Captain Ericsson Himself Before the Public.

The following is a letter from Capt. Ericsson, in the New York *Daily Times* of the 28th ult:

NEW YORK, Thursday, May, 24, 1855.

SIR: The assertions of my opponents that the caloric engine has failed and been abandoned, and that a "new steam engine" has been put into the *Ericsson*, are wholly unfounded.

Every trial made has proved the soundness of the *principle* of the caloric engine, an extraordinary saving of fuel being in every instance well established. I have deemed it prudent, however, not to publish certain facts conclusive as to ultimate success, because it would have encouraged many to help me to "improve," and deprive me, if possible, of the fruits of much labor and expense.

The first engine of the caloric ship was removed, notwithstanding its economy, because it proved too cumbrous for the amount of *available* power it exerted—in other words, because the differential force of the working and supply piston did not prove in practice to realize what calculation promised—losses by leaks, friction, &c., being much greater than reasoning could anticipate. The second engine was applied to remedy this deficiency of power, by employing compressed air, but it was found that the joints of the pipes of the heaters could not be made sufficiently tight to carry more than one-third of the intended requisite pressure. Accordingly, this modified engine proved inadequate to give a speed of more than seven miles an hour to the ship. Apart from the imperfections connected with the leaks alluded to, the machine worked to the admiration of all who witnessed its operation. But although *air* thus escaped through the joints, steam, it was found, could only be retained in the heater pipes, and was therefore employed in a surcharged state, in place of air. It was under the agency of surcharged or overheated steam that the machinery operated on the day of the sad accident of sinking the ship. The sudden immersion and cooling of the furnace pipes, &c, unfortunately destroyed a vital part of the contrivance, and after fruitless attempts to repair and patch, no alternative was left but to apply ordinary boilers. The *engines*, however, are now without alteration; the same as when compressed air was employed. The statement that "new steam engines," planned and constructed for the purpose, have just been put into the ship, is pure fiction. I promised the owners of the ship, on proposing to remove the original caloric engine, to build the second one in such a manner, that if we failed in using air, steam might be resorted to by replacing the air heaters by steam boilers.

The stories relative to the "burning of the bottoms" of the original caloric engine I have deemed it unnecessary to notice, as many practical means obviously might have been adopted to overcome the difficulty. Numerous have been the suggestions I have received from correspondents in various countries, all proving that I am not alone in thinking that the "incurable burning of the bottoms" was, after all, no serious matter.

The positive assertion, that I have altogether abandoned the caloric engine, is a base calumny. The subject has been by me unceasingly prosecuted. Experiment has succeeded experiment, and continued exertions have been made to devise and perfect the useful mechanical expedients for rendering the incontrovertible physical laws involved in the principle of this machine subservient in producing a cheap and harmless motor. How far I have succeeded in the final practical solution of the great problem will soon become known, as I am now engaged in building a test engine of considerable magnitude.

Possibly the performance of this test engine will prove the conductors of certain scientific publications more at fault in their opinion of the caloric engine than Sir Humphrey Davy was when he ventured to ridicule the proposition of lighting London by gas.

Let me add, that should some unexpected difficulty prevent a full realization of the capabilities of the new system when the said test engine shall be put in operation, such an event will by no means stop the prosecution of the matter—nor will any mechanical difficulty whatever cause the writer ever to abandon a plan so eminently based on physical truth, and fraught with such vast beneficial results when perfected. It is much to be regretted that so important a matter should be in any manner retarded by the obtrusive interference of persons who do not possess knowledge enough to understand that our present motor, the steam engine, working as it does within very limited range of temperature, and constantly wasting the caloric, never can be made an economical medium of transferring the force of caloric for motive purposes. Happily, whilst those who only pretend to science thus assail the good cause, the highest authorities support it. The late British Association in England discussed the matter at length, the inferiority of steam as a motor being fully established. The celebrated Regnault—the greatest living authority in relation to caloric—in a memoir to the French Academy, after discussing the relations of force produced and range of temperature, says: "But, as in the Ericsson system, the heat which the air gives out is given up to bodies, from which the entering air takes it again and brings it back to the machine, we see that theoretically *all the heat expended is utilized* for mechanical work; whilst in the best steam engine the heat *utilized in mechanical* work is not the one twentieth part of the *heat expended*." Endorsed by such authority, and fortified by such opinions, the writer disregards assailants, and will continue to labor at the perfection of the caloric engine until the end is achieved.

I am, Sir, very respectfully, your obedient servant, J. ERICSSON.

