The specific gravity of the bath may vary from 5° to 15° Baumé s hvdrometer and still furnish good results.

Electro-silvering baths do not generally work so well when freshly prepared. If properly used and cared for they improve by age. At first the deposit is often granulated, bluish or yellowish.

It is customary to mix portions of an old bath with a freshly prepared one. Some platers introduce small quantities of ammonia instead to age the liquid.

Bisulphide of carbon in small quantities imparts a bright luster to plated articles. An ounce of the bisulphide is put into a pint bottle filled with a strong solution of the cyanide of potassium and silver, briskly shaken, and a few drops of this liquid poured into the bath occasionally until the work appears sufficiently bright. An excess of bisulphide must, however, be avoided, as it will spoil the bath.

What has been said about the arrangement of battery in articles of nickel and brass plating will also apply here. (See p. 153, vol. xliii., and 4, current volume.)

Electric Light Experiment.

The recent experiment of lighting the Hoosac (Mass.) Tunnel with electricity was with an apparatus placed on a platform car which was pushed slowly along by a locomotive. The generator of 4,000 candle-power was operated by an engine of 20 horse power, and each of the burners was of 2,000 candle-power. In the parts of the tunnel free from smoke the light was thrown strong enough to do track work over 500 feet away, and driving spikes and shoveling 1,000 feet off. Between the central shaft and the east portal, where the smoke was so dense that an ordinary locomotive light would not be visible 10 feet away, the electric light could be seen for over 100 feet. In some parts of the tunnel one could read by the electric light 250 feet from the car. The State authorities are soon to witness an experiment, and it is probable that the improvement will be adopted. If the electric lights are adopted power can be supplied from a turbine water wheel now lying idle in a shop at the east end. It is thought that twelve lanterns will light the tunnel, except when the smoke is unusually dense.

IMPROVED LOCK FOR MUSEUM CASES.

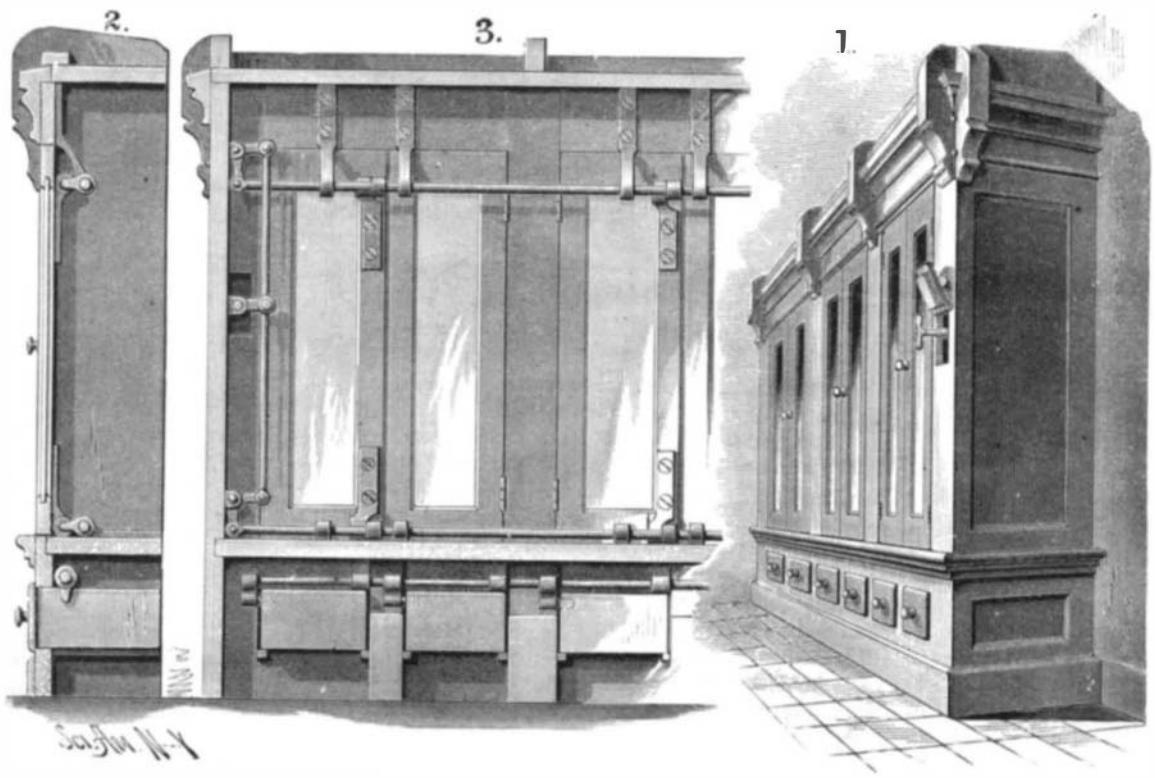
The difficulty of properly fastening the doors of museum, cabinet, and library cases in institutions where such cases are employed in large numbers, is only too well appreciated by those having such matters directly in charge. The usual method of bolting one of a pair of doors and locking the other, or of locking both doors simultaneously where cases are numerous, entails a great deal of labor, beside incumbering the person doing it with a weight of keys that is really burdensome.

