Presented to
Mrs Hattie Elizabeth Everett
with compliments of the Inventor
William Thompson

REPORT

OF THE

James Harman Ward, etc.

COMMISSION APPOINTED

TO EXAMINE THE SYSTEM OF

CONSTRUCTING BOATS BY MACHINERY,

INVENTED

BY NATHAN THOMPSON, JR.,

OF NEW YORK.

PATENTED

IN THE UNITED STATES, ENGLAND, FRANCE, RUSSIA, BELGIUM, HOLLAND, SWEDEN, DENMARK, AUSTRIA, SARDINIA, TURKEY, AND SPAIN.

NEW YORK:
JOHN F. TROW, PRINTER, 379 BROADWAY,
CORNER OF WHITE STREET.
1859.

NAVY DEPARTMENT, WASHINGTON, D. C.

August 12*th*, 1859.

SIR:

Agreeably to the request contained in your letter of the 3d inst., I send you inclosed, a copy of the "Report of the Board" appointed to examine your system of Boat building, also of the "Order" by which the Board was appointed.

I am, respectfully,

Your obed't Serv't,

ISAAC TOUCEY,

Secretary U. S. Navy.

Mr. NATHAN THOMPSON, Jr.,

Care D. D. MILLER, Esq.,

190 *Water St.*, *New York.*

ORDER.

U. S. NAVAL STATION, NEW YORK.

COMMANDANT'S OFFICE,
19*th May*, 1859.

GENTLEMEN:—You are hereby constituted a Board to examine into the merits of Mr. Nathan Thompson, Jr.'s Invention of a process for Constructing Boats, and will, in pursuance of this order, make a full and critical examination of the same, so soon as the Inventor is prepared to show it you, which, he informs me, will be on Thursday next.

You will make a duplicate Report of it to the Department, with your opinion of the merits of the system, especially for constructing Boats for the Navy.

Respectfully,
Your obed't Serv't,
SAMUEL L. BREESE,
Commandant.

To Commander J. H. WARD,
" " W. M. WALKER,
" *Lieutenant* GEO. W. RODGERS,
" *Carpenter* J. H. OWENS,
U. S. Navy,
JAS. KERRIGAN,
M. B. Builder.

REPORT.

U. S. NAVAL STATION, NEW YORK.
July 22*d*, 1859.

TO THE HON. ISAAC TOUCEY,
Sec'y of the Navy.

SIR:—In pursuance of the Instructions of the Commandant of this Station, Commodore Breese, we have, with all the care and patience which the importance of the subject demanded, examined into the merits of Mr. Thompson's "Invention of a process for constructing Boats," and have the honor to submit to you the following Report:

In order to arrive at a just comparison between the system proposed of building by machinery, and the process hitherto in general use, of building by manual labor, a boat of 25 ft. 9 ins. long, 5 ft. beam, 2 ft. 4 ins. deep, was first built in the establishment of Mr. J. B. Webb, a well known boat-builder, of good reputation for skill and intelligence,

of the City of New York, by two workmen selected for this express service, on account of superior skilfulness in their art.

This construction, while in progress, was frequently observed by members of the Commission, and there is every reason to believe that it was executed with all possible diligence. The time occupied in it was equal to thirty-six "days' work" of ten hours each.

After this preliminary, the Board assembled, on the 13th instant, at the Factory of Mr. Thompson, and, after listening to a clear and full exposition of the system proposed by him, it was resolved, as the only sure means of testing its practical merits, to construct by it, from the rough material, a boat of the same class and dimensions as that already referred to, which was forthwith commenced; and here it is proper to state, that it was to be the first boat constructed upon this system, in the application of which, the workmen employed had necessarily but little experience; and, as the work was experimental in its character, the machinery was not subdivided to the extent of which it is capable; the same machine being required to perform various offices, and the workmen, instead of being employed at one machine only, shifting from one to another; whereas, the History of Manufactures shows, that "when the workman is engaged at one machine only, in the execution of one particular branch of

labor, in course of time he comes to do ten times as much, as if he were constantly shifting from one thing to another."

The process of constructing this boat was most carefully observed by the Board throughout its whole course, and resulted in the completion of the work in 11 days' (of 10 hours each) and 3 hours, a disparity so great, compared with the time of building by manual labor, as to be its own best commentary; for it is impossible to bring to your consideration more clearly the advantage which may be derived to the Government, and to every maritime community, from the adoption of Mr. Thompson's system, than by the simple comparison of the time, and consequent cost of production, by the system of hand labor hitherto used, and that now proposed; and, although, as ever has been the case on introducing labor-saving machinery into any new field, apprehensions will arise in some minds that individual labor will be partially displaced, or unsettled for a time, by the use of cheaper and better power than unassisted manual labor, all become gainers by the use of that power, which, by making production cheaper, renders consumption universal, and therefore, has always eventually, if not speedily, increased rather than diminished the demand for manual labor; but we may not pursue these reflections, lest we invade the province of political economy.

The system of boat-building now under consideration, is, in principle, no novelty; it is the same which, for many years, with such perfection of execution, and so much economy of outlay, has been applied to the manufacture of fire-arms at Springfield, and at Harper's Ferry. At these Arsenals, the various parts of the rifle are prepared by machinery, out of which, without the assistance, perhaps, of any other tool than a screw-driver, the perfect weapon is completed; and it is this system, found to work so well in its application to delicate parts requiring perfect adjustment, which has been adapted by the fertile genius of Mr. Thompson to the construction of boats; and, in like manner, the various parts are prepared, from which a Launch or a Cutter can be speedily built, it may be said, with only a hammer.

We have now, Sir, briefly, and we trust clearly, submitted to you this system of boat-building and its results; it only remains, in compliance with instructions, to "express our opinion of the merits of the system, especially for constructing boats for the Navy."

Wherever machinery has been applied, a better class of work has been produced at an inferior cost; all the parts of the boat being accurately prepared by machinery, they must of necessity fit more perfectly, and should therefore produce stronger boats than those made by hand.

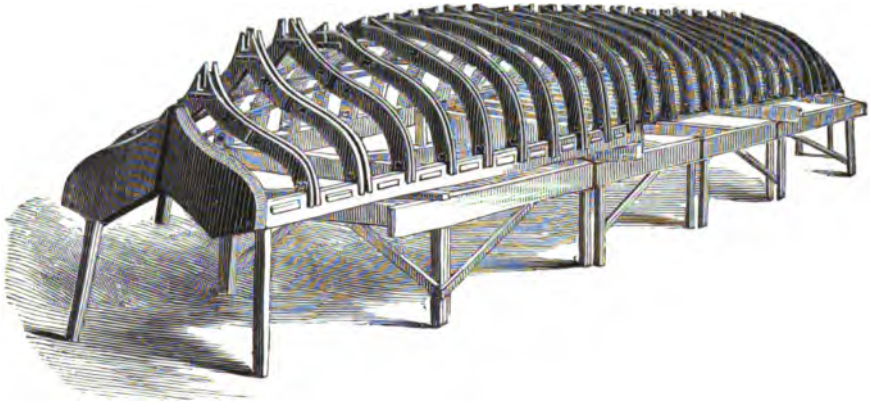
This system will produce uniformity in construction, an advantage that may be of great moment, for by it every ship may be cheaply supplied with duplicates of the important parts of her boats, whence in the event of damage or loss of them, the deficiency may be readily repaired from her own resources or those of the squadron.

In an emergency, it will enable the Government to produce with great economy and expedition, any number of boats that can probably be required. without being compelled to submit to the delays and extortion of contractors, consequent upon the inadequate means of supplying such demand now existing in the dock yards; a want which was so signally illustrated, in the preparation for debarking Scott's army in Mexico.

