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EXTENSION OF PATENTS---FOR WHOSE BENEFIT THEY ARE GRANTED.

There seems to be an impression among inventors that, since the law of March 4, 1861, went into force the previous law in respect to extending patents for seven years was abrogated. This is not so in regard to cases which were patented under the old law. Any patent which was granted prior to March 4, 1861, may be extended for seven years on proper application to the Patent Office, provided the patentee has not already been amply remunerated for his invention and proves to the satisfaction of the Commissioner that he has used proper diligence in attempting to realize gains from his patent. The patentees of 1848 and 1849 should lose no time in making out a statement of their profits and losses in consequence of their patents, and in seeing counsel in regard to an extension, if they wish the term of these expiring patents continued for another seven years.

It is often the case that the extended term of a patent produces to the patentee a ten-fold profit over the amount realized during the first fourteen years of its existence. The assignees of a patent cannot obtain this extension; it must be done at the instance of the inventor, for whose sole benefit it is granted.

For full particulars concerning extension, address

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ARE IRON-PLATED SHIPS INVULNERABLE?

The London *Times* has made the remark repeatedly that a struggle was going on in England between the Navy and War Departments; the Admiralty endeavoring to construct vessels which no shot could penetrate, and the ordnance officers of the War Department striving to make guns that would pierce the sides of any ship.

This contest is a sample and a portion of the struggle that is going on in all countries and at all times. In the perpetual efforts which men are making to obtain power over their fellow men ingenuity is constantly exercised to devise means for injuring others and for protecting ourselves. All the complicated engines of war are but equivalents for the shield and spear.

From the beginning of war—since Cain killed his brother—the power of destruction has always had the supremacy over that of defense. It is easy to destroy. Months of labor are required by scores of laborers to erect a building which a child, by dropping a lighted match into a heap of shavings, may sweep away in an hour. Very few are the impregnable fortifications on our globe, and those are inaccessible. As a general rule, however carefully or laboriously a fort may be constructed, its capture, by a competent force, requires but a limited number of days.

This law applies with peculiar force to structures floating upon the water. Here new means of destruction are brought into action, and the difficulty of preservation is greatly augmented. A hole of moderate size made in the bottom of the structure causes it to sink down in the fluid, and the blowing of the wind very frequently so disturbs the water as to shake the fabric to pieces.

We have recently called attention to the fact that the most powerful artillery in use has never been tried upon iron plates; but if naval constructors should succeed in building ships that would resist the heaviest cannon that can be made they would have triumphed over only one kind of destructive enginery. Their ships would be exposed to the attack of large vessels smashing against them as rams, or they might be pierced by protruding prows; or, more formidable still, they might be blown up by mines of powder under their keels. We know that "torpedos" have never operated very successfully, but this has always been owing to imperfection in the arrangements. It is only necessary to place a hogshead of fulminating mercury and gunpowder against a vessel's bottom, and to explode it there, in order to destroy any structure which man can make to float upon the water.

We have already shown that the fight between the *Merrimac* and *Monitor* did not teach the lesson which has been drawn from it in regard to the impregnability of iron-plated ships; it is also true that the conquests over our sea-coast forts by our wooden ships do not show any superiority of naval over land artillery. Those forts were armed merely with small guns. Had their armaments consisted of even 11-inch columbiads, with supplies of suitable ammunition, there can be no reasonable doubt that every wooden ship which came within fair range of them would have been blown to pieces.

It is a curious fact that we are fighting this great war to a large extent with arms that have become obsolete, and the results of its battles consequently throw no light upon the present relations of the powers of attack and resistance. And even if these relations could be shown with perfect precision at the present time, the knowledge would afford a very poor criterion to judge of them at any future time, however near. In the intense activity which now prevails in the invention of the enginery of war, the conditions are shifting almost daily, and no human foresight can reasonably predict what they will be a month hence.

Judging, however, from the difficulty of constructing and preserving, and the ease of destroying, especially with the forces which modern chemistry has placed in our hands, it is not probable that human skill will ever produce a vessel which will prove invulnerable.

CONVENTION OF SORGHUM SUGAR MANUFACTURERS.

