

Mixture for Writing on Glass.

The preparation for writing on glass called "diamond ink," says the *American Druggist*, is to be used with a common pen, and at once etches a rough surface on the parts of glass it comes in contact with. It proves to be a very useful article for labeling bottles which are to contain liquids that will destroy common labels.

At the request of Professor Maisch an analysis was made, which proved it to be prepared ammonium fluoride, barium sulphate, and sulphuric acid. The barium sulphate seems to act as an absorbing medium, and when the semi-fluid mass is used, it makes a white mark, and prevents the spreading of the watery liquid; it also seems to make the acid etch a rougher surface.

It is made by mixing barium sulphate 3 parts, ammonium fluoride 1 part, and sulphuric acid a quantity sufficient for decomposing the ammonium fluoride and making the mixture of a semi-fluid consistency.

The sample examined was contained in a glass bottle holding nearly two fluid drachms, and which was thickly coated on the outside with asphaltum, on the inside with a thick stratum of beeswax, and was stoppered with a rubber stopper.

It is claimed by the manufacturer that the mixture contains no hydrofluoric acid and does not corrode a pen; but of course it does corrode a pen, and hydrofluoric acid is the one thing that does the etching. Any one making this mixture and wishing to keep it in a glass, may coat the bottle inside with paraffin, beeswax, or rubber. It should be prepared in a leaden dish, and is preferably kept in a gutta percha or leaden bottle.

NOVEL METHOD OF PROTECTING VESSELS AGAINST TORPEDO ATTACKS.

The idea that a small torpedo or torpedo boat can most effectually and thoroughly destroy the largest ironclad afloat, if the explosion takes place immediately against the hull of the vessel, is extremely general. The protection of the hulls of these vessels against attacks by submarine torpedo boats has, therefore, received wide attention, although it does not seem that the art, so to speak, has advanced as far as that of the torpedo; and if this be the case, much remains to be done before these powerful little annihilators can be considered contemptible. The accompanying engraving clearly illustrates a method—proposed by Mr. E. F. De Celis, of Los Angeles, Cal.—by means of which a vessel may be warned of the approach of a submarine torpedo. Briefly, this plan consists in providing the hull with a series of bull's eyes below the water line, through which a powerful light may be thrown to illuminate the surrounding water. Alongside of each bull's eye is a glass-covered opening, through which a close watch of the water may be maintained, and the approach of a torpedo noted. Commenting upon the probable effectiveness of this method, Mr. De Celis says: "Is there anything to prevent it (the ironclad) from exploding the torpedo or torpedo boat by means of a dirigible torpedo before it comes

within the proper distance to do any harm? This device can be applied at very small cost to any vessel," and "now that 'Uncle Sam' is going into ship building for war purposes, it would not be a bad idea to suggest this possible improvement for the *to be men-of-war*."

certainly, if private capital shall undertake the building of this latest wonder of the world, Mexico can afford to favor the enterprise in every legitimate way without spending any money thereon. Under the provisions of the bill passed by the Senate of the

United States, the capital stock of the Ship Railway Company is fixed at \$100,000,000, of which ten per cent must be subscribed and \$1,000,000 paid in cash before a meeting of the directors is held and certificates issued. Bonds are not to be authorized, or issued, until the paid up capital amounts to \$5,000,000. There is, of course, under this arrangement, no mention of a government guarantee of interest payments. We are glad that the scheme has been taken out of the domain of governmental guardianship, for, if the plan be a sound one, there are plenty of bold investors who will furnish the money to construct what we believe will be a formidable rival to De Lesseps' ship canal at Panama. It is quite within the domain of probability that Captain Eads will be conveying ships across the narrowest part of Mexico many years before De Lesseps will be towing ships through his great ditch at the more southern isthmus."

The above is from the *Mexican Financier*, the most influential newspaper in the interests of banking, railroads, and commercial affairs published in Mexico. The death of Captain Eads may re-

