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Cement for Belting.

C. Phelps of Salem, Mass. informs us that he has had in constant use for eight years, a six inch belt, which is jointed with Russian isinglass as a substitute for rivets. The isinglass for this purpose is applied in the same manner that glue is applied to join pieces of wood together. The end of the belt to be thus cemented, should be scarfed for about six inches lengthwise, then a strong solution of isinglass applied, and the surfaces so treated, brought together and held fast by joiner's screws until they are perfectly dry. "It might be well" says Mr. Phelps, "to put a row of small tacks along the thin edge of the scarf, and clinch them firmly." We would state, although we have never used isinglass for cementing belting, we have oftentimes used it for cementing leather, for various purposes, and have found it to answer well.

Varnish for Iron Works.

Put 28 pounds of asphaltum into an iron pot, and boil it for four hours. During the first two hours of boiling, introduce 14 lbs. of litharge, 3 lbs. of dried copperas, 10 gallons of boiled linseed oil, 8 lbs. of resin, and one of the sulphate of zinc. After four hours of boiling, these ingredients should be of a thick consistency. It is then suffered to cool, and when cold, it is thinned with turpentine, so as to be applied with a brush. It is used for blacking the iron work of carriages, &c. Of course the quantities given may be reduced, if the proportions are retained.

To Make the Oxyd of Gold.

Having received several communications recently making inquiries respecting the mode of preparing the oxyd of gold, we present the following as the best method with which we are acquainted for making it. Dissolve pure gold in two measures of muriatic, and one of nitric acid; and then evaporate to dryness. After this, dissolve the product in twelve times its weight of pure water, and then add a solution of pure carbonate of potash; apply a heat of 170° Fah., and a yellow precipitate falls, this is the hydrated per-oxyde of gold. Wash it well, and then boil it in pure water, when it becomes of a brownish black color which is the oxyd required.

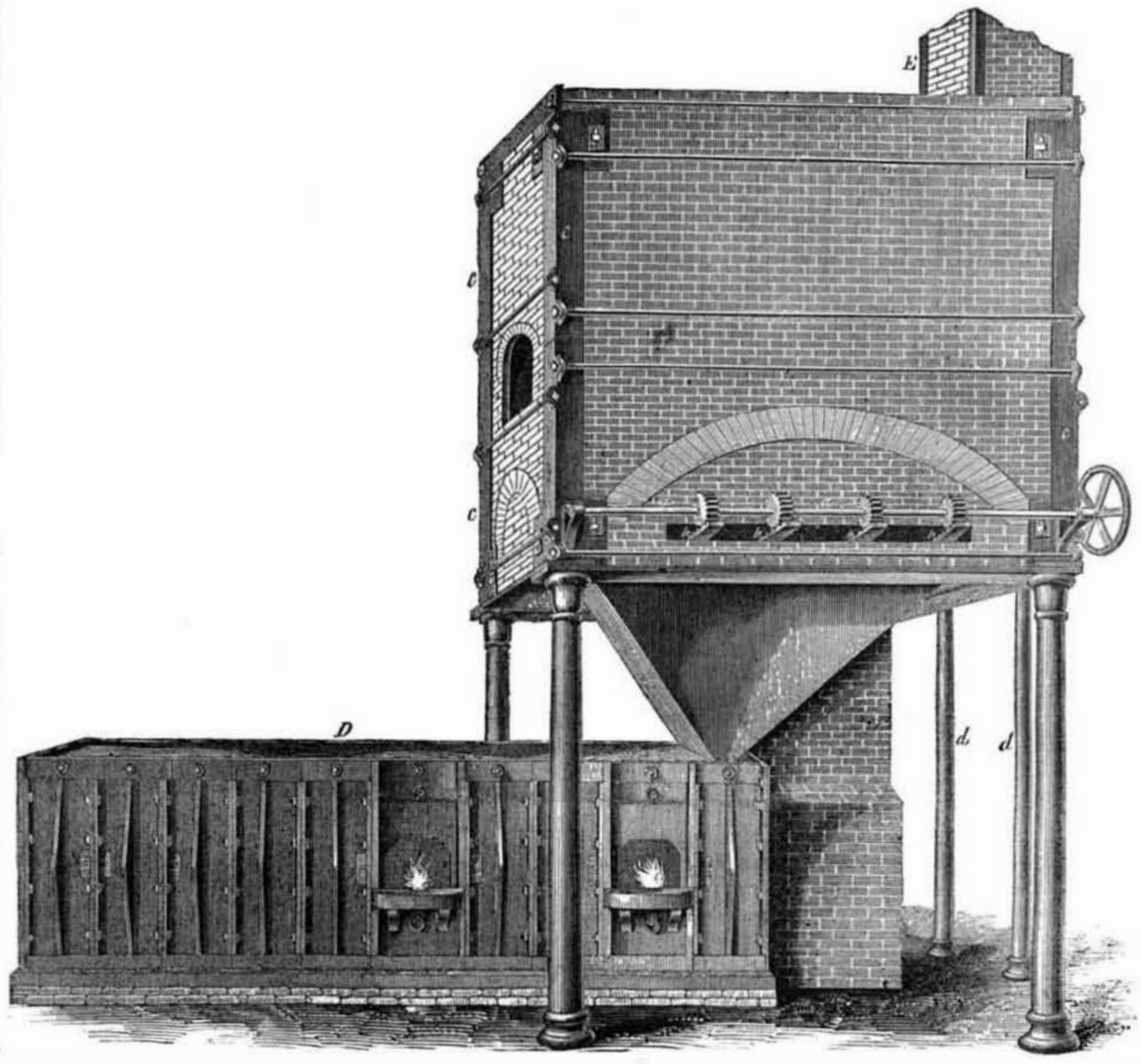
Stopping the Echoing of Halls.

