

new. The degree of pleasure attained augments in mathematical ratio with the number of tunes the box plays.

M. J. Paillard & Co., 21 Maiden Lane, have given special attention to the importation of music boxes for the past seventeen years, and keep a great variety constantly on hand, which play from 2 to 72 tunes, and cost from a few dollars each to as many thousands. Music boxes are mostly made in Switzerland, and are an article of large exportation from the city of Geneva.

CONVERSION OF WOODEN SHIPS.

This subject is largely occupying the attention of our English cousins, the *Engineer* of Nov. 16th presenting an elaborate plan, illustrated by engravings for converting their "wooden walls" into iron-clads. This journal says: "We must not forget that this wooden fleet was, until the advent of iron clads, both in the number and character of its component ships, the most powerful fleet in the world. Its construction cost vast sums of money, and employed the talents of perhaps the most able constructors who ever existed in any country. Even at this moment, it is questionable if it be possible to set better ships afloat as regards strength, seaworthiness, and comfort. Much importance has been attached to recent changes in the construction of vessels of war, but, after all, these changes relate almost solely to what we may term the military equipment of the ships, either not operating at all, or else operating prejudicially as regards every question connected with the sailing, steaming, and turning qualities of the hull."

There is some force in the recommendation of the *Engineer* to utilize the present wooden navy of Great Britain, judging from the list given, of seven three-deckers and fifty-one two-deckers; but the question of the feasibility of the project turns wholly on the availability of these hulls for the purposes of modern warfare. Mr. C. F. Henwood submits a proposal to raze the three-deckers to the lower deck, just above the water line, and then to armor the side with a skin of one-and-a-half-inch iron, covered with eighteen inches of teak carrying six eight-inch iron plates. The deck to be plated, and having above a raised spar or hurricane deck of iron, over the tops of the turrets, strengthened and supported by girders on the principle of our American steamboats. This deck to be enclosed by upright bulwarks of iron ordinarily, but when in action to be lowered and lie upon the decks. It is supposed by the *Engineer* that these girders, supported and strengthened by trussing, would restore the vertical stiffness lost by cutting down the ship's sides. Mr. Henwood proposes to convert the smaller vessels into monitors in a similar manner, except that where the large ships would carry six inches of armor the monitors would carry twelve inches. The cost of this conversion is calculated at less than half that of building new.

Engineering, on the contrary, ridicules the idea of converting what it calls "our matchwood fleet" into ships adapted to the purposes of modern warfare. It says: "Strength of structure is certainly a most important consideration in connection with our iron clad fleet, and does any one suppose that the wooden ships, even if they are still as good as new below the water-line, will, when cut down and loaded with even so little as eight inches thickness of armor, be really strong ships, fit for any service—for ramming, and for all the rough work of modern warfare? They would have nothing like the lateral strength required; they have no compartments, and would very likely break open and sink on the first blow from an enemy's ram. The old timber ships cannot even bear the vibration of their own screws. What would they be, then, when half their lateral strength in the shape of decks was taken from them?"

John Bourne says: "Our old wooden ships, refurbished and plated, might do if we had no more enterprising enemy to apprehend than the Chinese; but it would be quite inexcusable, with our knowledge of what is being done and contemplated by other nations, to send our sailors into action in ships so weak and imperfect that no amount of courage or seamanship could possibly avert disaster and defeat."

It is undoubtedly the part of wisdom in the case of the English navy to begin *de novo*. It is folly to suppose that those wooden hulls when razed and loaded with iron of sufficient protective thickness at and near the water line, and carrying immense turrets, could withstand the assaults of thoroughly built monitors. They were not constructed for such kind of warfare as must be waged on the seas hereafter. Of how much service would they be in such an encounter as that between the Austrian and Italian fleets at Lissa? Even the *Re d'Italia*, immensely stronger than any wooden ship could possibly be, could not stand the shock of ramming although almost impenetrable to shot. There is a vast difference between wooden ships built for plating and those built for the old style of naval warfare. These last are not fit even for harbor defence or floating batteries. Under the fire and direct assaults of true iron clads they would become the coffins of those who put their trust in them.

Patent Laws in Mexico.