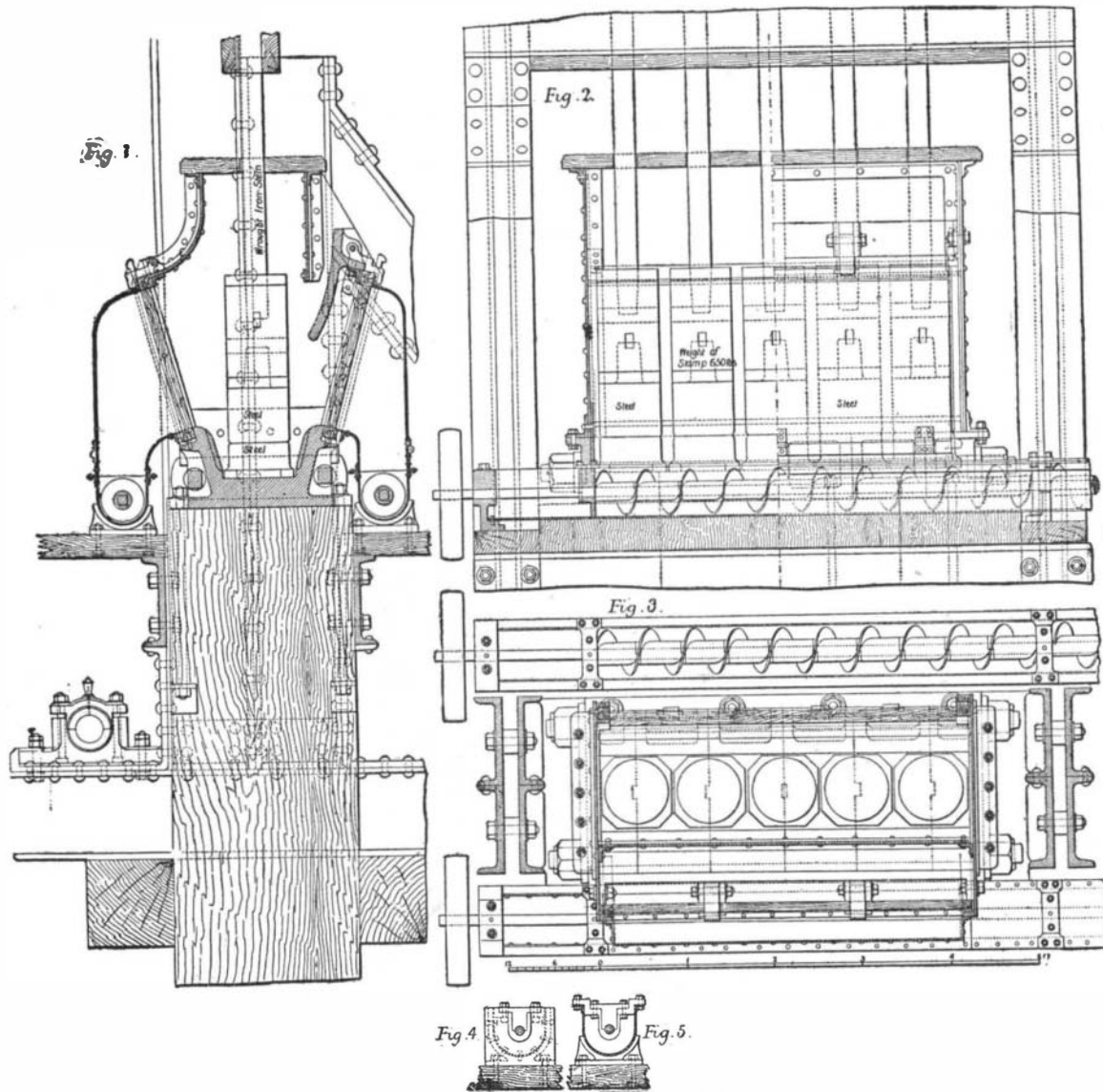
tard the ship railway enterprise, but there are other living promoters of the enterprise, who are energetic and determined on carrying forward the work so well begun by Captain Eads.

Artesian Wells in the Desert.

Respecting the plan of Colonel Landas for fertilizing the African desert by means of wells, Sir R. Lambert Playfair, in the course of a consular tour in Tunis, has visited the ground where the first well was sunk, and reports most favorably as to the success of the project. A space of 375 acres has been cleared, and sown with cereals and lucerne, a vegetable garden been made, and a nursery of young trees planted. Two other wells are being sunk, which on completion will irrigate 7,500 acres of land. The Bey of Tunis has conceded to the company 25,000 acres of land, which they can select themselves from districts which are at present of no value.

Freezing Mixture.