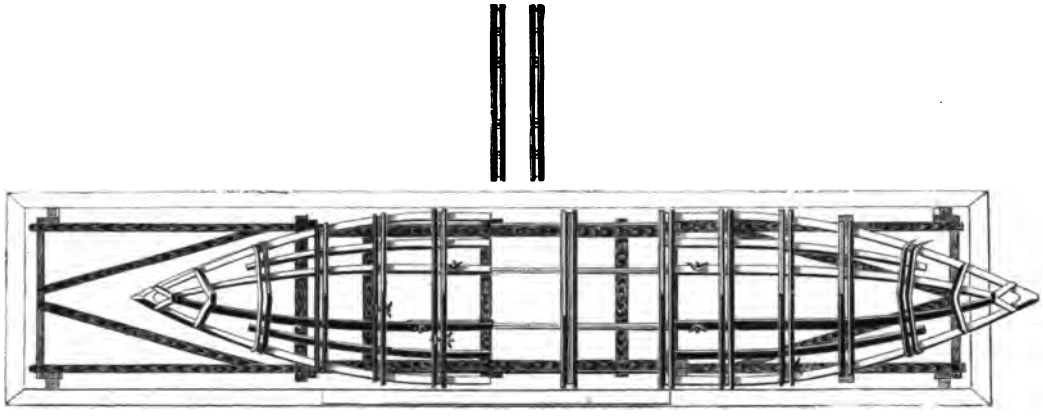
Lastly, it will add to the efficiency of the Naval Establishment, by vastly reducing the time and outlay required, to complete the equipment of any naval enterprise.

We have, sir, the honor to be,
Very respectfully,
Your obedient servants,

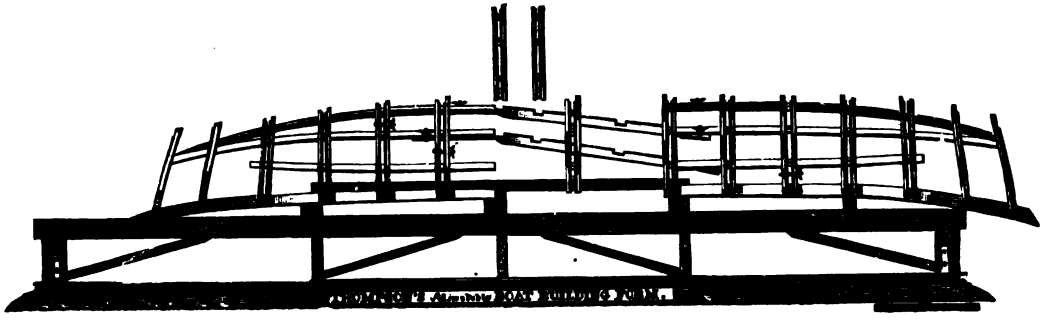
J. H. WARD,
Commander U. S. N.
W. M. WALKER,
Commander U. S. N.
GEO. W. RODGERS,
Lieut. U. S. N.
JAS. H. OWENS,
Carpenter, U. S. N.

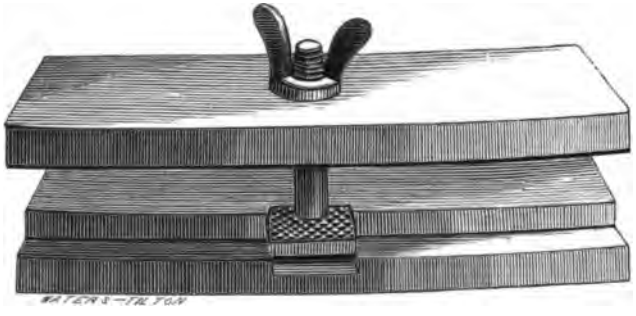


Stationary "Form."

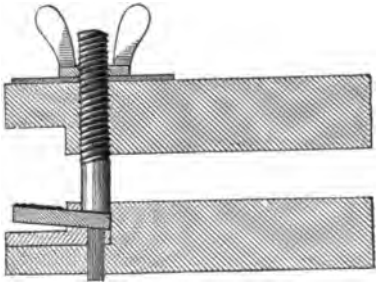


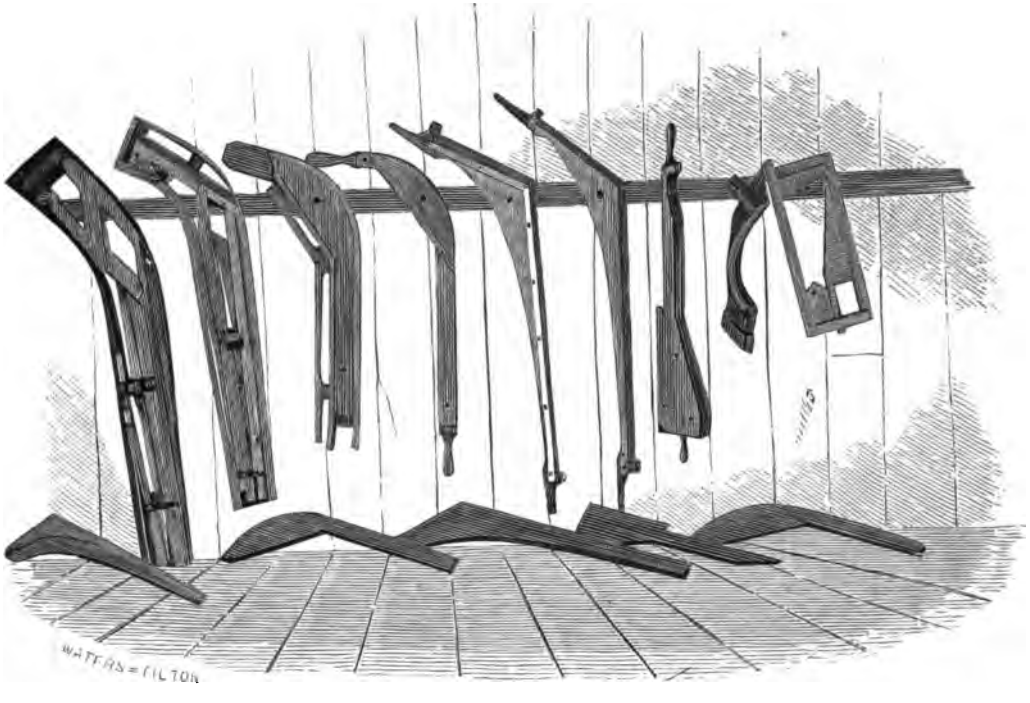
ADJUSTABLE "FORMS."



