawings annexed, showing the machinery or apparatus for one mode of mounting and maneuvering cannon and for opening and closing the cannon-hatchways according to my improvement—

Figure 1 represents a combined side view and longitudinal section of the apparatus in connection with sections of part of one side and portions of the decks of a vessel of war. Fig. 2 represents an end view of the apparatus in connection with longitudinal sections of portions of the decks of a vessel of war. Fig. 3 represents a top view or plan of the apparatus with hatchway-covers and so much of the hatchway-framing as necessary for the purpose removed to expose it. Fig. 4 represents a combined transverse section on the line 6 7, Fig. 1, and end view of parts of the apparatus in connection with longitudinal sections of portions of the decks of a vessel of war. Fig. 5 represents in combination a horizontal section on the line 8 9, Fig. 4, a top view of parts of the apparatus, and a section through the pipes and cocks for admitting steam to and discharging from the steam-cylinder.

Referring to these drawings, the following will serve as a description of the same, to wit:

A is a movable platform for carrying the chassis, the cannon-carriage, and the cannon, and to which the chassis is secured by the pivot or pintle *a;* B, a cylinder, into which steam is admitted for raising the platform A; C, a plunger attached to the bottom of the platform A, and extending down into the steam-cylinder B, a steam-tight joint being formed between it and the upper portion of the steam-cylinder by means of packing within the space *b;* D, hollow columns or cylinders for containing water or other fluid for the purpose of forming a support for the platform A; E, plungers attached to the platform A, and extending down into the hollow columns or cylinders D, water-tight joints being formed between these plungers and the cylinders, into which they respectively enter by means of packing within the space *c.* The lower end of each of these plungers is made concave, for the purpose of containing air to act as a cushion or spring for the purpose of relieving the apparatus, as well as the ship, in some degree from the effects of the severe vertical concussions produced by firing the cannon at an elevation above the horizontal line.

F represents pipes for the purpose of conveying water or other fluid to and from the cylinders D; G, tanks for containing water or other fluid for filling the cylinders D; H, the chassis upon which the cannon-carriage is placed, which is so made and arranged as that it may be adjusted by means of the blocks or wedges shown and marked *d*, so as to give it any desired inclination, and by means of the tangent-screw *e* and its appendages, so as to train or turn the cannon horizontally with facility and precision. By changing the position of the blocks or wedges *d* from where they are shown on the drawings, to the point *f*, the inclination of the chassis may be reversed, so as to adapt it in this respect to the cannon when its direction may be reversed.

I represents the cannon-carriage, which is represented as being made to part at the line

g h, so that the upper portion of it may be swiveled or turned upon the pintle *i*, when it may be necessary to reverse the direction of the cannon, which may be done by this means when the cannon is raised, so as to be above the upper deck; but when in action the two portions of the carriage will be firmly secured to each other by bolts, substantially as represented in the drawings. The lower portion of the carriage is provided with wheels, which are brought into and thrown out of action, as required, by means of eccentric bearings—a well known expedient for the purpose; and to provide a means of resisting the effects of recoil when the vessel may be rolling or pitching, so much as to render the inclination of the chassis an unsafe reliance for the purpose, spring-compressors for increasing the friction between the carriage and the chassis are provided. These are represented at the points *k*, and are brought into action by eccentrics on the shaft *l*, and straps from these eccentrics which take hold of and draw the clamps *m* up against the projecting lips of the guides *n*, attached to the chassis.

K is the cannon; L, sliding doors or covers, of iron or other suitable materials, for closing the cannon-hatchways; M, substantial bulkheads intended to act as deck-stanchions, guides, and lateral as well as longitudinal supports for the platform A; N, stanchions for supporting the lower decks. Guides may be attached to the carriage I for guiding it in a proper direction, and preventing its being lifted from the chassis by any violent movemont; P, a wheel or pulley, the axle of which is secured in one of the bulkheads M, for conveying motion to the chains or ropes V, for opening and closing the doors or coverings to the cannon-hatchways; *q*, arm with pin in its outer end attached to the pulley *p* for communicating motion to said pulley; *r*, connecting rod or link for connecting the arm *q* to the pin *s*; *s*, pin attached to one of the guide projections of platform A for carrying the connecting-rod *r*, through which motion is given to the arm *q*; *t*, springs for the purpose of checking or stopping the platform A without severe shock when it is raised and lowered to its extreme limits. The upper springs are made adjustable, so that the extent of extreme lift may be varied; *u*, pulleys for carrying the chains or ropes for opening and closing the doors L.