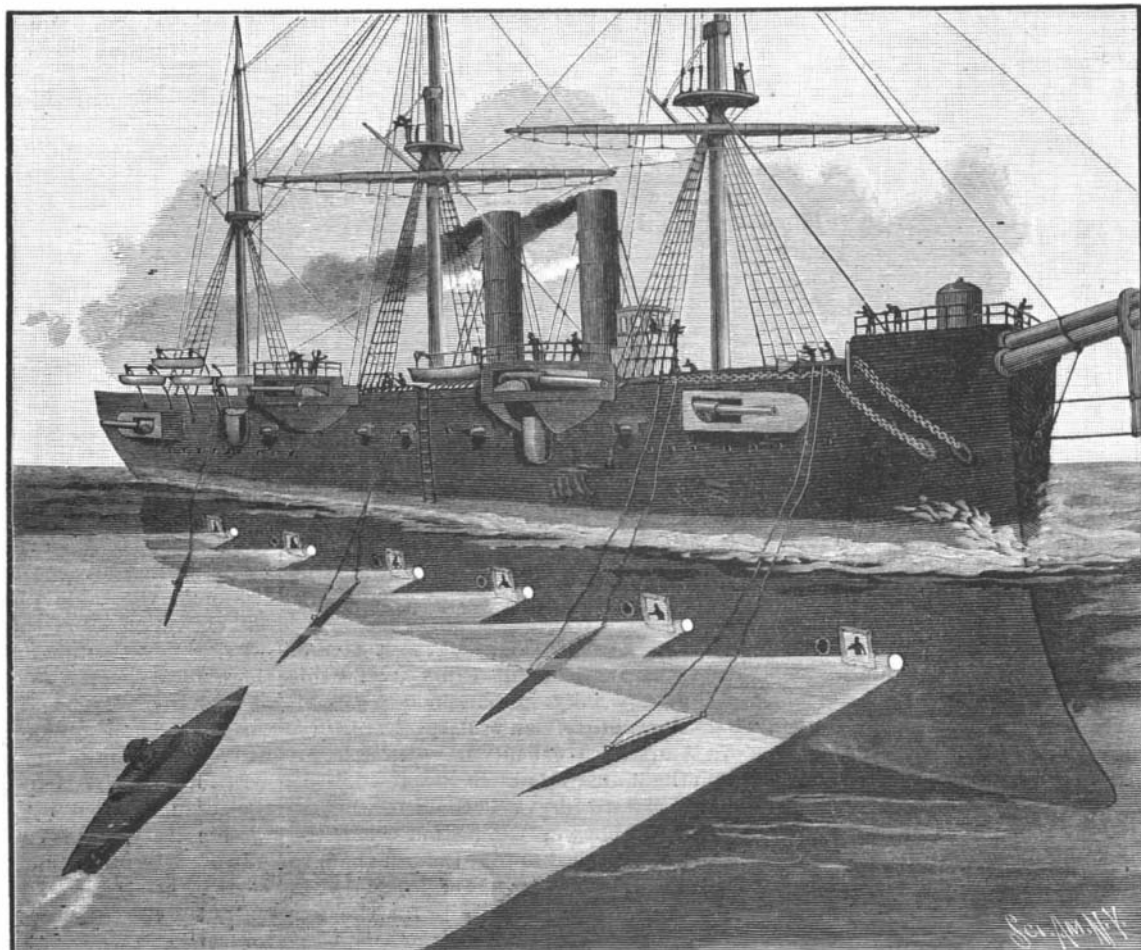
A liquid invented by Raoul Pictet, of Geneva, Switzerland, for use as a disinfectant, answers well as a freezing mixture for hardening microscope specimens. Sulphur dioxide and carbon dioxide, having been mixed and cooled, are compressed until they are liquid, and stored in siphons. When liberated, they rapidly evaporate with great reduction of temperature. By this means mercury may be frozen, and animal or vegetable tissues rendered solid in a few seconds. It is as easily managed and more effective than ether, the odor being the principal objection.



IRON FRAMED STAMPER BATTERY.

The Tehuantepec Ship Railway.

"Should the House of Representatives at Washington pass the Senate bill incorporating the Ship Railway Company, this huge scheme will be then presented to the attention of the great capitalists of the world, and, as the plans of Captain Eads have received the cordial approval of a great number of eminent naval engineers and competent constructors, it may be considered as certain that he will meet with a respectful and attentive hearing. Now that Captain Eads and his friends have abandoned the scheme of a joint governmental guarantee, Mexico may be regarded as entirely released from any future demands on her treasury on account of the ship railway; and



SUBMARINE LIGHT FOR TORPEDO BOAT.