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Repairs to the Ericsson---Let the Truth be Told.

The Ericsson is getting new *cast*-iron crown plates, in place of wrought iron ones in her furnaces.

The "New York Daily Times," of Saturday the 26th, had a long article on the subject, and made one statement which contradicts another made by Capt. Ericsson, in our presence.

It says, "the bottoms of the cylinders are of *wrought iron* and *convex* in form, because no foundry would cast them. During the *first* trial trip down the bay, under anything like a *full* pressure, the wrought iron bottoms (it should have said crown plates) proved too elastic. When the pressure reached nine pounds, one or two of the bottoms yielded from half to three quarters of an inch. Upon the next trip, the pressure was less, and during the voyage south, it never exceeded eight pounds. The remedy for this is simply to substitute *cast-iron* for the wrought-iron bottoms used hitherto; Messrs. Hogg & Delameter are now casting them."

In answer to the foregoing we say, it will be remembered by those who were on board the Ericsson on her second trial trip, that Alex. Jones, Esq., of this city, asked Capt. Ericsson if the crown plates of his furnaces were not liable to *give way*, and the answer he received was "NO." "Their form," (convex) said Capt. Ericsson, "allows them to expand and contract without danger." Said Mr. Jones, "the talk on 'Change among those who have a knowledge of such things is, *they cannot* stand." The "Times" says, in the article referred to. "Practical engineers who make any pretensions to a mastery of their profession are very careful even while dealing largely in annonymous and injurious insinuations not to put themselves *on record* against the speedy and complete success of the caloric engine." This is untrue; we can get the opinions of fifty engineers, if we choose, to put on record against its success, while the world lasts. How does this accord also with the statement and question of Mr. Jones? it has already come to pass what engineers talked of on 'Change, and which Capt. Ericsson denied, and which we heard with our own ears.

The "Times" also says, "The theoretical demonstrations with which many of our so-called *scientific* journals lately abounded that the use of heat *over and over* again for the purposes of motive power was absolutely and simply impossible, have already vanished altogether."

No paper professedly devoted to science but the Scientific American has put forth theoretical demonstrations, to prove the principle of using heat claimed for the Ericsson, erroneous. The advocates of the Ericsson claim that a certain amount of heat by the use of packages of wire gauze can be made to produce an infinite amount of motion—strokes in an engine. We deny this, it is against all the established laws of mechanical philosophy, and there is not a single scientific engineer or professor of mathematics and engineering in our country but will, if called upon, corroborate our views; if we are not correct the Principia of Newton is trash, and the philosophy of mechanics as taught in our colleges for two centuries (but which the editor of the "Times" has never learned) and is now taught there, is false. If a definite quantity of heat can produce an infinite amount of motion, there is hope for the static pressure engine yet, although we exploded that humbug more than a year ago, the principle claimed is the same in both cases. In conclusion let us say that cast-iron crown plates for wrought-iron ones is a new idea in engineering, but as poor as the use of hot air. What engineer of common sense would use cast for wrought-iron in a high pressure boiler. We now say and call upon all to mark our words, that the cast-iron crown plates will soon be found as useless as the wrought-iron ones. So far as it regards anything the "Ericsson" has yet done, our readers will see that their confidence in our opinions has not been misplaced.

Fuel and Mechanical Power.

As the saving of the fuel is the only string on which the advocates of the hot air engine harp, we must say, they exhibit an amount of ignorance on the subject worthy of a native of the interior of Africa. The Arctic burns 84 tons of coal per day, and we assert that the Ericsson cannot go as fast and use 100 tons: When our north river steamboats increase their speed to but a few miles beyond their average rate per hour, they consume four and five times the usual amount of fuel. Dr. Lardner himself, who presents in his "Railway Economy" the Iron Witch, of Capt. Ericsson, which turned out a complete failure, as a favorable specimen of a north river steamboat, admits this to be true.

When the Oregon and Vanderbilt had their famous race on the 2d of June, 1847, the former consumed 18 tons of the very best picked coal in three hours, running at the rate of 24 miles per hour. She will run to Albany in 10 hours at the rate of 15 miles per hour, and use only 12 tons of common coal. Thus with an increase of only three-fifths the speed, she consumed more than 6 times the quantity of fuel—the increase was as 6 tons to 0·83 of a ton. With this data of the quantity of fuel necessary to run a steamboat according to a certain speed, the Oregon would only use 1¼ tons of coal in running to Albany at the rate of 7½ miles per hour, that is allowing a double speed to require 8 times the amount of fuel which appears to be about the quantity.