V represents chains or ropes for opening and closing the doors L; X, cock for admitting steam to the steam-cylinder, and *y* cock for admitting steam from steam-cylinder. These two cocks X and *y* are opened and closed by means of the handles *i'* and *k'*, respectively; *z*, valve for admitting water or other fluid to the hollow column or cylinder D, of which there is a corresponding one for the like purpose in connection with the other hollow column or cylinder D. These valves are opened and closed as the platform A begins to ascend or descend by means of friction or adhesion between the packing within the boxes *d'* and the rods *b'*, which is made adequate to the purpose by compression, and the extent to which these valves may be moved is determined by proper permanent stops above and below the levers *e'*. These valves, after being opened, remain open until the movable platform recedes or falls back from its extreme height of lift the small space sufficient to close them; *d'*, valve, of which there is one for each for discharging the water or other fluid from the cylinders D.

e' represents levers for opening and closing the valve *d'*; *f'*, treadle, by which force is communicated to the levers *e'* for opening the valves *d'*; *g'*, a spring to counteract the weight of the levers *e'*, and to aid the weight of the valves *d'* and their rods in closing the same when the force for opening these valves is removed from the treadle *f'*; *h'*, a chock securely fastened to the chassis to stop the carriage at the proper point when it is moved back from the position to which it is driven by the recoil of the cannon. To avoid confusion no means are shown to limit the extent to which the carriage may be thrown back by the recoil, as the usual and well-known appliances may be adopted, and will be ample for the purpose.

Having indicated or described all of the principal parts of the apparatus for raising, lowering, and maneuvering cannon, shown by the annexed drawings by letter, it will suffice to say that like letters indicate like parts in the different views and sections shown, to explain that by admitting steam of suitable pressure into cylinder B, the whole movable portion of the apparatus may be raised to such a height as to bring the cannon into the necessary positions for firing it—as, for instance, those positions indicated by the dotted lines where the cannon is carried below the upper deck, as shown in the drawings, and that by opening cock *y* for discharging the steam from the steam-cylinder and the valves *d'* to afford egress for the water or other fluid from the cylinders D the cannon may be lowered to its original position of safety, where it may be reloaded and prepared for refiring. The speed at which the cannon may be raised and lowered may be determined at pleasure, and will depend upon the extent that the cocks and valves for admitting the steam and water or other fluid to and discharging them from their respective cylinders may be opened.

It is obvious that cannon may be carried upon the upper deck of a vessel or floating battery, or behind permanent bulwarks, and raised above these at the moment of firing them, and then lowered again to their places of safety, by the means herein indicated and set forth, to be reloaded and prepared for refiring.

The apparatus herein described for raising, lowering, and maneuvering the cannon may be adjusted to work with such accuracy and rapidity, and the sights of a cannon may be so arranged, as that it may be aimed before or

while being raised, so that it may be discharged as soon as it reaches a point high enough to clear the decks or bulwarks; hence the exposure of the cannon, as well as of those working or maneuvering it under this system, will be exceedingly small, if not, indeed, of the least practicable amount.

It will be obvious, also, to any intelligent engineer or mechanic that the apparatus particularly described may be considerably modified or changed in its form and proportions without essentially changing its general character or affecting its efficiency; and, further, that the hollow columns or cylinders for containing water or other fluid for supporting the cannon and movable portions of the apparatus after they have been raised to the required height by means of steam within the steam-cylinder, may be dispensed with altogether, and that their purposes may be fulfilled to a great extent by substantial stanchions, or other means of support analogous thereto, in connection with sliding bolts, ratchets, and pawls, or their equivalents, and that, in cases where it is desirable to sweep the entire circle with a cannon, the chassis-platform may be circular, and be supported at its edges by any of the means just indicated, in which case the steam-cylinder can be used as a pivot on which to turn or train the cannon. I, however, notwithstanding their greater cost and weight, because of the superior safety and facility which they afford in securely supporting the cannon at any and all points within the extreme range of lift, and also of the facility and safety with which the cannon may be lowered by means thereof, prefer to use hollow columns, or cylinders with water or other fluid, as a support, and in cases where it is desirable to have the power of sweeping the entire circle with the cannon I would increase the number of these columns to three or more, and make the chassis-platform circular.

The apparatus above described may be applied in most cases with facility and to great advantage. In some instances, however—such, for instance, as where the space below the point for carrying the cannon is not of sufficient height for the accommodation of the apparatus, as shown by the drawings, or where objections to its employment may arise on other accounts—steam may be applied or used in raising or lowering the cannon through a system of ropes or chains and pulleys, or any other of the well-known mechanical means, and in others where steam-power may not be conveniently had or used for the purpose, and circumstances favor the application of animal or manual power, such power alone, or either of them in connection with a system of counterweights, may be used to advantage in raising and lowering the cannon.

Besides the first-mentioned and principal objects attained by this improvement, there are other most important objects and advantages gained by it, viz:

First. By dispensing with port-holes in the sides of vessels of war and floating batteries the sides of these structures can be made much stronger at the same cost than is practicable where port-holes are used, and in addition to this the sides of vessels of war may in the absence of port-holes be reduced in height, and in connection with the power afforded by my improvement of raising the cannon before firing it without necessarily reducing the distance or height between the water and the point for its discharge, which lessening in height would not only lessen the cost and weight of the vessel, but would also lessen the mark for an enemy to shoot at.

