

ROBERT C. BUCHANAN.

MARCH 2, 1877.—Recommitted to the Committee on Military Affairs and ordered to be printed.

Mr. ALPHEUS S. WILLIAMS, from the Committee on Military Affairs, submitted the following

REPORT:

[To accompany bill H. R. 4701.]

The Committee on Military Affairs, to whom was referred the memorial of Robert C. Buchanan for compensation and relief for the use of his invention and the infringement of his patent-right for a portable boat by the United States, having had the same under consideration, respectfully submit the following report:

That in March, 1856, R. C. Buchanan, then brevet lieutenant-colonel, United States Army, was assigned to the command of all the United States troops to be employed in the suppression of Indian hostilities in the district of Southern Oregon and Northern California. He took the field in the middle of the same month, and found his operations seriously embarrassed by the want of means for crossing the rivers which intersected the district, as no boats were to be had which could be transported over the high and rugged mountains of that country.

By the 6th of May, 1856, in the prosecution of this campaign, Colonel Buchanan had succeeded in inventing and constructing a canvas boat, by means of which he was enabled to follow the Indians in any and every direction, crossing rivers with it and safely transporting across men, arms, and stores. By this means he was enabled to bring the war to a speedy and effectual close, and remove the whole of the tribes of hostile Indians as prisoners of war to the reservation provided by Government.

In May, 1856, a board of officers was convened at Oak Grove Camp, Oregon Territory, to examine and report upon the capacity and fitness of this portable boat for the transportation of troops across rivers. This board was composed of officers, most of whom subsequently became distinguished in the military service—Bvt. Maj. (afterward general) J. F. Reynolds, Capt. (since general) A. J. Smith, Capt. (now general) E. O. Ord, Capt. (now general) C. C. Augur, and Capt. (now colonel) D. Boyd-Jones.

The following is the report of this board:

CAMP OAK GROVE, OREGON TERRITORY,
May 17, 1856.

The board met pursuant to the above order—present, all the officers named—and proceeded to examine the plan and specifications of the portable boat submitted by the commanding officer of the district, Bvt. Lieut. Col. R. C. Buchanan, major Fourth Infantry, and have the honor to make the following report thereon:

The portable boat, which is now in this camp, and with which three companies of troops, provisions for six companies for twenty-five days, their baggage, packers, and pack-saddles, &c., had been transported over Rogue and Illinois Rivers, was brought from the mouth of Rogue River to this point on three mules, the planks for flooring included, over a very rough and mountainous district of country; and the whole boat, when dry, did not weigh over two hundred and fifty pounds, nor, when wet, more than three hundred pounds, and was effectually tried in crossing the Illinois River, where the troops arrived in the middle of a day's march. The boat was unpacked from the mules, put together, and the three companies, packers, provisions, and everything belonging to the train, crossed safely and dry over a rapid stream, about 80 yards wide, in a few hours, carrying with ease, at one load, 6,000 pounds in weight.

This boat is a flat, consisting in a wooden frame, divided into sections, which can be taken apart and folded together in a small compass, and a stout canvas cover, which, being fitted over and lashed firmly to the frame, answers in every respect the purpose of planking. These, when properly put together, which is done with rapidity, form a strong, capacious, and portable boat, by means of which the crossing of large bodies of troops over deep streams can be effected with facility; and each officer of the board, having practically tested its utility, would recommend its adoption in the Army, the operations of which, especially in the Indian country, it is calculated to facilitate exceedingly.

A plan and description of the boat, marked "A," the board herewith submit. The board then adjourned *sine die*.

JOHN F. REYNOLDS,
Capt. and Bvt. Maj. 3d Arty.
 A. J. SMITH,
Capt. 1st Drags.
 E. O. C. ORD,
Capt. 3d Arty.
 C. C. AUGUR,
Capt. 4th Inftry
 DE L. FLOYD-JONES,
Capt. 4th Inftry;

J. BONNYCASTLE,
1st Lieut. 4th Infly, Recorder.
 Official copy.

S. WILLIAMS, A. A. G.

ASSISTANT ADJUTANT-GENERAL'S OFFICE, June 9, 1857.