To Lieut. Gov. H. J. Raymond.

[This letter was written to Mr. Raymond in reply to personal inquiries, and the *Times* introduces it in the following sentence:—

"The public press, for some weeks past has teemed with reports that the caloric engine has proved a total failure, and that the principle on which it was constructed had been finally abandoned by Capt. Ericsson, who had substituted steam engines in the ship with which his experiments were made."

The above sentence from the *Times* is a disingenious mode of saying what is not correct in fact, and Capt. Ericsson must meet the same charge from his own self, for in the first sentence of his letter he denies that the caloric engine has failed, and been abandoned, and that "a new steam engine" had been put into the *Ericsson*, while in the commencement of the third paragraph, he then says, "the first engine of the caloric ship was removed, &c." Now, since we all know that steam engines have been substituted for them, it makes no matter whether these engines are old or new, they are steam engines and not hot air ones—that is the grand criterion point. Neither Mr. Raymond nor Capt. Ericsson dare deny this. Why do they not, then, like honest upright men, tell the downright truth about the matter. This would be creditable to them, for the best of men make mistakes, and Capt. Ericsson is not immaculate. Who his *opponents* may be, we do not know. Ericsson, the engineer, may not abandon hot air while he lives, but *Ericsson* the ship, after giving it a most expensive and thorough trial, has abandoned it for steam.

He says in the above letter, that the hot air engine was abandoned (there were two of them) because it was found to be too cumbrous for the power it exerted, on account of "losses by leaks and friction."

In the *Times* of Jan. 12th, 1853, he stated, "the pistons do not chafe, and hence there is little or no friction."

He now says these engines were too cumbersome, but if his principle of using hot air is correct, why did he not just enlarge his cylinders. In the *Times* of the same date referred to, he again said, "Were we able to introduce cylinders of 20 feet diameter, we should be able to surpass anything that floats on the ocean, and the effect of the improvement would be extraordinary. The enlargement of the cylinders would not cause them to occupy a much greater space in the ship, so that there would be *no appreciable want of room*." We have put these two statements together in order that the public might "look on this picture, and then on that."

Capt. Ericsson says in the above letter, that he is now going to build a *test* hot air engine. What in the name of common sense were the huge air engines of the *Ericsson* built for?

Let us again turn to Capt. Ericsson in the *Times* of January, 1853. He was asked, "are you perfectly satisfied with this trip of the *Ericsson*?" He answered, "It has exceeded my highest expectations—the engine has effected more than I had any reason to anticipate." In answer to another question he said, "I have never been at a loss for means, by making representations to your capitalists. I met a number of merchants, supported by other gentlemen of capital, who afforded me *ample opportunity of testing* the caloric principle on this large scale. The thing is accomplished; there is no remaining difficulty in the way which cannot be met, there is no doubt that cannot be answered. The principle has been tested long enough to prove that it is reliable, feasible, and successful." We advise him and Mr. Raymond, before they write any more on the *Ericsson* and hot air engines, to read the back numbers of the New York *Times*—our Lieut. Governor especially will find them very instructive in his editorial capacity.

Capt. Ericsson quotes Regnault as sustaining his views; we must deny the correctness of this. As our authority, we refer to the report of a paper read by Regnault to the Academy of Sciences (Paris) on the specific heat of gases,—translated for and published on pages 115 and 116, Vol. 28, *Franklin Journal*, 1854. The whole article militates against Mr. Ericsson's views of hot air, as carried out in his engines, by his *Regenerator*. The paper of Regnault, instead of furnishing proof of economy, for the mechanical work done by saving the heat by that Regenerator, says, "the useful work done by hot air, is more nearly expressed by the heat lost in the fall of the temperature in proportion as the machines are more perfect."

Capt Ericsson's fling at those "pretending to science assailing the good cause," thus recoils upon himself.

The best answer to the above letter, as it relates to the economy of steam and hot air, was published in the *Times* itself, of the 30th, giving an account of the trial trip for thirty hours of the *Ericsson*, with her steam engines. C. H. Haswell, the well-known engineer, who was on board, has reported that the consumption of fuel, according to the speed of the ship, was less in proportion than that of the *Ericsson* with hot air, and the low estimate of 7 tuns of coal per 24 hours, for the speed was about double with the use of two-thirds less fuel—21 tuns—whereas it should have been 28 tuns, estimating the resistance according to the square of the velocity, and according to the "cube" 196 tuns.

The Ericsson under Steam.