We have received a report of a very large and interesting convention of sugar cane growers and manufacturers, held at Adrian, Michigan, on the 16th and 17th ult. Representatives from Ohio, Michigan, Indiana, Illinois, Missouri and Iowa were present, and many interesting facts were related in connection with the culture of the cane, and the treatment of its juice to obtain sirup and sugar. Many specimens of sirup and samples of sugar were exhibited. There was also an exhibition of seven evaporators, namely, that of H. G. Bulkley, Kalamazoo, Michigan; C. Cory, Lima, Indiana; Eagle Works Manufacturing Company, Chicago, Illinois; O. N. Brainard, Marion County, Iowa; D. D. Tooker, Napoleon, Michigan; John Miller, Rolling Prairie, Indiana; Cook's portable, by J. Richards, Raisen, Michigan. A committee of the convention was appointed to examine these evaporators and decide upon their merits; C. Cory's apparatus, called "Cook's Evaporator with Cory's Improvement," received the preference of the judges. The nature of this invention, as described in a previous volume of the SCIENTIFIC AMERICAN, consists in the arrangements of an elevated partition extended from one side of the pan to the other, in combination with a gate, in such a manner that the circulation of the evaporating fluid can be detained or regulated at pleasure, and that the sirup in its clarified state, and while separated from its scum by continuous active ebullition, can be passed into the finishing part of the pan. We have received two samples of beautiful pale yellow sugar made in this evaporator; they formed parts of parcels for which prizes were awarded.

Mr. Cory, in a communication to the convention, gave some useful information respecting the culture of the sorghum and the treatment of its juice. He stated that light sandy soils produce lighter-colored and better-flavored sweets, but for the sake of larger gains his preference is for richer soils, abounding in good corn-growing qualities. The opinion often published, that Chinese cane is best for sirup and imphee for sugar, is probably correct. Early planting is desirable; the seeds should be first moistened and nearly sprouted; they should be thinly covered, and lightly pressed down, as planted; the ground, if inclined to be wet, should be ridged; the crop is most easily tended when in rows, nearly four feet apart each way; early and frequent cultivation is desirable; a mixture of ashes, lime and gypsum applied to the hills in suitable quantities during the early stages of its growth, is beneficial in many respects, stimulating its growth, and destroying and preventing the existence of multitudes of parasites. When the crop is gathered before proper maturity it should remain a few days, protected from heat and cold, to ripen, before the cane is crushed.

The juice of the samples of sugar exhibited was pressed from the cane by rollers in the ordinary manner. It was then passed to the receiving tub at the head of the evaporating pan, and a small amount of freshly-slacked lime added in a diluted state, to neutralize, in part, the acidity of the juice, and to aid in its defecation. The pan used is of copper, three feet eight inches wide and ten feet long. This is placed on a stationary brick arch, and is divided into apartments. In the first division a most perfect defecation is secured, after which, in a clarified state, and entirely freed from scum, the sirup is passed into the finishing portion of the pan, and subjected to a continued intense heat, till sufficiently cooked at the further end of the pan, at which point it is passed off at the speed of from eight to twelve gallons per hour through the day. Nothing but the small quantity of lime added to the juice was employed in treating the sugar that we have examined.

Samples of sorghum sirup, analyzed at Belcher's refinery in Chicago, presented the following results:—

Cane sugar	45·00
Liquid sugar	28·00
Gluten	3·50
Water	22·00
Other substances	1·50
	100·00

Judging from the interest now taken in the cultivation of sorghum, imphee and beet root by our Western agriculturists, and from the energy and ingenuity displayed to invent improved apparatus for manufacturing sirup and sugar, we conclude that a new and profitable branch of industry is about to be established in our country.

REPORTS OF OUR MILITARY COMMISSION TO EUROPE.

On the 2d day of April, 1855, Jefferson Davis, then Secretary of War of the United States, signed a commission appointing Major R. Delafield, of the Corps of Engineers, Major A. Mordecai, of the Ordnance Department, and Capt. G. B. McClellan, of the Cavalry, of the United States Army, commissioners to visit the theater of the war which was then in progress between England, France, Turkey and Sardinia on the one side, and Russia on the other.