In March, 1857, letters-patent were granted to Colonel Buchanan for this portable boat, and vested in him the full and exclusive right to make and construct and sell to others the right to make and construct, &c., and the use thereof; and he received at exhibition of 1859, from the Maryland Institute for the Promotion of Mechanic Arts, a certificate of merit for his invention.

The decision of the Supreme Court in United States *vs.* Burns, 12 Wallace, 246, settles clearly what this officer's rights were and are under this patent.

The Supreme Court says in this case:

If an officer in the military service, not specially employed to make experiments with a view to suggest improvements, devises a new and valuable improvement in arms, tents, or any other kind of war material, he is entitled to the benefit of it, and to letters-patent for the improvement from the United States, equally with any other citizen not engaged in such service; and the Government cannot, after the patent is issued, make use of the improvement any more than a private individual without license of the inventor or making compensation to him. (United States *vs.* Burns, 12 Wall., 246.)

The petitioner charges, and sustains by official letters and other proofs, that his patent portable canvas boat has been used by the United States Government, without license of the inventor or compensation to him, in the following-named military expeditions and campaigns:

- 1st. In the campaign against the Rogue River Indians, as per General Ord's report dated February 18, 1858.
- 2d. In the expedition against the Cœur d'Alene, Spokane, and other hostile Indians, in the summer of 1858, under Colonel Wright, United

States Army, as per Captain Winder's letter, November 15, 1858, and report of Captain Kirkham, assistant quartermaster-general to Major-General Jessup, Quartermaster-General, September 25, 1858.

3d. In the exploration of the Colorado of the West, under Lieutenant Ives, Topographical Engineers, United States Army, in 1858, as per his letter October 12, 1858.

4th. In McClellan's peninsular campaigns on the Chickahominy, as per letter of Lieut. Col. B. S. Alexander, A. D. C., dated March 9, 1863.

5th. At the Brazos and Point Isabel, Tex., and in the Department of the Cumberland in the late war, as per letter of Capt. W. A. Wainwright, assistant quartermaster, dated Brownsville, Tex., July 22, 1868.

Beside these specific and known cases, it is claimed that this patented boat has been in almost constant use in the United States Indian expeditions and military explorations in the Rocky Mountain regions.

It is also known to one of your committee that similar, if not identical, canvas boats were used by the army under General Sherman in the long marches through Georgia and the Carolinas in 1864-'65. They were used mainly as bridge-pontons in crossing the numerous and often large and turbulent streams which interrupted the line of march, especially in the Carolinas in the winter and spring of 1865.

For lightness of transportation, great durability, and general adaptation to the necessities of campaigns in a country of unforded streams, they cannot be too highly commended, and were so spoken of in the official reports of the campaigns referred to. No other ponton boats known to the military service could have been carried over the muddy roads in sufficient quantity to have supplied four army corps with each an ample separate bridge-train, as was the case in the campaign through South Carolina. It would be difficult to estimate the money-value of these portable boats to the Government as attested by practical use in that campaign alone.

The question has been, however, incidentally raised as to the originality of this invention.

In answer to an inquiry addressed to the War Department for information upon this subject, the following extract from a letter of Lieutenant-Colonel Duane, United States Engineers, was sent to your committee:

The canvas pontons used in the United States Army during the late war were copied exactly from the Russian pontons. These pontons have been in use in the Russian service for more than one hundred years.

