

# Pictorial Guide

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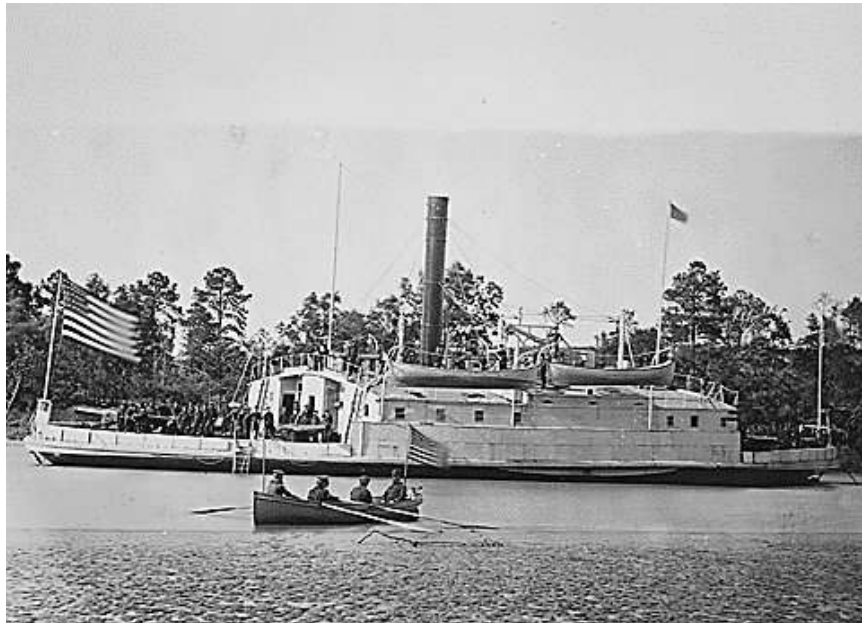
## U.S.S. Fort Henry

**On March 25, 1862, a New York City side-wheel steam powered ferryboat was purchased by the U.S. Navy. The approximately 150-foot long ship was fortified and armed with six large guns, and named the "U.S.S. *Fort Henry*."**

**by Lew Zerfas**

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*Note:* No known photographs of the U.S.S. *Fort Henry* exist. Photos used in this guide are of other ex-New York City ferryboats used during the Civil War as converted to gunboats. Boats of about the same size and configuration are used to approximate life aboard and what the U.S.S. *Fort Henry* probably looked like. Other photos (like the USS *Commodore Barney*, below) and diagrams are used to aid in explaining what the gunboat looked like.



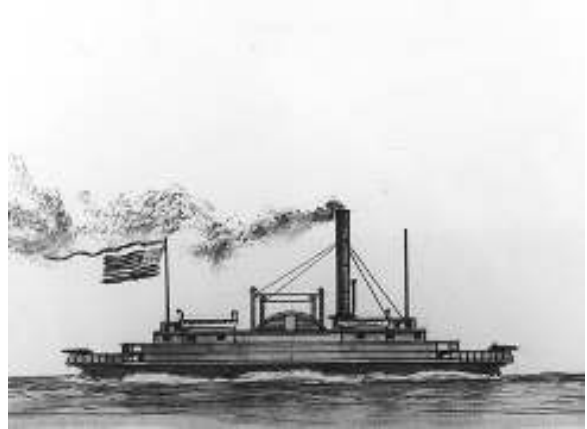
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## Forward

The U.S.S. *Fort Henry* was one of over fifteen ferryboats purchased early in the Civil War by the U.S. Navy and converted to be used as gunboats. Most were previously in service in New York City. Although some of these new gunboats kept the same name after the conversion, it is probable that the U.S.S. *Fort Henry* was newly named for Navy service. The previous name as a ferry is not known.

Most of these ex-ferries, now gunboats were in the 500-550 ton displacement range with an overall length of 150-170 feet.



## I. General Information

Ferryboats typically had a “drive through” structure, large openings which would allow horse-drawn wagons to be moved on board from one end of the boat, then removed off the other end. These boats were typically double-ended. The openings would be right behind the crew in the center of the photograph. However, these openings were enclosed to make living quarters and storage space for the added crew. Ferries were typically not manned for extended periods, and with a much smaller crew they had limited quarters. The U.S.S. *Fort Henry* was on duty for well over three years off the west coast of Florida. Repairs, usually to the steam engines, were completed at Key West, the closest squadron station to the *Fort Henry's* assigned patrol sector.

