

Science and Art.

An Old Conical Ship.

A correspondent of the London *Engineer* states that a patent was taken out, in England, in 1852, by Joseph Burch, of Briggs Hall, Macclesfield, for a vessel which was of a double cone (spindle) form, but the propeller was placed at the stern. The object of Mr. Burch was to tunnel through the waves, to obtain a level gradient, and not lose time and space by mounting up and then sliding down the waves. On searching for a record of this patent, we find that it was granted on the 1st. of October of the foregoing year.

Structure of Anthracite.

It has been ascertained that anthracite coal is capable of division into very thin laminae, all of which, examined under a microscope, give evidence of their vegetable origin. During combustion in an ordinary coal fire, the cinders which fly off are very good for these examinations; they easily split into thin layers and show vegetable tissues of various kinds. Even completely decarbonized coal shows this origin. The little white spots are the vessels. It is more difficult to examine soft coal, as the bitumen swells and obscures the vegetable forms. The principal forms observed are thin layers of elongated cells, scutiform ducts and flattened tubes arranged in spiral lines, like rectangular cells around the charcoal-like masses.

Progress of Light and Knowledge.

It is really wonderful to witness the progress which some inventions have made, in spite of the most bitter and powerful opposition. This has been the case with gas-lighting in the city of Philadelphia. The Philadelphia *Ledger* publishes a document or remonstrance made in 1833, by a large number of the most wealthy and distinguished citizens, against lighting the city with gas. They relate in the document that lighting by gas is a most offensive and dangerous mode. They considered it "as ignitable as gunpowder, and nearly as fatal in its effects, and as it regards the immense destruction of property, we believe the vast number of fires in New York and other cities must be, in a great measure, ascribed to this mode of lighting." They also represented that if gas was introduced, "the water of the Schuylkill and Delaware rivers—now considered the most pure and salubrious in the world, as many long voyages have tested—must soon, we fear, experience the deterioration which has reduced the water of the Thames to the present impure and unhealthy state." They also represented that the fetid smell of the drains from the gas-works would soon destroy all the fish in the rivers, and in conclusion, they solicited that "the lighting of the city with oil may be continued."

The keenest satire which can be published on the light which then shone upon the minds of such petitioners is that one of them, Mr. John C. Cresson, is now chief-engineer and superintendent of the city gas works which were erected in 1836, and which are now the pride of the very parties who remonstrated against their introduction. So we live and learn.

Improved Match Safe.

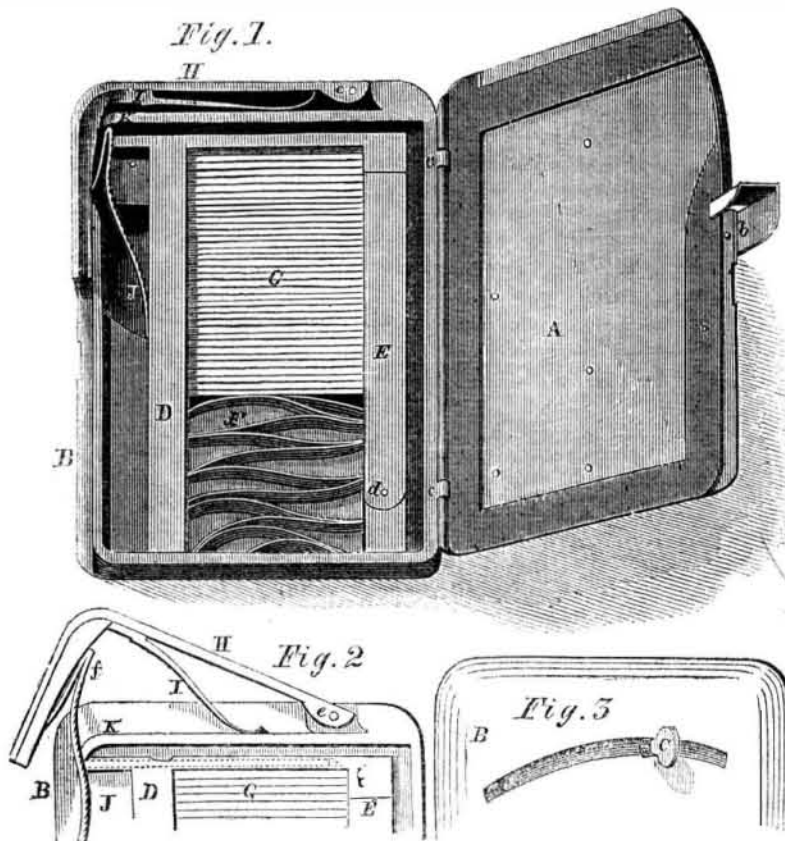
The traveler or hunter who has to wend his way through swamps, perchance to cross rivers, will be glad of a contrivance by which he can keep a supply of friction matches in his pocket safe from damp and moisture, and by which he can instantly procure a light, even in the most cheerless spots, where the snakes glide in and out among the oozy reeds, and the wild fowl cry forth their discordant noises overhead.

This match safe is shown open in Fig. 1. It consists of a port-monnaie-shaped case, B, with a door, A, that closes on it perfectly waterproof, in which position it is held by

the catch, b, the hinges being seen at c. In the back is a small trigger, C (seen in Fig. 3), by which, without opening A, the matches can be forced out. Inside B is an inner case or receptacle, D, one side of which, E, moves on a pivot, d, to admit of the matches, G,

being put in the case; spring, F, keeps them in place, always forcing them to the top of the case. To the top of B is hinged, at e, a bent piece, H, provided with a spring, I, that by pressing upon K tends to keep or throw it open (as seen in Fig. 2). A serrated spring,

MERRILL'S MATCH SAFE.

