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American Inventive Genius and Patent Laws

Up to the present week, no less than about twenty-three thousand American patents have been issued, averaging three hundred and sixty-two annually since the first general patent law was enacted in February, 1793. It has proved a blessing to our country, that soon after the Federal Government was formed, the great and wise men then at its head—Washington, Jefferson, Hamilton, and others—adopted measures to give an impetus to the inventive genius of our people by the passage of a patent law. Jefferson, who had a great taste for mechanical inventions, was then at the head of the Patent Board, and was very liberal in encouraging inventors. His far-reaching sagacity saw, in the future, his native country—then weak in power, and far behind in the arts—rising gradually into inventive grandeur and greatness, unsurpassed, if not unequalled, by any empire or kingdom. And were he now to awake from the tomb, he would perhaps exult more at the great improvements invented by his countrymen, and which have been fostered by the Institution which he founded, than any other of the acts of his life. Since then, the fame of American inventive genius has passed into a general proverb; while, before that period, our manufactures were rude, and our inventions, could almost be written with a cypher. Then our agricultural implements were either imported or copied from foreign models, now they lead the world. Our reaping machines and thrashers, are the admiration of Europe, and they reap the fields and tribulate the grain of Gaul and Albion.

The invention of the cotton gin has made an American product the clothing king of mankind. The steamboat has proved a civilizer of nations; and the American telegraph is fast banding all men in a community of interests. We might go on and specify invention after invention of our people, until we filled several columns, but *our* readers do not require us to be thus particular.

Our mind was directed to this subject by seeing "No. 15,000,"—(the number granted since the re-organization of the Patent Office, in 1836,) on a patent issued this week, and we have but thus briefly glanced at the subject, to put us all in remembrance of what our Patent Laws have done for our country. Most of those American inventions which now cause the hearts of our citizens to exult with honest national pride, never would have come to light but for the encouragement given to inventors by our patent laws. And since the present patent code—which is but the old one amended—came into existence in 1836, affording greater security in obtaining patents, improvements have increased in a greater ratio than before. The laws which fostered so many good and useful inventions, and warmed them into existence, form a noble national fabric. We do not say it is perfect, but it would be a sad thing for our country if it were uprooted and subverted by such a substitute as the new Patent Bill lately introduced into the Senate. Our people will never permit such a national calamity to occur.

American Life Boats and Military Wagons in Europe.

Major Vincent Eyre, of the Bengal Artillery, recently delivered a lecture in the United Service Institution. London, on Francis' Metallic Boats and Military Wagons, in which he passed a very high eulogium on their qualities and utility. Capt. Bevis, R. N., had experimented with one of the boats, and pitched it from a considerable hight upon a stone pavement, in Liverpool, where it was rolled by several men, and then battered with hammers, to damage it, but all in vain. It was afterwards set afloat, and with four men pulling, run against a stone pier several times, but suffered no further injury than a few dents and bruises. Capt. Bevis then made a most favorable report on it to the Admiralty Board.

One of Francis' Military Wagons was also brought before the British Ordinance Department by Col. Tulloch, R. A., and experimented with at Woolwich. It was first placed in the water with the whole of its running gear attached, weighing 700 cwt., and sixteen men got into it, weighing 2500 cwt., which brought it within one foot of the top. They tried to upset it, but could not. Many other experiments were tried, and all with astonishing success. These wagons were also favorably reported on to the British Government chief officials, but so stupid were they, that no notice was taken of them. This was not the case, Major Eyre said, with the French Emperor. He had heard of the favorable reports on their qualities made to the British Government, sent for Mr. Francis, examined his models, had experiments made in his presence, and at once ordered the establishment of a factory to build both the Life Boats and Military Wagons to supply the army and navy of France; and the British Government will soon, from necessity, be compelled to adopt them also.

We are now supplying the Army of England with American rifles, and we will, no doubt, soon be supplying it with American Military Wagons, and her Navy with American Life Boats.

As many of our readers may not be acquainted with the construction of these famous Life Boats, a description of them will be both instructive and interesting.

