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**The Wheeling Bridge—Steamboat Chimneys.**

The Supreme Court of the United States has rendered its decision in the case of Pennsylvania, versus the Wheeling Bridge Co. The State of Pennsylvania brought an action te restrain the said company from obstructing the navigation of the Ohio river, and injuring the plaintiff, in respect to steamboats running from Pittsburg down, and to it up, said steamboats having to pass under the bridge. The complaint was—the bridge is a nuisance—an obstruction to the passage of certain steamboats which have high funnels, during high water in the river. The decision rendered is, that the bridge is an obstruction, and although some questions are not fully decided, it amounts almost to an order, "the bridge must come down." Chief Justice Taney dissents single and alone from the decision, and has given his reasons for so doing. He does not discuss the question directly, whether or not the bridge is an obstruction; he takes the ground that the United States Courts have no jurisdiction over the matter. He believes his brethren have committed a grave error in their decision, as the court has no law to guide them, and the jurisdiction exercised is without a precedent. We agree with him; Congress alone has power over this case. The bridge is in the State of Virginia, over an inland river, and Congress has made no laws for deciding such a case. It has power, no doubt, to do so, but in exercising it, how will Congress proceed? The decision of the court asserts that there were seven steamboats with high funnels, which were obstructed in their passages during high water; it also asserts that by increasing the height of the chimney of one boat its speed was increased, and cutting down another, its speed was decreased. To pass the bridge during high water, part of the chimneys of these boats would have to be lowered by an apparatus. This was an obstruction truly, and a bad one. None of the chimneys were under 60 feet, and those of one boat were over 80 feet high. If Congress attempts to pass a law on the subject, some knotty questions will come up, such as "will we allow bridges with draws, or shall we prescribe a certain height for steamboat chimneys?" There were various opinions about the scientific questions of draught and the height of steamboat chimneys. We have not seen all the evidence on the subject; it would be a treat to us to examine it, for we are confident that witnesses of repute have given queer testimony. The Supreme Court adopted the view that long chimneys promoted the draught. Here is what the court says:—

Professors Renwick, Byrne, and Locke say, that by a law of nature the force and velocity of a draught depend upon the height of the chimney—the force and velocity being measured by the difference in the weight between the column of air within the chimney and an outside column of equal height and diameter; so that a reduction of the height of the chimney involves a diminution of that force with which nature supplies air to combine with fuel for combustion, and by consequence there follows a diminution of heat developed in the furnace, or steam generated in the boiler, and of power by which the wheel is moved, and the boat propelled.

The commissioner in his report says, "the deduction of science also shows that the draught is increased by elongating the chimneys." In this question economy of fuel is not the object to be attained, but the greatest practicable speed, consistent with safety. And this is attained where there is no defect in the furnace by the combustion of the largest amount of fuel. Forty-three bushels of bituminous coal are consumed per hour by each of the Pittsburg packets.

The commissioner says, "in relation to the question whether chimneys as high as those now in use upon the Pittsburg and Cincinnati packets, or some of the largest crafts on the Ohio, are necessary for obtaining a maximum of speed desirable in the navigation of the river, there is a diversity of opinion among the witnesses, especially among those who are not acquainted with the scientific principle of chimney-draught in reference to the combustion of fuel for the generation of steam. But I think there is a great preponderance of the testimony, even of that class of witnesses in favor of the necessity of very high chimneys, upon the large Ohio steamboats."

Here it states that there was a difference of opinion among those *not acquainted with the scientific principle of draught*. We must say, that as enunciated above, we do not understand it either, and we should like to know who does—are these opinions scientific ones? that is the question. Neither the force nor the velocity of the draught is regulated by such a law, and it must be wrongly stated above. The ascent of smoke up a chimney depends on the comparative lightness of the column of heated air within and an equal column of the atmosphere; the longer the chimney, therefore, the greater will be the draught, provided the fire affords sufficient heat to warm the air, and certainly there is always plenty of heat in our steamboat fires. But in some cases the draught of a chimney has been lessened by increasing its height. If a chimney like the iron funnel of a steamboat were to be constructed so high, and exposed to an external atmosphere that would condense the air at the top so as to render it heavier than the heated column within, the smoke would be forced down; there must therefore be a point—a line—for the proper height of every chimney, but that line is very flexible. There was a light house in the Isle of Portland, which had a smoky chimney; it was erected considerably higher, and this made it a great deal worse, Prof Faraday was commissioned to examine it, and cured it by cutting down the chimney, and making the top of a concavo form outside.

