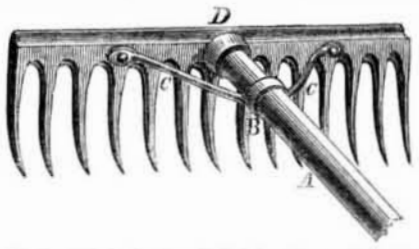
New Inventions.

Hotchkiss Rake Head.

This is a simple contrivance, and yet one of utility, for in the ordinary ferules of rake heads, the braces have either been riveted to it, or fastened by screws, and this improvement consists in casting them in one piece, thus forming a strong and cheap rake head.

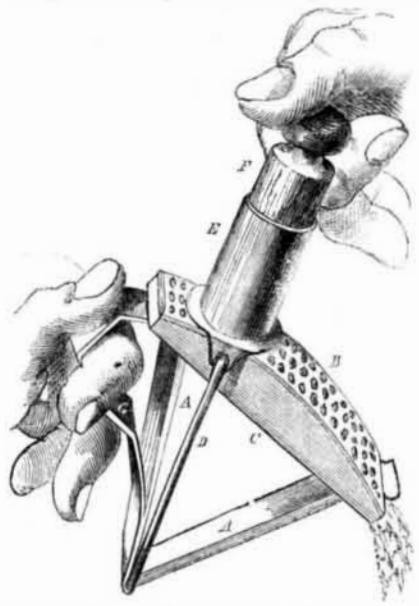


In our engraving, A is the handle, and B the ferule, with its braces, C, cast in one piece, and D is the rake, all formed of cast iron.

It was patented on the 6th of October, 1857, by its inventors, A. A. and A. Hotchkiss, of Sharon Valley, Ct., from whom all further information may be obtained, or by addressing Hotchkiss & Sons, of the same place.

Ames' Radial Grater.

This is a thoroughly Yankee invention; it is ingenious, simple, and easily worked. Our lady readers will no doubt examine its merits with care, and order their husbands to purchase one immediately. In our engraving, A A is a hemmed piece of tin bent into the form of a V, the ends of which are soldered to the under side of the segment, C, the latter forming a box for the reception and delivery of the grated material. B is the rasping surface soldered to C, and forming the exact arc of a circle. G, is th handle. D D are the radial guides, formed of a wire bent as seen in the figure, being hinged at the apex of the sector so as to swing freely backwards and forwards. The ends of the guides are soldered to the bottom of the cylinder, or holder, E, in which the nutmeg or other article is placed. F is a wooden piston, or follower, for pressing, with any desirable force, the substance to be grated against the rasping surface, B. This follower, the bottom of which is shod with a rough disk of tin, is a little longer than the



holder, E, in which it plays, being prevented from dropping out or touching the grater, by means of a short pin, projecting through a longitudinal slot in the holder, said pin and slot being so arranged that the piston may be entirely withdrawn from the cylinder whenever the operator wishes to insert an article to be grated. The method of holding the instrument in the hands and operating it is sufficiently explained by the engravings.

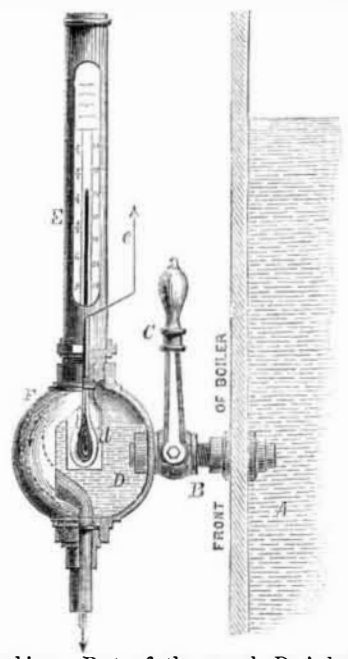
It was patented on the 13th of October, 1857, and further information may be obtained from the assignee, Edmund Brown, Lynn, Mass.

Cast iron is case hardened by first heating it to a red heat, and afterwards putting it into copperas water.

Improved Salinometer.

