Science and Art.

Extraction of Silver from Copper Ores.

Kocubly, in speaking of the extraction of silver from copper ores, at the Malden Smelting Works, near Freiberg, says that the process observed is an economical and efficient one. The copper stone, containing from 50 to 70 per cent of copper, 8 to 15 per cent of lead, and 0·20 to 0·45 per cent of silver, is stamped, sifted, and roasted in a double furnace with two hearths, one above the other, first in the upper hearth and then in the lower one. During the first stage of the roasting, sulphides of copper are converted into neutral and basic sulphates, which are again decomposed during the second stage of the roasting, giving off sulphuric and sulphurous acids, and being for the most part converted into oxyd of copper, while sulphate of silver and a small portion only of the sulphate of copper remains undecomposed. The roasted mass is again stamped and ground, and mixed with from 4 to 8 per cent of chloride of sodium, and again roasted. By this means the copper is converted into chloride, and chlorine compounds of the other metals are also produced. After this roasting is finished the mass is extracted in wooden tubs, under hydrostatic pressure. At first, lukewarm water is used for this purpose, and when the greater part of sulphate of soda and other salts have been removed a solution of chloride of sodium is substituted. This dissolves the chloride of silver into precipitating tanks containing copper, which is dissolved while the silver is precipitated.

Lockjaw in Horses.

This is a terrible malady to which horses are sometimes subject, and it is generally fatal owing to the want of skill on the part of veterinary physicians. The method pursued by them in its treatment has been blistering, clystering, &c., which rather aggravates than relieves the spasms that usually attend it. Death generally ensued by this practice, and the disease has been held to be almost incurable. In a late number of the Edinburgh *Veterinary Review*, a new system of managing lockjaw is described, and nearly all the cases in which it has been applied, have resulted favorably. The plan consists of a hot water packing similar to that pursued in the "water cure" for the *genus homo*.

As soon as the horse is observed to be affected with tetanus, it is wrapt from head to tail in four or five pairs of blankets, which have been wrung out of warm water at a temperature of 200° Fah. The animal is then allowed perfect rest and quietness for about two hours, when warm water of the above temperature is poured along its back outside of the blankets, and another like period of repose allowed, and so on until a cure is effected. A thin gruel of flour, oat, or Indian corn meal is given, when the jaws of the animal are capable of being opened.

As horses are liable to take lockjaw from pricks in the feet caused by careless or unskillful blacksmiths while shoeing them, this simple method of managing the disease can be applied by any person, and is designed, we think, to be of considerable benefit.

Improved Boiler Furnace.

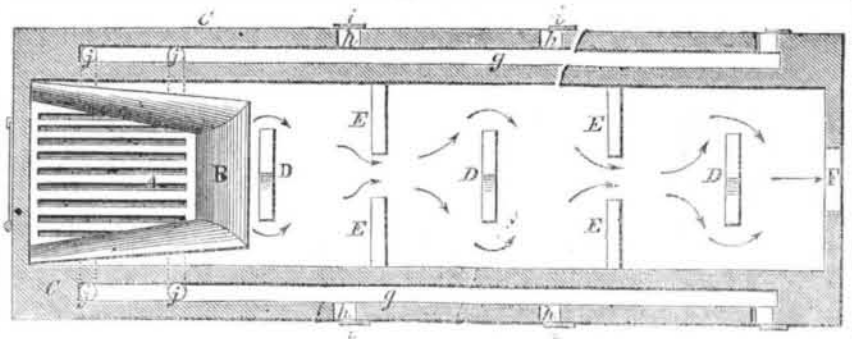
This is an arrangement of fire bridges in the bed of a furnace designed for heating a double cylindrical boiler, so that the gases and products of combustion may pass off quickly, and give up nearly all their heat to the boilers in their passage under it. The fire-place or grate is made gradually tapering in order to prevent the escape of any gases that are unconsumed.