In examination of this statement of Lieutenant-Colonel Duane, your committee was referred to the report of General George B. McClellan, who was sent to Europe by the War Department to examine this and other kindred subjects of military engineering, and whose report was printed by the order of the Senate, March 14, 1857. On page 26 of this report, in speaking of the military bridges of Russia, he says:

The bridge-equipage has been partially introduced, especially the trestles; but the Russian engineers seemed to prefer their own system of canvas pontons. * * * The canvas pontons consist of two wooden side-frames, connected by moveable transoms with a painted canvas cover stretched over the bottom, ends, and sides. * * * The canvas cover is painted black on both sides.

The patented claim of General Buchanan is thus described:

The application of the property of elasticity or stretching in unprepared canvas to the purposes of sheathing for portable boat frames, which can be taken to pieces and folded into a small compass, so as to be readily carried in a wagon or on an animal's back.

His invention differs from the Russian boats in several important particulars. He uses unprepared canvas, and in its natural state, which

can be folded into a small portable shape. The Russians use painted canvas, which cannot be thus folded, nor safely transported, nor stretched without injury to both the coating and material. In Colonel Buchanan's patent the canvas is very differently secured, and in a much more simple and substantial manner. The skeleton frame of the Russian boat cannot be folded in a convenient portable shape as can the boat invented by General Buchanan.

Your committee is of opinion that the portable boat of General Buchanan is a great improvement upon the ponton boat used in the Russian army in all particulars that add value to such implements for military operations in an active campaign, and especially for the kind of frontier warfare and the rough character of the country in which our troops must operate.

It is very evident, too, from papers and documents laid before your committee, that, at the time the invention of General Buchanan was patented, the use of painted canvas boats in Russia was not known to our War Department, nor does it appear that these painted canvas boats have ever been used in our service to the present time, while the portable unprepared canvas boats of General Buchanan in numerous Indian expeditions have proved of great service, and in the late war, in campaigns already referred to, they were proved to be of incalculable value. Capt. (now General) E. O. C. Ord, in a letter dated Benicia, Cal., February 18, 1858, gives his own experience with a single boat made by his command, after a pattern of the original boat of General Buchanan, by which, with an escort of fifty men and a supply-train of 100 pack-mules, he was enabled to avoid a large band of hostile Indians by crossing the mouth of Rogue River, a deep and rapid stream, two hundred yards wide. In his letter he says, "I assign the safe detour of my train principally to the canvas boat." (See Exhibit A.) Strong commendations of the convenience and adaptation of these boats to military purposes, made from personal experience in Indian campaigns, were submitted to your committee from other Army officers, to wit:

1. A letter dated Fort Hoskins, Oregon Territory, March 16, 1858, from Capt. (now General) C. C. Augur, United States Army, commanding post, addressed to Major Mackall, assistant adjutant-general. (See Exhibit B.)

2. A letter dated Fort Walla-Walla, Washington Territory, November 15, 1858, from Charles S. Winder, United States Army, referring to the use of these boats in the expedition against the Cœur d'Alene, Spokane, and other hostile Indians, in which he says: "They were used most satisfactorily in crossing the Cœur d'Alene and Saint Joseph Rivers." (See Exhibit C.)

3. A letter from Capt. R. W. Kirkham, assistant quartermaster United States Army, to Major-General Thomas Jesup, Quartermaster-General United States Army, dated Camp near Steptoe's Battle-Ground, on the Latoo River, September 25, 1858. (See Exhibit D.)

4. A letter from First Lieut. J. C. Ives, Topographical Engineers, commanding Colorado exploring expedition, dated October 12, 1858. (See Exhibit E.)

5. A letter from Bvt. Col. H. W. Janes, assistant quartermaster, Baltimore, Md., January 17, 1876. (See Exhibit F.)

6. A letter from Capt. H. A. Wainwright, assistant quartermaster United States Army, dated at Brownsville, Tex., July 22, 1868. (See Exhibit G.)

7. Letter of Lieut. Col. B. S. Alexander, United States Engineers, relative to the use of these boats in the peninsular campaigns under General McClellan, dated March 9, 1863. (See Exhibit H.)

