

Improved Tile Roofing.

In some districts of this country, as well as in some other countries, wood is scarce and cannot be obtained readily, even for the purposes of roofing. Shingled roofs may be considered essentially American, not being much in use elsewhere. Slate stone is not universally found, and metal roofing corrodes readily in some climates. In such cases recourse must be had either to tiles or some more primitive material.

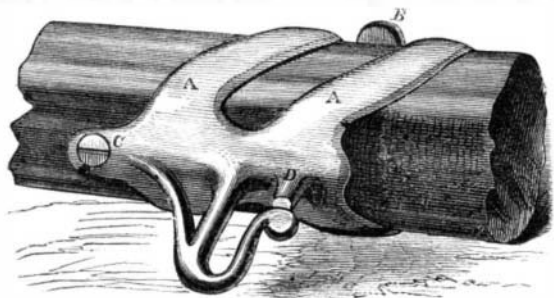
The annexed engraving shows a method of forming and laying tiles to make a convenient roofing. It is the invention of gentlemen living in Colorado, where wood, slate and metal for roofing purposes are scarce. The tiles are made in sections, so formed that each successive layer is a support to that next preceding. The tiles are made with projections running across the under sides to rest against the eaves or wall plate and against the cross rafters. The upper edges also have projections at the other ends of the tiles to lock into the downward projecting edges before mentioned. The whole is secured in place by a strip which near the ridge-pole fits into proper depressions, and the longitudinal recesses in the center of the tiles form in combination perfect gutters for rain. The arrangement can be easily understood by the engraving. It would seem to be admirably adapted for certain situations. Address Chas. Bamberg or Jos. Weiber, Box 443 Central City, Colorado, for state and county rights.

Absorption of Gases by Solids.

Among the interesting observations of Mr. Graham, Master of the British Mint, (to some of which we have lately referred) upon the passage of liquids and gases through solids, is the fact that atmospheric air, by passing through india-rubber, becomes super-oxygenated, and will rekindle smoldering wood like pure oxygen. Any kind of light india-rubber receiver, in which a vacuum may be obtained, the size being sustained by mechanical means, will collect super-oxygenated air; the better if the india-rubber be thin and the temperature high. Mr. Graham makes the suggestion that the solid films pass gases through them by first condensing them to a liquid form within the substance, and then passing them off on the other side by evaporation. Hydrogen passes through redhot platinum, while oxygen and nitrogen do not, or not in appreciable quantities; hence their compounds with hydrogen are readily dialysed by this method. The passage of carbonic acid, chlorine, hydrochloric acid, vapor of water, ammonia, coal gas, and hydro-sulphuric acid, is also inappreciable, while the hydrogen, in compounds containing it, passes. One volume of redhot platinum absorbed 0.207 volume of hydrogen, retained it while cold, and gave it off on reheating. One volume of palladium absorbed 643 volumes of hydrogen, sensibly increasing its weight, and when heated afterward, gave off the most of it in a continuous stream. On the other hand, osmium-iridium does not absorb hydrogen, and copper absorbs it very slightly. Gold absorbs hydrogen and nitrogen slightly. Silver absorbs 0.289 of its volume of hydrogen, and then presents a beautifully frosted appearance. Oxygen is taken up in the proportion of 0.745. Redhot iron and steel pass hydrogen as readily as platinum does.

WILSON'S CLASP HOLD-BACK IRON.

In attaching the common hold-back irons to carriage shafts the shaft itself is weakened by the insertion of screws which remove a portion of the wood from that part that requires to be as strong as any other, if not stronger. In case of acci-



dents by the stumble of the horse, the shaft is frequently broken, even if the animal does not fall upon it. The hold-back here represented is not open to these objections, as instead of weakening the thill it really strengthens it. It is made of malleable iron in one piece, embracing the shaft by two bands, A, which unite on the hook-front plate. On the opposite side the hold-fast is divided in a line with the shaft and the two parts are secured together by a single screw, head seen at B, which grips the halves firmly around the shaft. By loosening this screw and drawing that at C the hold-fast can be removed to any portion of the shaft desired. The projection, D, on the inside of the hook makes it almost impossible for the breeching to slip out.