The following is the Report of Chas. H. Haswell to J. B. Kitching, Esq., a copy of which he has kindly furnished us. It is more concise, and yet more full and complete, than the account published in the *Times*, to which we have referred above:—

NEW YORK, May 30, 1855.

DEAR SIR: Having, in compliance with your request, embarked on board the steamer *Ericsson*, on the 28th inst., for the purpose of witnessing the performance of her machiney, and having received authority from you to control the operations of it in such a manner as I saw fit, for the purpose of advising myself of the consumption of fuel in her furnaces, speed of vessel, &c., I have now to submit the following report of my observations, and for the purposes of ready comparison and estimate of the value of the elements submitted, I give the following particulars of hull and machinery:

Hull—Length on deck, 250 feet; breadth of beam, 40 feet; depth of hold, 27 feet.

Draught of Water—Forward, 17 feet 2 inches; aft, 16 feet 10 inches (mean 17 feet.)

Coal and Water on Board—550 tuns.

Area of immersed midship section at this draught—546 square feet.

Machinery—Two inclined engines of direct action.

Cylinders—62 inches in diameter by 7 feet 8 inches stroke of piston.

Water Wheels—32 feet in diameter by 10 feet in width.

Boilers—Two vertical tubular, supplied by fresh water from the external condensation of the steam: natural draught to furnaces.

Cut Off—Drop valve with adjustable arrangement, set in this experiment at 45 100ths of stroke of piston.

Dip of Water Wheel Blades—4 feet 6 inches.

Coal—Anthracite, Pittston, Bituminous, and Cumberland.

RESULTS OF EXPERIMENT—1st. *Anthracite.* At sea, May 28th, 1·45 P. M. to 2·15 A. M., 29th, 12 hours and 30 minutes, consumed 26,400 lbs.: 2.112 lbs. per hour, or 0·94 of a tun (of 2240 lbs.) per hour.

2nd. *Bituminous*—At sea. May 29th, 2·15 to 11-30 A. M., 9 hours and 15 minutes, consumed 15,390 lbs.: 1.664 lbs. per hour, or 0 74 of a tun per hour.

3rd. *Anthracite*—At sea, May 29th, 11·30 A. M. to 1·45 P. M., 2 hours and 15 minutes, consumed 4,320 lbs.: 1,920 lbs. per hour, or 0 85 of a tun per hour.

RECAPITULATION.

1st.	12 h. 30 m. × 2112 lbs.	=26,400 lbs.
2nd.	9 h. 15 m. × 1664 lbs.	=15,392 lbs.
3rd.	2 h. 15 m. × 1920 lbs.	= 4.320 lbs.
	24h. 0m.	46,112 lbs.

the total consumption for 24 hours=20·58 tuns.

The average pressure os the steam was 22 5-8 lbs. per square inch; the vacuum 27½ inches, and the average revolutions of the engines 13 3-8 per minute. The speed of the vessel, as measured by a chip log, with 25 fathoms of stray line, was 11 knots large = 12·83 statute miles per hour.

The fresh water condensers maintained an uniform vacuum of 27½ inches of a mercurial column, and by the aid of an auxiliary distilling vessel, more water was readily obtained than was required to meet the loss by vents and leaks from the boilers, pipes, &c.

With a view to test the evaporative qualities of the boilsrs, and at the same time to verify the extraordinary results here given, in economy of combustion, the water of condensation therefrom was, at six different periods, measured in a vessel, and the supply was found to reach the unexampled quantity of 9·96 lbs. per pound of anthracite coal consumed, and notwithstanding this unprecedened attainment in a marine engine, it could have been very materially increased with better firing of the furnaces.

In conclusion it may not be amiss for me to add, that all the elements of means and results here given were noted by myself, so far as it was practicabie to do so, and such as I had to transfer to the observation of others, were alone confided to my two assistants, who accompanied me on this occasion for such services. I am, respectfully, yours, &c.

CHAS. H. HASWELL.

JOHN B. KITCHING, Esq., New York.

[The amount of water evaporated by one pound of coal, by the boilers of this vessel, is greater than those of any other steamship with which we are acquainted. The economy of the fuel is attributable to the boilers, and if Capt. Ericsson planned them he deserves great credit, although it may be said there is little, if anything, new about them; the results, however, are good, and he who has accomplished any useful result, deserves the honor which is his just due.

The whole economy in fuel, however, in the *Ericsson*, is not superior to that of the steamer *Brandon*, a brief account of which was given on page 11, this volume SCIENTIFIC AMERICAN. That steamer made the voyage, with a full cargo, from Havre to this port, in 16 days—frequently running 12 knots an hour, with an average consumption of only 15½ tuns of coal per day.

