

NEW RAIL SAW AT THE LANDORE STEEL WORKS.

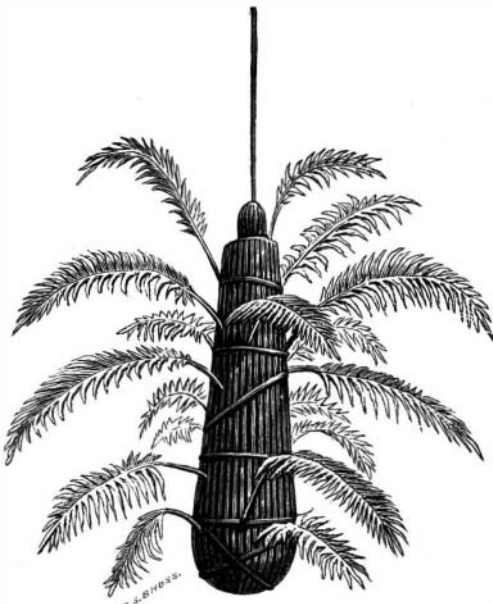
This saw is made by Messrs. Kitson & Co., Airedale Foundry, Leeds, England. Instead of the rail being brought up to the saw, the latter, mounted in a swing frame which oscillates on the main shaft, advances to the rail. Our engraving is prepared from a photograph of the actual machine, but does not show an ingenious self-acting clutch arrangement, which has since been added, for holding the rail firm while being sawn. The saw is placed sufficiently far from the rolls to admit of a 65 feet length being rolled, to be afterwards cut into rails of the required dimensions. On the occasion of a recent visit, some Great Western Railway bridge rails, 86 lbs. to the yard, were being rolled, and afterwards sawn into two 32 feet lengths. The production of the rail mill at these works is from 600 to 700 tons a week, the largest output in any one week having been about 850 tons, though 160 or 170 tons are frequently got out in the twenty-four hours.—*The Engineer.*

Dental Gardening.

Miss Adelia L., aged 28, nervous temperament, very healthy and robust, consulted me on May 10, 1876, in reference to trouble with left superior second bicuspid. I found, upon examination, a large cavity upon posterior surface, high up under the gum, with exposed pulp and considerable inflammation, attended with severe pain. The cavity being extremely difficult of access, and the patient preferring not to take the chance of possible trouble after a painful operation, I extracted. A moment after, I proposed to her, partly in jest, to fill and replace it. She agreed, and after excavating, etc., I filled the pulp canal with oxychloride and cotton fiber, and the other cavity with amalgam, and then, carefully rinsing the socket first, the tooth was carried up gradually into the alveolus, carrying with it a piece of silk, which was laid longitudinally along the root, in such a manner that, when the tooth was nearly in place, the gradual drawing out of the silk furnished a vent for the escape of air or water confined above the root. Previous to replacing, about one sixteenth inch of the tip of the root was excised, as it was curved considerably. Pain followed for five minutes, after which the lady closed the teeth forcibly, and with a snap, without any feeling of discomfort. She was directed to avoid using it for a day or two, and then report. Ten days after, May 20, she came in and stated that for a couple of days there was some soreness, since which time she had eaten on that side of the mouth without trouble, and at the time of examination the tooth was as firm as the contiguous ones. No ligatures were used to keep it in place at first, as reliance was placed upon the antagonists in the lower jaw.—*W. E. Hyde, Danielsonville, Conn., in Dental Cosmos.*

A JAPANESE FLOWER BASKET.

In the Japanese Building at the Centennial Exposition is to be found a variety of hanging baskets, containing ornamental plants. One of the most graceful designs is shown



in the annexed engraving, the basket being made of the roots of trees, laid parallel and encircled by hoops. Ferns and other plants, judiciously selected, are placed with their roots inside the basket, the flowers and foliage hanging down outside. It would be difficult to imagine a prettier ornament for the parlor or conservatory.