The new Capitol of Nashville, Tenn., reverberated sound in such a manner as to destroy the use of the Legislative Hall, where the voice of a speaker, reverberated like that of a noisy crowd. This has been remedied by spreading a thick layer of sand dust on the floor, covering it with a heavy carpet and curtaining the windows with thick curtains. A similar defect in College Hall, Cincinnati, was remedied by covering the walls with canvas.

Characteristics.

Somebody says there are three kinds of men in this world—the "wills," the "won'ts," and the "cant's." The first effect everything, the next oppose everything, and the last fail in everything. "I will" builds our railroads and steamboats; "I won't" don't believe in experiments and nonsense; while "I can't" grows weeds for wheat, and commonly ends his days in the slow digestion of a court of bankruptcy.

RENTON'S FURNACE FOR MAKING WROUGHT IRON FROM THE ORE.---Fig. 1.



We present our readers this week with illustrations of James Renton's process for the manufacture of wrought-iron direct from the ore, the American and Foreign Patents upon which were obtained through our Agency.

Our readers are aware that the ordinary process of manufacturing iron is both tedious and complicated. The ore, in which the iron is found existing in combination with oxygen, carbon, and sulphur, is first subjected to the process of roasting. This is usually accomplished by piling it in large heaps, over a stratum of fuel which is then fired, and by the combustion of which sufficient heat is generated to calcine the ore. The object accomplished in this roasting, is the separation of the sulphur and the complete oxydation of the ore. After the pile has been sufficiently roasted it is *cleaned*, a process which consists in separating it from the dust and foreign matter which it contains. This is accomplished by means of various devices, consisting of screens, fans, and picking it over by hand.

The ore after being properly calcined and roasted, is generally mixed, the different varieties, when judiciously selected, furnishing a cheaper and better iron than any of them taken separately. It is often the case that some varieties cannot be employed profitably by themselves, but when combined with others, containing less sulphur perhaps, they can be economically worked.

The next step is technically termed "reviving" the iron,—in other words, bringing it from the state of an oxyd or sulphuret, as the case may be, to that of pig iron. This has usually been accomplished in a "blast" furnace, in which the ore, mixed with a due proportion of fuel, and a certain quantity of lime, clay, or other substance employed as a flux, is subjected to a strong heat, generated by the combustion of the fuel urged by a strong blast of cold or hot air, according as the process of "cold blast" or "hot blast" is employed. After being thoroughly deoxydized and separated from the sulphur or other foreign ingredients contained, it is melted, and flowing down to the bottom of the furnace it is drawn off and cast into "pigs." But it is now only cast-iron, and before it is adapted to the manufacture of the various articles for which malleable iron is employed, it must be decarbonized and brought to a purer state. This is done sometimes by transferring the pigs directly to the bloomeries, where, after being broken in pieces of suitable size, they are mixed with a due proportion of charcoal or coke, and heated until the carbon is burned out and the metal brought to a semi-fluid state, when it is drawn from the fire and placed upon an anvil, where, beneath the blows of a trip-hammer, it is converted into "blooms" or large bars of an impure wrought-iron.

In many other cases, however, an intermediate process is employed. The pigs after coming from the blast furnace, are taken to the "finery," as from the very impure condition in which the iron is found, in consequence of the employment of stone coal and the hot blast, it has often been necessary to separate a portion of the impurities before its removal to the forge or bloomery.

But we must not dwell longer on the ordinary process of manufacture. We have referred to it that our general readers may the more readily appreciate the great advantages of the improved process, which we will now proceed to describe.

Fig. 1 is a perspective view of the furnace complete, and fig. 2 is a vertical section of the same.

The ore, after being properly calcined, is crushed by the action of stampers or any other suitable means to a granular state. It is then mixed with about twenty per cent. of carbon in a finely comminuted state, and is thrown in the tubes, *a a*, fig. 2, where it is subjected to a high red heat for about twelve hours. The contents of one or more of the tubes is then let down through the funnel-shaped chamber, *e*, into the preparatory bottom by withdrawing the slides, *b b*, which are then closed, and the tubes filled with fresh ore. The preparatory bottom is that part of the chamber, K, next the chimney. It is here worked for about 20 minutes, when it is passed along to the puddling bottom in the center of the chamber, and is there made in a ball, after which it is taken to the anvil to be wrought into a bloom. *l*, fig. 2 is the fire chamber. The heat of this chamber, after passing over and heating the iron in the puddling chamber, K, is conducted through the flue, *i*, to the flues, *f f*, surrounding the ore-flues, *a a*. It will therefore seen that the whole operation is performed by a single fire. The stack of flues, as can be seen in the engravings, is built upon a heavy bed plate, supported by cast-iron pillar and is formed by a

(*Continued on the Fourth Page.*)