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DREDGING AND RECLAIMING LAND IN GLORIETTA BAY, CALIFORNIA.

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The accompanying illustration shows the Bowers new dredger now at work reclaiming land in Glorietta Bay, near San Diego, Cal. It is another link in the evolution of the hydraulic dredge.

The cutting arrangement is about five feet in diameter, and differs from those heretofore used in that it is worked at an inclined angle, instead of vertically, and that the suction of the pump acts directly between the blades, instead of over them.

The engines are of the non-condensing Westinghouse pattern, of about 300 horse power. There are two horizontal 72-inch locomotive boilers, with 14-foot flues. The pump is a six-foot centrifugal of improved pattern, with an eighteen-inch discharge pipe, and capable of depositing ten yards of material per minute. In soft mud it will dredge about 75 per cent of solid matter. The dredge is swung to and fro with a rotary motion, when at work, a spud at the stern acting as a pintle.

It is very interesting to notice the development of the dredge in the past few years. From the old "dipper dredge," which is still in use for dredging hard material, we see the rapid evolution into the "clam shell." Then came numerous kinds of endless chain dredges, which do splendid work, and these followed finally by the hydraulic dredge, which can deposit from three to five thousand yards of material a day. One of the first dredges of this kind that was a success was the "Von Smith" dredge, several of which are now at work on the reclamation of the Potomac

flats, Washington, D. C., and on the improvements at Oakland, Cal.

This dredge does good work in soft mud or sand. The cutting machine is a circular plow, revolved on a vertical axis, and moved from side to side, making a cutting a little over the width of the dredge. The pump acts directly over the plow by means of a hood, and in soft material it can dredge about 50 per cent solid matter. The arrangement of the spuds in the Bowers dredge shows a novel idea for "working forward." The spuds rise on opposite sides of a revolving table. While the dredge is at work the after one acts as the anchor. When the dredge is moved ahead the forward one is dropped, the after one raised, and the table given half a turn.

Grisontite.

The *Chronique Industrielle* states that Mr. E. Muller, of Cologne, has invented a new form of explosive that fulfills two conditions which are essential in practice, but which, up to the present, have scarcely been compatible—efficiency and entire freedom from danger. The uniting of water with an explosive, so as to cool the flames resulting from deflagration, is an old idea, and some of the processes devised to this effect have given good results.

The ingenious idea occurred to Mr. Muller to introduce water into the explosive itself, but in a solid form.

Certain salts, as well known, possess the property of holding in combination, in the state of water of crystallization, a portion of the liquid in which they form and are deposited, the quantity of water varying with the salt. When heated, such salts dissolve in their wa-