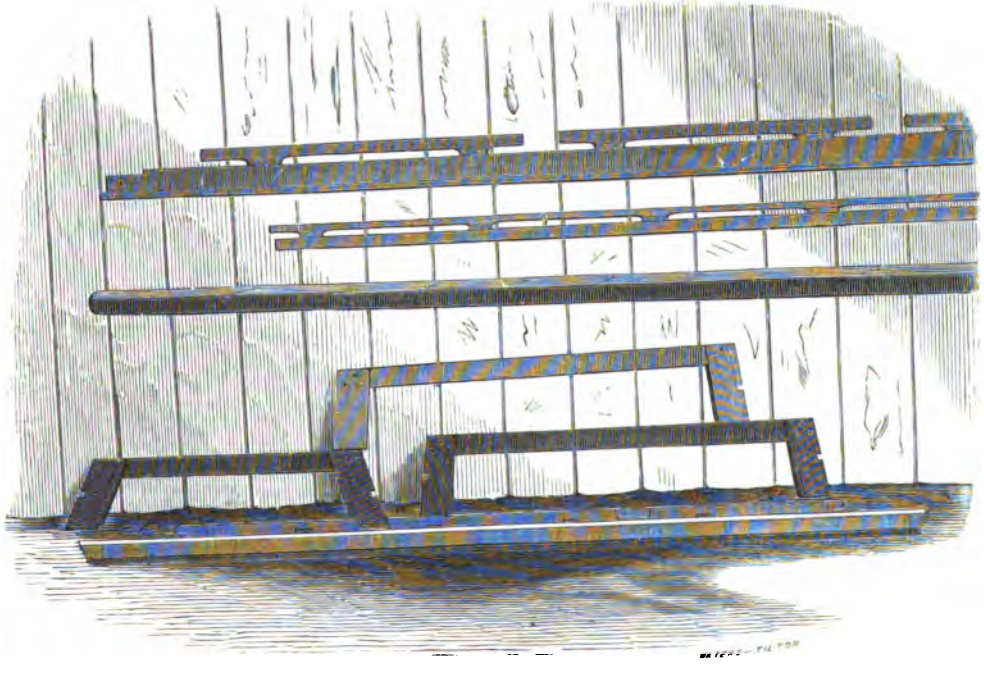


METHOD OF SECURING RIBS IN "FORMS."

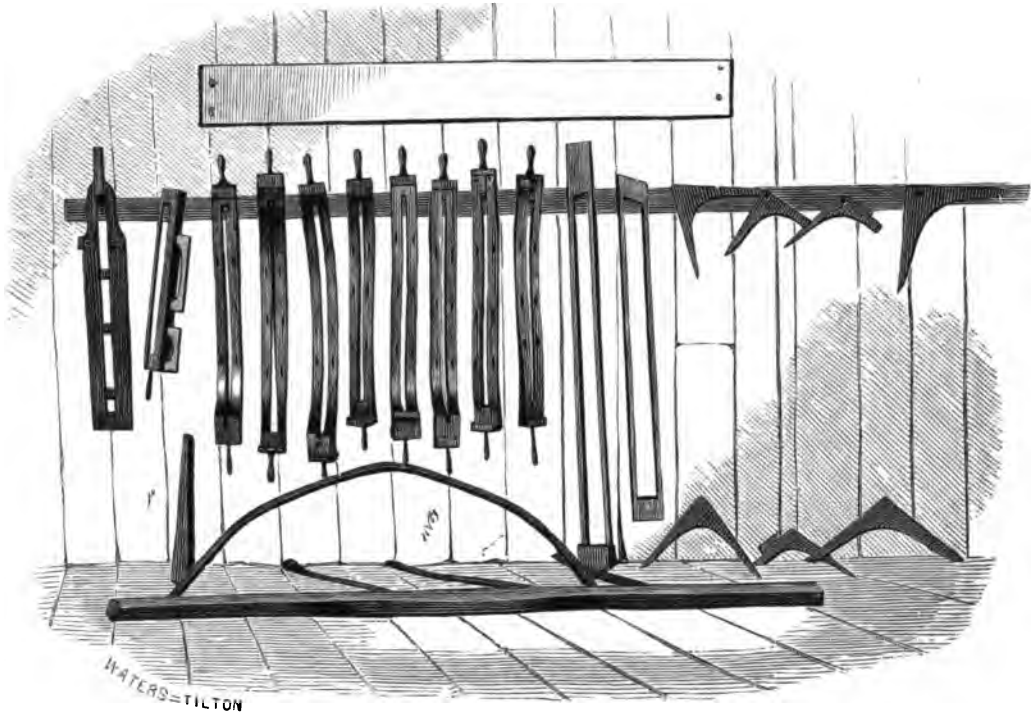




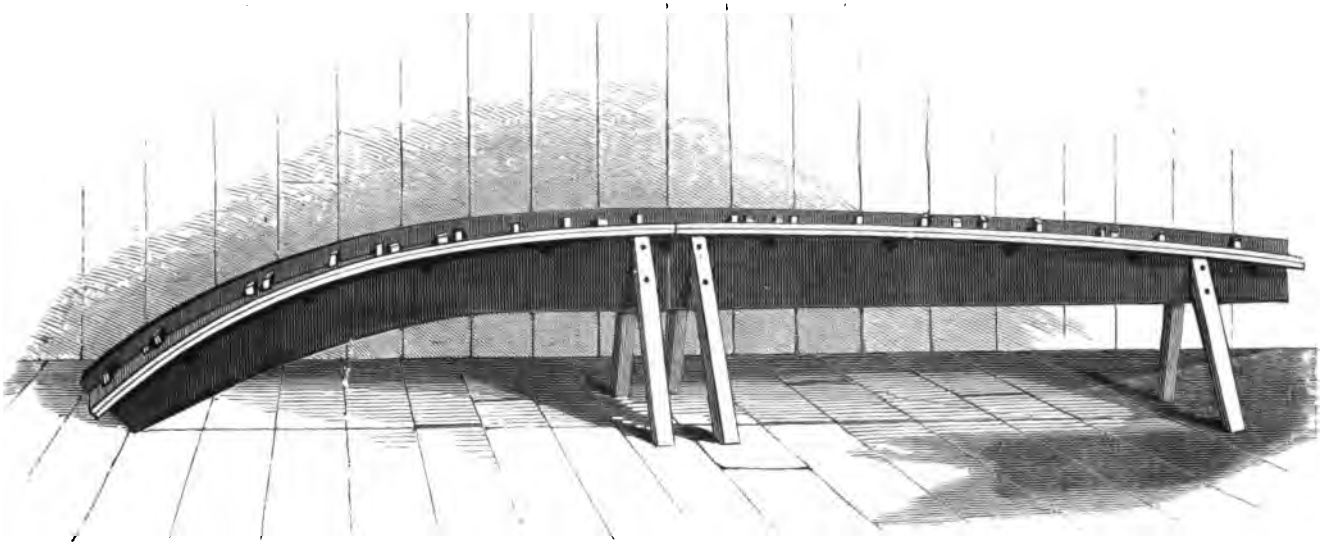
Forms for Bow and Stern, Deadwood &c.



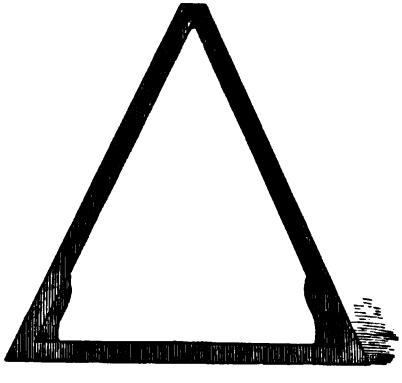
"Forms" for Keel Thwarts and Ribs.



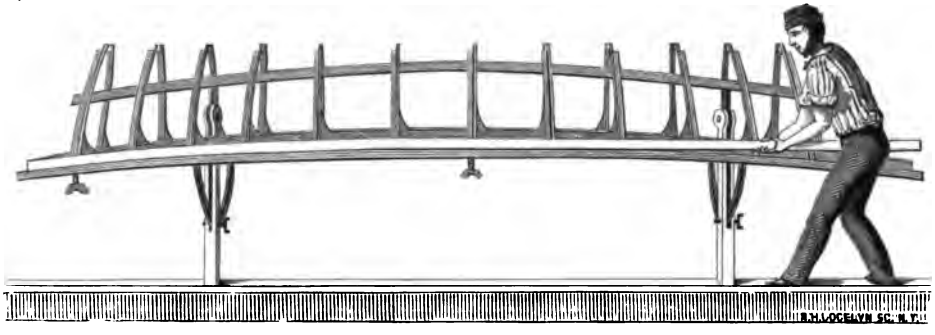
"Forms" for Forward Frames, &c.