Withdrawals from the Patent Office.

We request the attention of our readers to the following letter:—

U. S. PATENT OFFICE, WASHINGTON, March 20, 1853.

SIR—In reply to your's of the 1st inst., I have to inform you that, doubting the legality of refunding money on the withdrawal of an application, the fee on which consists in part of that paid on filing a caveat, I have submitted the question to the Attorney General, and until his decision shall have been communicated to the patent office, all such applications for withdrawals must be suspended.

Respectfully R. C. WEIGHTMAN, Acting Commissioner.

Since the re-organization of the Patent Office in 1836, every Commissioner of Patents has refunded the sum of twenty dollars according to the plain provisions of the law—on the withdrawal of every application for a patent. When Mr. Hodges was appointed he sent out a new order of instructions respecting such payments, and the above is the first case bearing on the subject which has come under our cognizance. Had he followed in the footsteps of his predecessors, abiding by the plain language of the law, the Attorney General would have been saved the trouble of deciding upon such a question, and other troubles in connection with it, would also have been avoided.

Section 12, of the Patent Act, of 1836, in relation to the fees of caveats says, "which sum of $20, in case the person filing such caveat shall afterwards *take out* a patent for the invention therein mentioned, shall be considered a part of the sum *herein* required for the same."

That specific sum mentioned as *herein required* refers to section 7, of the same act, which says, in reference to withdrawals:—"In *every such case*, if the applicant shall elect to withdraw his application, relinquishing his claim to the model, he shall be entitled to receive back *twenty dollars* part of the duty required by this act. On filing a notice of such election in the Patent Office, a copy of which certified by the Commissioner, shall be a *sufficient warrant* to the Treasurer for paying back to this said applicant the sum of *twenty dollars*." This is all so plain that the wayfaring man need not err in respect to its meaning; it can have no other than just paying back $20 upon every withdrawal of an application for a patent. To refuse to pay it back in the above case is a violation, we believe, of the plain letter of the law; the duty of the Commissioner was to certify at once, to a copy of the application for a withdrawal, so that the money returnable by law should be granted immediately to the applicant. To alter the established policy of the Patent Office after it has paid out thousands of dollars for the past seventeen years for such withdrawals, exhibits a want of consideration. Before the old policy can be abandoned, with a regard to justice, the patent laws must be altered. If it were the law to refund no moneys on rejected applications, *upon which Caveats had been filed*, we would not and could not utter a disapproving word, but instead of this being the case, there is not a syllable in the whole Patent Code authorizing the Patent Office to refuse the paying back of $20 on *every* withdrawal, when the application had been fully made.

It is true that, in the case of filing a caveat, and again applying the fees to an application for a patent, more labor is entailed upon the Patent Office than in a case where no caveat has been filed; but the Patent Office is not in debt; the fees pay all the expenses. If, however, it is considered necessary to charge more for a case like the above, let the law be altered to charge $25 for a caveat and allow $20 to form part of the patent fee. Or let $5 be the Patent Office fee for a caveat, and let $30, in every case, be paid on the application for a patent. Five dollars are sufficient to cover all the expenses of the Patent Office for filing a caveat. We should have no objections to such an alteration of our patent laws, but until they are so altered let the Patent Office honestly and rigidly adhere to the law as it is, and make no rules which do not harmonize with the code.

Events of the Week.

TIN AND COPPER PRICES—The metal trade of Birmingham, England, rules the world in respect to articles of tin, copper, and light jewelry. Since we last noticed the rise in the price of tin, another advance has taken place of no less than $10 per ton. The price of copper has also advanced to no less than $695 per ton; the small manufacturers of copper and brass articles, in Birmingham, have stopped manufacturing, owing to the high price of tin and copper.

INCRUSTATIONS IN BOILERS—Fredk. Dam, a chemist, of Brussels, Belgium, has lately taken out a patent for employing a solution of soda, in steam boilers, for the purpose of precipitating impurities in the water. Soda will precipitate lime, which will fall to the bottom. Some of the salts of soda are dissolved in hot water and then poured into the boiler. This substance is not expensive and can easily be tested. In our opinion it will be found to work very well.