Without actual photographs or specific documentation, it is difficult to be completely correct as to the exact look of the U.S.S. *Fort Henry*. We can look to these other ships to draw close estimates as to what she looked like and configured for war.

The photo to the *right* shows what appears to be hinged iron plates (shown in the down position) for protection from enemy fire. These were added during the conversion to a gunboat. (Some of these gunboats used sandbags around the perimeter of the main deck.)

This photo shows the placement of the guns on one of the ends of the ex-ferry's main deck. The main difference between this photo and the *Fort Henry* is that the later would have one 9-inch and two 32-pounders placed on each end deck.



Although there is no indication of how many of the ship's launches (or cutters) nor the size of them, there were most likely four hanging from the davits on either side. Along the *Fort Henry's* “patrol sector” there are no ports nor rivers deep enough to provide direct docking of the gunboat. All transportation of naval infantry (landing Army infantry or Naval forces, inspection of the rivers, etc.) had to be accomplished by using the ship's launches.

As mentioned earlier, the U.S.S. *Fort Henry* was steam powered, driving a set of paddlewheels, one per side. Built as a ferryboat and put into service as a harbor bound ship, these ex-ferries served along the coast and rivers of the blockade. Some, like the *Fort Henry*, served for months at a time on patrol, constantly keeping up a “head of steam.” A comment by McCauley (June 30, 1863) “by the unseaworthiness of the *Fort Henry* herself” tells a lot.

## II. Heavy Artillery

### Dahlgren 9-inch (quantity: 2)

The largest guns carried on the U.S.S. *Fort Henry* (and several of the other ex-ferry gunboats) was the Dahlgren IX (nine) inch smoothbore. Two of these large guns were on board, one on each end of the ship.

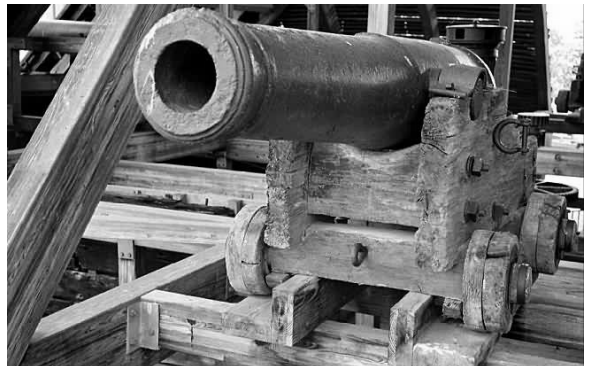
This gun required a crew of 17 to serve this type cannon. The photo at the *right* shows this type gun on a pivot gun carriage. (The *Fort Henry's* guns were most likely mounted on standard naval carriages.) It could fire a solid ball of 90 pounds, exploding shell of 73.2 pounds, shrapnel of 75 pounds, and canister weighing 70 pounds.



The expected range for 73.5-pound shell was up to 3,357 yards with a 10-pound propellant charge, 15 degrees elevation, and a flight time of 14.7 seconds. Thirteen-pound charges would provide ranges up to 3,450 yards for the same projectile. A 10-pound powder charge would give 75-pound shrapnel shot ranges up to 1,690 yards at 5 degrees elevation and 5.9-second time of flight.

### Navy 32-pounder (quantity: 4)

The U.S.S. *Fort Henry* carried four 32-pounder Navy guns (photo, *right*). Length was 112 inches and has a marked weight of 6,500 pounds. Elevated at 5-degrees, the gun had a range of 1,922 yards (well over one mile),



A typical ship cannon could fire any kind of projectile, but solid shot, hot shot, exploding, grape, and canister were in widest use. These guns were mainly flat trajectory weapons, with a point-blank range of about 300 yards. They were fairly accurate up to about half a mile. The 32-pounders were each served by a crew of 12 men and a powder boy, and fired a 32-pound solid shot cannon ball.

### Manning the Guns

Keep in mind that not all guns had to be manned during a battle. Just adding up the numbers for the two IX-inch and four 32-pounders, it would require fifty-eight men. Gun crews were usually responsible for a pair of guns, mirrored port and starboard in equivalent positions. However, with the different layout of these unique ships, it might have been a combination of port, starboard, and fore and aft assignments for the gun crews.