We give herewith engravings of an improved system of locking mechanism for museum doors, by means of which an almost unlimited number of doors and drawers may be securely fastened by a single operation. This invention has been practically tested in the Museum of the University of Michigan, where its application to the newly-built cases effected a saving of $800, beside furnishing a complete fastening, which not only holds the doors securely, but draws them into place should they be left slightly ajar before locking. The inventor has shown us letters from several of the professors in the Michigan University indorsing the lock in the highest terms.

The bolt consists of a steel rod extending along the top and another at the bottom of the series of doors, and carrying beveled hooks capable of engaging sockets or eyes attached to the doors. The rods are supported at suitable intervals by guides attached to the casing of the doors. In like manner a rod extends over a series of drawers and carries hooks which engage sockets attached to the sides of the drawers. The upper and lower continuous bolts are each connected to a bell-crank lever, and the two levers are connected by a vertical rod, so that the bolts will move simultaneously in the same direction. The vertical rod is connected with a lever whose pintle extends through an opening in the front of the case, and is capable of being turned by a key adapted to it. The opening in the front of the case is closed by a small door, which is locked by means of a fine lock and key of approved make.

The bolt which locks the drawers is connected with the lower door bolt by a lever, so that when the key is turned, the bolts at the top and bottom of the doors and at the top of the drawers are all moved at once, permitting of opening any of the doors or drawers in the case. The bolt may be applied to cases containing any number of doors, and in fact to any number of cases if desired, so that one motion locks or unlocks the entire series. When the doors are closed and bolted the key is removed, and the small door which covers the pintle of the unlocking lever is locked by a single key, rendering all secure by the use of a single key weighing but the fraction of an ounce, and capable of being carried without the slightest inconvenience. These bolts are very cheaply made, and yet strong and durable, and capable of accomplishing all that is required of them.

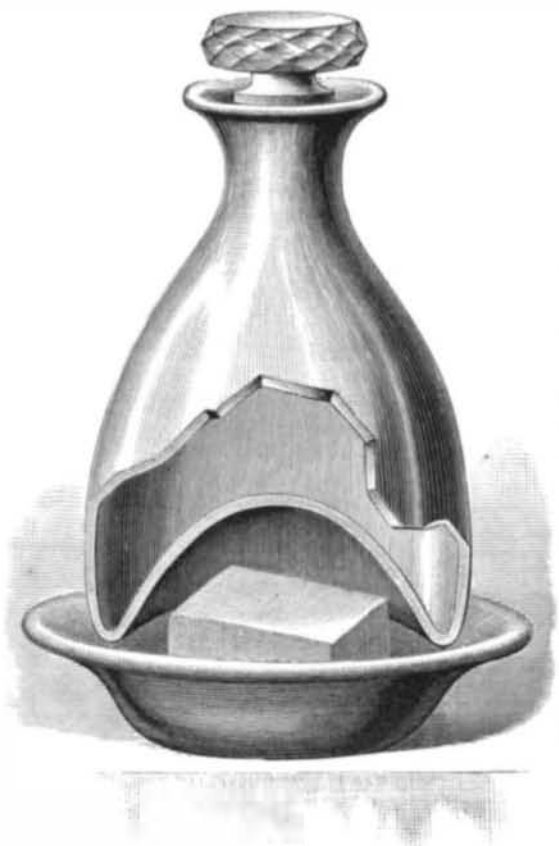
This useful invention was recently patented by Mr. Andrew Climie, of Ann Arbor, Mich.



CLIMIE'S MUSEUM CASE LOCK.

BUTTER COOLER AND WATER HOLDER.

The engraving shows a novel device for holding water and cooling butter. It consists of a water bottle, having a deeply-recessed bottom, and a butter plate of sufficient size



COMBINED BUTTER COOLER AND WATER HOLDER.

to receive the base of the bottle. The cavity in the bottle is sufficiently large to inclose the butter without touching it, and the bottle, when in use, is filled with water and ice in small pieces.