IMPROVEMENT IN THE MANUFACTURE OF IRON—This is a subject of deep interest to our manufacturers, and a discovery has recently been made in England, which is of the utmost consequence to all engaged in that art who use coke for smelting. As we learn by our cotemporary, the "London Mechanic's Magazine," at a late meeting of the Institution of Civil Engineers, a paper was read by W. Fairbairn, C. E., on the increased strength of cast-iron produced by the use of improved coke. It was stated that the quality of cast-iron had greatly deteriorated by the application of the Hot Blast, by which a large per centage of slag and other impurities, viz., sulphur, phosphorus, &c., were reduced into cast and malleable iron, destroying its tenacity and making it *red* and *cold short*. Impure fuel is also a great cause of destroying the tenacity of cast-iron, especially when it contains sulphur. The improvement has been made in removing the sulphur from the coal. Iron that was melted with common coke contained 0·281 proportions of sulphur; some kind of iron, melted with purified coke, contained only 0·191 proportions of sulphur. A great increase of strength had been obtained in the improved iron. The coke was purified by adding a considerable quantity, in layers, of common salt, among the coals. This salt acts upon the sulphur in the coal, when subjected to heat in the coke-oven, forming the chloride of sulphur and disengaging it. A portion of the sulphuret of sodium was left, but this in the iron furnaces does not yield its sulphur, but passes off, during combustion, into the cinders.

Another plan for using the salt so as to remove sulphur in the coal while in the smelting furnace, is to add a considerable quantity of the salt (chloride of sodium) with the ore, so as to mix it with the coal and the iron.—This is a good plan for those iron works, which employ coal and not coke in smelting. We are not informed of the exact quantity of salt used, and in fact this could not be determined, as that must be according to the quality of the coal and ore. Our manufacturers can easily try the experiment with half a bushel of salt to the ton. In some experiments made with iron produced without the salt and with it, on bars one inch square; that made with improved coke was found to be from 10 to 20 per cent. stronger. The cast-iron made with improved coke was superior in the ratio of 5 to 4.

In England nothing but coke is used as fuel for locomotives; it will yet be employed extensively in our country, as we have bituminous coal fields of greater extent than all those known in the world beside; our anthracite fields are mere plots in comparison with our bituminous fields. Coke made with salt, by removing the sulphur, must be excellent for locomotives; and will tend to make the tubes endure twice as long. We commend this subject to all those engaged in making coke and manufacturing iron.

Aerial Navigation by Steam without Balloons.

Theodore Poesche has presented a plan for navigating the atmosphere with a car propelled by a steam engine without employing a balloon. His plan is published in the last number of the Journal of the Franklin Institute, and he has sent us a pamphlet containing his plan, illustrated with some engravings. We certainly would like to see Mr. Poesche driving his steam car "through the ether blue," but his plan presents no rational ground for us to hope we shall ever see him perform such a feat. We consider that safe, economical and successful aerial navigation would be the grandest and most important invention perhaps ever made, but no plan yet proposed, no means yet tried, have by actual experiments (the only way to test the value of any invention), proved anything more than that, with a gas more rarified than air, man is enabled to ascend by the help of a huge balloon to some upper strata of air, there to be drifted by the current of wind to some distant place—not without risk and danger in a single case. M. Poesche's plan is to build a long, narrow, and light wooden vessel, with a flat bottom, and with wings of canvas, and propel it by a screw propeller driven by steam power. "My ship," he says, "most nearly resembles the flying fish, which progresses by the spiral action of the tail, while its extended fins support it in the air."

He trusts to the propeller to drive his long boat through the air, but he will find himself greatly mistaken. The screw was proposed long ago to drive aerial ships with balloons, but could not do it, and that it will be able to do so now without a balloon, is an impossibility, just as much so as that the author of the plan is able to fly by tying wings to his shoulders; in fact, the latter case is the most feasible. There is one way to prove we are wrong, and that is for M. Poesche to put his invention into practice, and floor all opposition by actual demonstration.

Pneumatic Telegraph.

In a few weeks we expect to be able to present engravings of a pneumatic telegraph, invented by J. S. Richardson, of Boston, which presents features of a new and important character. This kind of telegraph is composed of a tube, which, by exhausting the air from it by a steam engine working a huge air pump, is intended to send packages from one place to another through it with great velocity. The idea of sending packages in this manner from one place to another is not new, many attempts have been made to carry it out, some of which we have witnessed. Mechanical difficulties, however, have prevented the success of such a desirable mode of expressing parcels, and these it is believed have been overcome by Mr. Richardson. His atmospheric tube telegraph and railway is very ingenious, and in a tube one mile long, it has operated successfully for some time. We will present a more full description of the invention when we illustrate it. A joint stock company is about to be formed for a line of this telegraph, between this city and Boston.