A thin sheet of galvanized iron, or copper, of the full half size of a boat, from stem to stern, is placed between two great dies of the proper form, and subjected to an enormous pressure by a hydraulic press. The sheet of metal is thus pressed into the shape of half a boat, and is corrugated fore and aft. The two opposite halves of the boat are thus first made, then rivetted together, and the boat is complete. It is to the corrugations of the metal that these boats owe their great strength, for they have no framework—no ribs, no timbers. The body of the Military Wagon is constructed on the same principle, and is water-tight, enabling it to float over rivers, transport guns, and form pontoon bridges. A factory for building such boats of all sizes has been in successful operation for some years, in the vicinity of New York, and from it has gone forth those boats and wagons which have astonished the best military and naval men of France and England, and opened their eyes to the inventive genius and "go-a-head" spirit of Brother Jonathan.

Patents.

The official report of claims of patents granted last week embraces a large number of inventions. Nineteen patents, or more than one-third of the whole number, were obtained through the Scientific American Patent Agency.

We propose to publish, from time to time, reports of the *sales of patents*, and we should be glad to have our readers lend us their aid. Whenever they hear of the sale of a patent right or portions thereof on terms of any importance, we should be glad to have them report the fact to us for publication, that is, if private interests are not likely to suffer thereby.

We believe that the publication of such reports has a tendency to increase the public confidence in good inventions, and also to lessen the difficulties of inventors in engaging the assistance of capitalists.

Accidents from Lightning, and Volatile Fluid Explosions.

Mr. E. Merriam, of Brooklyn, is a valuable man to the community. He is a great observer of natural phenomena, and a recorder of useful statistics. He has kept a record of deaths and accidents from the use of camphene and kindred articles for the purpose of illumination, since 1850, inclusive. From that time to the present 169 persons have been killed, and 279 wounded. He has also kept a record of those killed by lightning for the past 14 years. During that period this record gives an aggregate of 750 deaths by lightning on land, only one person being killed in a building furnished with lightning conductors.

Early Wheat.

New wheat of excellent quality has been brought into the market at Augusta, Ga.

Notes on Patented Inventions.—No. 10.

India Rubber Manufactures.—Caoutchouc, also called gum elastic and india rubber, is produced from the syringe tree of South America. The substance was first brought to Europe in 1735 by some French astronomers, who were sent to Brazil to make astronomical observations. It is found abundantly in Para, Brazil, and Quito, and has recently been found in Asia. Considerable quantities of it are now obtained in Java, Penang, Singapore, and Assam. In some places hundreds of miles are covered with the trees. The caoutchouc oozes out of them in the form of a milky juice. The sap of the tree is laid on a mold in successive layers, which are allowed to dry, and are formed into bottles and cakes, in which form it is exported. The natives of South America make boots, syringes, and tubes of it. The tubes are used as torches; they burn with a good light, and emit but little odor.—According to Faraday, its composition is, Carbon, 87·2, hydrogen, 12·8—a hydro carbon. It melts when exposed to a heat of 248°, is resolved into vapor at 600°, and may be condensed into the liquid *caoutchousine*.

On page 118, this volume, SCIENTIFIC AMERICAN, there is an article on this subject by Chevalier Claussen, in which he describes the india rubber tree as belonging to the same species as that which produces gutta percha, and that compounds of the same nature may be made by mixing starch and gluten with tannin and some resinous substance.—Caoutchouc is dissolved in ether, in sulphuret of carbon, in warm naphtha, turpentine, and rectified empyreumatic oils. It is also soluble in many of the fixed oils. Alcohol will precipitate the caoutchouc in a pure milky form from an ether solution.

In 1770, a cubic inch of india rubber was sold in London for 75 cents, to rub out pencil marks. It was not used to make water-proof fabrics until about the year 1800. These were first invented by Charles Mackintosh, of Glasgow, who applied a naphtha solution of it to the surfaces of two pieces of cloth, then laid them together, passed them between rollers, and thus cemented them together. A "Macintosh" was the name applied for many years to a water-proof coat. Dr. Ure, although well aware of Mr. Macintosh's invention, coldly passes it over in his Dictionary. It is supposed that personal feeling was the cause of this, as Dr. Thomson and Ure were once rival chemists in Glasgow, and Macintosh was the friend and pupil of the former. The fabrics of Macintosh had a most disagreeable smell, still he was the first person who established india rubber manufactures in Britain, and perhaps the world. He afterwards removed his factory to Manchester, England. Various kinds of goods made of india rubber soon afterwards began to be manufactured in England, but they were all decidedly objectionable to use, until the grand discovery of sulphurization was made; for this, the world is indebted to an American inventor.

This substance, or rather, compounds of it, is now manufactured into so many articles of beauty and usefulness, that it forms an object of no small wonder to witness the rapidity with which such manufactures have sprung into existence.