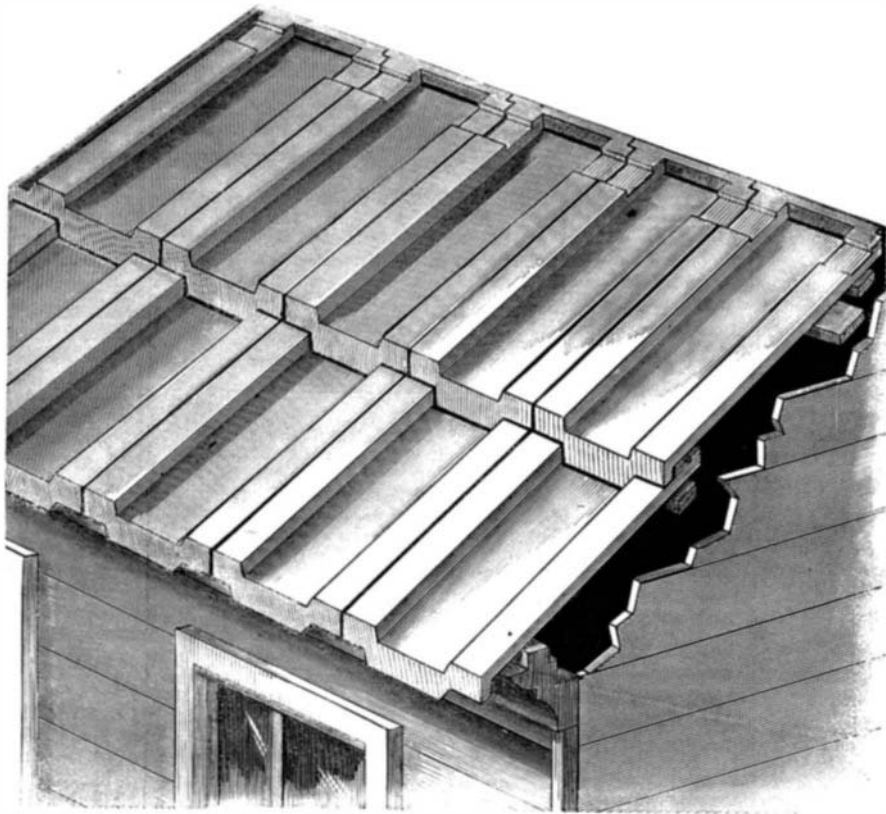
The contrivance has a very neat appearance and seems to be calculated for giving additional strength to the shaft. It was patented Nov. 6th, 1866. Information required by those interested, as to rights to make and use, can be obtained from Edward Wilson, Northbridge, Mass.

THE MODEL SCHOOLHOUSE.—The Legislature of Massachusetts has decided not to pay for the model schoolhouse which certain gentlemen have been getting up for the Paris Exposi-

tion. The point is, that Massachusetts and other American States excel not particularly in school houses but in school laws. Such a humble specimen of mere architecture, in the Exposition, will astonish the natives only as flies in amber do—how in the name of common sense, did they come to be there.

DAVIS'S IMPROVED PROPELLER SCREW.

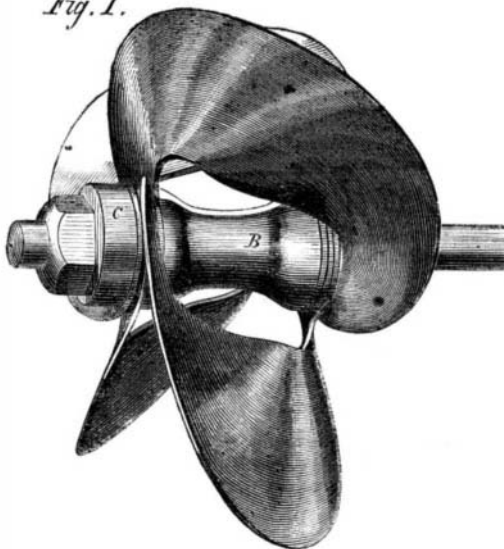
The inventor claims for the screw represented in the accompanying engravings several advantages over that in common use. As may be seen in the engravings, it is a combination screw, formed in parts and put together, instead of being a single casting. The blades are made of boiler plate, or of plate steel, of equal thickness throughout. They are cut

**BAMBERG & WEIBER'S TILE ROOFING.**

from a flat plate, the holes for the reception of the propeller shaft made, and then either by hammer, rolls or formers curved to the proper shape. Each blade is precisely alike, so that if one should be broken a duplicate could be readily fitted.

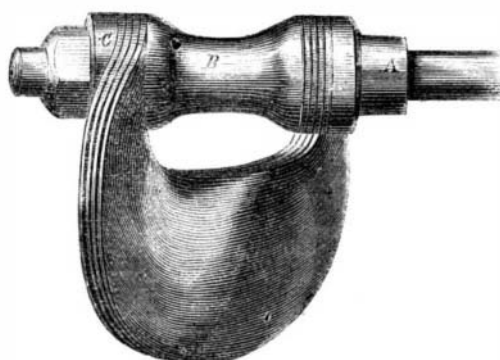
A is a collar secured upon the shaft, and the inner legs of the blades bear firmly against it. The sleeve, B, keeps the legs of the blades at the proper distance apart, and the collar, C, and nut secure all in place. To hold the blades in position

Fig. 1.



against the leverage of the water, bolts may be passed through the collars and blades longitudinally with the shaft, or the blades may be held by a feather on the shaft.

