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- I. **ENGINEERING AND MECHANICS.**—The Cruising Canoe "Jersey Blue." By W. STEPHENS, Commodore Jersey River Canoe Club. With 9 figures. The sheer half breadth, and body plans to scale showing water lines, construction, and interior fittings, and plans of three useful rigs. Directions for constructing a boat that has seen actual service, and embraces the best points of the Rob Roy and the Nautilus canoes. The setting up of keel, stem, and stern posts, the bending of the ribs, etc. The combining of the stern, the backboard, the paddle, and the mast described. The steering, the rigging, the canvas, the where to stow them, etc.—Walling Rocket Trial.—The Cleveland Viaduct.—The Proposal to Flood Sahara.
- II. **TECHNOLOGY.**—I. C. Eastman, Meat Exporter. By JAMES PARTON. How American meat is exported to England. The refrigerating process on the steamer. Effect of beef export in England. Statistics of the new trade.—Sheep Raising in Montana.—The Grape Crop in Cal.—Oriental Styles as Applied to Fabrics. East Indian and Japanese styles, with 15 figures.—Waterproof Soles.—A New Method of Decorating Porcelain with Gold.—Electro-Brassing and Ironing.—Signs of Social Progress.—American Silk Velvets.—The Wood.—One Hundred Choice Household Receipts. For family bread, Indian bread, sally lunn, muffins, corn muffins, hot rolls, soda waffles, waffles, yeast, potato snow, mock oysters of corn, pea fritters, substitute for cabbage, fried cucumbers, French omelette, real crème, chicken pie, chicken salad, oyster fritters, fried oysters, noodles, apple-custard pie, apple mince pie, golden pie, lemon pie, mock mince pie, baked apple dumplings, apple and tapioca puddings, cake pudding, custard, cottage pudding, with sauce, bird's nest pudding, Indian pudding, lemon rice pudding, plum pudding, with sauce, queen of puddings, rice cream, snow pudding, suet pudding, tapioca pudding, fruit pudding, hard sauce for puddings, almond blanc-mange, almond custard, floating island, Spanish cream, bread cake, coffee cake, chocolate cake, cookies, crullers, delicate cake, dried apple cake, fruit cake, cheap fruit cake, French cake, fig cake, fried cakes, ginger cookies, cold water gingerbread, ginger nuts, jelly cake, lemon cake, Neapolitan cake, pound cake, white sponge cake, sponge cake, soda rusk, silver cake, water pound cake, Washington cake, white cake, icing for cakes, coconut macaroons, chocolate cream-cake, ice cream, fruit ices, cranberry jelly, currant jelly, green grape jelly, quince jelly, gooseberry catsup, tomato catsup, chutney sauce, cucumber sauce, imitation Worcestershire sauce, bigdum, cucumber pickles, pickled plums, pickled peaches, seed cucumber pickles, elderberry wine, grape wine, arrowroot custard, arrowroot jelly, arrowroot blanc-mange, beef tea, Indian meal gruel, eau de Cologne.
- III. **FRENCH INTERNATIONAL EXHIBITION OF 1878.**—Official Trial of Plows. With 20 engravings, illustrating French wooden mould-board plow; French one-wheel plow (Bomplaster's two-wheeled plow; Gale's Michigan plow; Dore's Illinois plow; Durand's Charrue a chain; plow mounted with Bonbille's avant-train; Durand's brabant simple; brabant double plow; B. din's brabant plow; Brunet Freres's Tourne-oreille; Dabrye-Tailleur's charrue a trois socs; French tourne-oreille plow; Dore's Illinois plow; Gaul's pin sulky plow; Melmoron-Dombasle's bisoc; butoir, or Riding plow; Garnier's subsoil plow; trenching plow; Billot's trenching plow; mole plow; Bourdin's subsoil and clearing plow; two forms each of potato diggers and beet root pullers. Explanation of the plows and their uses; their construction, showing every part. Description of trials, etc.
- IV. **ELECTRICITY, LIGHT, HEAT, ETC.**—Poplars as Lightning Conductors.—Herring's Printing Telegraph. 2 figures.—New Use of Electricity.—Effect of the Motion of the Air within an Auditorium upon its Acoustic Qualities. By W. W. JACOUES.—How the Alps were Formed.
- V. **MEDICINE AND HYGIENE.**—Constipation. Its successful cure by Cascara Sagrada. By F. GUNDLACH, M.D.—Cascara Sagrada. By J. H. BUNDY, M.D.—Fluid Extract Cascara Sagrada. By WILSON J. BEAN, M.D.—Cascara Sagrada. By DR. S. W. FOWLER.—Cascara Sagrada. By W. O. BUCKLAND, M.D.—Cascara Sagrada. By DR. C. M. GALLWAY.—Buck's Kidney and Bladder Remedy for Diseases of the Urinary Organs. By A. J. ROE, M.D.—Skin Grafting. By G. W. GARRISON, M.D.—A paper read before the Knox County, Ohio, Medical Society. The Moxus Operandi, and report of two cases.—Pituiti, the Narcotic of the Austrorians.—A Proposed "Index Medicus."—Contra in Aniseeds.