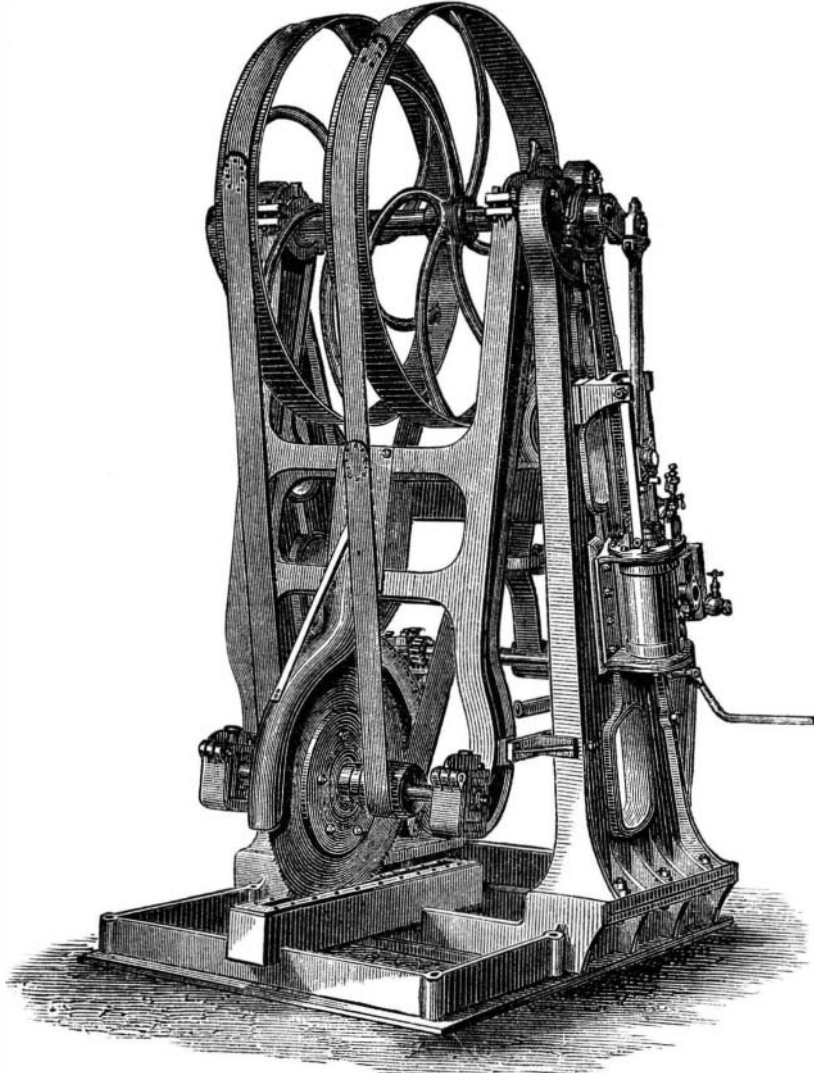
Patents for Seeders and Planters.

Another very useful summary and digest of all patents in a particular class of inventions is announced. It will include the drawings, briefs, and claims of all patents for seeders and planters, from 1836 up to and including July, 1876. The range covered by the class is a very extensive

one, including fertilizers, liquid manure machines, land markers, etc. The book will contain from 400 to 600 pages, illustrated by about 3,500 drawings. It will be well bound, and sold for \$25 per copy, by the author, Mr. James T. Allen, room 116, Patent Office, Washington, D. C.

New Engraving Process.

Messrs. Leitch & Co., it is said, are now successfully practicing a new process, which has not hitherto been carried on here. The drawing is done on glass, covered with a thin etching ground, which is of a pale green color, and so thin

**SAW FOR CUTTING HOT STEEL RAILS.**

that it can be removed with the finest etching point, thus allowing of the most delicate lines being drawn. By placing a sheet of black paper underneath, the artist can perceive at once the progress and effect of his work, the lines of which appear in their natural black. This plate, when finished, is treated as a negative, and a photograph obtained from it, say on zinc, from which a surface block is got in the ordinary way. The great advantage is the possibility of seeing how the work proceeds, for in several processes this cannot be done, and the artist finds, when he has finished his drawing, that it looks very different from what he expected or intended.

The San Fernando Tunnel.

The San Fernando tunnel, through the San Fernando mountains, on the Southern Pacific Railroad, California, is the largest one on the Pacific coast. Its length is 6,966 feet, or 1 mile and 1,686 feet. The work of construction was remarkably rapid; it is not two years since the first borings were made. Many difficulties were encountered. San Fernando is the petroleum region of Los Angeles, and there were fears lest in tunneling the mountain the workmen might come upon reservoirs of petroleum or other noxious fluids and gases. The great obstacle has been the character of the rock, and the enormous pressure upon the timbers placed as supports. The tunnel will be lined with masonry of great strength. The longest tunnel on the Central-Pacific, in crossing the Sierras, is only about 1,200 feet, not one fifth the length of the San Fernando.

Poisoning by Virginian Creeper.

The details of two cases of poisoning by the well known Virginian creeper or American ivy (*ampelopsis hederacea*) have been communicated to the medical papers by Mr. Bernays, of Chatham, England. The sufferers were two children, aged respectively two and a half and five years, who had chewed some leaves of the plant, swallowing only the juice. They were quickly seized with violent vomiting and purging, with considerable tenesmus, then collapse, sweating, and faint pulse, followed by deep sleep for two hours, from which they were aroused by a return of the vomiting and purging. Milk, with some rum mixed in it, was freely administered, under which treatment the children soon recovered; but four hours after the commencement of the attack there was considerable dilation of the pupil.