8. A report of experiments made by officers of the Navy at navy-yard, Norfolk, Va. (See Exhibit I.)

Under date April 16, 1860, the Secretary of War writes to Hon. Mr. McCrae, of the Committee on Military Affairs, as follows:

From the reports of officers who have tried the boat in actual service, this Department entertains the highest opinion of its usefulness.

These letters, from able and experienced officers, are made a part of this report as the most reliable testimonials of the benefits of this invention to the military service.

Your committee may add to these certificates of the value of these boats, and their repeated use by Government troops since the patent was obtained in 1857, that the doubts expressed by Colonel Alexander as to their fitness for bridge purposes was fully removed in the campaigns of General Sherman in the Carolinas. Large armies, with heavy trains, great droves of cattle, heavy artillery, large cavalry commands, passed with safety over many turbulent streams upon bridges supported by these boats alone.

General Buchanan has never received from the Government directly or indirectly but the sum of \$170 for the use of his invention or the violation of his patent right.

In view of all these facts, your committee believe that General Buchanan is entitled to compensation for the use of his invention of portable canvas boats and the infringement of his patent right by the United States; and they report the accompanying bill and recommend its passage.

EXHIBIT A.

BENICIA, CAL., February 18, 1858.

SIR: In answer to your letter calling on me for a report on the usefulness of a boat patented by Colonel Buchanan, U. S. A., I report that in Southern Oregon, during the campaign against the Rogue River Indians, a flat-boat designed by Colonel Buchanan, made of sewed canvas fitted to a portable frame, was found of great use in passing deep streams with but little delay. Two mules carried a boat with frame, large enough to cross twenty or thirty men at once, easily put together, and navigable with oars or by the use of ropes. By using two thicknesses of canvas and boards to ceil the bottom, I have no doubt cattle and horses could be ferried in such boats at points where special objections might exist to swimming them, such as quicksands or bluff banks, whereon swimming cattle might land or be forced by currents, and from which they could not be extricated. The canvas boat is lighter, more durable, and safer than the rubber ponton, besides not being liable to stick in warm or crack in cold climates. In a long march over this department I would like my company provided with a small canvas flat and frame, to be put together without nails, and two or four small oars with screw blades. (Such are in depot, Benicia.)

Colonel Buchanan's patent I understand to be for the use, the canvas, the frame, size, weight, and form of the boat to suit the object to be attained.

To instance the use to which a canvas boat was put, I can state that during a truce with the Indians I was dispatched from the south side of Rogue River, Oregon, with fifty men and one hundred pack-mules to go to Fort Orford, sixty miles, through a densely thicketed, rough country, to clear my own trail, and bring back provisions for the whole command in *ten days*, when their supply was to be out.

Colonel Buchanan lent me a canvas boat to cross my party over Rogue River near his camp; the boat was then returned him. On my way to Fort Orford, passing through the enemy, I had reason to apprehend that should I return the same way, the Indians would have violated the truce and would attack my almost defenseless train, which necessarily occupied from one-half to one mile of the winding mountain-path. On reaching Fort Orford, three days after starting, I determined, if it was possible to build a canvas boat, *to do so*, and take a safer and open trail back, which required me to cross my command at the mouth of Rogue River.

In a day and a half I had contrived the boat and was off with my train. On the third day from Fort Orford, at 1 p. m., I reached the mouth of Rogue River, a deep and rapid stream, about two hundred yards wide, crossed my train and escort with its 30,000 pounds of freight by night with the canvas boat, arrived on the ninth day at the camp where I had left Colonel B. I found that the Indians had broken the truce,

and in large force had attacked and nearly cut off a concentrated body of men twice as numerous as all my divided escort; this near Colonel B.'s camp.

I assigned the safe detour of my train principally to the canvas boat.

Very respectfully, your obedient servant,

E. O. C. ORD,
Captain Third Artillery.

To Maj. W. W. MACKALL,
Asst. Adjt. Gen. U. S. A., Hdqrs. Pac. Dept., San Francisco, Cal.

