

IMPROVED FIREPROOF CONSTRUCTION.

Such fires as those of Chicago and Boston have brought out the great want of fireproof material to be used in the finishing of buildings, such as roofs, cornices, partitions and interior walls. In the case of Boston, if the mansard roofs and the upper portions of the high buildings had been made of metal or other fireproof material, such vast destruction would have been impossible.

In the annexed illustrations, is represented one of the latest improvements in fireproof construction. It consists of wall surfaces and partitions, all the material composing which is of iron. The form of the lath is such that, when in place, it presents a firm surface; while at the same time, the latter is sufficiently open to receive and securely hold the plaster coat. The cost of the construction is claimed to be more moderate than that of any other plan now in the market.

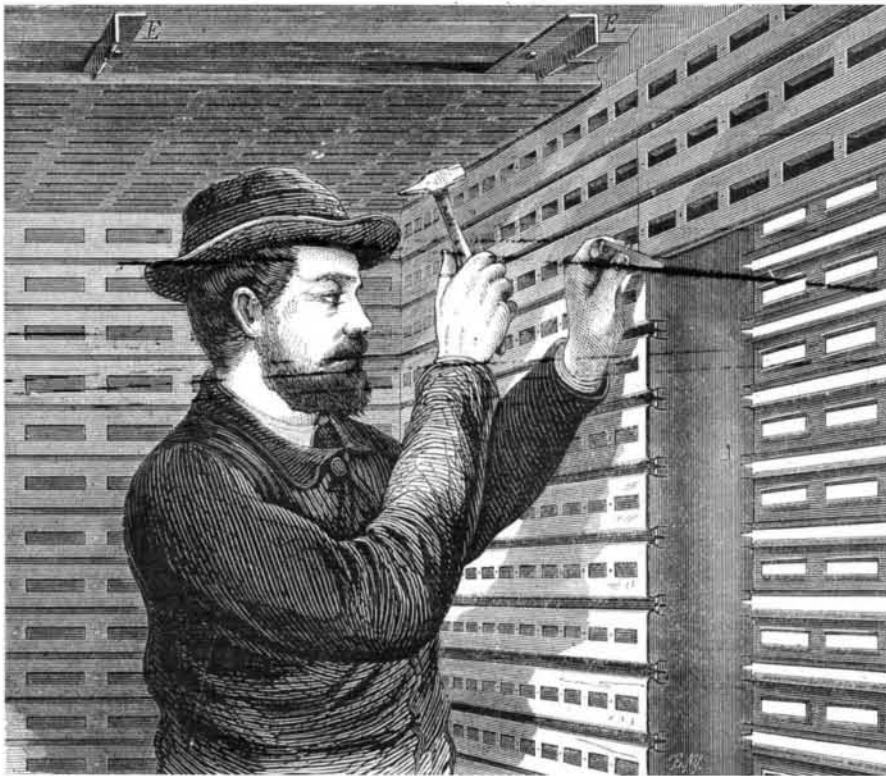
Fig. 1 is a perspective view of a room which the workman is fitting up with the improved lath. The mode of fastening the latter to the studding for side walls and ceilings is clearly represented. As there are no screws, pins, or rivets, the workman with one blow of his hammer securely locks the two adjacent laths in place.

As shown in Fig. 2, the laths are made of strips of thin sheet iron, about 36 inches long, which, by means of a machine invented for the purpose, are formed to the required shape, perforated as at D, and delivered complete for bundling at the rate of one thousand per hour.

Fig. 3 is a full sized section of lath in position, with a side view of the perforated edge of the stud, A, showing the two tongues, B, by means of which the laths are fastened. A wedge-shaped tool is driven between the two tongues, so that they are bent outward, locking the edges of the laths firmly to the stud. As is evident, the strips may be secured in position with great rapidity.

Figs. 4 and 5 represent a side view and section of the corrugated studding, as used for full partitions where the plaster coat is applied to both sides. The same illustrations also show the mode of fastening the studs to the floor by an adjustable foot, C. Fig. 7 gives the arrangement of the studding where great stiffness is required to support the floors. Fig. 6 is a section of wall, showing how perfectly the plaster

such a state of purity that it may be unfailingly recognized by characteristic properties, and produced in court as evidence, D. A. von Bastelaer gives a process, already found of advantage in several judicial inquiries, which is based essentially on the solubility of phosphorus in ether and its almost perfect indifference towards solution of ammonia if in contact with it for only a short time. If the substance from which phosphorus is to be separated is not fluid, such as phosphor paste, it is first reduced by addition of