The pressure in lbs. per square inch produced by centrifugal fans equals the square of the velocity of the tips of the fan in feet per second divided by 97,300.

Hops as a Photo Preservative.

Notwithstanding the great improvements that have been recently made in the various emulsion processes, and the degree of perfection that has been attained in the preparation of the emulsions, many photographers, even amateurs, are conservative enough to stick to their baths, simply because they have long been accustomed to work in that way, and because in the various bath processes there is more latitude in the road leading to success than there is with emulsion work.

It is far from our intention to undervalue the advantages of the several emulsion processes, because they require, for their most successful working, a degree of nicety and care much greater than most of the processes with the bath; but we cannot shut our eyes to the fact that there are many who, from long experience of the older methods of working, get very fine results with it, and who have neither inclination nor time to battle with the difficulties of anything that to them is new. Taking it for granted, then, that for some time at least dry plates will still be sensitized in the bath, we gladly chronicle any advance that may be made or any improvement that may be effected.

We have recently made numerous experiments, and think the desideratum has been found in ordinary hops—preferably the variety known as Bavarian, which seems stronger in certain qualities than the English hop.

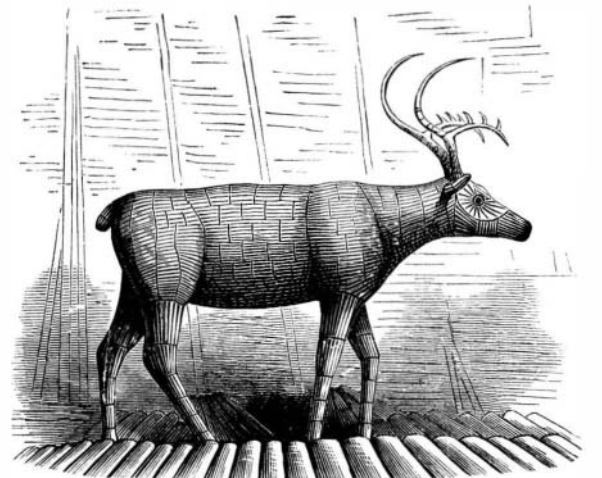
Two ounces of hops are infused for one hour in twenty ounces of water at a temperature of 170° Fah., and the whole then turned into a cloth, and the liquid pressed out. When cold, twenty grains of pyrogallic acid and the albumen of two eggs are added, and the mixture is well shaken for ten minutes. It is then filtered into a dish and used in the ordinary way; or, if only a few plates are to be prepared, a smaller quantity may be made, and poured off and on several times. Plates preserved with this solution, dry perfectly hard, have a fine gloss, and yield negatives of very high quality. The color is a rich greenish brown, and so non-actinic that over-development must be carefully guarded against. Although the solution can be easily made, it is desirable that, if possible, it should be made to deep, and therefore we have added carbolic acid and salicylic acid to separate quantities, and shall note the result on a future occasion.

Meantime we consider the hop preservative as above indicated, a decided improvement on the beer and albumen. It possesses all its good without any of its bad qualities, the principal of which are the sticiness already referred to, the varying qualities of beer in different local

ities, and, especially, the irregular proportions of chlorides which more or less are always present, and to get rid of which many workers are in the habit of adding silver nitrate, which always introduces an additional element of uncertainty.—*British Journal of Photography.*

A SWEDISH CENTENNIAL EXHIBIT.

Our engraving represents a very neatly executed device for exhibiting the various sizes and shapes of nails manufactured by one of the Swedish ironworks. It is the figure of a reindeer, the hide of which is formed of the nails, the forms and dimensions of which are so selected that the contour of the animal is unimpaired, the proportions and form being exactly preserved. The figure is to be found in the



Main Building, near the north entrance; and it attracts large numbers of visitors, who cannot but admire the fidelity and ingenuity with which the design is carried out.

New Blue Color.

Girard has taken out an English patent for the following process: He heats 1 part of methyl, ethyl, or amyl diphenylamin with two parts of oxalic acid for 10 to 15 hours to 230° Fah., and washes in water, alcohol, or petroleum. The residual powder is dried and heated for some hours to 230° Fah., which renders it soluble. To prepare methyl diphenylamin 100 parts of diphenylamin, 68 of muriatic acid, and 24 of wood spirit are digested for 15 hours at 536° Fah., at a pressure of 12 atmospheres.