Among the acts of the bogus Empire of Mexico, we hear of one which, it may be hoped, the legitimate government will soon find leisure to confirm or improve upon. We refer to the introduction of a system of patent laws; conferring rights for five, eight or twelve years, at the option of the inventor, with fees attached, respectively, of from five to twenty, twenty to forty, and forty to sixty, guineas. We might mention the features of the system in detail; but of course Maximilian's regulations are of small practical moment to any body at present, as no validity is very likely to be allowed to his acts by the future rulers of the country.

THE Russian iron clad fleet was begun in 1861 by the building of the *Pervez*. Now the fleet consists of thirty armored ships of different descriptions,

PITEZELS EXCELSIOR CLAMPS.

The engraving furnished herewith will explain itself to harness makers, shoemakers, and other manufacturers of articles made of leather and other similar material.

It can be attached to any bench, stool or table, and is strong, cheap, and efficient in operation. The fixed jaw, A, is secured to a bed of cast iron which has a flange extending up the back of the wooden jaw, and a rib which fits a mortise in the jaw, the two being secured in position by a screw bolt passing

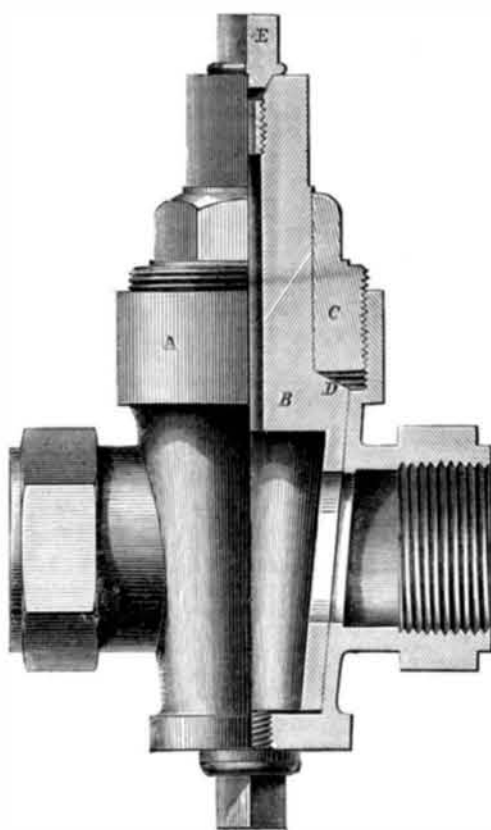


through the iron and the wood. The movable jaw, B, is properly secured to the upper part of the lever, C, as seen in the engraving, which passes through the table and is pivoted at D. An extension of the bed plate clasps the table and is secured by a bolt. The lower end of this extension bears a small roller over which the strap, E, passes, one end attached to the lever, C, and the other to the treadle, F. The operation can now be readily understood. Depressing the treadle closes the jaws, and a rubber spring—not shown—between the jaws at the bottom, throws them apart when the pressure on the treadle is removed. The treadle can be held at any point by a simple ratchet rack on one of the ~~table legs~~ ^{table legs} to engage with a projecting plate of metal on the side of the treadle. The jaws are open from the table up, so that a dash board, the folded parts of a carriage cover, or long boot-legs, may be held. A diploma was awarded at the late State Fair of Michigan.

Patented Nov. 6th, 1866, by John H. Pitezels, Three Rivers, Mich., whom address for other particulars.

LEHMAN'S IMPROVED STOP COCK.

The improvements contemplated by the inventor of the cock herewith represented are of a nature which have often deman-



ded the attention of engineers and others engaged in steam and gas work. The objects sought were a straight port or way, which is not secured in the ordinary globe valve; perfect joints without the possibility of leaking; freedom from danger under pressure, and security against freezing. These appear to have been attained in the cock shown in the en-

graving. It is shown half in perspective and half in vertical section.

The shell, A, is not open at the bottom as in ordinary stop cocks. The plug, B, is open at the bottom, and, as seen by the shaded portion in the engraving, is hollow nearly to the stem. The upper portion of the shell is enlarged to form a stuffing-box into which the follower, C, is screwed. The stem of the plug passes through this follower, and that part just above the seat, at D, is beveled toward the circumference. This beveled form, in combination with the flat bottom of the follower, compresses the packing at its outer circumference and thus prevents leaking. The follower also keeps the plug in its seat, and does this more securely and effectually than it is done by the screw and spring washer in the ordinary cock. Before the plug could be blown out by pressure, the threads of the follower and stuffing-box must be stripped.