The first American patent for india rubber manufactures only dates back to 1831. It was granted to George H. Richards, of Washington, D. C. He claimed obtaining the india rubber in its native fluid state (the juice from the tree) and applying it to articles to render them water-proof. In 1834, Patrick Mackie, of New York, secured a patent for covering ropes for railroad inclined planes with india rubber. Such ropes had been in use in England before that date. He also obtained a patent in March, 1836, for dissolving india rubber in naphtha and sulphate of zinc. This appears to be the first patent taken out for mixing a sulphate with india rubber.

In January, 1835, George D. Cooper, of New York, obtained a patent for covering ships, and houses (under the shingles) with sheets of india rubber, to prevent leakage. This invention has been proposed a thousand times since.

In October, 1835, Wm. Atkinson, of New York, was granted a patent for cutting india rubber in a paper cutting machine preparatory to dissolving it.

In August, 1836, E. M. Chaffee, of Roxbury, Mass., obtained his important patent for softening india rubber, and applying it to cloths without dissolving it, by pressing it between heated rollers. This was a great improvement for cheapening the manufacture.

In June, the succeeding year, 1837, Charles Goodyear, of New York, received the first patent for depriving such goods of their stickiness, by washing their surfaces with an acid metal solution, such as copper dissolved in strong nitric acid. This was applied to the surfaces of the fabrics, and after it had acted on them for a certain period it was washed out The specification states that this rendered india rubber fabrics capable of resisting solar and artificial heat at the ordinary atmospheric temperature, and that they might be washed afterwards in turpentine, and not rendered *tackey*. In the same patent the use of lime combined with india rubber was also claimed for bleaching the material and rendering it white.

In December, 1837, Stephen C. Smith, of New York, obtained the first American patent for the manufacture of india rubber boots, shoes, and overshoes. It simply embraced covering leather boots and shoes with a thin sheet of india rubber cemented with a solution of the same substance; they were not vulcanized.

In July the succeeding year, 1838, Charles Goodyear was granted a patent for the same kind of manufactures—boots, shoes, &c. They differed from Smith's boots and shoes in being wholly made of gum elastic and fibrous material, and were tanned or cured by the metallic nitric acid solution, according to his patent of June, 1837. These shoes were, no doubt, a very great improvement upon those made under Mr. Smith's patent.

In February, 1839, a patent was granted to Charles Goodyear, as the assignee of of Nathaniel Hayward, of Woburn, Mass., for combining india rubber with sulphur. The sulphur is described in the specification as being mixed with the oil of turpentine, in which the india rubber was dissolved, (about a tea spoonful of the flour of sulphur to the pound of india rubber,) or it might be mixed with the pulpy mass when rendered plastic by heated rollers, or by pressing it into sheets of rubber when soft. The fabrics thus made were afterwards to be submitted to the process of Mr. Goodyear, namely, the action of a metalized acid, as already described, for removing the odor of the sulphur. None of these processes of curing or tanning india rubber embraces what is now understood by the term vulcanizing, which consists in submitting a compound of sulphur and india rubber to a high degree of steam heat. In 1839, neither Goodyear nor Hayward had discovered this. The application of the steam heat to sulphur rubber compounds is claimed as an English discovery. We do not know whether a compound of the *sulphate of zinc* and india rubber has ever been submitted to the vulcanizing process of steam heat, but we think such a compound so treated, would produce vulcanized india rubber. If so, then Patrick Mackie has not received sufficient credit for his invention, as he obtained the first American patent for use of a sulphate mixed with india rubber. Hayward, who made the valuable discovery of india rubber sulphurization does not receive credit for it, but C. Goodyear, the assignee. Dr. Ure, in his Dictionary, ascribes it to him and so does the public. The patent has expired; an extension was refused while Mr. Hodges was Commissioner of Patents.

In 1841, C. B. Rogers and E Arnold, assignees of N. Chaffee, secured a patent for manufacturing india rubber balls. The claim embraces the peculiar method of making such balls hollow.

The same subject to be continued next week.

Recent American Patents.

Improvement in Saw Mills.—By John M. Carlisle, Williamston Springs, S. C.—This is an improvement for moving the carriage, or feeding the log up to the saw; also for setting the log. The mechanism which effects these changes is self-operating, and thus much of the labor of attendants is saved.

Machine for Slotting Reed Boards of Melodeons.—By Jeremiah Carhart, of New York.—The