

**REVOLUTIONIZE
SMELTING.**

**Garretson Furnace Given Prac-
tical Test at the Crofton.**

A recent telegram from Vancouver, British Columbia, says: Interest in the mining world is being centered in the experiments now going forward with the Garretson furnace at the Crofton smelter on Vancouver island. Judge Reel and colleagues, Messrs. Bagley and Lindquist, of Pittsburg, have been at the smelter to witness the further tests of the new furnaces, which are expected to revolutionize the smelting industry of America.

The inventors are C. S. and F. C. Garretson, father and son.

The Garretson smelter, if as successful as the first day indicated, will, it is said, cut down the cost of smelting to one quarter of what it is today. It will do away with the necessity of using coke and will abolish the separate converting plant. By it the three present processes of smelting are combined and the whole operation takes place in one apparatus.

F. C. Garretson, speaking of the invention, said:

"It is a little difficult to explain our system in a way intelligible to a layman, but I may say that the ordinary process of smelting involves the roasting and smelting of ore as separate processes to the converting of it. The smelting process is much the same in our furnace, but we utilize the sulphur and iron in the ore as fuel, which saves the cost of coke. In ordinary pyritic ore there are as many heat units as in coal.

"Further, we do away with the cost of the converting plant, which is the most expensive portion of a smelting plant. In cases where the ore is right—where it contains the necessary proportions of sulphur and iron—we do away with carbonaceous fuel and the cost of the Garretson process is, roughly, just one fourth the cost of ordinary smelting.

"In our furnace we take the raw ore as it comes from the mine, charge it into the top of the furnace and take out at the bottom blister copper, which is about 94 per cent metallic copper. After that, it is only necessary to refine it electrolytically to eliminate what impurities remain and separate the gold and silver.

"The difficulty with the old process has been that a high grade product could not be made without making a rich slag—too rich in mineral to be thrown away. Also it was not considered possible to convert in a waterjacket converter without lining it with fire clay and crushed quartz, which has to be frequently replaced and is an expensive method. A number of systems of introducing silica into the converters have been tried, and they have been lined with refractory material such as magnesite, but it was found difficult to introduce the necessary silica so as make it combine with the oxide of iron formed in converting.

"We obviated this difficulty by converting underneath the charge in the furnace, feeding an excess of silica in with the charge and converting by a row of tuyeres placed around the furnace. In this way we prevented all of the silica from being taken up at the top and it is forced down by the weight of the charge above it as silica, into the matte, where it is required.

"Pyritic smelting is an established fact. The reason it is no more in use is that in order to make a sufficiently high grade matte it is essential to run the furnace very slowly, and it is then liable to

clog up. If the furnace is kept in good smelting condition the product is so low grade that it has to be put through the smelter again. In our furnace we are not particular what grade of matte we get, because converting is carried on in the same vessel.

"It has always been said that if you make a high grade product it means a rich slag, but we can make a rich product and get a clean slag, because the making of the rich product is carried on below the slag level in the furnace, and before the slag gets out of the furnace it is cleaned by the low grade matte falling and being reconverted.

"We are creating an excess of heat by converting immediately under the smelting zone of the furnace. It is usually considered necessary in pyritic smelting to have a hot blast, but we avoid that by putting an excess of air in the converting tuyeres and allowing it to pass through the hot matte and slag into the smelting zone above, being heated in its passage.

"The Garretson furnace has hitherto not been a successful commercial operation, but sufficient experiment has been made to show that we are sure of our ground. The furnace has been built for several smelters, but none have been in operation up to the present."

Mines Are Made, Not Found.

Very few people, as a general thing, have but a vague conception of what constitutes a mine. Many hold to the idea that a mine is found when a ledge or surface cropping is discovered; and, if they are interested in any way in the new discovery, they expect dividends at once, and condemn mining in all its branches if the property is not remunerative within a few months after work has begun on its development. To all such The Mining Review would say: "Have nothing at all to do with mining, as, with this impression in your mind, you are doomed to disappointment." The man who expects dividends from a prospect after it has been worked for a few months is out of his class, and had better devote his time to digging potatoes or measuring calico, as mines are to be made after the prospect is found, and it often takes four or five years of steady work and extensive development before a prospect can be rated as a producing and paying mine, no matter how rich and strong the veins may be at the surface.—Salt Lake Mining Review.

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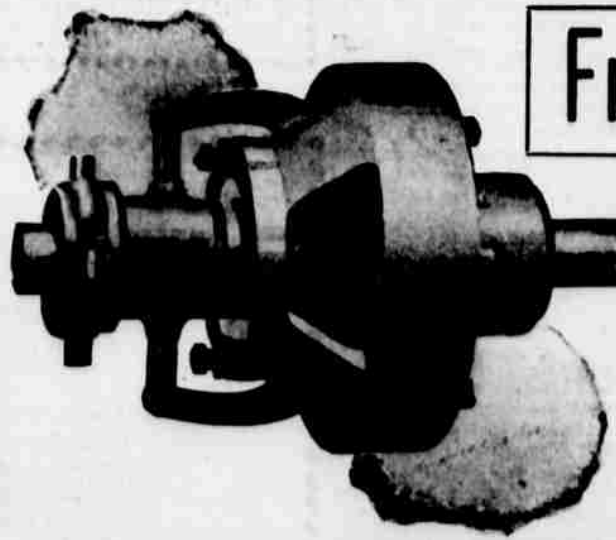
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