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USEFUL RECEIPTS.

On Varnishes.

In a recent number you published a formula for making a varnish unchangeable by any *ordinary* intrusion of water (as I would understand you). According to my experience of twelve years in such matters, I submit the following. Although in this instance I do not know what you mean by gum and water colors being so susceptible to the ruinous action of water, as there are so many kinds of gum, yet I presume you had reference to a spirit varnish containing a gum resin and any of the ordinary colors used by painters. I would state that according to my observation no spirit varnishes will stand the wet for a long time, and much less an aqueous solution of gum resins by an alkali. You will remember that water, potash, and shellac were at one time much used to stiffen hat bodies, and the compound went by the epithet of patent stiffening. My first hat happened to have it in, and unfortunately got caught in a shower, and ever after had the appearance of the fur on a recently drowned rat. The gum re-dissolving penetrating the silk. I have always found that oil and turpentine solutions of the gum resins, particularly copal, withstand the action of water and moisture best, but a varnish made of 8 lbs. gum damar, dissolved in 2½ gallons of spirits of turpentine is an excellent preparation for indoor work, or an article somewhat better but more expensive can be made as follows:—5 lbs. mastic, 4 oz. white bees wax, 2 gallons of spirits of turpentine. Mix carefully in a covered vessel subjected to a moderate heat. The addition of wax is intended to correct the brittleness of the varnish when dry, both useful as paint lustres. The pigments used in the preparation of water colors are mostly admissible in the manufacture of colored resin varnishes, some being clear while others are more or less opaque and are not easily affected by water if their particles are protected by a good varnish.

With regard to the new varnish, the only advantage I can see in the use of lime with the potash is to render the latter more caustic.

Yours, JNO. H. RASER.

Reading, Pa., Jan. 1st, 1853.

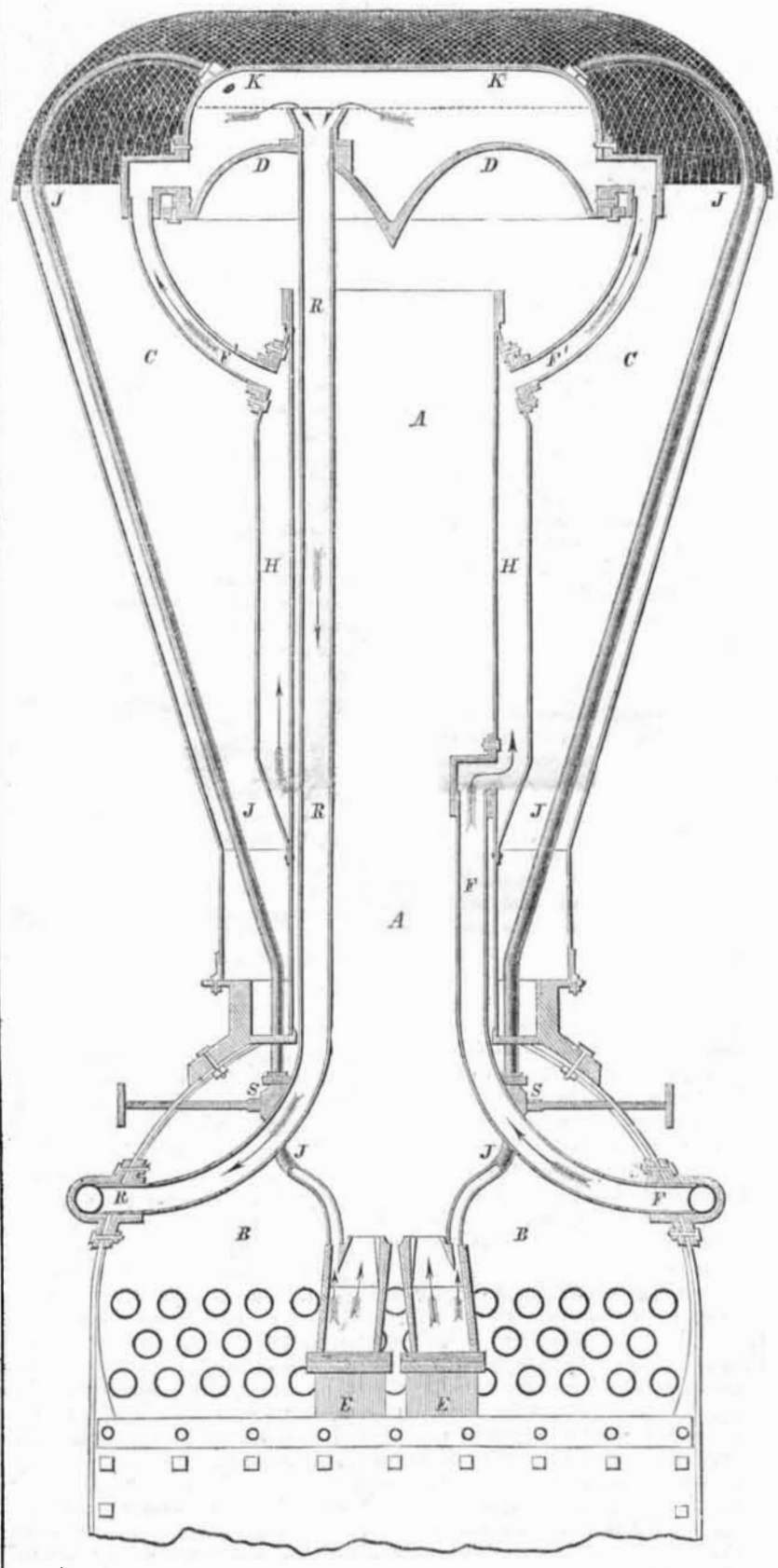
[The lime and potash make a caustic ley as alluded to by our correspondent. We are much obliged to Mr. Raser for his thoroughly practical information.