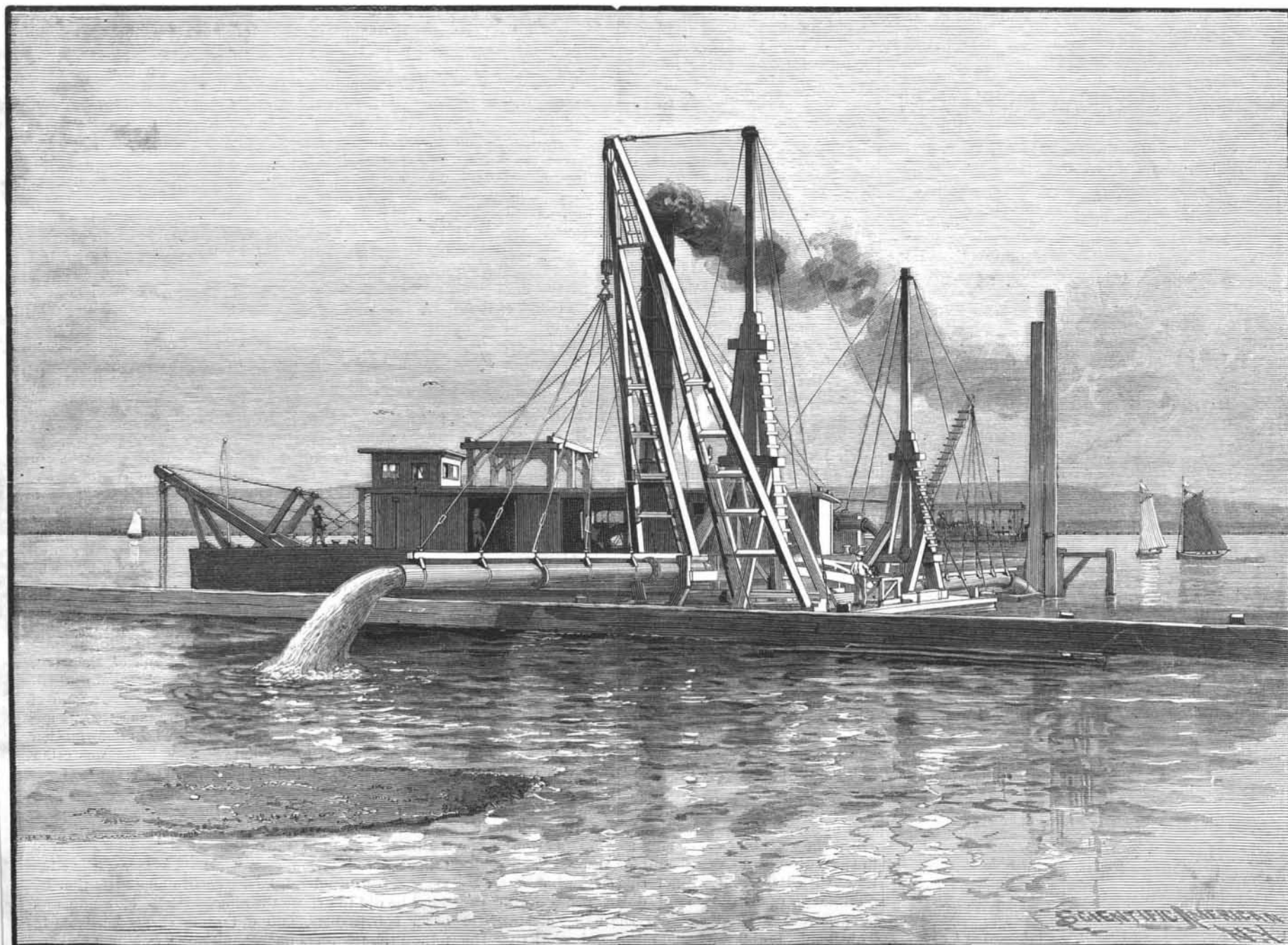
ter of crystallization, and that, too, usually, at quite a low temperature. Upon being further heated, they lose this water very easily, and in most cases without the salt being altered.

With a proper explosive, the inventor incorporates one of such salts in a very finely divided state, and thus obtains a new explosive, which he calls "gum grison" or "grisontite" (from French *grison*, "fire-damp"), in which the proportion of water may be graduated at will by varying the salt or the mixture. The salts best adapted for this purpose are carbonate of soda, which has ten equivalents of water, and sulphate of magnesia, which has seven.

Grisontite with fifty per cent of salt contains, with carbonate of soda, thirty-one per cent of water, and, with sulphate of magnesia, twenty-five and one-half per cent. Numerous experiments made in England and Germany, under the most dangerous conditions of mining practice, have been crowned with entire success.

Mr. Muller's invention is rendered complete by a special apparatus for firing, and by what are called safety matches, these being surrounded by wire gauze, which performs the same office as the wire gauze of a miner's safety lamp. With these matches, there is no danger of setting fire to the gas that may exist in the surrounding atmosphere.

BURLS, used in making veneers with remarkable eccentricities of grain, are excrescences that grow upon various trees, such as the walnut, rosewood, mahogany, oak, and ash. They weigh from 1,000 to 6,000 pounds, and the largest and best come from Persia and Circassia, and cost in the rough from 15 to 40 cents a pound.



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