

THRASHER, STRAW SCALE, AND SHEAF BINDER.

The apparatus shown in the accompanying engraving is a combined thrasher, straw scale, and sheaf binder, of French manufacture. The straw, as it is forced out by the teeth of the thrasher is received on the straw scale, which is formed on an axle, and consists of iron wires crossing each other at right angles. On the arms so formed the straw is deposited by the arms of the thrasher. The axle on which the scales are secured is supported by the lever of a steelyard, sufficiently weighted to prevent the axle from turning until the quantity of straw thrown on the arms of the scales has attained the prescribed weight. The rotation of the axle, which is limited to a quarter of a revolution, permits of one set of arms replacing the others. This also imparts motion to the sheaf binder, the arms of the thrasher and those of the scales together compressing the straw to prepare it for the binding. Near the middle of the inclined grate, at the bottom of the apparatus, there is a bobbin of fine wire. As soon as the bundle is prepared, the wire is carried around it after having passed through the sheaf binding apparatus, and meets the part opposite the bobbin, where it is twisted and cut off.

The bundles follow each other very regularly, without any great trouble, and the services of five or six persons, necessarily accustomed to the binding of straw in sheaves, are dispensed with.

The thin metallic wire forms a strong band, which, however, is very easily cut by an instrument which also pulls it out of the bundle, so that the cattle may not be injured.

Rock Drilling by Electricity.

In a recently published work of M. Gaston Plante, "Recherches sur l'Electricité," noticed in one of our French exchanges, the author mentions a new application of electricity which had not been hitherto published by him, and which is of considerable interest.

After describing the process of engraving on glass by electricity, that he made known in 1877, and the account of which has been so