In our illustrations, Fig. 1 is a top view of the hearth and fire-place, with the boilers removed, and Fig. 2 is a vertical cross section of the furnace, with the boilers in their place.

A are the grate bars, and B the sloping sides of the fire-place. C is the outer wall of the furnace, which is hollow, having a passage, *g*, throughout its length. This passage communicates with the external air by passages or holes, *h*, that can be closed or opened by doors, *i*, so as to admit a greater or less quantity of air to the fire, as desired. The air entering any of these doors becomes heated in its passage through *g*, and passing through *j* into the chamber, *k*, is presented to the fire in a heated state, which is one of the best for obtaining proper combustion. The two boilers, G, are supported on side bridges, E, and central bridges, D, arranged as shown

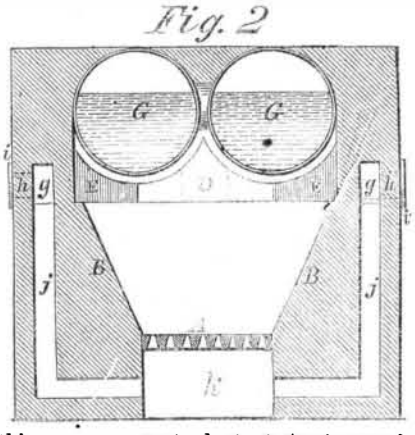
SKELLY'S BOILER FURNACE.

Fig. 1



in Fig. 2, and the gases and products of combustion, passing in the direction of the arrows to the flue, F, give up their heat to the boiler, being detained long enough to impart more heat than is usual, and at the same time, by

Fig. 2



this arrangement, the draft of the furnace is not materially impaired.

The simplicity of this device must recommend itself to every furnace builder. Any further particulars can be obtained by addressing the inventor, Evan Skelly, of Plaquemine, Aberville District, La. He has applied for a patent.

Pure Air.

The *Eclectic Medical Journal* of Philadelphia, in speaking on this subject, very properly remarks that it is not only necessary that men may have sufficient air to breathe, but it is necessary to provide air for the apartment itself in which they live, as well as for the persons who inhale it. The influence of impure air is not only exercised upon persons through their breathing organs, but the surface of their bodies, their clothes, the walls of the apartment—in short, the free surfaces of everything in contact with the air of the place becomes more and more impure—a harbor of foulness, a means of impregnating every cubic foot of air with poison—unless the whole apartment has its atmospheric contents continuously changed, so that everything animate and inanimate is freshened by a constant supply of pure air.

Ferber's Improved Window Blind.

This simple contrivance consists in fitting to one of the stiles of the window a vertical rod or bar, and attaching pins at the ends of the slats to openings in the same, whereby the rod cannot obstruct the light nor serve as encumbrances, as hitherto, nor the slats be allowed to turn or move casually. Through this means the appearance of the blind is not only greatly improved, but its attachments are made more durable than those of the usual construction.

In our illustrations Fig. 1 is a perspective view of a window blind, with the improvements attached. Fig. 2 is a vertical longitudinal section through a portion of the same, and Fig. 3 is a perspective view of the sliding bar of ditto. The same letters in the figures indicate corresponding parts.

A represents the rectangular frame of a blind, on one stile of which is formed a rebate, B. C are the blind slats, the ends of which have journals formed on their centers, which turn in suitable boxes in the stiles, the journals, C′, at one end being provided with radial arms or pins, D, which enter spaces, F, formed in a vertically sliding bar, E, fitted outside the rebate, and having a stop block, E′, hinged to its lower end, which is capable of being pressed under the same when it is desired to sustain the said bar at its greatest hight, to give a certain degree of inclination