Fig. 2.



Among the advantages claimed for this screw over others is increased strength from the material used, less weight, greater efficiency from the uniform thickness of the blades, facility for repairs and also for transportation as shown in Fig. 2.

When a blade is broken from a cast propeller the screw is ruined, and floating ice, timber, or fouling by a rope, are always threatening such an accident. With this screw, however, the breaking of a blade can be at once remedied by removing the remaining portion and replacing it with a duplicate blade. Letters patent for this device were granted through the Scientific American Patent Agency to William E. Davis, Aug. 7th, 1866. Mr. Davis will supply all further information if addressed at Jersey City Locomotive works Jersey City, N. Y.

Steam Plowing.

A steam missionary has been sent over from England to preach to our Western farmers. The economy of steam plowing, cultivating and harvesting in the Mississippi valley, is extraordinary, of course. The cost of the apparatus is the grand objection. In England, where \$5,000 will buy a plowing equipment, it is found that few farmers feel able to furnish themselves, and still fewer, perhaps, could give enough employment to the capital in this form to render it remunerative. Hence association is resorted to, and a neighborhood of farmers sometimes organize a company for steam cultivation. Under our free laws of association this can be done with facility and advantage. Messrs. John Fowler & Co., of England, have taken the right way to extend their business, by sending out the agent above referred to, with their apparatus, (price \$10,000) to exhibit its economy and induce the Western farmers to form associations for owning and operating it. An objection to doing this business by itinerant jobbing, is the cost of so much heavy transportation. The work of the steam plowing apparatus is estimated at an acre per hour, twelve inches deep.

Aerial Ferry.

We are rather surprised that our aeronautical friends have not seized the present favorable juncture for proposing an "air line" from New York to Brooklyn. It would seem that the first practical success in aerial navigation should be on short crossings like these, where some kind of guide or aerial suspension way can be established, along which to propel and steady in its course the unfledged flying ship. A sort of guy rope anchored to a pier in the middle of the channel, reaching to the shore, and there connected to the aerial boat, would guide it over in a parabola; yielding gracefully to any lateral deflection the wind might require in either direction. On approaching the shore, a gradual and easy descent would be secured by running out the guy rope off a drum checked by the tension of a strong spring or brake, thus rendering the centripetal pull sufficiently elastic. An experiment might perhaps be cheaply conducted by using one of the islands up the East River.

PAYMENT OF A PATENTEE.—Senator Van Winkle, from the Committee on Post Offices and Post Roads, reported a bill authorizing the Post Master General to pay \$100,000 to the owner or owners of the letters patent granted to Marcus P. Norton, of Troy, N. Y., for invention for marking of letters, etc., and for the cancellation of postage stamps thereon, said sum to be compensation for the past and future use of the patent, and for which the transfer of the same is to be made to the United States.

Our readers will find an illustration of this invention on page 104, Vol. XI, SCIENTIFIC AMERICAN.

RAILWAY DRY DOCK.—Two gentlemen of Portland, Me., have patented apparatus designed for connecting with a dry dock a system of tramways and trucks upon which a ship, after being docked by means of high tide and supplementary water raised by pumps, may be run out into a ship yard adjoining, making room for others to any required extent. Locks and reservoirs are also arranged in such a manner as to store at the required elevation, for further use, the water once raised for the purpose of docking a ship.

GEORGE PEABODY'S GIFT.—A million of dollars in cash, and a million and more of unreputed Mississippi bonds which can be fully resuscitated through a shrewd application of the terms of the gift, make up a virtual donation of probably two millions of dollars, given in trust to a number of our most patriotic and liberal public men, for the all-important object of the time—the education of the youth of the Southern States, without any other distinction than that of their needs.

OFFICERS OF THE AMERICAN INSTITUTE.—The election of officers of the American Institute took place on the 14th inst., when the following gentlemen were elected:—President, Horace Greeley; Vice Presidents, Dudley S. Gregory, Orlando B. Potter, William H. Vanderbilt; Recording Secretary, Salem H. Wales; Corresponding Secretary, Samuel D. Tillman; Treasurer, Sylvester R. Comstock.

PATENT EXTENSION.—Senator Willey, Chairman of the Committee on Patents, has made an adverse report on the application of Geo. B. Simpson for the extension of a patent of a telegraph cable insulation by gutta percha. The case was elaborately argued by several prominent lawyers.