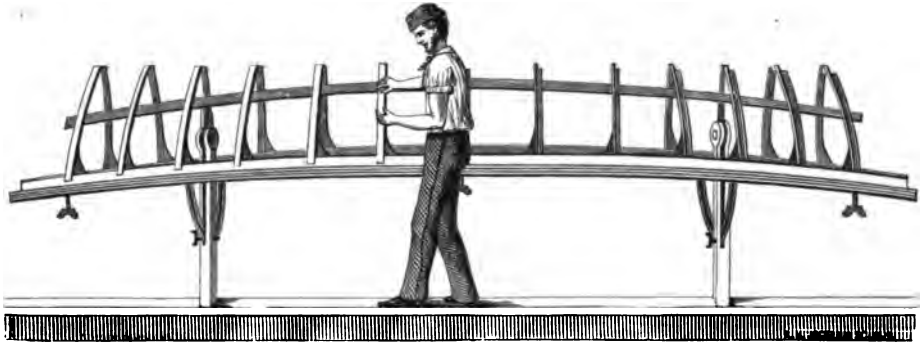
HORSE FOR BENDING AND SLOTTING GUNWALE.



PATTERN FOR GRATING.

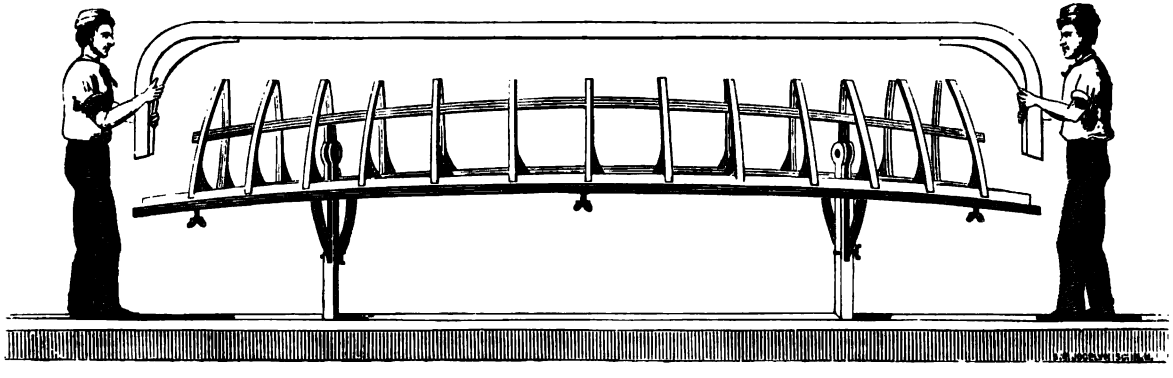


PLACING GUNWALE ON "FORM"

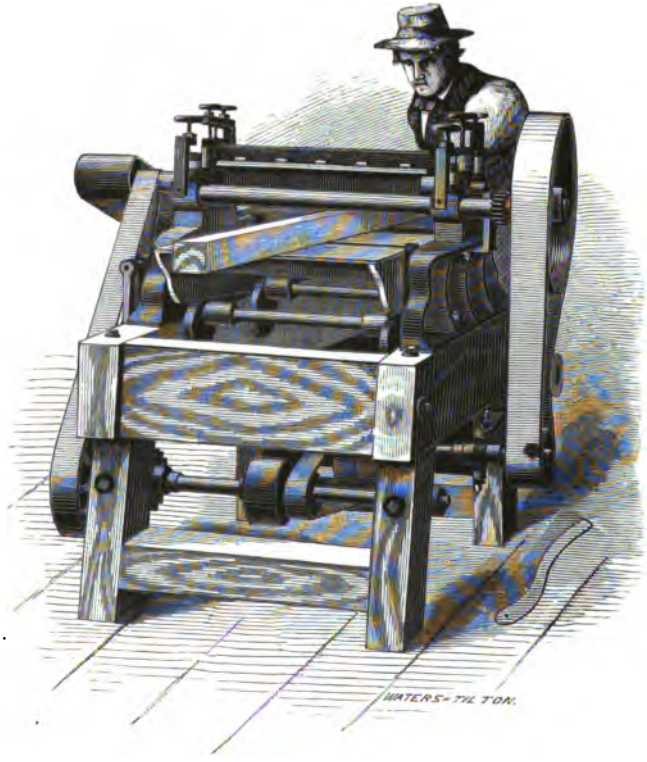


Placing Ribs [Natural Curve] on "Form."

BEVELING RIBS OF NATURAL CURVE.

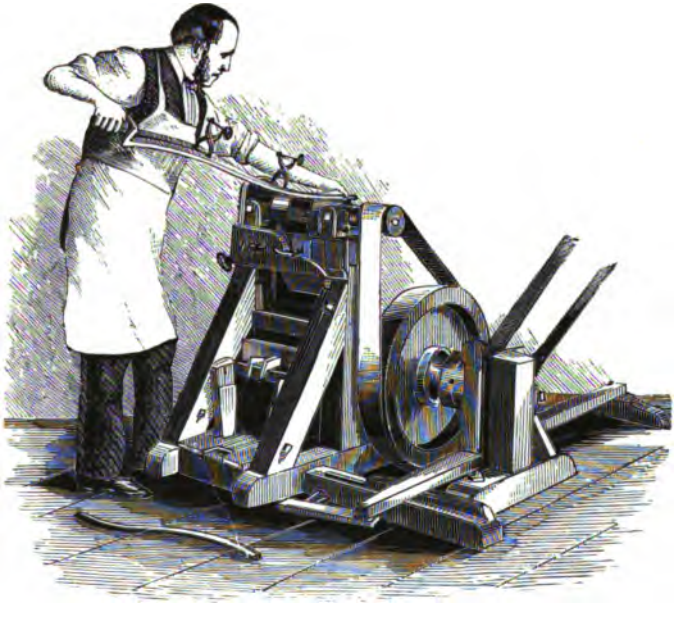


PLACING KEEL.



Beveling Ribs.

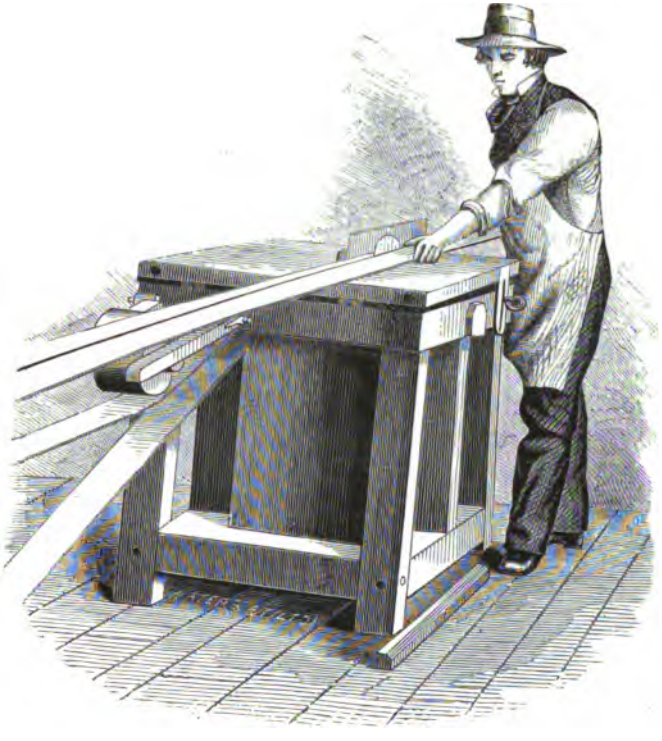
Bending Ribs on "Form."