The Delaware and Raritan Canal Company are about commencing the enlargement of their canal. The whole line is to be made wider and deeper, and new locks built throughout, capable of passing vessels of five hundred tons burthen; making it, in reality, a ship channel. From four to five thousand men will be employed upon it, including many carpenters, masons, and blacksmiths.

Fine tooth combs are now made of India rubber.

Thefts of statuary have recently occurred in Greenwood Cemetery.

HEATING FEED WATER IN THE SMOKE-PIPE OF LOCOMOTIVES.



The above engraving represents a transverse vertical and central section of a locomotive chimney and smoke box and its exhaust steam or blast pipes, with the Apparatus for Heating Feed Water attached thereto, invented by Israel P. Magoon, of St. Johnsbury, Caledonia Co., Vermont, and patented Sept. 7th, 1852.

B represents the front end of the boiler; E E the exhaust pipes; A the inner smoke or cone pipe; C the outer or external chimney, and D the deflector or cone, all of which are usually found in modern locomotives. H represents a hollow cylinder of sheet-iron larger than the smoke pipe which it completely surrounds, and to which at top and bottom it is attached water tight, leaving a space between it and the smoke pipe of about two inches; K is an inverted bowl-shaped vessel of cast-iron attached, also water tight, by a flange to the outer and lower edge of the deflector or cone, and with it forming a water vessel of about fifteen gallons capacity, and connected by the pipes F′ F′ to the top of the cylinder, H; F is a pipe (two inches in diameter) leading from a force pump on the left side of the engine, and along the side of the boiler to the smoke box which it enters as seen in the figure, and opens at its upper end into the lower part of the cylinder, H; R is a pipe of the same diameter as F, having its mouth within the vessel, K, 2½ inches above the highest part of the deflector or cone, thence leading down through or insi e the smoke-pipe and smoke-box to the right side of the boiler along which it passes and connects at its hindmost end with the tank of the tender by a flexible hose; J J are two small pipes (three-eight inch internal diameter,) opening from an orifice in the top of the exhaust pipes, thence leading up between the smoke pipe and outer chimney and into the vessel, K, above the mouth of the return pipe, R, and furnished in smoke-box with stop-cocks, S S, which are opened when additional heat is needed in the vessel, K, and shut when the engine cylinders are oiled, to prevent any oil or grease from passing with the steam into the vessel, K, and through it into the tank.

The action of the apparatus will be readily understood as follows, water drawn from the tank by the pump on the left side of the engine will be forced up through the pipe, F, into the cylinder, H, t ll that is completely filled, thence through the curved pipes F′ F′ in the direction of the arrows into the vess el K, which it also fills to the mouth of the pipe, R, or a little above the dotted line when by its own weight it descends through that pipe and into the tank on the right side, thus keeping up, while the engine is running, a constant circulation of the water from the tank up through the heating apparatus and back again to the tank. A small part of the exhaust steam also is thrown up through the jet pipes, J J, into the vessel, K, condensed there, imparting its additional heat, and with the water passing back to the tank. It will be seen that the water while passing up through the feed pipe, F, the cylinder, H, the connecting pipes, F′ F′, vessel K, and down the return pipe, R, is exposed to all the hot-air, gases, smoke, and exhaust steam, which, after leaving the boiler and cylinders are driven up through the smoke-pipe, A, against the deflector, D, and from under it out into the open air. It thus rapidly receives a considerable quantity of heat which otherwise passes off and is lost, effecting quite a material saving of fuel. Additional information can be obtained by addressing Magoon & Prince, proprietors, St Johnsbury, Caledonia Co., Vt.

The Mechanics and Men of Literature in New York.

In our last number, in a few words, we stated that Hon. John A. Dix had delivered a lecture before the New York Mechanics Institute, on a subject relating to the mechanical classes, and that his lecture was not well attended. We rebuked our mechanics for their apathy and want of taste; but the most keen rebuke which they have received comes from another quarter and in a different manner.—The Hon. Ex-Senator, U. S., delivered a lecture in Metropolitan Hall, on the evening of the 6th inst., before the New York Historical Society, which embraces the most learned and distinguished gentlemen in our city. Instead of having a thin audience in that Hall, which is ten times larger than the rooms of the Institute, the hall was well filled and the audience very large. We are afraid that too many of our young mechanics go to hear songs and see mountebank exhibitions in preference to attending scientific lectures. Mechanics with families cannot attend lectures with the same convenience that persons of wealth can, but from their numbers in New York they ought to crowd the largest Hall in the city, whenever a lecture respecting their interests is delivered.

Fatal Accident.

An accident lately occurred at the brewery of Mr. Sietz, in Easton, Pa., Phillip Winner, one of the hands, went into the cellar, and accidentally slipped into an ale vat which had been left open for the gas to escape. He was overcome by the effects of the gas, and when removed life was extinct.

The Atlantic is nearly four miles deep off Cape Hatteras, so say the U. S. Coast Surveyors.