Second. By this system or improvement one gun or cannon may be raised and discharged while others immediately in the rear or advance of it are being loaded. Consequently most, if not all, of the cannon from different sides and parts of a vessel of war or floating battery may be brought to bear in any given direction without the interference of one with another; hence several pieces of cannon may be placed, one immediately behind another, on a given front and all fired in the same direction, thus enabling a greatly increased number of cannon to be brought to bear from a single tier on a vessel or battery in any given direction.

Third. By carrying cannon below the point for firing them the center of gravity of the battery of a vessel of war may be brought lower than is customary or practicable under existing systems.

Fourth. By this improvement one line of cannon placed near to or on the fore-and-aft center line of a vessel of war, or a lesser number alternating on each side than is now customary, and discharged above decks, would be quite as effective in broadside fighting as two full lines, one on each side of the ship or vessel placed and used in the customary way, and, moreover, by this system cannon may be placed further from the sides of the vessel than is customary or practicable where they are fired through port-holes. These advantages, in connection with that of carrying the guns lower in the vessel, as explained under the previous article, would render admissible a less breath of vessel in proportion to its length than is practicable and customary where cannon are carried and used as at present on them, and as the lessening of the breadth of a vessel in proportion to its length is favorable to increased speed this is an advantage of considerable importance.

Fifth. By discharging cannon from above decks, in connection with the power afforded by my improvement of maneuvering them from below, the annoyance and obstruction to rapid firing caused by smoke under the present system will be almost wholly, if not entirely, removed.

Sixth. By dispensing with port-holes in vessels of war and carrying the cannon below deck, which is rendered practicable by my improvement without detriment, it will give to these

vessels all the appearance of merchantmen, which is a matter of no small importance in many descriptions of service.

Seventh. By mounting cannon, substantially as described and shown by the drawings annexed, on board vessels of war, the labor of maneuvering them will be greatly reduced as compared with that necessary under the systems now in general use; hence by the adoption of this improvement the number of men per cannon to be carried on board these vessels may be considerably reduced below the present standard.

Although in what has been stated above the dispensing with port-holes in vessels of war and floating batteries is contemplated, yet the benefit of my improvement may be attained in a very great degree by retaining the port-holes at a proper and convenient height in the sides of vessels and floating batteries, and carrying the cannon below them, except when wanted in action, when they may be raised to the proper height for firing through the port hole or embrasure, and maneuvered by means and in the manner substantially as herein indicated and shown, and although, in what has been previously stated, it is contemplated that after firing, the cannon shall in each case be lowered again, to be reloaded, yet in some cases this will be unnecessary, and in these the gun or cannon, being once raised to its proper height for firing, may be retained and reloaded and maneuvered in that position, or lowered again for these purposes, as the commander may see fit.

Having now described my invention of improvements in the manner of mounting and maneuvering cannon or ordnance on ships or vessels of war and floating batteries, and having explained the best means with which I am acquainted for carrying the same into effect, would observe that I do not mean or intend to confine myself rigidly to the precise arrangements herein set forth, as the same may be varied without departing from the nature and object of my invention.

I desire it to be understood that what I claim, and desire to secure by Letters Patent, is—

1. Mounting the carriage of a gun on a platform, which is connected with a plunger, to be elevated by the admission of steam to the cylinder, substantially as described, in combination with the connection of the said platform, with other plungers fitted to cylinders to regulate the descent of the platform and gun by the flow of water or other fluid, substantially as described, and for the purpose specified.

2. Making the plungers for regulating the descent of the platform and gun, with a cavity in the lower end thereof to retain air, substantially as described, to act as a spring-cushion, to relieve sudden and violent concussions, as set forth.

3. In combination with the mounting of a gun on a platform to be raised and depressed, the employment of a chassis connected with the platform and interposed between it and the carriage, and provided with wedges or the equivalent thereof to vary the inclination of the chassis, substantially as and for the purpose specified.

4. Connecting the upper part of the carriage, in which the gun is mounted, with the lower part thereof by means of a swivel, in combination with the chassis connected with the movable platform, by which the gun is raised to be fired and let down to be reloaded, substantially as and for the purpose described, whereby the gun can be turned to take any range desired, notwithstanding the platform, by reason of its connections, cannot be turned.

5. In combination with the platform for raising and letting down the gun, as described, the employment of sliding hatchways, so connected with the platform as to be operated by the motions of the platform, substantially as and for the purpose specified.

In witness whereof I, the said WILLIAM LOUIS WINANS, have hereunto set my hand and seal the 10th day of January, in the year of our Lord 1862.

WILLIAM LOUIS WINANS. [L. S.]

Witnesses:
W. E. NEWTON,
FRED. WALKER, Sr.,
Both of 66 *Chancery Lane, London.*