The object of the visit was to "obtain information with regard to the military service in general, and especially the practical working of the changes that have been introduced of late years into the military systems of the principal nations of Europe."

Each of the three members of the commission made an elaborate report of his observations, and a few copies of the reports were printed at the time. Since the breaking out of the war in our country a large demand has arisen for these reports, and when General McClellan was appointed to the chief command of the army, a Philadelphia publisher issued an edition of his report in convenient form for circulation. An extended notice of this book, with illustrated extracts, has appeared in our columns.

On the 2d day of March, 1861, the House of Representatives ordered the printing of 20,000 copies of the reports of Majors Mordecai and Delafield, and to the politeness of the Hon. William Kellogg we are indebted for a copy of each.

These books are far superior in paper and printing to most of the work executed by order of Congress, and the superiority of the illustrations is still more marked. They are principally lithographs by E. R. Jewett & Co., of Buffalo, N. Y., the same parties who have for a few years executed the engravings for the

Patent Office reports, which we have so much admired. We are glad to see this improvement in government printing and engraving, and we hope that it will be carried forward until this class of work is done as well for the nation as it is for private individuals.

THE COLORS FROM COAL TAR.

Number VII.

Blue Colors.—We have already described the purple, red and crimson color derived from aniline. On the 30th of July, 1861, G. E. C. Delaire, of Paris, France, obtained an American patent for an aniline blue and violet. The following is an extract from the patent :—

Take ordinary aniline—red—purify and mix it with an equal quantity of pure aniline. This mixture is maintained during several hours at a temperature of 165° Centigrade. It then becomes a violet color, is mixed with water and hydrochloric acid, and is brought to the boiling point. The excess of the red aniline mixture that does not become a violet color is thereby dissolved; the residue that remains is the violet color sought. If this violet residue be boiled successively with hydrochloric acid diluted with a small quantity of water, and then washed in boiling water, a precipitate will be produced of a blue color with a copper tinge on its surface.

The claim is for the method described of converting the red of aniline into the blue and violet of aniline, by treating the former with pure aniline, in the manner substantially as set forth.

Blue de Paris is produced by heating, for thirty hours, in a sealed tube, at a temperature of 365°, one part of anhydrous bichloride of mercury with two parts of aniline. This color resists the action of weak acids and alkalies, but it assumes a red hue when acted upon by these agents in a concentrated state. It dyes animal fibers with facility. This blue was discovered by M. M. Persoz, De Luynes and Salvetat, of Paris.

White gum lac in powder, boiled with carbonate of soda and an alcoholic solution of red aniline, forms a blue for printing on calicoes.

Green Colors.—Messrs. S. Cliff, C. Lowe and Dr. Calvert, of Manchester, England, obtained a patent June 11, 1860, for producing a green aniline color called emeraldine, on cotton fabrics. The process consists in printing an acid chloride of aniline on cotton cloth which has been prepared with a mordant of chlorate of potash. In a few hours after the aniline is printed on the cloth a beautiful bright green color gradually appears. If this green-colored fabric is then passed through a solution of the bichromate of potash, the color becomes a dark blue, called azurine.

Naphthaline Colors.—That beautiful, colorless solid hydrocarbon naphthaline, has lately been subjected to many experiments, for the purpose of obtaining colors from it, and considerable success has attended these efforts. It unites with nitric acid, forming binitronaphthaline. This is boiled with sulphuric acid, and granulated zinc is added in small portions. The temperature is gradually raised to 392°, and the liquid becomes a deep red color. About eight volumes of water are now added, and the whole allowed to boil for a few moments, then permitted to cool down, when it deposits beautiful red and orange colored crystals. According to Z. Roussin, a French chemist, it is of nearly of the same nature as alizarine obtained from madder. It colors a red on cotton by using a mordant of alum in preparing the fabric. Purple color can also be obtained from naphthaline by employing oxide of iron for a mordant. Naphthaline colors are but in their infancy, and not yet commercial products, but they may ultimately supersede many other colors.