THE NEW PATENT BILL.—SHALL IT PASS THE HOUSE?

In our last issue we recorded the fact of the passage by the Senate of the new patent bill (Senate Bill 300), which is now before the House of Representatives.

This bill, as we have on several occasions tried to show, is likely, if it becomes a law, to impair the future value of property in patents; and therefore it behooves all who wish to preserve the existing privileges of inventors to use their best influence with their Congressional representatives to defeat or set aside the measure. Whatever is done in this direction must be done quickly. Congress is to adjourn finally on the 4th of March, and the bill must either pass or suffer defeat by or before that day.

An esteemed correspondent writes us that he thinks it would not be difficult to defeat the bill if we would formulate specific instructions addressed to inventors and patentees, telling them how to band together to oppose the passage of the bill, specifying exactly what they ought to say to their representatives in Congress in order to induce them to give it their adverse votes.

Inventors, says our correspondent, are generally unlettered men, and although they feel strongly opposed to this attack on their interests, many of them do not know how to give proper expression to their views.

We suppose that what our correspondent desires is that now, in this closing hour of the contest, we shall briefly recapitulate the status of the present law and point out the scope of the intended substitute.

The present law, substantially, has been in operation for some forty years. It secures to the inventor an exclusive property in his own invention for the small period of seventeen years, at an official cost of thirty-five dollars. During this term no person may interfere with the patent without liability for infringement.

The existing practice of the United States Courts is to construe the present patent laws liberally in favor of the inventor and against the infringer. But on the other hand, the courts are careful to guard the interests of the public against the claims of unauthorized or pretended patentees; and the more widely a new device is wanted for public use, the more particular are the judges to require the clearest evidence on the part of the patentee in support of the patent.

The law, as it stands, as shown by the practice of the courts, provides ample safeguards for the public interests, as against untenable or wrongfully granted patents. The courts also regulate the measure of damages, so that even infringers are never overmuch punished.

At the same time it must be confessed that a patent as now granted means something. It means that a man shall actually own and control his patent, in his own way, like any other property, for the period of seventeen years. It means that his patent shall not be taxed out of existence after it is once granted. It means that a poor man who owns a patent shall enjoy the protection of the courts, and that rich and grasping corporations or combinations of interests shall not have power to harass, annoy, and altogether rob him of the fruits of his toil and ingenuity.

The amazing progress of the country during the past forty years is undeniably due to the fostering influence of the present patent laws. They have given impetus to manufactures, supplied thousands of new industries, and rendered the American name famous for industry and progress.

The present laws and practices of the courts have worked and are still working so well that it seems a great pity to change them, except as to such minor particulars where obvious corrections may require.

To boldly overthrow them and reverse, by legislation, the accustomed practice of the courts, seems to be suicidal. But this is what Senate Bill 300 seems designed to accomplish. It is the offspring of the combined efforts of the wealthy railway companies and other interests, who have become impatient to seize and appropriate to their own use every really valuable and important invention, without the customary formalities of payment or the owner's consent, as now by the law and the courts required.

Senate Bill 300 provides substantially, by section 2, that the patentee shall not for the future enjoy the full and exclusive right to control his patent; but anybody who desires may, by legal proceedings, which the inventor must defend, take the right from him.

It provides, by sections 3, 4, 5, 10, 11, that infringers may call the patentee into court and subject him to heavy costs and vexatious legal proceedings, so as practically to compel the inventor to deliver over his invention for the use of the infringers, thus reversing the present practice.

In short, the new law aims to punish the inventor and protect the infringer; whereas the present law aims to protect the inventor and punish the infringer.

Section 12 of the new law aims to tax the majority of patents out of existence after they have been issued, by requiring the inventor to pay a tax of \$50 at the end of four years and \$100 more in nine years, or in all \$185 for the patent, instead of \$35, as at present.

In our last number we gave a brief summary of the designs of all the sections of the bill, of which there are twenty-five; to which, and also to the several interesting discussions given by us week by week for a long time past, our readers are respectfully referred. We hope that every inventor and patentee who wishes to defeat this bill will make energetic use of the short time now remaining to assist members of the House in reaching the truth on the subject, and thus enable them to cast their votes intelligently.