**Reformed Patent Law.**

The Bill to amend the Patent Laws, which has been before the two last Sessions of Congress, has passed to a second reading. We cannot say that we have any fault to find with it, except the 8th and 12th sections, which we think should not pass as they stand. We will quote the sections and make a few remarks on them:—

"Sec. 8. And be it further enacted, That the knowing and willful sale by a factor, or the knowing and willful use by an incorporated company, or a company enjoying the rights of incorporation, or the knowing and willful use or sale by any person or persons, without the consent and authority of the patentee, of the product of a patented machine, or invention, or discovery, whether said product be made in this or any foreign country, shall be deemed an infringement within the meaning of this act; and the party or parties so selling ing or using, shall be liable as in other cases of infringement."

This section has been introduced to protect the owners of the Blanchard patent for making shoemakers' lasts, and the owners of the Woodworth Planing Machine against the unfair competition of persons in Canada, who have been running Blanchard's and Woodworth's machines there, sending over the lasts and lumber here, and selling them at a lower price than the owners of these machines in New York could, and pay the stated tax to the patentees. There should be ample protection to our people who have paid and do pay the patentees for the right of using patents; but, at the same time, it is our opinion that some part of this section should be struck out or more carefully elaborated. It provides that "the knowing and willful use of the product of a patented machine, by any person or persons, without the consent of the patentee, shall be deemed an infringement of the patent." Now, by this clause, a man who purchases a coat or pair of pantaloons, or a shoe last, or a planed plank, must first find out whether or not these articles have been produced by How's Sewing Machine, Blanchard's Last Machine, or Woodworth's Planing Machine, and if so, get the consent of the patentee to use it or them, or be liable as in cases of infringement of the patent. It may be said, "this is no objection, for the buyer need not know that it is the product of a patented machine;" this is true, but then the plain inference of the section is in the use of the word *willful*, to make a man liable for every board in his house, unless he has the consent of the patentee for its use. We hope this clause will receive more attention from Senator Norris. Do not leave it so ambiguous, and do not let it pass as it is, or it may lead to most unfortunate results in the daily transactions of life. It would be far better to pass a supplementary act, for the relief of the owners of the Blanchard and Woodworth patents, than enact such a section as this, making it a principle in our Patent Code. We wish to see inventors and patentees protected, and they can be fully but do not pass a bill that may lead to such aggravating actions among our people, as will lead them, in a few years, as has been threatened by some, to demand an entire repeal of the Patent Laws, which would be an unfortunate thing for the progress of the Arts:—

"Sec. 12. And be it further enacted, That copies of foreign patents and the specifications thereunto belonging, describing any invention or discovery in the arts or sciences, that may be certified as exact copies of the originals or of the records, or rolls, or files thereof, by any consul or vice-consul of the United States, under his hand and official seal, shall be read in evidence in any suit, either under proceedings on scire facias, in equity, or at law, in any of the courts of the United States. And the consul or vice-consul shall be subject to the same penalties for falsely certifying any of said papers as exists in other cases of issuing false certificates: Provided, also, That said certified copies shall be subject to disproval according to the rules of the common law."

We certainly have strong objections to this section. It should be struck out entirely. If a patent has not been published in any printed work, it should be excluded as evidence. There is no necessity for the passage of such a provision in the Bill. We do not see; we cannot divine how such a provision got into it. If the section merely mentioned that such patents might be used as evidence in contested cases before the Commissioner of Patents, or the Judge on an appeal, then we could find no fault. We could give many good reasons why this provision should not be included in this Bill, but to us, it appears that just calling the attention of the Senate to the subject, will lead to a more full consideration and subsequent expungement of it.

