

LLOYD V. MILLER AND OTHERS.

Circuit Court, W. D. Pennsylvania. February 12, 1884.

1. PATENTS FOR INVENTIONS—PUDDLING-FURNACE.

Letters patent No. 135,650, granted February 11, 1873, to E. Lloyd, for an improvement in puddling-furnaces, construed, and *held*, not to be infringed by the defendants

2. SAME—INFRINGEMENT.

The plaintiffs' invention, which secures protection from the intense heat to the walls of the chimney or stack of the puddling-furnace, by means of an opening into the stack at its base, whereby a current of air drawn from an air-conduit underneath the furnace-bed is permitted to enter the stack, *held* not to be infringed by a construction which secures such protection to said walls at the base of the stack by an external circulation of air.

In Equity.

D. F. Patterson and *E. E. Cotton*, for complainant.

Bakewell & Kerr and *George H. Christy*, for respondents.

ACHESON, J. The plaintiff's letters patent—No. 135,650, dated February 11, 1873—are for an improvement in furnaces for boiling, heating, and puddling iron. The objects to be attained thereby as stated in the specification, are the prevention of the rapid burning out of the hearth-plate and the base of the chimney or stack, and the facilitating of the combustion of the inflammable gases in the furnace by supplying air thereto, thereby utilizing fuel and preventing largely the escape of smoke. The furnace described in the specification and accompanying drawing—aside from the plaintiff's improvements—is a puddling furnace of the well-known kind, having the ordinary exit-flue leading into the high chimney or stack.

The invention is thus described:

“Beneath the hearth-plate, c, and a plate, e, [which is merely the continuation of the hearth-plate under the neck] is an air-conduit, G, which extends ⁹¹⁶ from the ash-pit opening, E, to the back wall of the stack, C, *and communicates with this stack at its base by means of an opening, g.* This will allow [the specification proceeds to declare] a current of air induced by the draft of the stack, C, *to enter the stack* at its junction with the flue, *h.*”

The resulting advantages thereby secured (as is affirmed) are the following: *First*, the current of air so entering the stack will “violently turn back the flames rushing through the flue, *h,*” retard the escape of inflammable gases, and mixing therewith promote their combustion in the furnace. *Second*, the air in its passage through the conduit, G, will absorb heat from the hearth-plate and plate, *e,* and keeping down their temperature, preserve them. *Third*, “and as the air impinges on the walls of the chimney at its base, these walls will be protected from the intense heat to which they are subjected in other puddling furnaces.”

The claim is in these words:

“The air-conduit, G, arranged beneath the hearth and communicating with the chimney or stack at the base thereof, for the purposes and in the manner substantially as described.”

It was not a new thing to let air circulate underneath the hearth of a puddling furnace to cool and preserve it; and it is shown that for many years prior to the plaintiff's invention such furnaces were constructed with a passage-way or conduit for air beneath the hearth and extending from the ash-pit opening to the back-wall of the stack, with an aperture through that wall outwardly into the external air; so that this conduit was supplied with air from both ends, the fresh air coming in at the stack-end passing underneath the base of the stack on its way to the ash-pit. Nor was it new to promote combustion in the furnace

by a supply of heated air drawn from underneath the puddling hearth. I incline, however, to think that the plaintiff's method of construction whereby communication is secured between the air conduit, G, and the base of the stack, by means of an opening into the stack, is new, at least in puddling furnaces. And, assuming that the defense of anticipation has not been made out successfully, I, address myself to the inquiry whether the defendants infringe the plaintiff's patent.

The distinguishing feature of the plaintiff's invention is the opening, *g*, into the stack at its base, whereby a current of air, induced by the draft of the stack, is permitted "*to enter the stack.*" Great prominence is given to that opening in the specification and accompanying drawing, and, although not expressly mentioned in the claim, it is necessarily implied. It is indeed indispensable, for without the opening, *g*, there would be no communication whatever between the air-conduit, G, and the chimney or stack. Every advantage specified or contemplated is altogether due to that opening, which, in my judgment, is of the essence of the invention.