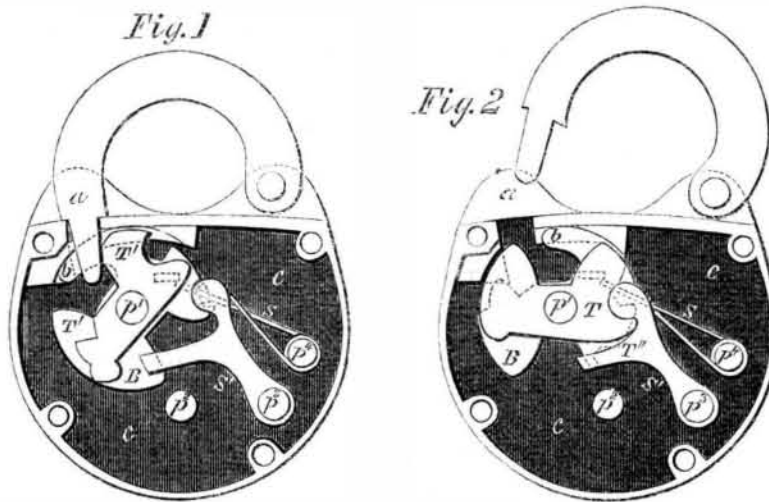


J, is attached to the end of H, and when H is shut, this passes into a receptacle in the case, B, while its bent end, f, catches against the end of K, and holds H in its place. When a light is wanted, the trigger, C, is pushed, and as its inner part is always against the back or non-striking end of the top match, it forces it out of the case, D, along a little channel, until the frictional end comes in

contact with the spring, J; this it forces out, releasing f from K, and the spring, I, instantly acts, pushing up H, and with it the serrated front of J, which, rubbing against the match, ignites it, and so a light is procured.

The inventor is Platt Merrill, of Port Simlac, Mich., who will be happy to furnish any further information upon being addressed as above. It was patented October 12, 1858.

SCHNEIDER'S IMPROVED PADLOCK.



This lock causes the bolt to be shot through the shackle by the action of the shackle itself, but it cannot be unlocked except by the key from without. Our engravings fully illustrate the invention, which was patented January 26, 1858—Fig. 1 showing the shackle and bolt in a locked position, and Fig. 2 in an unlocked one.

The casing, c, and pins, p<sup>1</sup> p<sup>2</sup> p<sup>3</sup> p<sup>4</sup>, are cast in one piece. The bolt, B, is a circular plate with a hole in its center, to fit on pin, p<sup>1</sup>, upon which it can rotate; on this circular plate a bolt hook, b, is formed, and notches to catch the stirrup of the tumbler and trigger; and B has also a recess, which is so shaped as to present a cam-shaped surface to it to make it move on p<sup>1</sup>. B has projections on the under side, one forming a collar pass-

ing over the pin, p<sup>1</sup>, and supporting B. The other projection is a stud, which affords a hold to the spring, S, and it is so placed as also to limit the motion of the bolt. T<sup>1</sup> is a tumbler set on the same pivot as B, and can rotate until it meets with the slotted end of the shackle, a. The shape of this tumbler cannot be described—we must refer the reader to the engraving. A trigger, S<sup>1</sup>, provided with a projection, T<sup>2</sup>, is placed on a pin, p<sup>2</sup>, and the spring, S, presses on its back. To lock the padlock, the shackle is pressed in the lock, and the front of the shackle pressing against the tumbler, T<sup>1</sup>, and plate, shoots the bolt hook through the slot in it, and so fastens the lock. The trigger, S<sup>1</sup>, then falls, by the force of the spring, into proper notches in the plate and tumbler, and holds the bolt securely locked. The key, upon being intro-

duced by having its tube placed on the spindle, p<sup>3</sup>, will first lift the trigger out of the way, and then operate the bolt.

None but the proper key will open this lock, as all the parts have to be operated at the proper time in the process of unlocking and in their correct sequence, or the bolt cannot be shot. This is a good padlock, and although the parts are few, it is sufficiently complicated to be reliable and safe.

The inventor is J. Schneider, of Chicago, Ill., and any further information may be obtained by addressing Charles Best, Box 1,137, Post-office, at the same city.

POTATOES THEN AND NOW.—In 1597, "Virginia potatoes," as they were then called, were just beginning to be known, and the sweet potato was cooked and eaten in a manner quite different from that pursued at the present day. An old writer says of them:—"They are used to be eaten roasted in the ashes; some when they be so roasted infuse them, and sup them in wine; and others, to give them the greater grace in eating, do boil them with prunes, and so eat them. And likewise others dresse them (being first roasted with oile, vinegar, and salt, every man according to his own taste and liking; notwithstanding howsoever they be dressed, they comfort, nourish and strengthen the bodie."

BORAX has usually been made from the crude bi-borate of soda evaporated in Tuscany, but a new mineral—the borate of lime—has recently been discovered in South America, from which it can be manufactured.



INVENTORS, MILLWRIGHTS, FARMERS AND MANUFACTURERS.

FOURTEENTH YEAR

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