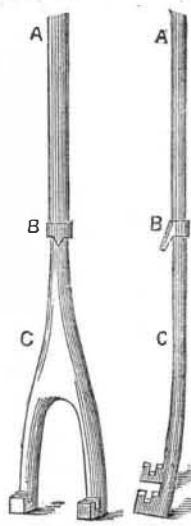


HOLMES' IMPROVED FIREPROOF CONSTRUCTION.—Fig. 1.

water to the condition of a sufficiently thin, pap, in order that it may be thoroughly mixed with ether by agitating for some seconds. Not only the weight of the original substance taken, but also that of the added water, is noted. After the reduction, about 100 grains, or any other suitable weighed quantity, of the fluid mass is taken, mixed with as much ether, and left in contact therewith in the cold for four or five hours, during which period the mixture is to be violently shaken at frequent intervals. The ether, being now decanted, is replaced with an equal quantity of fresh ether, and these operations are repeated about three times. The united ethereal liquids, protected from dust, are allowed to evaporate spontaneously at 59° or 68° Fah. in a shallow dish. At this point some water is added, that the phosphorus may be protected from the action of the air after evaporation of the ether. If what remains after removal of the ether be gently warmed to 122° or 140° Fah, the phosphorus unites itself with a portion of the fat, forming a fluid globular mass under the water, while the remainder of the matter taken up by ether rises to the surface as a thin film. The globule containing phosphorus is now treated with about 10 or 15 grains of strong aqueous ammonia in a small flask and violently agitated. This treatment is repeated a few times. Lastly, if the adhering ammonia be removed by washing first with water acidulated with sulphuric acid, and then with pure water, the phosphorus remains behind, certainly somewhat soft in consistency, but otherwise exhibiting all the physical and chemical properties which characterize it. It may be brought in a little glass tube and handed to the judge as *corpus delicti*.

The "Jackson" Dipper.

Mr. B. Pennington presents to the photo fraternity, through the Philadelphia Photographer, a new plate dipper, which is evidently a most useful little affair. He dedicates it to the public, not intending to secure it by patent. The body, A, he makes out of hickory, covered with shellac. At C it is curved, to keep the plate at a proper distance from the handle. B is a silver slide, which moves up and down on the handle so that any size of plate may be held. One special advantage of this instrument is that plates may be placed in the bath back up; floating particles of dirt are thus prevented from injuring the film, which leaves the bath clean. Operators who love good work will find this dipper to be of value.

**English Machinery for the American Market.**

By reference to our advertising columns, an announcement from a celebrated English manufacturer will be found, offering, in this market, his ten inch lathes, the parts of which are made in duplicate by machinery, so exactly as to render them interchangeable. Parties wishing a superior lathe, of the size indicated, would do well to send to the manufacturer, G. E. Illingworth, Leeds, England, for photograph, and obtain his price list.

THE total number of admissions to the Vienna Exhibition from the opening to the closing day was 7,250,000.

Ice Caverns in Switzerland.

The Swiss Times says: Some fine caverns have recently been discovered on the right flank of the Monteratsch glacier, near Pontresina. At about half an hour's march from the foot of the glacier, there is a gallery in the ice about 150 feet in length and 30 feet in height (just beneath the surface), which serves as the vestibule to the caverns. At its extremity there is an opening about the height of a man, within which there is a sharp descent over blocks of ice.

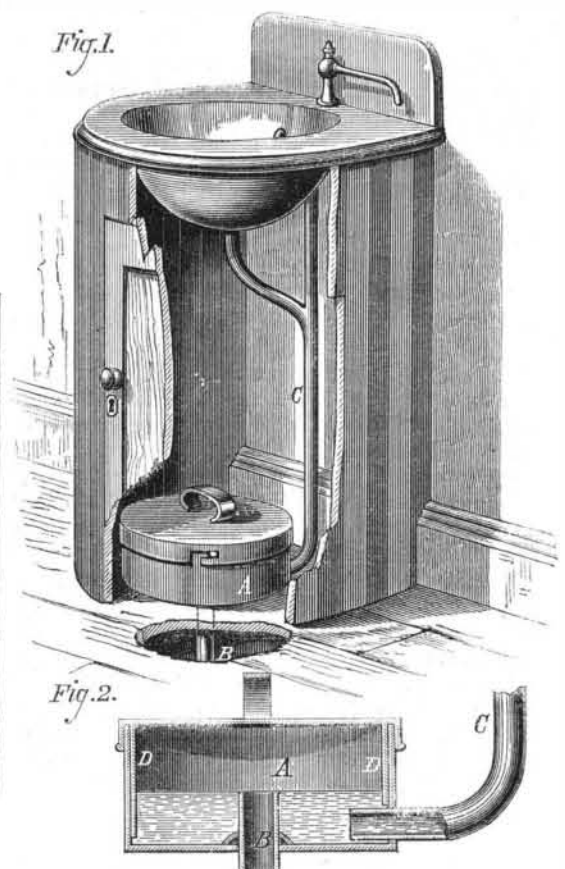
From this point ropes and lights are needed. Some distance from the portal rises a splendid vault, seemingly cut out of the pure ice, and two lateral galleries open out from this, but of less height. The temperature is not excessively cold, and the ice is dry. There is a lake within the large cavern, upon which blocks of ice are floating, and, in the distance, a small waterfall which supplies it. The colors of the vault and the crevasses show brilliantly, even under the moderate light of lamps.