The salinometer is an instrument for measuring the quantity of solid matter or mineral salts dissolved in water. The one we now illustrate (taken from the London *Engineer*) is intended to be applied to a boiler, to indicate the percentage of mineral salts in the water it contains. It depends on the principle that water containing any dissolved matter boils at a higher temperature than when pure. For instance, pure water boils at 212° Fah.; a solution of alum at 220°; a solution of common salt at 224°; and one of acetate of soda at 256°; so that by arranging a delicate thermometer and properly graduated scale in connection with the boiler, it is possible to indicate the percentage of salts in the water which is being used.

In our engraving, A is the boiler, having a pipe, B, and stop-cock, C, connecting with a globe-shaped vessel, D, containing the bulb of a thermometer, *d*, properly protected from



breaking. Part of the vessel, D, is broken away, to show the interior. E is the scale, and F a waste pipe, so placed that the excess steam or water can escape, and so allow the water in D to remain at its normal pressure; that is, at the same pressure as that in the boiler.

The operation is as follows:—The handle of the stop-cock, C, is so turned as to admit the water into D, and the percentage and temperature can be read off, and the pointer, *e*, so fixed that on another trial the last one may be indicated, and a comparison instituted. Of course, the whole depends on the graduation of the scale. It is a simple and useful invention. The *Engineer* does not say whether it is patented or not.

Architectural Decorations.

The ordinary house decorations that usually have any connection with their architectural proportions are, if not of the same material as the front of the house itself, generally made of plaster or stucco. When the house is new, these answer very well, and for a short time look in keeping with the whole; but it does not take long for the weather to cause them to crack, then little bits break off, and finally the whole crumbles away. A new material has been introduced to supply the place of these friable plasters and stuccoes, which is easily moulded and can be cast into any pattern. It is basalt. There are works in Birmingham, Eng., where architectural decorations are cast from it in hot molds. The products are very firm and beautiful, and are represented as possessing characteristics of great durability. When cast in cold molds, a glassy lava termed obsidian is produced. The material generally employed is the rag-stone of the neighborhood, but furnaces are in operation for the reduction of quartz by direct fusion according to a peculiar process, in which the pulverized quartz is mixed with fluor spar, lime, and oxyd of iron, which agents combine with the silica and render the whole perfectly fluid.

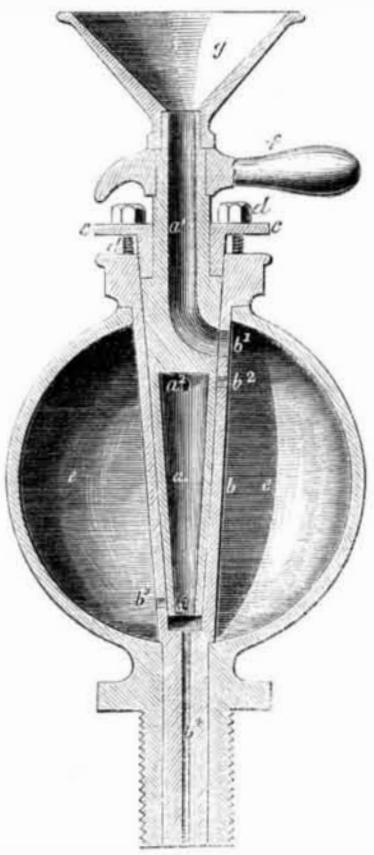
Manufacturing Coiled Springs.

This invention consists chiefly in the combination with a rotating mandrel—whose form is that of a single cone or frustum of a cone—of two or more pressing rollers, arranged and operating in such a manner as to coil a piece of wire of any length in the form of a continuous series of truncated cones, having their bases in alternate opposite directions. The wire thus coiled only requires to be cut apart, at the union of the bases of the several coniform portions of the coil, to produce a number of double or single conical springs, such as are used for upholstery, and other purposes. This is the invention of James Harrison, Jr., of this city. It has just been patented in Great Britain, and was patented in the United States January 27, 1857.

Improved Lubricator.

An invention was patented in Great Britain by Mr. Sourbut, on the 28th of November, 1856, consisting in improvements in taps or valves, by which more covering surface is given to the orifices of them than usual. In place of the passage being made directly through the plug, it is made hollow, and the liquid entering at one part, passes along, and leaves it at another part, and he usefully applies this arrangement to lubricators. Our engraving (copied from the London *Engineer*) represents a section through one of these lubricators. *b* is the casting, *a* the plug, which is kept in position by the collar, *c*, and set screws, *d*. The casting, *b*, is secured in the globular receiver, *e*, containing the fluid, which can be screwed into the cylinder head or other place that is to receive the lubricating material.