New Inventions.

Velocitrat Lubricator.

The patent granted for a lubricator for machinery to George Dixon, of Lafayette, Ind., bearing the above name, and the claims of which was published on page 294, SCIENTIFIC AMERICAN, two weeks ago, embraces a very ingenious apparatus. The oil cup is applied to the crank pin of an engine, and has a steam valve in it, which is made to open at every downward motion of the connecting rod, owing to the movement of the latter being quicker. This allows the oil to escape on the crank pin in a jet, when it closes by its own gravity, shutting off the oil until the connecting rod makes another downward stroke. By this method of lubricating (there being also a regulating screw in the cup) the exact quantity of oil is supplied at every stroke by a positive motion.

Michigan Philanthropy for Ericsson.

We have now before us a printed circular headed "State of Michigan," and signed "Naw-Beck," suggesting that subscriptions be taken up for Capt. Ericsson throughout the United States. The mover of this enterprise says he is a native of New York, but has resided in Michigan for thirty years, and is well known to Gen. Cass. He suggests that the people of different States, form themselves into County Committees, unite their subscriptions, purchase drafts on New York, payable to John Ericsson, and forward them to John Thompson, Wall street. This philanthropic individual is still full of caloric, and looks upon the Caloric Engine as one of the greatest discoveries of the age. He compares Ericsson to Christopher Columbus, and sets him above Fulton. He had read, as we can perceive from his remarks, one of the floating paragraphs from some obscure source, which were recently propagated, respecting Capt. Ericsson having expended his whole fortune and that of his wife, and which had led to their separation. We have been informed that this report respecting his family affairs is entirely destitute of truth.—"Naw-Beck," who appears to be a hot-hasty philanthropist, desires that the contributions should all be made up by the next Fourth of July. We hope "Naw-Beck" will subscribe liberally; he no doubt ought to know, away out *there*, far better about such matters than the people *here*,—who generally do not yet know who paid all the expenses of the *Ericsson*, or whether they are all settled.

Rounding and Beveling Barrel Heads.

The accompanying figure is a perspective view of a machine for the above named purpose, for which a patent was granted to Joel P. Heacock, of Marlborough, Ohio, on the 7th of March last year.

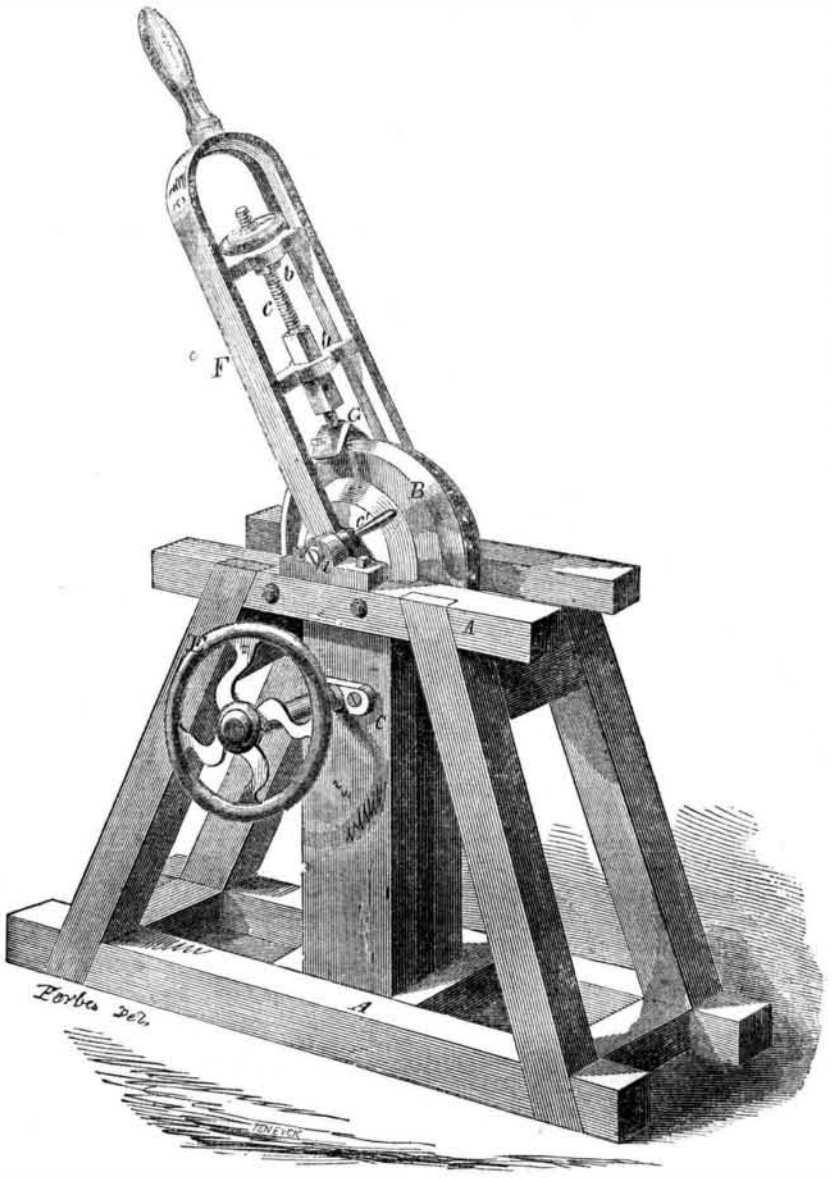
The nature of this invention consists in the employment of two jaws or clamps for holding the stuff for making the barrel head, in combination with a double edged or V-shaped adjustable cutter, which is attached to a swinging lever, that is moved back and forth in the path of a circle from a horizontal to a vertical position, and vice versa, and thereby made to give the proper shape and bevel to the stuff intended for a barrel head.