Fig. 1

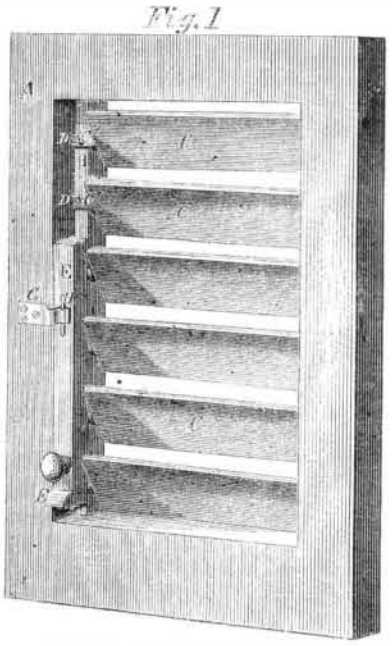


Fig. 2

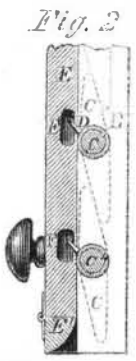


Fig 3

to the slats, or withdrawn from under the bar E, when it is desired to reverse their inclination. This bar is guided in its up-and-down movement by a spring plate, G, secured at one end to the stile of the window frame, and pressing at its opposite elastic end on a vertical rod or rib, H, attached to the outside of the bar, E.

From the above description it will be seen that when the bar, E, is moved up and down, the blind slats will be opened and closed by the spaces, F, in the same on the radial pins or arms, D, and that the elastic plate, G, will press against the guide rod or rib, H, with sufficient force to prevent the slats from casually turning, and that the bar, E, is not in such a position as to obstruct the light, or to be liable to detachment from the slats or in any manner produce the inconvenience experienced in the use of the ordinary method of attaching and operating window blind slats.

The patent for this effective attachment to window blinds, for which there is a universal demand, was patented by Andrew Ferber, of Elizabeth City, N. J., on July 27th, 1858. Any further information can be had by addressing him.

Literary Notices.

WELLS' PRINCIPLES AND APPLICATIONS OF CHEMISTRY. By David A. Wells, A. M. New York: Ivison & Phinney, 321 Broadway. Every contribution to the natural sciences is an addition to our knowledge, and all those books which try to make the thorny paths of science easy and pleasant to the student are to be accepted with thanks. This book is the last published of a series by Mr. Wells, and is highly recommended by some eminent educational authorities. It embraces in a compact form, and in language easily understood, the facts of chemical science, illustrated with 240 engravings. From the number of professors and teachers who endorse the value of Mr. Wells' publications, they must be largely in use in our schools and colleges, and by those who use them as text-books, and many others, we have no doubt this new one will be hailed with pleasure.

THE KNICKERBOOKER. John A. Gray, 16 and 18 Jacob street, New York. We have received the September number of this veteran journal of upwards of half a century, and find it filled with that choice and versatile character of writing for which it has long been distinguished. This number is adorned with a finely executed likeness of Epes Sargent, whose writings have so frequently added lustre to this sterling magazine. It also contains contributions from the graphic pens of Tuckerman, Stoddard, Aldrich, and other eminent writers. There is in addition a variety of other original matter, which renders its perusal highly useful and entertaining, including, of course, the rich, ripe and rosy, and genuine witty table talk of the able editor, Lewis Gaylord Clark.

THE ECLECTIC MAGAZINE. W. H. Bidwell, editor and proprietor, 5 Beekman street, New York. The September number of this excellent periodical contains some of the best articles, as in fact every number does, of the foreign reviews. We may mention as best, "Description of Active and Extinct Volcanoes," "Recent Astronomy," and "Canning's Literary Remains." There are two portraits, one of David Garrick and his wife, and another of the Rev. Chas. Kingsley.

THE ATLANTIC MONTHLY. Phillips, Sampson & Co., Boston. The September number is an excellent one. The articles on "Eloquence," Daphnaides," and "An Evening with the Telegraph Wires," are particularly interesting. The "Autocrat of the Breakfast Table" is as lively, entertaining and philosophical as usual.