## III. Light & Field Artillery

Like a number of other ships, the USS *Fort Henry* carried a 12-pounder Dahlgren "light boat howitzer" between April 1863 and June 1864. This unique gun could be used in several configurations, the two most common being mounted on a swivel carriage on one of the ship's launches as well as being fitted with a field carriage (photo, *right*). The boat howitzer did not fire solid shot but did fire canister and shrapnel. This made the gun behave like a giant shotgun and was very effective against close up infantry.

The boat howitzer could be quickly disassembled, lowered into a launch, transported to the shore, and carried over obstacles by a crew of about eighteen men. Each man would be assigned

specific components to carry. For instance, two men carry the wheels, one each, other men various parts of the carriage, powder chest, etc. The rammers would be lashed to the heaviest part, the barrel, and it would be carried by several men, stretcher style. Upon arrival at the destination, the boat howitzer would be quickly reassembled and ready for action.

In the photo right, two officers are posed with the Dahlgren. The all-iron carriage is evident and if you look under the barrel and above the axle you can see the easily removable fasteners which enable the gun's barrel to be removed. The wheels appear to be of wooden spokes with a wood rim and most likely an iron tire. Some of the guns had wheels made completely made of iron.



While looking at these photos, take note of the extensive use of canvas for coverings and especially for shade from the long hot days on patrol. The first photo with the sailors in white trousers (summer use) and in the second photo the officers are wearing straw hats, indicating that these photos were taken during the summer.

#### IV. The Crew

The U.S.S. *Fort Henry's* crew totaled about eighty enlisted men (including marines) and officers. In the photograph to the *right* are sailors on the quarterdeck standing watch. One can be seen holding a telescope, not for being posed as such, because many of these photographs were taken in areas where the ship was on active duty and men always had to be on alert.

**Officers** The officers of a similar gunboat pose in the above photograph. Three of the officers (including one on the quarterdeck) are wearing straw hats while three are wearing the standard issue hats.

The commanding officer, common for most "gunboat" class of ships, was usually a lieutenant-commander, in this case the man in the middle. The other commissioned officers ranks included ensigns and masters, plus a paymaster and assistant surgeon, and an engineering officer.

**Sailors** The U.S. Navy was integrated (the Army was segregated) with men from various races and national origins crammed together in living quarters. It is most likely that the crew of the *Fort Henry* followed the same dispersion of men in its crew. The photo to the *right* shows the crew posed on the deck. The quarterdeck was usually limited to officers and to sailor who were on watch.



Ongoing maintenance of the ship occupied much of the crew's time. Decks had to be cleaned, ashes had to be removed from the boilers, and repairs made.

Time was spent for laundry and personal hygiene as well. Months at sea would also provide time for entertainment as well, but being so far from friendly ports, a watchful eye was also kept.

Tenders (supply ships) often came along side to transfer ammunition, food mail, orders, and many other items need to sustain the crew and keep the ship operational.

## Marines

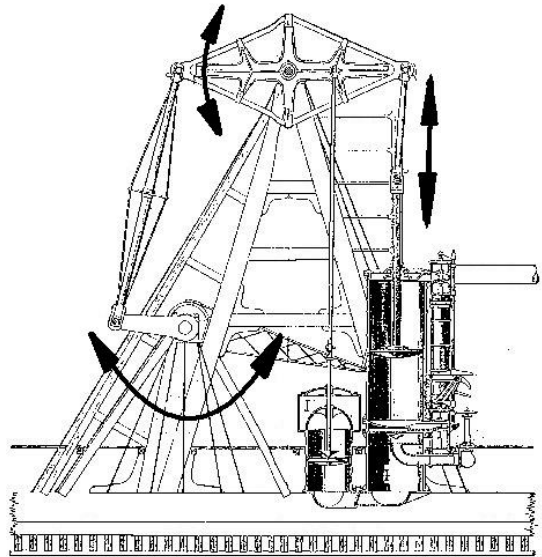
Some of these gunboats, like the U.S.S. *Fort Henry*, carried a small detachment (about six) of marines. The *Fort Henry* had a detachment of six marines, including a sergeant and corporal. The small detachment of marines on ships like the *Fort Henry* usually blended into the sailor's workforce. Most had to know how to do multiple chores. Most often the marines were part of the gun crews. Marines were often used when expeditionary forces ashore were needed.