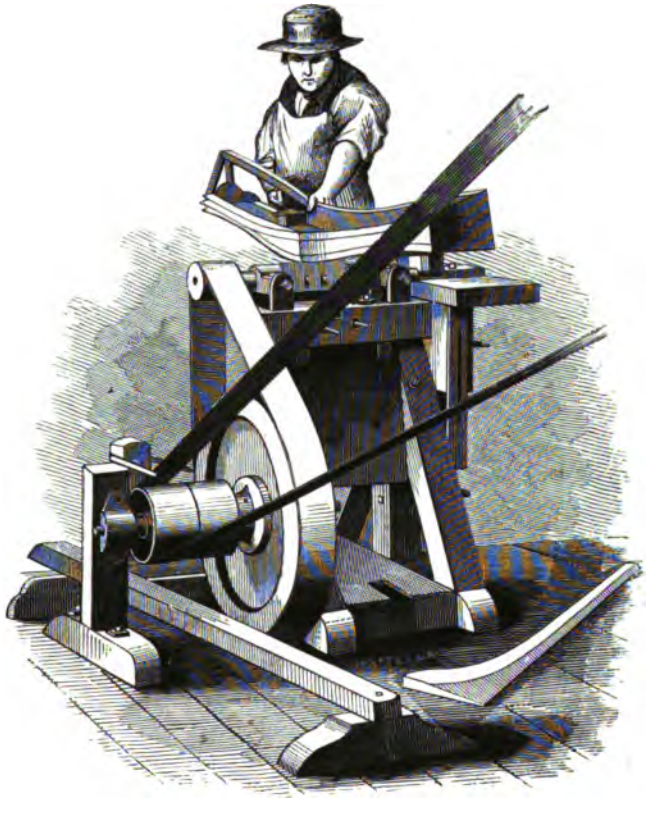
BEVELING BOW FRAMES.

Bending Stern Frames.

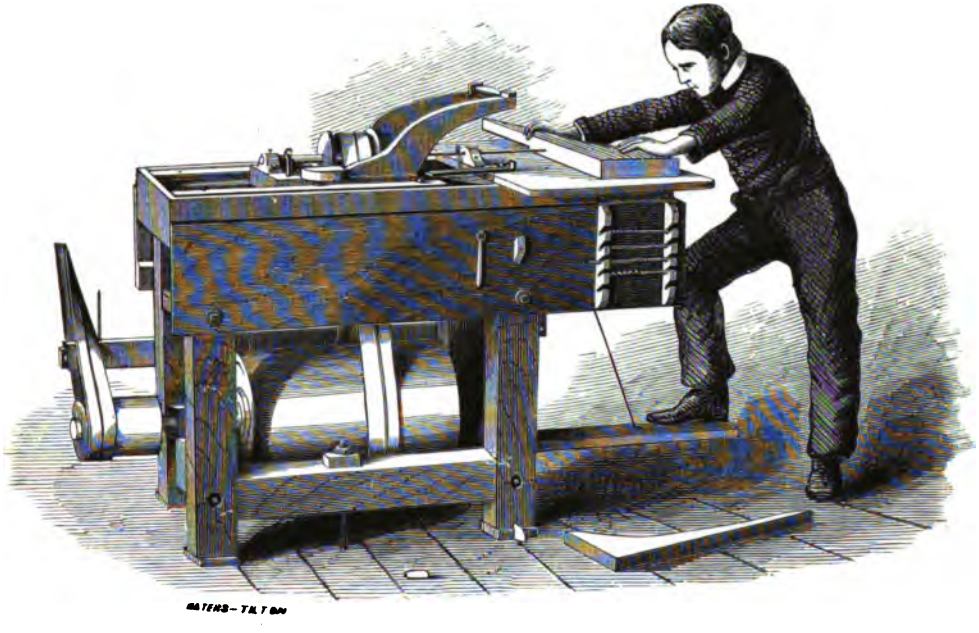
Securing Heads of Ribs on Form.



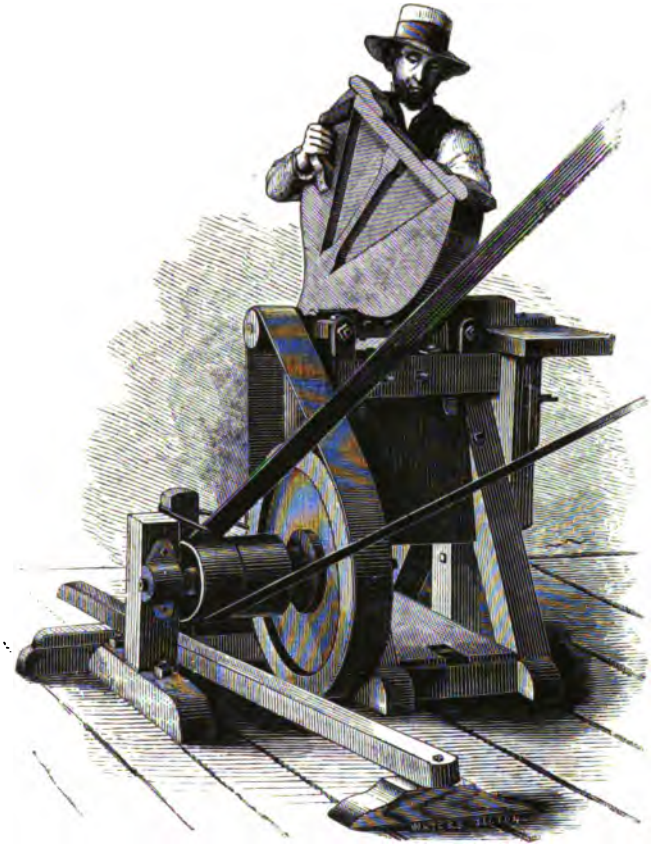
SAWING KEEL.



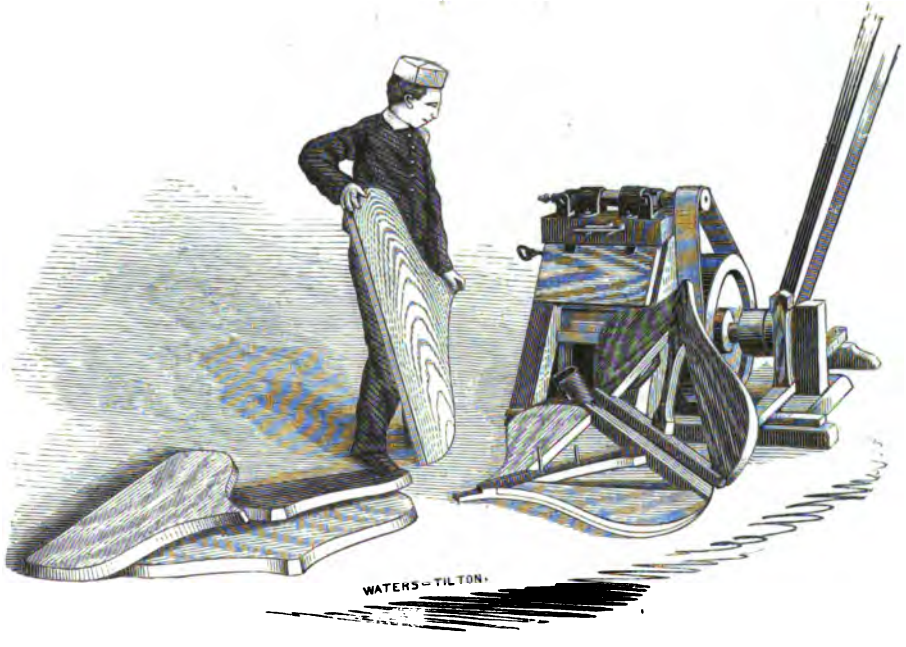
Beveling Dead-Wood.



