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O. D. MUNN, S. H. WALES, A. E. BEACH.

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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 hogs-head 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, Raisin, 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