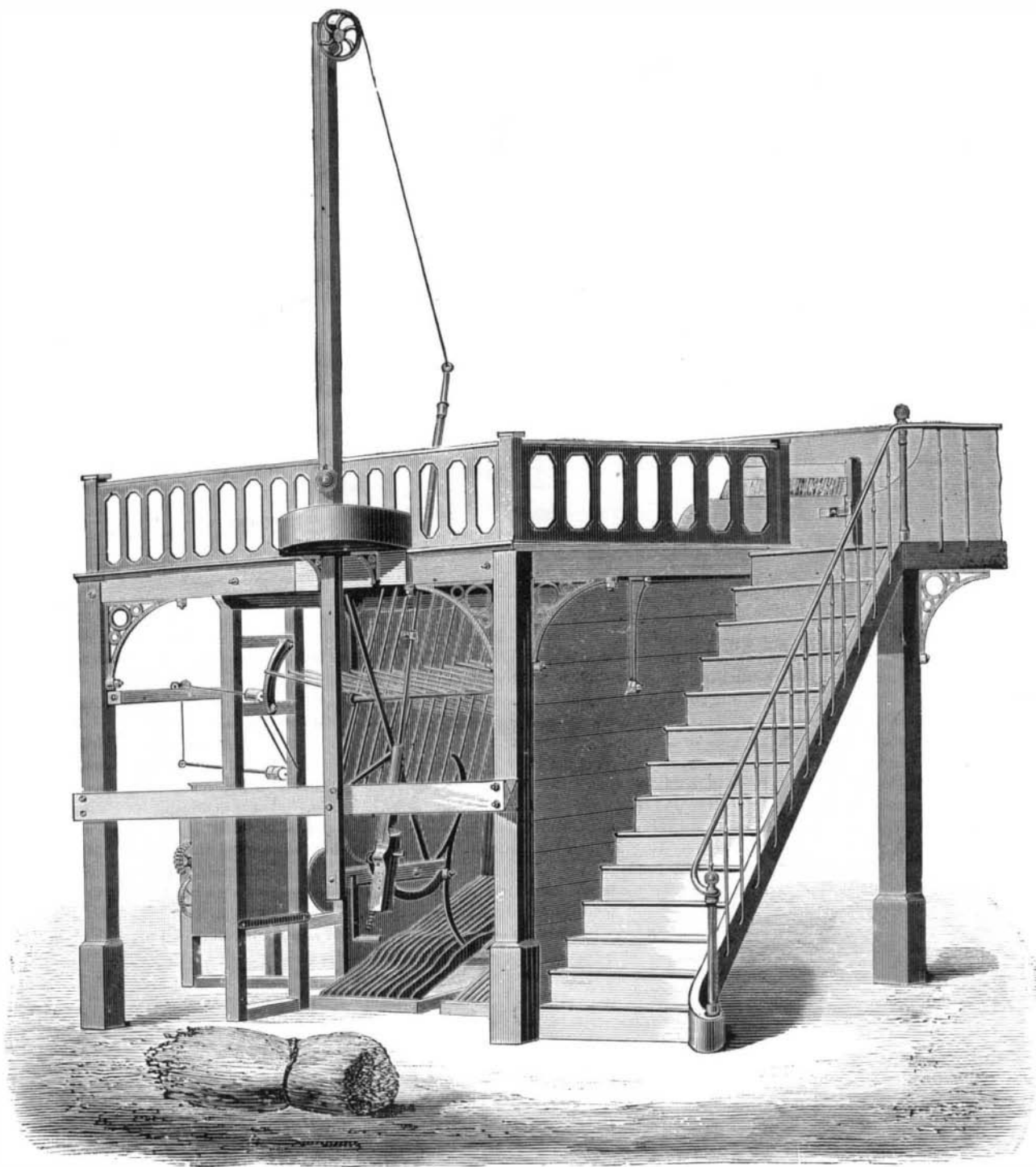
widely copied by scientific papers, M. Planté goes on to say: "We have seen that one of the electrodes conducting an electrical current of a certain tension being brought in contact with glass, in the presence of a saline solution, it acts like a graver or diamond by tracing grooves in the surface of the glass, and even digs into it quite deeply. In spite of its great hardness, rock crystal can also be attacked by the same method; and, if not engraved regularly, it at least cracks into small fragments, and is finally disintegrated." In view of this, M. Planté suggests that the electric current, under conditions analogous to those above described, might be substituted for diamonds in the operation of drilling rocks. He states that electrodes of platinum would not be necessary, for here it is not the metal of the electrode that is affected, but the silicious matter in contact with a saline solution. Metallic points or projections suitably located at the extremity of the drill, isolated on a part of its length, and actuated by a rotary movement, would lead the electric current to the surface of the rock to be pulverized, and would thus replace those numerous and expensive diamonds which are set in the head of the drills employed in the present system of rock boring.

New American Industries.

The recent rapid increase in American chemical manufactures, in many cases from native crude materials, is a very encouraging feature of American trade.

The *Grocer* notes that six years ago we imported from France cream of tartar to the extent of 6,000,000 lb. yearly,

but so successfully has the manufacture of it in this country been carried on, that last year not a single pound was imported. Notwithstanding that the crude materials have at present to be imported, the price of the manufactured article has been reduced from 32 cents per pound, the rate for the French article here, to 23 and 24 cents per pound for the American production. France and England formerly sent us annually 500,000 lb. of tartaric acid, while the importation for the last fiscal year was 183 lb. England formerly monopolized our market for citric acid to the extent of 250,000 lb. annually, at the rate of \$1.30 per lb., while last year 27,018 lb. were imported and sold at the same price as the American article, 57 cents per lb. At present the lime juice from which citric acid is made has to be im-

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ported, but it could easily be produced from fruits grown in Florida, if only sufficient energy were put into the work. If the lemon and lime growers of the South can be induced to prepare the lime juice, the entire production and manufacture of citric acid will be kept in this country, saving hundreds of thousands of dollars annually and developing another great industry. Borax was formerly brought from England at the rate of from 600,000 to 1,000,000 lb. every year. Owing to the development of borax mines in Nevada this importation has largely fallen off, and the report for the last fiscal year showed only 3,492 lb., and the price of the refined article, which is now prepared in this city, is only from 8 to 9 cents per lb., when formerly it was 35 cents, England being now among the buyers where she was the principal seller, both of the crude and refined product.