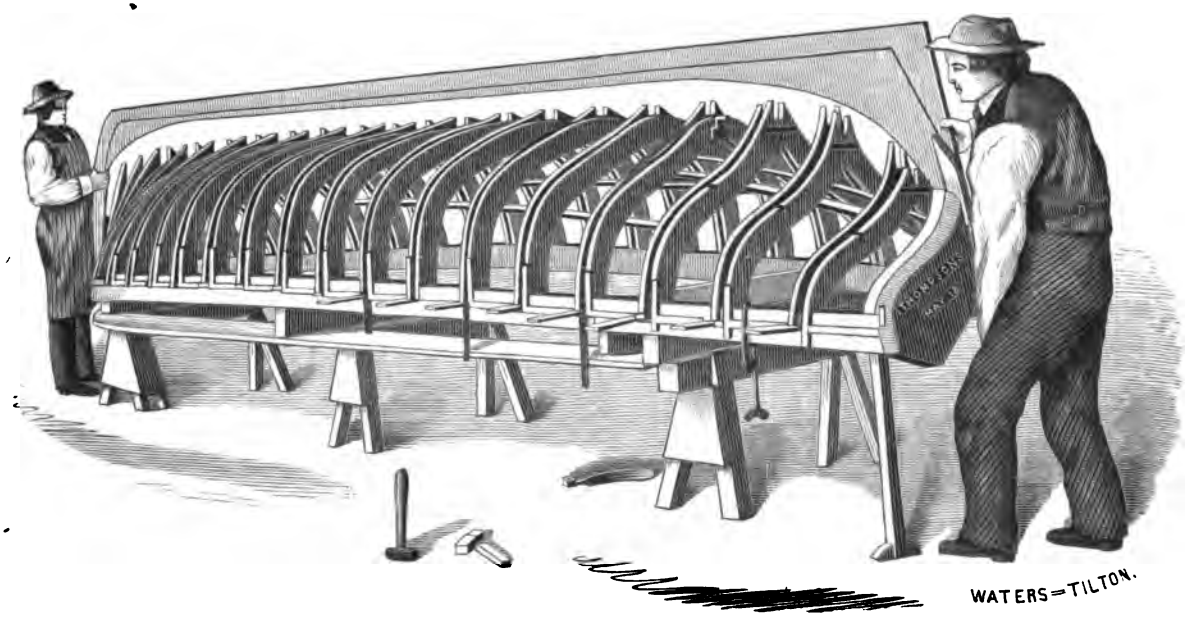
Boring Stern Post.



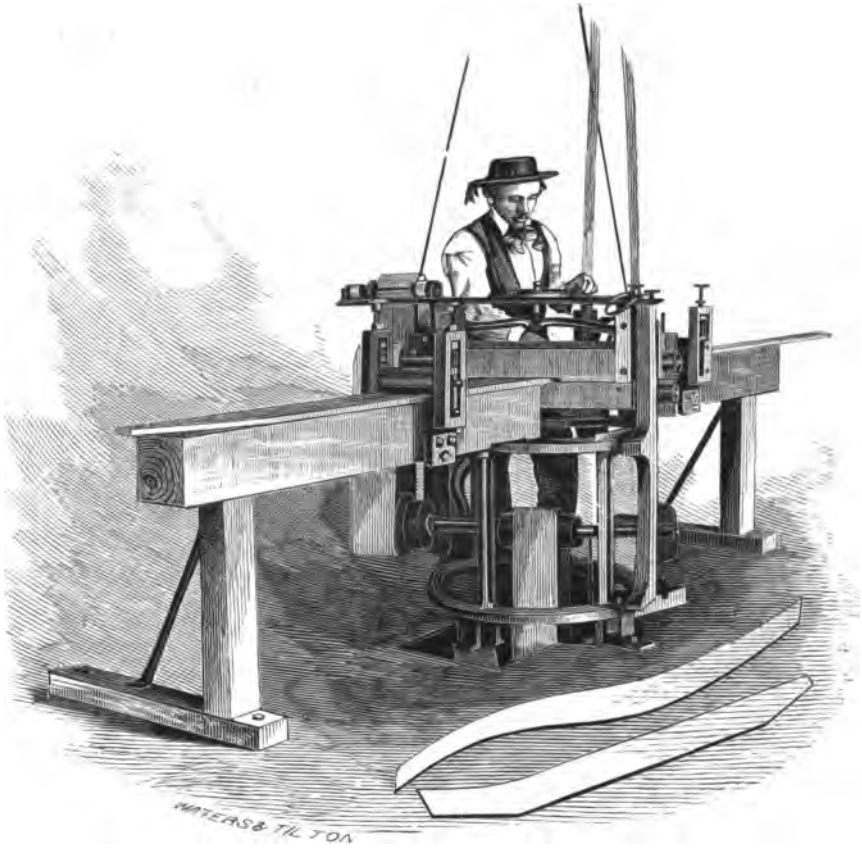
Beveling Stern-Board.



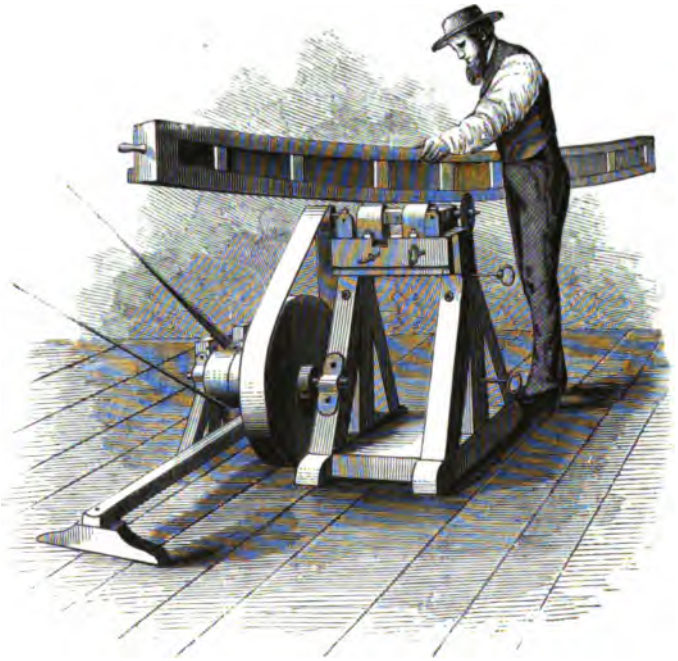
TAKING STERN-BOARDS OUT OF "FORMS."



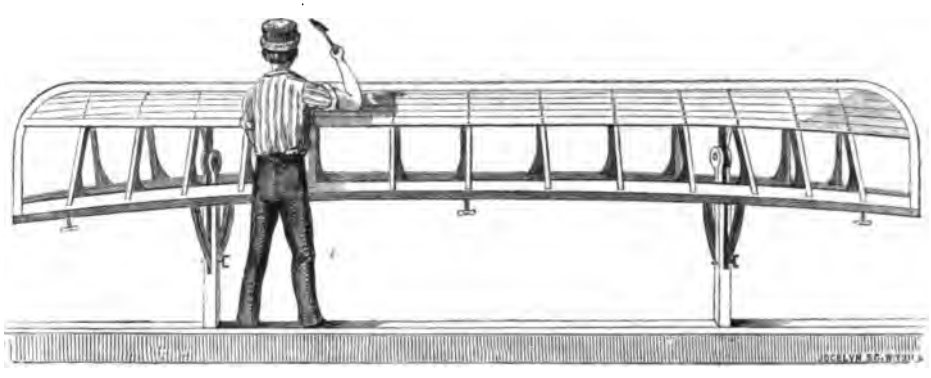
PLACING KEEL.