Leucaniline.—This is a new and perfectly white base, obtained from pure rosaniline, by Dr. Hoffman, of London. Rosaniline is rapidly attacked by hydrogen in a nascent state, or by sulphureted hydrogen, and two equivalents of hydrogen are supplied to it, forming leucaniline. Its composition is C_{40} H_{21} N_3; pure rosaniline, C_{20} H_{19} N_3. Thus, by supplying but two equivalents of hydrogen to the rose-colored substance derived from aniline, a white product is obtained, which is anhydrous, but soluble in alcohol. It is converted into a chloride when boiled with hydrochloric acid. This salt is of dazzling whiteness. It unites in solution with the bichloride of platinum and forms a salt, the crystals of which are of a brilliant orange color. Leucaniline unites with nitric acid, forming the nitrate of leucaniline, which is a white salt, soluble in water. It unites with a large number of agents, such as bisulphate of carbon, chloride of benzole, &c., forming new compounds. There seems to be a chemical relationship between indigo and these aniline colors. There is, for example, white indigo, the composition of which is C_{16} H_{12} N_2 O_2, and blue indigo C_{16} H_{10} N_2 O_2. These two equivalents of hydrogen make the whole difference between white and blue indigo, and two equivalents of hydrogen make the difference between rosaniline and white aniline (leucaniline). By supplying an oxidizing agent to leucaniline it becomes a deep red again. The peroxide of barium, perchloride of iron, and especially the chromate of potash, produce this change. When rosaniline is boiled for a long period with compounds rich in oxigen, it changes into an amorphous powder of a dark brown color. A fulminating compound is produced with the nitrate of leucaniline and the bichloride of platinum.

The Pleasures of Business.

Such complimentary letters as we receive from those for whom we act as attorneys fully compensate us for all the troubles and vexations attendant upon the management of a large business. The following favors of this kind were received by a single mail last week. Read them.—Eds.]

MESSRS. MUNN & Co. :—Permit me to express my sincere thanks for the very able manner in which you have managed my claims for improvements in Rotary Pumps, bringing them to a successful issue. Very probably I should never have brought my invention before the public had it not been for the advice and encouragement received from you. It is an old adage that "necessity is the mother of invention," and I think there is much truth in the saying. Our national troubles the past year have deprived many mechanics of the greater part of their employment; necessity compels them to seek other channels for support. The inventive mind strives to bring to light something new that will enable him to establish a business for himself that his future welfare may not be so entirely dependant upon the caprice of others. And if there is one thing to encourage him more than another, it is to know that he can obtain such valuable information and advice as your long experience affords. Your institution is to the inventor what the beacon light is to the mariner—a sure guide to a safe haven. One of the many advantages to be derived from the employment of your Agency is, that it requires no personal attention after the matter is placed in your hands. I am satisfied that you make the interest of the inventor your own. My experience in the rotary pump business for the past ten years convinces me that the one on which, as you inform me, a patent is ordered to issue, will make the best practical working machine in the world and the easiest regulated and kept in order. I shall, at an early day, employ you to obtain a patent for the other devices of mine now in your possession. Before closing this long letter, permit me again to thank you for discharging my business with so much fidelity. With my best wishes for your success, I remain yours, truly, F. B. PIERCE.

Brockport, Ill., May 6, 1862.

MESSRS. MUNN & Co. :—*Sirs*—I suppose you would like to hear how one of your old customers is getting along with an instrument he had patented for cutting the noses of swine to prevent them rooting. To this I can say, first rate. I have sold over two thousand dollars' worth already and I am selling more or less territorial rights every day. It has proved a valuable operation. I am under a thousand obligations to you for favors in connection therewith, and I shall soon apply to you for services in getting out another patent. Respectfully, yours,

REUBEN HURD.

Spring Hill, Ill., May 5, 1862.

MESSRS. MUNN & Co. :—Through your Agency we have obtained our patent, and for your kindness we return you our most sincere thanks. If I am prospered I shall endeavor to obtain another patent in the course of the year for another and different object altogether, and I shall surely apply to your Agency in preference to any other. I have just received a number of circulars from Washington setting forth what certain parties there will do for me, but I cannot help them nor shall I permit them to help me.

Truly yours, C. M. FRENCH.

Weedsport, N. Y., May 3d, 1862.

Conservatory in the Central Park.