The little screw, E, at the top of the plug stem, has a central longitudinal channel, communicating, just under the head, with a lateral opening. These openings communicate with the interior of the plug by a small central hole in the stem. Screwed into the bottom of the case, is another valve screw with similar openings. Both these screws have seats or are packed so that when closed they are tight, and when opened in the slightest degree they make a passage through the plug. It will be seen that by this simple device all freezing and bursting the case is obviated.

Letters patent for this invention were secured through the Scientific American Patent Agency, Oct. 16, 1866, by B. F. Lehman, Bethlehem, Pa., who will furnish all additional information to persons interested.

GOVERNMENT GAS LIGHTING.

The unpopularity of gas monopolies, and the difficulty of checkmating their doublings and combinations, are not confined to American cities. The town of Prague, in Bohemia, has suffered in the same manner as New York, until the municipal authorities have decided to abate the burden by taking the business into their own hands. Corporation gas works have been erected and pipes laid in the most perfect manner yet known, and gas of improved quality is furnished to the citizens at about \$1 75 per 1,000 feet against \$2 25 formerly charged. The private company is, of course, compelled to "follow suit," and can hardly manage to confederate with the opposition establishment, after the American fashion. Shall New York and Brooklyn look to Albany for gas, as well as for police, health, and the other necessities of city life?

A proposal analogous to this is before the British Parliament, for turning over the business of supplying London with gas to the Metropolitan Board of Works. The city corporation is also in the field with a rival application for power. Both schemes propose the utter extinction of the private gas companies, and the purchase of their works, by agreement or compulsion, by the public authorities; a plan much less politic, fair, and practicable, than that of the Bohemian city, which establishes simply a permanent and unpurchaseable competition in the interest of the public, to keep down abuses and extortion.

Local authorities manage the gas-making in a number of towns in England, but probably not always with the most satisfactory effect for consumers; their prices in some cases being reported at a dollar or more per 1,000 feet, while Liverpool is supplied with an article of splendid illuminating power at 67 cents, and Plymouth with a poorer article, as low as 61 cents.

The competitive plan is evidently the only true economy; although the above comparison of prices, given by the *London Journal of Gas Lighting*, amounts to nothing of itself, the municipal prices quoted being only from small towns, where the cost is necessarily higher. A general return has just been made to Parliament under an act of the last session, from 157 chartered gas companies, and thirteen municipal boards; showing their rates, cost of coal, capital, and dividends. The experiment of public lighting on a large scale, like that of Liverpool or London, remains, it seems, to be tried in England.

Reservoir For Storing Petroleum.

The *Grocer*, (London), says: -

A new method of storing inflammable oils has been invented and patented by M. Oklandi and M. M. Lizard and Labarre, of Marseilles. The reservoir is a bell-like vessel without bottom, fixed within a water vessel rather taller. At the upper part of the bell are two stop cocks—one for filling it, and the other for drawing off the oil. The surrounding cistern being filled with water to the height of the bell, one of the cocks being turned to allow of the escape of the air, the bell also becomes filled with water. The oil is then pumped in, and being lighter than the water it remains at the top, and drives a quantity of water equal to its own volume out of the cistern by an escape pipe. The condition of the interior of the bell is shown by a tube and a float. To draw off the oil the discharge cock is opened, and more water being poured into the cistern, the oil is forced out of the bell. There is no danger from fire or leakage. At the bottom of the cistern is a small reservoir arranged to receive any impurities which may be deposited by the oil. The inventors assert the great storing economy of this system.

It will be seen that this plan does not materially differ from the apparatus used for storing illuminating gas being a modification of the common gas holder. If we are not mistaken, a method similar to this was in use in this city four or five years ago, and is still employed. It seems to be well adapted for the storing of inflammable oils, but not for protecting them during transportation.

A LINE of steam carriages for common roads is about to be established between Marseilles and Aubagne, a distance of ten miles. There are to be three departures daily, and the price of a return ticket will be 1^{fr}. 20c.