ANTHON'S SEWER GAS TRAP.

Every one who has ever examined the operation of the common V trap has doubtless remarked that, at times, a gurgling noise proceeds from it just after the last portion of the water disappears from the basin, tub, or sink. This noise is caused by the trap emptying itself when the velocity through it is too great, and in such case the apparatus is said to siphon out. Thus acting, it no longer serves as a sewer gas trap, but permits the foul emanations to escape and enter the house.

Experience of this fact, as well as the knowledge that such a trap, even when provided with a trap screw, can seldom be cleansed when stopped up without the aid of a plumber, has led the inventor to devise the improved apparatus represented in our engraving. There is a cylindrical

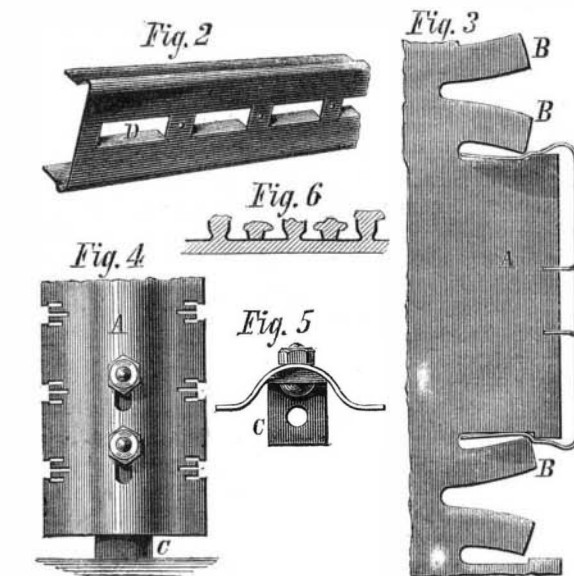
box, A, into which the soil pipe, B, is introduced so as to extend some distance above the bottom, as shown in the sectional view, Fig. 2. C is the waste pipe leading from the basin, the open end of which, communicating with the box, A, is at a lower level than the orifice of the pipe, B. The cover of the cylinder is arranged with the ordinary outer flange, having a bayonet joint to secure it in place (Fig. 1), and, besides, is provided with cylindrical walls, D, Fig. 2, which fit closely inside of box, A, and extend down below the surface of the water.



It is claimed that this device effectually prevents the escape of sewer gases from the pipe, B, as they cannot pass down through the liquid and under the lower edge of the inner cylinder. The cover being easily removable, no obstacle is placed to the cleaning out of the box without the aid of a plumber, whenever it becomes necessary.

Patented August 5, 1873, by Mr. George C. Anthon, of No. 13 West 35th street, New York city, who may be addressed for further information.

M. GRUNER, France, has been engaged in measuring the quantity of heat needful to effect the fusion of cast iron slags, dross, and steel, in order to compare the heat produced in blast furnaces with the heat utilized. He finds that cast iron melts at from 2,664° to 2,874° Fah. The heat of a hot blast iron furnace, for cast iron, is ordinarily reckoned at 3,092° Fah. Bessemer steel, according to M. Gruner, melts at 2,912° Fah. Siemens estimates the heat necessary in a furnace to melt steel as 3,600° Fah.



coat is locked and secured by the form of lath; also how completely the clinching of the coat is distributed over the surface, thereby insuring even drying, without cracking. Plasterers who have laid coats on this lathing state they can cover twenty-five per cent more surface, with the same labor and time, than on the ordinary wood lath.

The system, avoiding, as it does, the use of rivets or screws, is quite novel, and is secured in its various forms by letters patent. It may be applied to a variety of purposes, and it has been suggested that freight depots, shops, and similar buildings, can be constructed by setting up the frame and lathing the exterior, outside of which a coat of stucco might be applied, thus giving a fireproof structure at small cost.

Further information, circulars, prices, samples, etc., can be obtained by addressing the inventor, Isaac V. Holmes, or The John Cooper Engine Manufacturing Company, at Mount Vernon, Ohio.

The Estimation of Phosphorus in Fatty Mixtures.

In order to separate phosphorus from articles of food, vomits, and other matters containing fatty substances, in