The Central Park Commissioners have contracted with Messrs. Parsons & Co., of Flushing, for the construction of a grand conservatory, the largest in the United States, upon the Park grounds. The building is to be a "Crystal Palace," of iron and glass, 200 feet long, 70 feet wide, and about 50 feet high. Its base will be a parallelogram, and there will be three stories, curving inward like the successive folds of a turban. The conservatory will front Fifth avenue; its center being opposite Seventy-fourth street; and directly in its rear will be a beautiful little pond, with walled sides of a symmetrical shape, which will be built during the coming two years. When the Fifth Avenue is graded to its proper hight, it will be on a level with the second story of the proposed conservatory; and the main entrance to the edifice will therefore be on that story. Stairs and balconies will give access to every portion of the building. The contract provides that the grantees must erect the building entirely at their own expense, after the plans already agreed upon; that they must place in it nothing but flowers or rare trees or plants; that they shall be allowed to sell bouquets, &c., to visitors; that the public shall always be admitted free; that good order shall always be maintained inside, at the expense of the grantees: and that the work shall be completed by the first of January, 1864. The specifications of the contract are minute, and are believed to cover the objections which might be made to the granting of a monopoly of such a character. The grantees on their parts, agree to pay a rent which will add considerably to the revenues of the Park. The conservatory will cost about $50,000.

A Yankee Soldier.

The following characteristic sketch is from the *Commercial Advertiser*, Honolulu, Hawaiian Island :—We heard a few days since an anecdote which well illustrates the character of a large class of the American people, and the readiness with which the peaceful citizen becomes changed into the soldier. Most of our townsmen will remember Mr. J. Griswold, who came to Honolulu some two years since, and made one or two voyages to the Phœnix group and other islands, searching for guano. Hearing of the rebellion, he returned immediately to Honolulu from one of his expeditions, having determined to enlist in the army. Procuring a book on army tactics, he went through a series of daily drills under the tutelage of Captain J. H. Brown, the experienced commander of the Honolulu Rifles, until the sailing of the packet for San Francisco. On the passage home, he applied himself to the study of military tactics, and on reaching New York immediately offered his services, was examined and accepted as a captain, and within ninety days after leaving Honolulu, embarked to take an active part in the famous Burnside expedition to North Carolina, which has just gained a victory in the capture of Roanoke Island, and a half dozen towns and villages in the neighborhood, and promises soon to capture Richmond. This instance will show how readily, if necessary, the Americans can and will raise an army of a million soldiers to meet their foes, whether from within or without.

Cost of Raising Sorghum.

S. Ward communicates to the *Prairie Farmer* the following statement of the expense of raising Chinese sugar cane, and manufacturing the sirup, the result of his own experience —

Use of one acre land	$5 00
Plowing	1 00
Dragging and marking out	50
Seed	50
Planting	1 00
Cultivating	1 00
Hoeing	1 00
Stripping	4 00
Cutting and topping	2 00
Drawing to mill	4 00
Two hands and one horse 1 day making sirup	10 00
Fuel	8 00
Use of mill	4 00
Total	$40 00
Cr.	
By 100 gallons of sirup at 40 cents	$64 00
Cost	40 00
Profit per acre	$24 00

Or, 160 gallons sirup at 25 cents per gallon.

If a farmer should get his sirup made on shares the cost, according to the above account, of raising and drawing to a mill (if near by) would be $18.

Receives 80 gallons sirup	$32 00
Cost	18 00
Profit per acre	$14 00

Or, 80 gallons sirup, costing 22½ cents per gallon.

The "London Quarterly" on the "Monitor."

We have received from the publishers, Leonard Scott & Co., the April numbers of the "London Quarterly" and "Westminster Reviews." The "London Quarterly" has an able article on the fight between the *Monitor* and the *Merrimac*, in which the writer takes the same ground that was taken at the time by the SCIENTIFIC AMERICAN. The English Parliament and people are rebuked for their foolish excitement on the subject, and the superiority of stationary over floating fortifications is plainly shown. It is stated that the expense of a gun on a steamer is nearly four times greater than that of a gun in a fort. The writer also remarks that iron forts will be little if any more costly than those of granite, from the thinness of iron walls and the absence of internal piers.