## V. Steam Power

Most of these ferryboat to gunboat ships were "steam powered side-wheelers." Coal was fed into the burning chamber through which water was pumped through pipes. The water heated into steam which built up pressure through the use of valves. The steam then was systematically released into a chamber which forced a piston (or series of pistons) to move thus converting steam pressure into linear motion.

As seen in the diagram to the *right*, the piston's connecting rod (right side) was linked to the walking beam (top) which transferred the motion to a crank (left) where the linear motion was now rotary motion. This crank was connected to the paddlewheels.



The coal fired steam engines were below deck, and the walking beam can be seen in the photo at the *left* on one of the ex-ferryboat converted to a gunboat. When operating, the walking beam see-sawed much like the action of modern pumps on oil wells. The paddlewheel would turn and as the lower part of the paddlewheel went through the water, moving the ship.



Considering the volume of a pound of steam, a pound of water has a volume of only 0.016 cubic feet. Therefore, even at 200 psia, when water turns into steam, its volume increases by about 14 times.

You can see that if you can use the cold seawater as the lowest temperature, say 60 °F, the pressure would be less than 1 PSIA, and 1 pound of steam would require more than 340 cubic feet of space. Steam was not

expanded to this volume, but to the volume allowed by the largest practical cylinder.

The ships had to carry an large amount of coal that would have to be hand shoveled (by “coal heavers”) into the fireboxes. Huge amounts of water were also used. In the early days of steam, seawater was used. However, the salty water wrecked havoc on the steam boilers. The combination of hot salty water running through the iron steam pipes caused a lot of rust. The hot coals would deteriorate the grating as well, and after several months of continuous duty, failures often occurred.

Many of these failures meant the engine ceased operating, requiring a tug or another ship to provide a tow. This sent the steam powered ships to facilities that had the ability to make major repairs. For the East Gulf Blockading squadron, this was at Key West. The ship’s engineers were responsible for the operation of the engine.

Many ships like this one had the walking beam above decks because of space limitations. Later designs of steam power changed the linkage to connecting rods. The photo at the *right* shows the arrangement of a walking beam steam engine and the paddlewheels.

The constant splashing of the paddles through the water caused the paddlewheel powered ships to a unique sound. The amount of visible smoke depended on the type of coal used. The north had anthracite coal which produced less smoke. As the coal burned the ship’s draft (depth in the water) lessened as the ship became lighter. This could easily be a foot or two difference.

**“Not Much steam out there...”**

The expense of not only building a replica of a ship like the USS *Fort Henry*, but maintaining it as well, is prohibitive for reenactment/living history organizations. There are a few preserved ships in museums. For most of the living history community, photographs and words tell the story of the ship. The “reenactors” tell the story of the men. A few photographs (*below* and *right*) show some events.



## VI. Patrol Sector and Operations

The main objective of ships like the U.S.S. *Fort Henry* was to support the Federal blockade. The purpose of the blockade was to prevent the south to import various materials and weapons, as well as preventing the south to export materials (primarily cotton) which was used to pay for the imports. This meant a constant vigilance on the sea, looking for small boats to larger ships.

Another duty that the men and ship performed was that of transporting Federal Army troops. All movement of army troops around Florida (and many other states) required the use of the U.S. Navy's ships. For smaller actions, the Navy used the gunboats.

Perhaps the most unusual use of the gunboat's crew was as infantry ashore. Typically, when enemy activity was suspected or anticipated, a closer look was required, often by expeditions close along the coast or up one of the many rivers searching for blockade runners or enemy activity. It was either too risky for the gunboat to go up some of the larger rivers where Confederate artillery could be hidden in the woods or underwater "torpedoes" (mines) could activate. Other rivers were just too shallow for the gunboat's draft.

Danger always existed and this was proven on a number of occasions. When the *Fort Henry's* marines raided Crystal River, firing opened up on the marines. The marines withheld their fire when they sighted a civilian woman present. While on the Waccassa River, sailors on a launch from the *Fort Henry* were brought under fire and two sailors were killed by gunshot.