The alleged infringing furnaces were constructed by William Swindell under three patents for improvements in metallurgic furnaces 917 granted to him in the years 1875 and 1878. In the defendants' furnaces the gas from the producer—where the fuel is consumed—is admitted to the bed through a number of ports arranged below an equal number of hot air ports. A series of air-flues pass under the bed—but not in contact with the bottom—and over the crown or arch of the furnace to the end where the gas enters, and the gas and air there meeting, pass together into the combustion chamber, which contains the iron to be worked. The in going air is heated, and becomes more and more heated, as it passes over the arch towards the discharge ports, by reason of the flues through which it courses being in contract with alternate flues

which conduct the waste heat from the combustion chamber. Combustion begins when the gas from the producer meets the hot air, and uniting they enter the bed. The waste and heated products of combustion pass out of the opposite end of the bed into flues which extend over the crown or arch of the furnace and lead to the stack. No part of the air enters the waste-flues without first passing through the combustion chamber and it reaches the stack altogether through the waste-flues.

It cannot be pretended, and indeed it is not urged, that the method of construction found in the defendants' furnaces secures the first two above-enumerated advantages which appertain to the plaintiff's invention. Swindell's air-conduits have no tendency to cool the hearth-plate or bottom of the furnace, and he does not conduct into the stack a current of air to retard the escape of inflammable gases or promote their consumption in the furnace. There is indeed no connection or direct communication between his air-flues and the stack, the air as we have seen, reaching the stack through the waste-flues after it has fully served its purpose in the combustion chamber.

It is, however, earnestly contended that Swindell, by a mere structural or formal change has secured, and that the defendants enjoy the third advantage due to the plaintiff's invention, viz., protection to "the walls of the chimney at its base," from the intense heat to which they are subjected in other puddling furnaces. The plaintiff's theory is that the arched waste flues of the defendant's furnace are part of the chimney or stack, which, he insists, begins at the point where these flues leave the combustion chamber, and, as at that point the air passing in through the air flues absorbs heat from, and tends to preserve the walls of the waste flues, he maintains that there is an infringement of his patent. I have great difficulty in

accepting the hypothesis that the arched waste flues are part of the chimney or stack within the meaning of the plaintiff's patent. It is plain to me that when his specification speaks of the chimney it means the high stack, the two words being used as equivalents. Now I do not see that the defendant's arched waste-flues are any more a part of the chimney or stack than is the flue, *h*, in the plaintiff's furnace. The function of each is to convey the waste heat, smoke, etc., from the combustion chamber to the stack. But if the arched waste-flues be 918 considered as part of the chimney or stack, the fact remains that there is no communication between the air-flues and waste-flues by means of an opening. In truth, there is no communication whatever between them. They alternate, and are built side by side, up, over, and around the arch of the furnace, but they are completely separated from each other by brick walls, four and one-half inches thick. It is also an assumption of the plaintiff that the defendant's arched air-flues are "compartments of the chimney." But surely they come not within his own counsel's definition of a chimney, viz., "the flue which leads from the combustion chamber to conduct waste heat and smoke away." They perform no such service. Their function is, to supply the working chamber with hot air to promote a vivid combustion. Incidentally the in-going air does absorb heat from the common division walls between the two sets of flues, and thus tends to the preservation of these walls, but this is not effected by any means disclosed by the plaintiff's patent, nor by any method analogous thereto, or suggested thereby. In no possible view of the case can the plaintiff's pretensions be sustained without holding that the opening, *g*, into the chimney or stack for the admission therinto of a current of air is non-essential, and that *external contact* with the walls of the chimney or stack at its base is "communication" within the meaning of his

specification. But such constructive expansion of the specification is, it seems to me, utterly inadmissible. Moreover a claim so comprehensive could scarcely stand, in view of the prior state of the art.

Let a decree be drawn, dismissing the bill, with costs.

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