EXHIBIT B.

HEADQUARTERS FORT HOSKINS, O. T.,
March 16, 1858.

MAJOR: I have the honor to acknowledge the receipt of your letter of the 17th instant directing me to report on the usefulness of the boat patented by Colonel Buchanan and its adaptation to military purposes.

The boat in question is, I presume, of the same model as the one used by Colonel Buchanan's command in the Rogue-River war, in 1856, and which was found to answer, in an eminent degree, all the requirements of a military-boat—simplicity of construction, strength sufficient, and easily put in shape for transportation either by wagons or pack-animals, and from this condition quickly and easily put together for use. The one with Colonel Buchanan's command was, I believe, 13 × 18 feet; carried twenty men, with their arms and rations, over Rogue River, which is a very rapid stream, and was easily and conveniently packed, including oars, flooring, and everything connected with it, in fact, on three mules. Three men, with a little practice, could unpack and put it together for use in twenty minutes.

It is proper to observe that the particular boat in use was the first one constructed on that plan, and that Colonel Buchanan saw wherein a few changes in the manner of connecting the different sections of the boat would improve its strength and capacity. These changes have undoubtedly been introduced in his patent. I will remark, too, that in my opinion the boat in use was never tested to its fullest capacity.

Very respectfully, major, your obedient servant,

C. C. AUGUR,
Captain Fourth Infantry, Commanding.

Maj. W. W. MACKALL,
*Assistant Adjutant-General, U. S. A.,
Headquarters Department of the Pacific,
San Francisco, Cal.*

EXHIBIT C.

FORT WALLA-WALLA, W. T.,
November 15, 1858.

COLONEL: Your letter making inquiry in reference to the use of certain canvas-boats in the late expedition against the Cœur d'Alene, Spokane, and other hostile Indians, has been received, and in reply thereto I have the honor to state three skeleton-boats were made at this post during the last summer under the direction of Captain Kirkham, assistant quartermaster, for use on the above-named expedition; two only were taken from the post and used. These boats consisted of a frame-work, sides, bottoms, and ends being separate; their shape was rectangular, resembling what is generally called a flat-boat, the sides folded, being in sections, with hinges; the bottom also folded, being arranged in the same way. This frame was covered with canvas, said cover being made to fit it, being a bag or cap at one end, the whole being securely fastened to the frame-work by means of a small lash-rope passing through holes arranged on the edge of the canvas and around a small lash-rail on the sides of the frame. These boats were 10 feet long by 4½ wide, I think. They were used most satisfactorily in crossing Cœur d'Alene and Saint Joseph's Rivers. I would refer you to a letter of Capt. R. W. Kirkham, quartermaster of the late expedition, to Bvt. Maj. Gen. Thos. S. Jesup, Quartermaster-General, in reference to said boats. These boats are very similar to that patented by yourself, the difference being simply in the construction of the frame. That adopted by you I would prefer, giving greater stiffness to the boat. The whole was adapted for packing on a mule.

I am, sir, with respect, your obedient,

CHARLES S. WINDER,
Captain Ninth Infantry.

Lieut. Col. R. C. BUCHANAN, U. S. A.,
Newport Barracks, Ky.

EXHIBIT D.

CAMP NEAR STEPTOE'S BATTLE-GROUND,
ON THE LATOO RIVER,
September 25, 1858.

[Extract.]

GENERAL: * * * * *

I made two portable boats for this campaign, and have had good opportunities of testing their qualities. They were each packed on a single mule, and in crossing the streams I had no difficulty in putting across in each boat two thousand pounds of subsistence stores at a trip. Each boat would carry ten men with their arms.

R. W. KIRKHAM,
Captain and A. Q. M.

Maj. Gen. THOMAS JESUP,
Quartermaster-General, Washington, D. C.

The foregoing is a true extract from the original, on file in the Quartermaster-General's office.