MISCELLANEOUS INVENTIONS.

An improved canceling stamp, patented by Mr. George W. Stephens, of Denison, Ia., is designed for post offices and business purposes generally. It is simple and rapid in its operation.

Mr. Samuel F. Leach, of Boston, Mass., has devised an improved gas regulator, which is combined with a gas burner, for automatically regulating the gas as it is consumed.

An improved flexible printing film for use in artistic and decorative purposes, and for printing and the preparation and finishing of drawings, has been patented by Mr. Benjamin Day, of West Hoboken, N. J.

An improved bin, or receptacle for flour, sugar, and similar articles in bulk, for stores and households, has been patented by Mr. Edward S. Bliss, of Richburg, N. Y. It consists of a bin having a front curved rocker and a curved top, the bin being arranged to tilt in casing so as to render its contents easily accessible.

An evaporating pan, in which the heating pipes alternate, one half being supplied with steam at the center and one half at the circumference, has been patented by Mr. H. O. Ames, of New Orleans, La. The object of this peculiar arrangement of pipes is to perfectly equalize the heat throughout the entire mass of boiling sirup.

Mr. G. V. Sheffield, of New York city, has patented an improvement in the manufacture of leather articles, which consists in stretching the raw green hide upon a last or form, and subjecting the hide to a tanning process while on the form. Before removing the article from the form it is dressed and colored.

A toy, composed of two or more pieces of veneer, cut and embossed to imitate an animal or other object, and provided with a strengthening backing, has been patented by Mr. Charles Schwartz, of New York city.

Mr. S. C. Buchanan, of Camden, Ark., has patented an improved liniment composed of fusel oil, arnica, acornite, camphor, and saffras combined in proper proportions. It is designed for the relief and cure of rheumatism, neuralgia, and other similar diseases.

An improvement in finishing yarns of wool or soft hair, such as camel's hair, mohair, and alpaca, or yarns composed of a mixture of two or more of these, has been patented by Mr. Charles Hastings, of Bradford, England. The object of the invention is to give the yarns additional strength and to otherwise improve their quality.

A hot air furnace, constructed entirely of refractory bricks or clay, has been patented by Mr. Thos. Croke, of Newark, N. J. It is claimed that this furnace is free from the objections which are urged against cast iron furnaces.

An improved board for ironing shirts has been patented by Mr. John Boger, of Powhatan Point, Ohio, which is so constructed as to give a swell to the shirt bosom when it is ironed, and it admits of ironing the neck band in an erect position.

A sash tightener, consisting of two sheet metal tubes, closed at one end and adapted to slide one within the other, the closed end of the inner tube being forced against the sash by means of a coiled spring contained within it, has been patented by Mr. Frederick J. Hoyt, of New York city.

Mr. Ernest T. Gennert, of New York city, has patented an improvement in processes for extracting saccharine matter from vegetable substances. The invention consists in moistening the dried beets or other vegetable substances with a solution of superphosphate of lime just before the water is introduced into the extracting vat.

An improved truss hoop, having a metal strap fitted to the outer side of a wooden body, and extending from the end of the inner lap to or a little beyond the end of the outer lap, has been patented by Mr. John W. Maltby, of Rochester, N. Y.

An improvement in heating pots, patented by Mr. H. J. Nelson, of Pentwater, Mich., consists of a water receptacle provided with a central chimney, which rests on the flange of a lamp burner. The water receptacle is provided with suitable supporting legs.

Mr. Thomas M. Righter, of Sandy Run, Pa., has invented an improved sheave for wire ropes or cables. It consists of sector shaped sections of wood, clamped between suitable heads, with the grain running in a radial direction.