A is a stout frame. B represents two circular plate jaws secured on the top of two legs, C. One of these legs is made fast to the frame; the other is moved out and in at the top, to open and close the jaws, by a screw on the shaft of the hand wheel, E.

F is a forked lever secured on an axis pin (one on each side of the frame,) working in bearings. The prongs of this lever are united together by cross ties, *b b*. G is a V-shaped adjustable cutter on the end of a screw shank, *c*. On the top of the screw is a nut wheel above the cross tie. By turning this wheel to the right or left, the cutter, G, is elevated or depressed. The small handle, *c'*, is the lever of a dog bolt, which passes through the center of the jaw, C, and centers, and holds the stuff. This dog bolt is capable of turning and describing a semicircle.

Supposing the stuff to form a barrel head to be placed in the open jaws, B, by turning wheel, E, to to the right, the off jaw will close, and retain the stuff to the action of the knife. The lever, F,—by its handle—is then pulled down from a vertical to a horizontal position towards one end of the bench, which rounds and bevels the barrel head from where the knife commences to act, until the end of the cut. The lever is then varied to a vertical position, and then moved in a reverse direction towards the other end of the bench, and this one half of the barrel head will be rounded and beveled. The wheel, E, is then turned to the left, the toothed jaw is thrown out, and the jaws then opened. By turning the dog lever, *c'*, the stuff will be moved round so as to bring the rough edge

ROUNDING AND BEVELING BARREL HEADS.