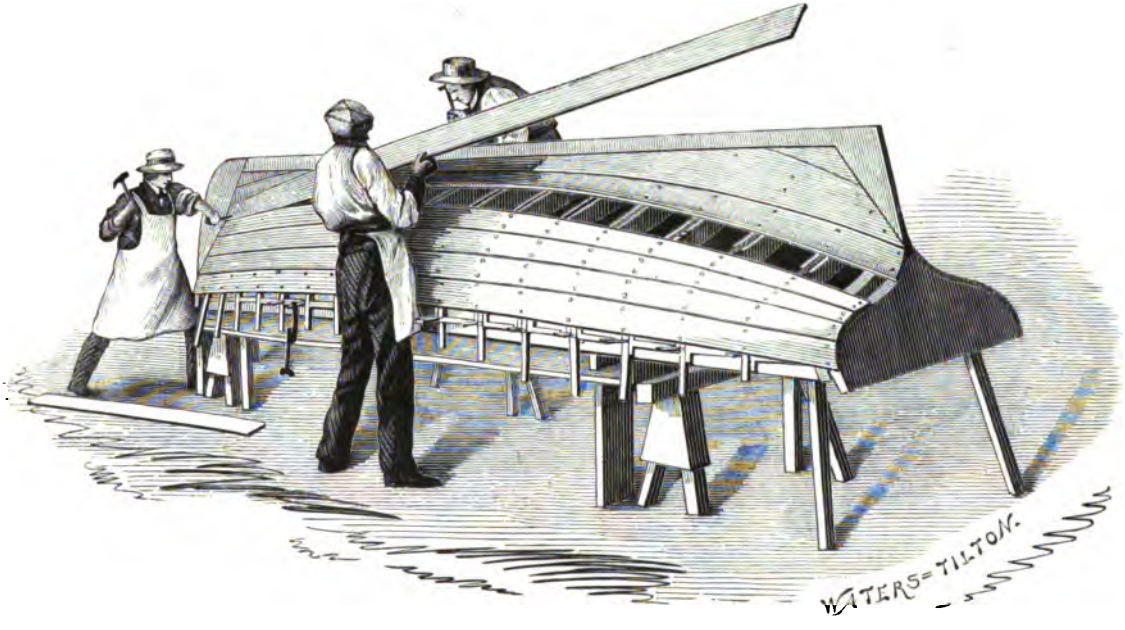
PLAINING SHEATHING.



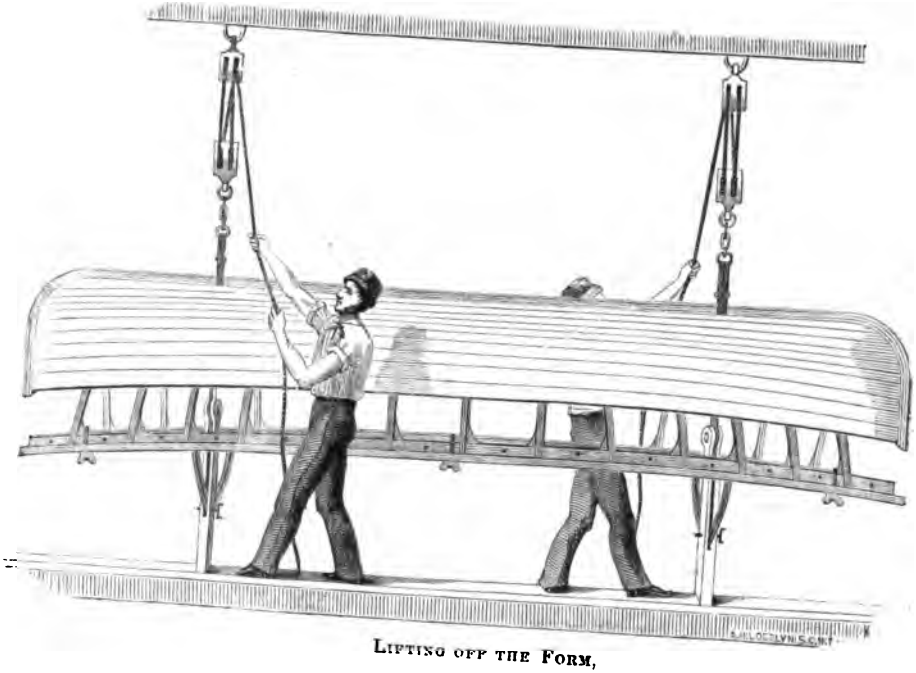
BEVELING EDGES OF SHEATHING.



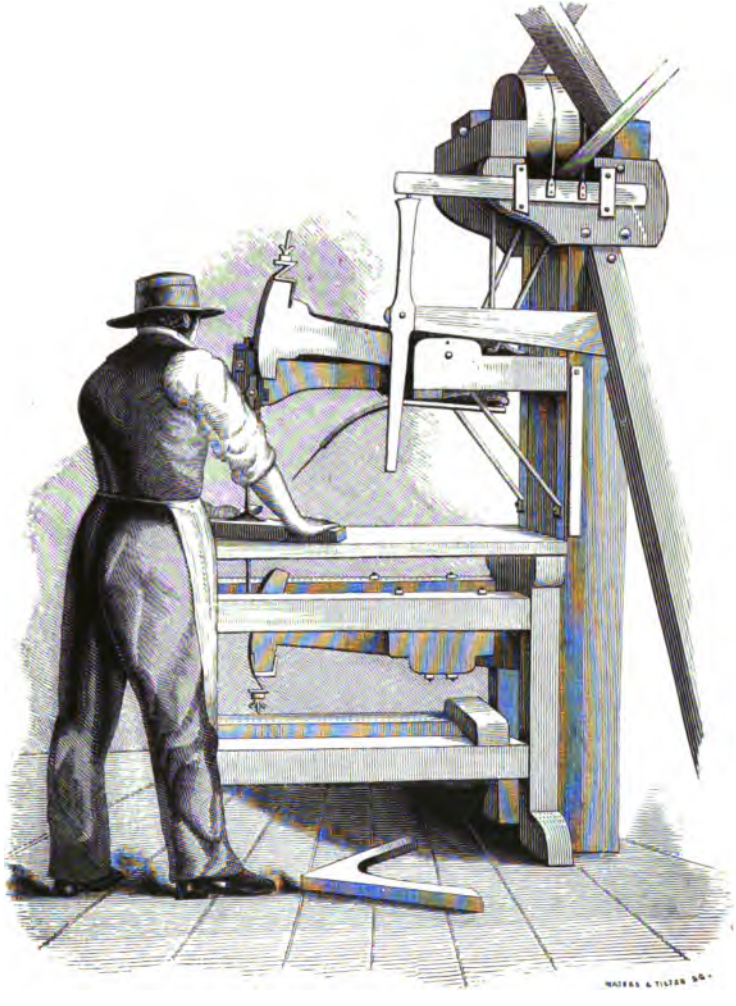
PUTTING ON SHEATHING.