This invention was recently patented by Mr. P. Dorlon, of Brooklyn, N. Y.

Mr. Oliver Byrne.

We record with regret the death of Mr. Oliver Byrne, C.E., who died at Grecian street, Maidstone, England, on December 9, 1880, aged 70 years. For some time past he had been in failing health, and lived a retired and secluded life. About two months ago, when in London, he caught a violent cold, which terminated in inflammation of the lungs, involving the smaller bronchial tubes, from which he gradually sank. Mr. Byrne was the author of several engineering works, and notably editor of, and a large contributor to, "Spons' Dictionary of Engineering." He was the inventor of the dual system of arithmetic, for which he claimed many peculiar advantages.

MISCELLANEOUS INVENTIONS.

A reel for measuring bagging, patented by Mr. Charles J. Le Roy, of Palestine, Texas, may be used for handling, measuring, and cutting bagging, matting, carpet, etc. It consists of a spool or roller from which the stock is taken, a reel upon which it is wound from the roller, a cutting board or table, and a measuring wheel, by which the operations named are simply, accurately, and easily performed.

In a button hole attachment for sewing machines, patented by Mr. John K. Harris, of Springfield, Ohio, an automatically acting and adjustable feeding device gives the cloth an intermittent lateral movement combined with a forward movement by improved devices, whereby an extra pressure of the presser piece upon the cloth is obtained, the locks of the stitches are caused to terminate in a straight line either above or below the surface of the material or at the edge, according to the regulation of the tension, and all upword or downward motion of the goods around the needle is prevented.

A feather renovator, patented by Messrs. Jefferson Hatch and Leonard Fortune, of Felt's Mills, is intended for cleansing feathers before using them for beds, both when new and after they have been used. The feathers are placed in a rotating cylinder, in which the feathers are subjected to the action of a strong blast which issues from openings in the hollow shaft of the cylinder, through which air is blown by a fan blower, the air finding outlet through a perforated or reticulated door in the side of the cylinder, through which the feathers are put in and taken out.

Mr. William A. Jennings, of Dyersburg, Tenn., has patented a clevis that may be adjusted to draw-beams of different dimensions. Two bars are hinged to the ends of a link. A screw bolt is pivoted to the free extremity of one of the bars, and its threaded end passes through an eye in the free end of the other bar, where it may be secured by a nut. The pivoted bolt is passed through a hole in the beam to which it is desired to attach the clevis.

A skirt ironing board, patented by Mary H. Baldwin, of Hamlin, Texas, has hinged detachable leaves, with devices for holding the leaves open, the board being hinged to a frame, the lower part of which forms a box for receiving that part of the article which hangs down, to protect the same from dust and dirt and to keep it moist.

A jack screw, patented by Mr. William H. Williams, of Key West, Florida, appears a very effective device for raising heavy weights. A peculiarly constructed detachable pawl, combined with a bifurcated lever for actuating the screw, is the main feature of the invention. The construction of the pawl permits the screw to be worked in either direction according as the pawl is adjusted; its detachability affords means for preventing any tampering with the screw by unauthorized persons.

Mr. Karl Kreutzer, of New York city, has patented a game bat of that class having oval-shaped heads fitted with netting. He bends a piece of wood to the shape required, the strip having wire rods embedded into it at opposite sides throughout its length for strengthening the bat, and gore pieces fitted into the crotch in a peculiar manner to resist strain and prevent disconnection at that point.

Mr. Robert Watkinson, of Salford, England, has invented an improved coupling for hose and other pipes. The joints are formed by interlocking devices, assisted by an elastic packing, which not only maintains the locking of the parts after they are joined, but acts to tighten the joint through the action of interior pressure upon the packing.

An improved pile for the manufacture of composite metal plates, patented by Mr. Dolphus Torrey, of New York city, protects the metal forming the interior of the pile from the action of oxidizing flames and gases while in the heating furnace and immediately subsequent thereto. The pieces of metal forming the pile are so shaped that no bands, ties, bolts, or rivets are required to keep them in position. The pile is made of two plates and intermediate band and steel scrap, which fills the space inclosed by the plates and band.

Mr. Otis D. Thompson, of Elkhart, Ind., has patented an improvement in wind wheels, which consists in a novel construction, arrangement, and operation of the wheel and vane relatively to each other, whereby provision is made for throwing