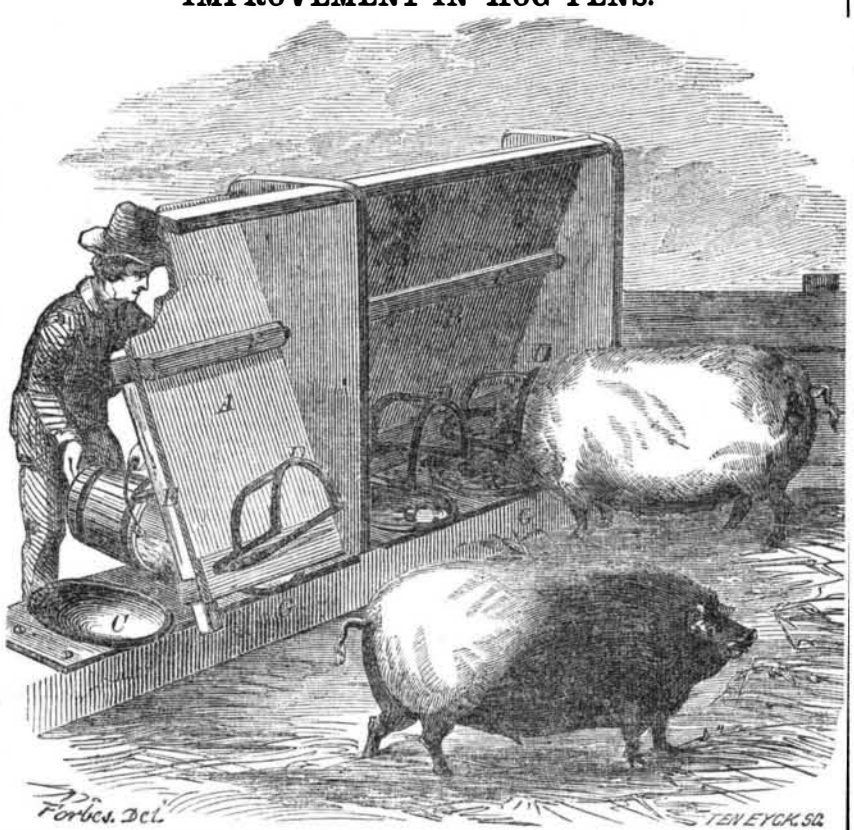


of the stuff to the proper position, to undergo the same operation as that described for the rest of the barrel head, thus completing and giving it the proper shape to fit the croze of the barrel.

The operation of this machine is exceedingly simple, and will be readily understood and appreciated.

More information may be obtained by letter addressed to the patentee.

IMPROVEMENT IN HOG PENS.



The accompanying figure is a perspective view of an improvement in the construction of Hog Pens, for which a patent was granted to R. M. Abbe, of Thompsonville, Conn., on the 29th of last August.

The improvement relates to the construction of the trough guards. A pen is first built of the requisite size for a certain number of hogs, and on the front part of it the improvement is placed. A B are swinging fronts intended to swing inwards, on F F, when cleaning out the troughs or feeding (as shown with front, A at E) and thus prevent the hogs interfering with any of these two operations. When the feed is placed in the trough, the swinging front is brought into place and made fast, by a bar, or button, as shown by B, thus allowing the hogs free access to the troughs, C C. These troughs are made of cast iron—oval formed basins,—and firmly secured in a frame, G. D D D are iron guards, one for each trough; these prevent the hogs from interfering with one another while feeding. They are fixed on the swinging frame inside the pen, and being secured with screw bolts, they can be raised or lowered to suit the size of the hogs. They are placed so as to allow each hog to pass his head in, but not his feet and feed freely. The latter is an ugly custom with hogs in common pens, by which they waste and foul their food.

By this method of constructing hog pens, the troughs can be easily cleaned out, and thus kept in proper condition. The health and growth of hogs are both greatly promoted by keeping their troughs clean, for it is certainly injurious to them if fresh food is mixed with any surplus that has been left from a previous meal, and suffered to ferment and become offensive. This method of constructing hog pens also saves food, by preventing waste, the grunters being very senseless animals in this respect, by getting into the trough with their fore feet and scattering their food on the floor.

More information may be obtained by letter addressed to the inventor.

Important Patent Case.

THE WOODWORTH AND NORCROSS PLANING MACHINES—An interesting trial at law between James G. Wilson and W. Van Hook, as owners of the Woodworth patent, and J. B. Church and J. W. Ogden, as defendants, using the Norcross machine, was terminated in this city before Judge Nelson, on the 29th ult. The complaint was that the defendants were infringing the Woodworth patent, and the trial was to decide this. The Judge limited the number of experts to two on each side, and circumscribed the range of testimony. In five days after the trial commenced all the testimony was taken, and the counsel on both sides (Keller for plaintiffs, Stoughton for defendants) had summed up. The Judge charged that two issues were involved, one for the planing part of the machine, and the other for a part of the tongueing and grooving. The jury brought in a verdict negative to the complainants except for the using a cutter for smoothing the edges of their tongued and grooved boards. The whole case may be said to have been in favor of the defendants.

Dry Dock Patent.

A motion for an injunction—before Judge Nelson, in the Circuit Court U. S.—to restrain Samuel Loveland from using the Dry Dock at the foot of Delancy street, this city, was denied with costs, on the 30th ult. The complainants were S. Williams and A. B. Hathaway, who claimed that the use of said dock was an infringement of the plaintiff's first patent, they having two on Dry Docks. The defence asserted, that if there was any infringement, it was not the first but the second patent of the plaintiff's on which the complaint was made: the Court seemed to view the matter in the same light, by refusing the injunction.

How to Prevent Worms on Trees.

Bore a hole into the tree the size of roll brimstone, six inches in depth, say four feet from the ground; fill the cavity four inches with the roll brimstone, plug two inches, and seal over with pitch. The sap absorbs the sulphur, and imparts a healthy hue to the leaves; beside being very offensive to the worms, it causes them to leave for parts unknown.—[Exchange.

Doubtful.