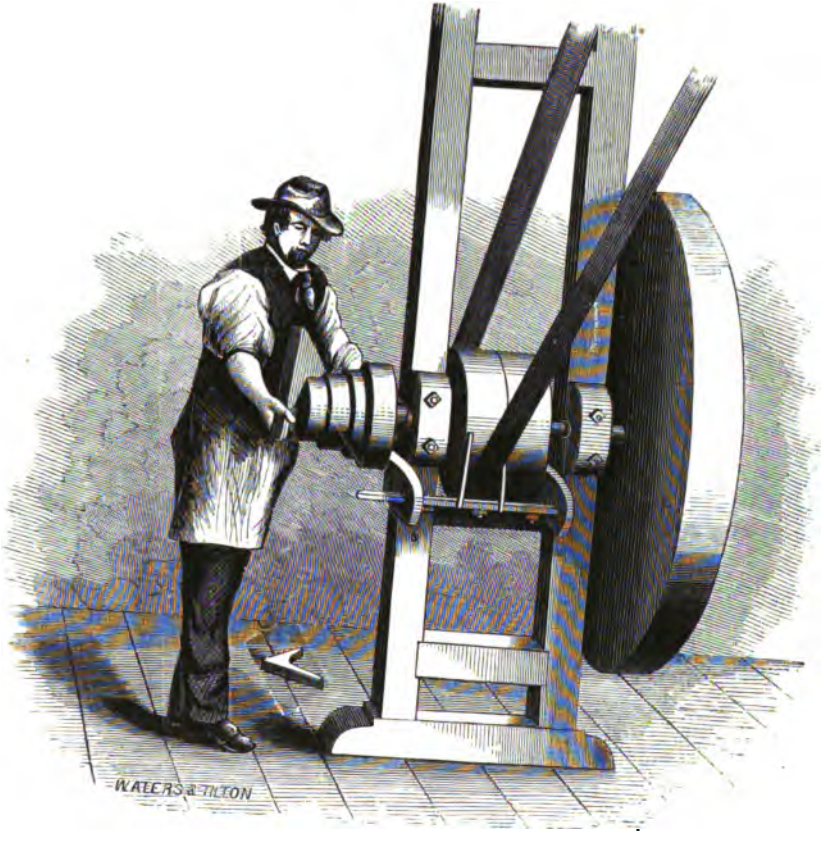
SHUTTING IN.



LIFTING OFF THE FORM,

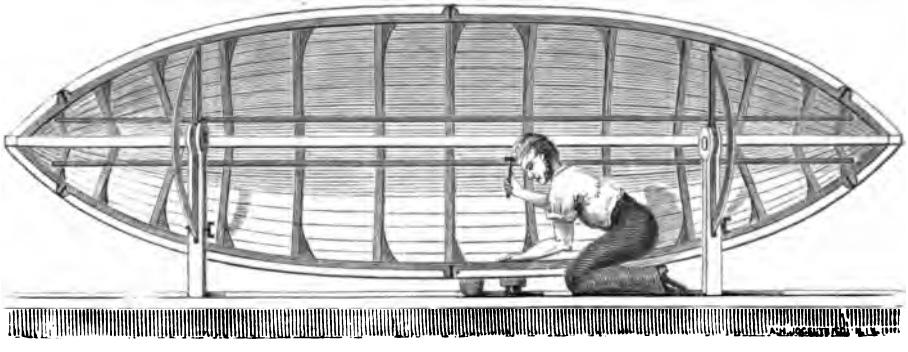


SAWING OUT "KNEES."



Smoothing "Knees."

SHEATHING AND RIVETING.



NEW YORK, November 17th, 1859.

THIS is to certify, that I have witnessed experiments by which every part of a Boat is manufactured by machinery run by steam, Invented and Patented by Mr. NATHAN THOMPSON, Jr., of New York, and after a critical examination, I am thoroughly convinced, and must acknowledge that Mr. THOMPSON has perfected a system of the most simple and effective character, for the building of Boats of every size. *I am confident that it will entirely supersede the present mode of building Boats by hand labor*, from the fact that Mr. THOMPSON can, with his system and machinery, *do ten* (10) *times the work* (of a superior quality as to finish and fit), *in the same time, that is now done by hand. No matter what combination or capital is employed, building Boats by the present system of hand labor* in opposition to Mr. THOMPSON'S process *can never possibly succeed*, for the reason known to all practical men, that *hand labor can never successfully compete with machinery propelled by steam;* and after 30 years' experience as a professional boat-builder, I most unhesitatingly assert that Mr. THOMPSON has, by patient and unremitting labor for years, of which I have been cognizant, brought to perfection a system for the Building of Boats by Machinery that must become universal, and give him a world-wide reputation for his genius.

JOHN B. WEBB,

718 WATER STREET,

NEW YORK.

NEW YORK, *Oct.* 19, 1859.

THIS is to certify that I, James Snellgrove, Jr., a practical Boat-builder, (having served an apprenticeship under John B. Webb,) was called upon to help put together a Wash-streak boat 25 ft. 9 in. long, 5 ft. beam, 2 ft. 4 in. deep, the *entire parts* of which were got out by machinery invented by Mr. Nathan Thompson, Jr. This boat was built in presence of a Committee appointed by Secretary of U. S. Navy, and was the first ever constructed under the process.

From the commencement of getting out the various parts from the rough material, until the entire completion of the boat, the time occupied was *Eleven days and three hours* (for one man working ten hours per day.)

In consequence of having to make the various changes from one machine to another, (owing to lack of room to work the full complement of machinery,) the time employed on the above boat *was lengthened at least six days more* than would have been necessary if the full quantity of machinery could then have been brought to bear. This fact will be admitted by any practical Boat-builder who will take pains to examine the principle even an hour.

I had heard, for a year previous to seeing the machinery, that Mr. Thompson

was engaged in inventing machinery to make boats, but did not believe it ever could be done, and thought it was throwing money and time away for nothing; but, when I came to see all the details of his system of construction, and tested the rapidity of getting out all the parts of a boat from the rough material, and finishing them complete by machinery, I was perfectly astonished, and acknowledged that I saw that which I had never expected to look at. It was to me evident that by Mr. Thompson's process, *every piece of timber required in boat-building could be shaped and finished by machinery to set patterns, (or fixed points,) and then the various parts could be put together without the use of ribbons, or even a rule to measure with*, as by the process every piece is held relatively on a Form just as designed in the finished boat. Thus the gunwale, ribs, floor-timbers, cants, keel, stern, and stern-posts being duly placed on the Form and fastened, the planking (*which has been previously planed on both sides at one operation of the machine*) is put on; the boat is then caulked; she is now lifted off the Form, and all that is needed to complete her, is to put in the kelsom, bottom boards, risings, thwarts, thwart-knees, stern-sheets, &c., these having all been previously got out by machinery, fit exactly to their place.

Mr. Thompson's system is so arranged that *twenty or more distinct operations on the same boat can be going on by machinery without interference.* It is by this perfect system of division of labor, (each workman being constantly employed at a certain machine, or in a particular department of construction,) that such *great economy in cost of manufacturing under the process is to be secured*, as compared with the present system of manual labor, which does not admit of any such division of labor. Another great advantage over the present system, lies in the rapidity with which orders may be executed. *A day, or a day and a half*, would allow time enough for the manufacturer employing Mr. Thompson's machinery to turn out from his shop a boat of almost any dimensions finished complete. I have no hesitation in saying, as a practical Boat-builder of thirteen years' experience, that, *by the use of Mr. Thomp-*

son's Patent Machinery, five boats can be built, in the best possible manner, in the same space of time now consumed in constructing one boat by hand labor, and that Mr. Thompson's process will cause an entire revolution in construction of boats.

JAMES SNELLGROVE, Jr.

City and County of New York, ss.:

On the 19th day of October, 1859, before me personally came James Snellgrove, Jr., known to me to be the individual whose name is attached to the foregoing certificate, and made solemn oath that the contents of said certificate are true.

JAMES G. COOPER, *Comr. of Deeds.*