**The Great Propeller Case in England.**

Our readers will remember the account we presented, on page 165, of the great patent trial in England, whereby injunctions were granted to restrain a Dutch Company from running their screw steamships in British waters, because they infringed the patent of a Mr. Lowe, which was dated 1838. We stated, in the article referred to, how injurious such a decision would be to the interests of commerce, if adopted as a rule in patent policy—a rule which we are afraid our Senators are about to make a law by section 8 of the new Patent Bill. In the said article we stated that, as Lowe's patent was about to expire, application had been made to the Privy Council for its extension, and that a hearing of the case would soon be had. It has been acted on; the case occupied five days in hearing before Lord Craworth, Sir Knight Bruce, and Sir Edward Ryan. The most eminent counsel were employed on the part of Mr. Lowe, and the different Screw Boat Companies opposed it by eminent counsel also. It appeared from evidence, that the practical value of the use of the screw, as a propeller, was demonstrated and rendered a public benefit independent of and without a knowledge of Lowe's patent, after the patent was granted. It was held that the patent never had conferred any benefit upon the public, which is the object of the patent law. The testimony of Thomas Lloyd, Superintendent of the Machinery Department of the Navy, given in the case, is the most elaborate and instructive ever presented on the subject of propellers. He stated that a sixth part of an entire turn of a screw was that which was used in the navy, and this was adopted after many expensive experiments to find out the best form and best relation of parts. A screw divided into two halves was first tried on the "Rattler," a vessel built and fitted for this very purpose of testing the screw, by making experiments. This was in 1843, and from a screw of two blades—two halves of a turn, they commenced to reduce it so as to find out the smallest section sufficient for the purpose. It was found that two blades of 1-6 area—1-3 total—were more efficient than others. Blades above and under 1-6 did not give such good results. No less than thirty screws were tried.

The decision in this case will remove the fears of some of our screw steamship companies. At the same time another decision was given against the extension of Taylor's patent for the flat bladed propeller. There is still one screw propeller patent in existence in England, viz., Capt. Carpenter's, which *may* create some trouble, but we scarcely anticipate any, although he sets up the claim for the exact propeller in such general use in England.

**Aerial Navigation.**

On Tuesday evening last week, M. Petin, a French gentleman, whose name has been before the public in France for some time, delivered a lecture in the Broadway Tabernacle, this city, on the subject of Navigating the Air. He was prevented from attempting to carry out his system in France, by that blessed law of the President, which forbids the assembly of large bodies of the people in one place. He has come here expecting to receive the encouragement of the American people in endeavoring to give his system a practical test, which he will soon attempt at Union Course, L. I. He had an interpreter, who translated what he said. Mr. Petin is a man of great seriousness, having implicit confidence in his own system, and he is determined to lose his life or do something great. The audience was not large. In front was a large painting showing his machine. It was composed of a frame like that of a steamboat hanging below three large spherical balloons. A model of it was exhibited; it had two side screw propellers and wings capable of being set at different angles, to direct the machine down or up, like the wings of a butterfly, or hawk. A steam engine is to be employed, and he expects that aerial navigation by his system will yet make all nations a universal republic. He said he had discovered no new law, but had been an attentive observer of nature. The use of the three balloons, (or two will answer), is to provide inverted sustainers of the car, resting on the medium of the atmosphere, the same as a weight attached to something which floats on water, the double balloon made to equipoise the car, like two scales attached to a beam, the one acting as a counterbalance to the other. M. Petin had acquired his knowledge of the principles of aerial navigation, by studying the motions of men, fish, and birds.

All bodies move, because they meet with a certain resistance round themselves, or, in the medium which surrounds them, let that medium be water or air. A body will not move in vacuo, wanting support or counterpoise, it will sink and be depressed. A cannon-ball and a humming bird's feather will drop in vacuo in the same time, which is not the case in the open air.

Every movement is the result of two forces; the influence of gravity, and the resistance of the surrounding medium. The butterfly, says M. Petin, with its four wings stretched out, lies in a horizontal plane.—When it wants to move forward, it partly closes its wings, and disposes them like a wedge or an inverted roof. Its body then is barely supported by the hind upper wings, it glides along the inclined plane. It would fall, like an unskilled swimmer, head foremost, if it should persist in this position, but it expands again its fore-wings, rests them upon the air which uplifts it and moves forward. Again it closes its fore-wings, and glides downward to rise again. The flight of the butterfly is nothing else than a succession of sliding movements up and down inclined planes. To create these inclined planes at pleasure in the air is the basis of this locomotive system, and this he thinks he has succeeded in doing. This much we must say, however, that there should be no comparisons made between water and the air as mediums for locomotion. The nature of the two is altogether different; the one is compressible and is agitated for miles in depth by a storm, the other is not compressible; there are no currents created by winds in the ocean.