W. A. GORDEN,
Chief Clerk.

October 9, 1859.

EXHIBIT E.

WASHINGTON, October 12, 1858.

COLONEL: As I have had one of your canvas-boats in use during the past year while exploring the Colorado of the West, I presume it would not be uninteresting to you to know how the trial of the boat in field operations resulted.

Having a limited amount of transportation, and being obliged to carry everything during my land explorations on pack-mules, I had the boat made of smaller dimensions than any that had been before constructed. It was eleven feet long, five feet wide, and about two feet deep. The frame was made of pine, and the weight of the whole boat, including the canvas and cords, was but 150 pounds—a light load for a single mule. Twelve men could cross a river in it with perfect safety. It could be unpacked and put together in about ten minutes.

Some years previously I had had experience, while in the same country and under much the same circumstances, of one of the ordinary ponton-boats. Its liability to rot, to get stuck together when closely packed and carried under a hot sun, and to be injured by the attrition of the pack-ropes, of other packs, and branches of trees, rendered it after a short time almost useless.

I consider your boat to be free from these objections. After being packed for four months over a wooded and mountainous country it was found to be in a perfectly serviceable condition. In crossing rivers, particularly where the current is swift, its great recommendation is its stiffness and stability. In this respect I consider it superior to any boat of the same dimensions that I have ever seen.

The canvas covering I used, when required, to protect the packs from rain. This answered the purpose of a tarpaulin, and rendered it unnecessary to carry one.

My experience of your boat has convinced me that it is admirably adapted for the service for which it was intended, and that in all field operations where the material must be conveyed with the moving party to transport them and their property over the streams that may be encountered, your boat will be found to possess the advantages of lightness, durability, and stanchness in a superior degree to any now in use.

Very respectfully, your obedient servant,

J. C. IVES,

First Lieut. Top. Engrs., Comdg. Colorado Exploring Expedition.

Col. R. C. BUCHANAN,
Fourth Infantry, Newport Barracks, Ky.

EXHIBIT F.

OFFICE CHIEF QUARTERMASTER,
MILITARY DIVISION OF THE ATLANTIC,
Baltimore, Md., January 14, 1876.

GENERAL: In reply to your inquiry as to what knowledge I have in regard to the use of canvas boats in this department, I beg to reply as follows:

During the existence of the Modoc war in Oregon and California in 1872 and 1873, I

was stationed at Vancouver, W. T., as depot quartermaster, and while there and at the commencement of the war, sent from the depot by order of the department commander (General Canby) to the quartermaster in the field, either four or six canvas boats for use on the lakes in the Klamath country. These boats had been in depot for many years, and had been used in previous troubles at Rogue River, Oregon, and at other places. They were used during the Modoc war, and, I am informed, were of great service, and they are now in all probability at Fort Klamath, Oregon.

Col. Edwin C. Mason, Twenty-first United States Infantry, at Columbus Barracks, Ohio, and Capt. C. H. Hoyt, assistant quartermaster, Leavenworth, Kans., can give you full information as to what service was performed by them.

Very respectfully,

HENRY W. JANES,

Captain and Assistant Quartermaster, U. S. A.

Gen. R. C. BUCHANAN, U. S. A.,
Baltimore, Md.

EXHIBIT G.

OFFICE SUPERVISING QUARTERMASTER,
SUBDISTRICT OF THE RIO GRANDE,
Brownsville, Tex., July 22, 1868.

COLONEL: I have the honor to submit the following report for your information respecting the canvas boat forwarded here some time since. Not having occasion to use the one sent me, I can only report the one at Brazos as efficient for light work; for instance, a small sail in it has transported seven (7) bales of hay from Brazos to Point Isabel and return, loaded with wood. As for lighterage purposes, it is not thought they will answer the purpose; the canvas bottom not being sufficient to stand the gratings on a sand bank or bar, or contact with sunken timber, &c., nor are they of the requisite shape. As a ponton-boat—I speak from long personal experience—they are invaluable, being light, easily handed, quickly put together, and not requiring the assistance of twelve or sixteen mules to transport them over the country.

