

the manufacture of sulphate of alumina or aluminous cake, involving the same invention. The commissioner, after the usual hearing and examination, decided in favor of the respondent, to whom letters were accordingly issued. The complainants have filed this bill to obtain the benefit of a review, in the light, not only of the evidence before the commissioner, but also of that taken here. The respondent challenges the court's jurisdiction, as well as the claim to priority of invention. As our judgment is with the respondent on the second point, and the bill must therefore be dismissed, the former may be passed by.

Little need be said in passing on the question of priority. In January, 1878, the respondent discovered that aluminous cake, of superior quality, may be obtained from halloysite, by the process described in his patent. This process consists in mixing ground halloysite, sulphuric acid, and hydrate of alumina, in the manner and proportions stated in the specifications, whereby a high degree of heat is generated by chemical action, producing ebullition, the halloysite rapidly decomposed, the fine particles of silicia thus liberated infused throughout the entire mass, resulting in a uniform homogeneous cake. It is unnecessary to review the prior state of the art, or recount the complainants' experiments in the direction of this discovery. Mr. Damon was president of the Pennsylvania Salt Company, whose business, in part, was the manufacture of aluminous cake. Having been tendered the purchase of extensive halloysite beds in Indiana, he was anxious to ascertain how this mineral could be profitably employed. Experiments were accordingly made, which satisfied him and his company, that it was valuable for the manufacture of aluminous cake, and they bought it in the fall of 1877. It is quite clear, however, that the experiments were incomplete, and the process subsequently patented had not then been discovered. Eastwick and Bihn were the company's chemists, and it was in the further prosecution of the experiments by Mr. Eastwick, at Mr. Damon's request, that the patented process was developed. All previous efforts had fallen short. That halloysite can be dissolved by sulphuric acid, and the resultant cake rendered neutral by the addition of hydrate of alumina, had been ascertained. But this was insufficient even to suggest the subsequent discovery,—which was not simply that halloysite may be thus dissolved and hydrate of alumina employed as a neutralizing agent, but a process whereby a high degree of heat is generated, the action of the sulphuric acid accelerated, and the decomposition and final result greatly improved,—mainly by the em-

ployment of other properties of the hydrate of alumina. That the respondent was the first discoverer of this process does not seem at first to have been doubted. His proposition to obtain letters patent was, to say the least, not discouraged by Mr. Damon, who was aware of it; and the counter-claim of Damon & Bihn does not appear to have been suggested until the respondent declined to transfer his rights to the salt company.

As remarked at the outset, the only question requiring our consideration is that of priority. The justice or injustice of the respondent's taxing the salt company, if he proposes to do so, for the use of a process disclosed by experiments made at its request and expense, with its material, while in its employment, we cannot enter upon.

WEIR v. NORTH CHICAGO ROLLING MILL Co.

(Circuit Court, N. D. Illinois. October, 1880.)

PATENTS FOR INVENTIONS—DEVIATION.

In reducing his patent to practical application a patentee is not held to strictly and entirely follow the mere mechanical device shown in his drawings, but he may deviate so long as he does not violate the principle involved in his patent.

In Equity.

J. H. Raymond, for complainant.

George Willard, for defendant.

BLODGETT, D. J. The complainant's device differs from the Pulver patent by the addition of stationary comb-grates, as he calls them, which operate with the rocker-grates. The Purchase patent shows a series of rocker-grates, each of which is rocked or tilted independently of the others; and the end rocker has grate-bars only on one side of the rocker-shaft, the shaft lying close to the end of the fire-box, and so constructed, with an eccentric upon the side next to the wall of the fire-box, that it can only tilt the grate-bars upward. For all practical purposes the grate-bars in the end shafts are stationary when the shaft is not itself rocked. The bars of the shaft next this end shaft engage and operate with those of the end shaft precisely in the same manner as in the Rounds grate.

I have here a model of the Rounds grate, showing the comb-grates at the ends of the fire-box, and the rocking-grate bars engaging

through them. The mode of operation is simply rocking or tilting the rocker-grates.

The model of the Purchase grate shows a series of rocker-grates, each moving independently by itself, and when you rock one of these, leaving the end of the grate stationary, as it is stationary except for an upward motion caused by an eccentric upon the bar, it is fixed, as far as any downward motion is concerned. By rocking this, precisely the same result is produced as in rocking Rounds' grate. You rock the teeth upon this rocker-bar, mashing them in between the teeth of the fixed grate, precisely as in the operation of the Rounds grate.

It is true, coal or cinders may accumulate upon the shafting which rests against the wall, forming, as it does, a ledge or shelf; but it does not affect the principle involved, which is that of one set of tilting grate-bars matching with a fixed or stationary set. In my opinion it was not invention, but only an act of mere mechanical skill or adaptation, after the steps in the art taken by Purchase, to make a grate with fixed or stationary bars at the ends, between which the rocking-bars could pass or match. It seems to me Purchase would have had the right, in applying his device to practical use, to have dispensed with his end rocking-shaft, and fixed his end grate-bars rigidly to the ends of the fire-box, so there would have been no material deviation from the operation shown in his device.

It seems to me there can be no doubt but what Purchase, after he had obtained this patent, could have said, "The rocking of this grate up and down is of no special practical importance; I will simply make the end bars fixed and rigid in the end of the fire-box, and rock the teeth of the next bar between those;" and it would have been one of those modifications of his device which would have been allowable under the patent, because no patentee is held, in reducing his patent to application, to strictly and entirely follow the mere mechanical device shown in his drawings of the patent. He may deviate, so long as he does not violate the principle involved.

The bill in this case is therefore dismissed, with costs.