A handle, *f*, is attached to the projecting part of the plug, *a*, and a small funnel, *g*, is screwed or otherwise fixed to the end of it. The matter to be supplied to the receiver is poured into the funnel, and passes down a hollow, *a'*, formed in the center of the plug, and then out at the side of it, passing through an orifice, *b'*, in the casting, into the receiver, *e*. The plug, *a*, is in that position in which the passage, *a'*, is open for the entrance of the lubricating fluid. There are two more holes



in the casing, b , and b_3, and corresponding holes, a^2, and a , in the plug, a. Only one of the holes or passages in the plug, a, need be in communication with the receiver at the same time, and each may be brought in communication by turning the handle, *f*, to the required position. In one position the steam entering the hollow of the plug will pass through the holes, a^2, and b^2, into the upper part of the receiver; in another position the lubricating matter will pass from the receiver through the holes, a^3, and b^3, into the hollow of the plug and through the passage, b^4.

India Rubber.

Charles Goodyear, of London, Eng., has patented certain improvements in the manufacture of boots and shoes. He makes the boots or shoes of perforated sheet india rubber, and presses on them tips and heels of vulcanized rubber—the perforations serving as air channels, affording ventilation to the foot. He also has invented a new heel for boots and shoes, which is molded of hard india rubber, and making the same hollow, to receive a filling piece of india rubber sponge, or other elastic and yielding substance, which projects somewhat beyond the edge of the enclosing case, so as to form a cushion or buffer for easing the blow of the heel when it strikes upon the ground.

Distillation.

Jean Eugene D'Arcet, of Paris, has invented a new process for the distillation and rectifying of tars, resins, turpentines, bitumens, and mineral oils, so that the process may be (like that of alcohol) continuous. In a vessel divided into compartments, the substances are subjected to a gradually increasing temperature, so that the most volatile constituents are first dissipated, and so on in the inverse ratio of their volatility. Each compartment is provided with a still, and each separate product is condensed as it comes over.

Preserving Food.

John H. Johnson, of London, Eng., has patented a method of preserving food. It consists in the application of an airtight envelope or covering of gutta percha, caoutchouc, or other similar impervious material, thereby perfectly protecting the article to be preserved from the action and contact of the atmosphere. The food to be protected is immersed once or oftener in a liquid formed of the above materials. This invention was patented in the United States by C. Van Vleck, Macomb, Ill., June 30, 1857.

How to make Ivory Soft.

Ivory, which has become friable by age, may be made to recover its original goodness by boiling it in a solution of gelatin for some hours. It may be made soft and translucent by laying it in phosphoric acid of moderate strength, drying it in pure linen, previously rinsing it in water. When dry it is translucent and hard, but will soften on being dipped in warm water and milk. The time of immersion in the acid differs in different pieces of ivory, and if certain parts are to retain their original character, they should be covered with a varnish before immersion.

Death of an Inventor.

John Lane, Senr., the inventor of the steel plow, died at his residence in Lockport, Ill., on the 5th of October, after a brief illness. Mr. Lane emigrated to Illinois in 1833, and in that year invented the steel plow, which is now in general use throughout the West. The value of this invention to the country cannot be estimated. The name of John Lane, Senr., should ever be remembered as one of the great inventors of the country; and in the West, especially, his memory will ever be cherished as one of its benefactors. He was 65 years of age at the time of his death.

Windmills are becoming great institutions in San Francisco. They are being extensively employed for pumping up water, propelling the shaft of the machine shop, turning the burr-stones of the flouring mill, &c. The weather there is peculiarly adapted to the windmill business, a large supply of wind being constantly in the market and obtainable without money and without price.

Appointed.—Elias Yulee, Esq., of Washington Territory, has been appointed to be Assistant Examiner in the Patent Office, at a compensation of $1,800 per annum. Mr. Y. was formerly professor in Woodward College, Cincinnati.