As chief quartermaster, engineer department, department of the Cumberland, I found that one-half the force required on the old style of ponton-boat would do more work and in much more satisfactory a manner with the canvas boat.

Very respectfully, your obedient servant,

W. A. WAINWRIGHT,

Captain and Assistant Quartermaster, U. S. A.

Bvt. Col. R. A. BATCHELDER,
Depot Quartermaster, New Orleans, La.

EXHIBIT H.

WASHINGTON, *March 9, 1863.*

SIR: I have to acknowledge the receipt of your letter of the 15th instant, making inquiries of me whether or not canvas-boats, similar to those used by Lieutenant Ives in his exploration of the Colorado of the West, (of which you state you were the inventor and patentee,) were used as pontons on the Chickahominy and elsewhere under my direction. In reply, I have to state that I made the two boats which Lieutenant Ives used in his expedition of the Colorado, or, rather, I had them made under my directions, while I was stationed at Cohasset, Mass.

The boats consisted of heavy canvas (No. 1 cotton duck) stretched over a light frame of wood, so put together that the canvas would easily be removed and the frame taken to pieces, so that the whole could be packed on mules for land transportation. The advanced guard train which I had prepared in winter of 1861 and 1862 was made on the same principle. The sides of the boat were strongly framed, so as to be able to withstand heavy weights without crippling. Running longitudinally and supported by the thwarts was a center beam, arranged to receive basks of a pewter badge, the bottom and sides of the boat being covered with a large sheet of heavy canvas, drawn fast by suitable baskings. These boats were used in the Peninsula during General McClellan's campaign, for landing men and light materials at Old Point, at Yorktown, at the Chickahominy, and perhaps elsewhere. I do not remember to have seen them used in making a ponton bridge but once. This was on the Chickahominy, in making what was known as the upper trestle-bridge, where a few of them were used in combination with the trestle. It is possible, however, that they may have been used elsewhere, as they were not under my direction after I turned over the ponton-trains

to General Woodbury. From what I know of them, I should think they would make a passable bridge for an advanced guard, a flying column, or a small body of troops crossing the continent. The boats are much lighter than the French pontoons, and although they made a very good bridge for a light column, I think, as we made them, they would hardly have sufficient stability for strength to insure the safe passage of a large army over a turbulent stream, with heavy artillery, cattle, and liable to rush upon a bridge in great confusion in case of a defeat and consequent panic. This train (with canvas boats) was the lightest train on hand, and hence it was called the advanced guard train. If other trains of the same kind should be built, I have no objection to the chief engineer the designation as you propose. I shall forward your letter to him, in order that he may have the benefit of your suggestions on the question.

Very respectfully, your obedient servant,

B. S. ALEXANDER,
Lieutenant-Colonel, Aid-de-Camp.

ROBERT C. BUCHANAN,
Lieutenant-Colonel, Fourth Infantry.

EXHIBIT I.

U. S. NAVY-YARD, *Norfolk, Va.*

We, the undersigned, witnessed with much satisfaction an experiment with Colonel Buchanan's portable boat. The whole apparatus, which can be placed in two bags, a load for one mule, was put together in less than 10 (say ten) minutes, forming a tight scow 10x5, propelled by two sculls. Eight men got in and were rowed for a sufficient time to cross an ordinary river without the boat making any water.

We consider this boat an admirable contrivance for parties on a long march, where rivers are to be crossed without the convenience of fords or ferries; it would also prove invaluable to wrecked or disabled vessels as a life-boat, occupying so small a space and so easily put together.

THOS. A. DORNIN,
Comd't Navy-Yard.
C. H. POOR,
Commander, U. S. N.
JOHN B. TUCKER,
Commander, U. S. N.