CREOSOTED WOOD AS A PROTECTION AGAINST TEREDOES.

A series of experiments of great interest was some time ago undertaken by the Royal Academy of Sciences, of Amsterdam, to determine the best means of preserving wood from destruction by the teredo (*Teredo navalis*). The examination made by Mr. Harting (one of the commission of investigation), embodied in a recently issued report, is very instructive. It is ascertained that the mechanism of the mollusk is of a twofold nature. Those animals which are found in calcareous rocks make their excavations chemically through the agency of a dissolving acid secretion; but the teredo that perforates wood employs mechanical means only. The teredo appears to have existed at a geological period earlier than our own; this view being confirmed by the discovery of fossil wood perforated by a species of this mollusk in the Eocene formations. It has been discovered also that certain circumstances favor the increase and ravages of the animal; these being a moderate rainfall, an increase of the saltiness of the water, and an increase of temperature. The experiments of the commission included processes that had been recommended to the government to protect marine works; and the pieces of wood experimented upon were allowed to be prepared by the inventors themselves. The ports of Flessingue, Harlingen, Stavoren, and Nieuwendam were selected first for the trials, the woods used being oak, red fir, common fir, and pine, in pieces about 3 feet long by about 12 inches square. By the side of these blocks other blocks of the same kind of wood were placed without any preparation, as counterproofs. The trials consisted (1) of coatings applied to the surface; (2) impregnation with different substances which modify the interior and exterior of the wood; (3) use of exotic woods.

All exterior applications—such as coal tar, paraffine varnish and Claassen's mixture of coal tar, resin, sulphur, and powdered glass—absolutely failed. A coat of mail consisting of nails is costly, and an examination of some piles proved that the coating of iron and rust was not proof against the ravages of the teredo in the interior. Sheets of iron, copper, or zinc are found effectual only as the surfaces remain intact and undamaged. Nature itself often affords a better protection than this in covering marine timber with barnacles or other shell fish. As to the second remedy—impregnation—the following substances all proved inefficacious and worthless: Sulphate of copper, copperas, acetate of lead, and mercurial and arsenical salts. The soluble glass and chloride of calcium process also proved powerless. Oil of paraffine injected into the blocks proved of no avail, as in about two years fully developed teredoes were found in all the pieces. Of the oil of creosote process, however, more favorable results are recorded—all of the woods prepared with this substance having been found intact.

The conclusions drawn by the commission are that the only effectual preservative is creosote, though in using it care should be taken that the oil is of good quality, the impregnation thorough, and that woods be used that will absorb the oil readily, as fir and other resinous woods. These conclusions are confirmed by the experiments of Mr. E. R. Andrews, of this country, who also has made interesting experiments with creosoted wood. A pine slab was taken, half of it was thoroughly impregnated with the oil, the other half being left untreated. It was then exposed during the season of 1877 in the waters of the Gulf of Mexico. When it was removed it was found that the creosoted portion was clearly and sharply defined by its darker color, and that it was perfectly sound, while the untreated half was riddled by teredoes, which had perforated it quite close to the edge of the creosote.

SKATING ON ARTIFICIAL ICE.

A skating rink, offering 16,000 square feet of artificial ice in one sheet, is in successful operation in this city. The projector, Mr. Rankin, is widely known in connection with the ice trade, particularly in the West and South, where his machines for producing ice are largely used. His present enterprise is notable chiefly for its magnitude, the area of ice produced being very many times larger than anything of the sort previously attempted. Something like nine miles of gas piping are required for the circulation of the refrigerating liquid, which is pumped through the pipes after having had its temperature sufficiently reduced in a freezing chamber some two hundred and fifty feet long, in which ice is liquefied by means of salt and other solids. The principle involved is simply that of the ice cream freezer. A tight floor was laid over a surface 200 feet by 80 feet; on this floor a network of pipes was laid, and the whole flooded by two or three inches of water. On pumping the refrigerating fluid through the pipes, the water is frozen and kept so cold that the surface of the ice remains dry, though the atmosphere of the rink is warmed by half a dozen large furnaces. The project might have been carried out equally well and much more profitably at midsummer, when a skating rink would have been more of a novelty. Mr. Rankin informs us that the temperature of the refrigerating liquid is raised but ten degrees while on its nine mile journey.

A new composition of iron and steel is described. A cast iron mould is divided into two sections by means of a transverse plate of thin sheet iron. The two metals are then poured into the respective compartments. The sheet iron partition prevents the mixture of the metals and facilitates the welding by itself being brought into a state of fusion. It is said that the product is well adapted for safes, and that it resists drills.