its contemplated work. The truth seems to be that the sieve, under certain conditions, may be a serviceable addition to the machine, but is not an indispensable part. And as it is not mentioned in the claim, and is not necessary either to constitute the "case" or to the successful working of the apparatus, it would seem to be a fair conclusion that is not an element of the patented combination. This view but conforms to the spirit of the rule for the interpretation of patents authoritatively declared in *Klein* v. *Russell*, 19 Wall. 466, where it is said:

"The court should proceed in a liberal spirit, so as to sustain the patent and the construction claimed by the patentee himself, if this can be done consistently with the language he has employed."

Let a decree be entered in favor of the plaintiffs.

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 improvment 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

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

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

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 pretentions be sustained without holding that the opening, *g*, into the chimney or stack for the admission thereinto 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.

THE DANIEL STEINMAN.[1]

(*District Court, E. D. New York.* March 29, 1884.)

SALVAGE SERVICE — AWARD — $25,000 ALLOWED ON VALUATION OF $252,500 — COSTS.

The steamship Daniel Steinman, 1,790 tons, on a voyage from Antwerp to New York, with general cargo and 335 steerage passengers, lost her propeller. She set all the sail she could, but made no headway. The same day the steamship R., of the White Star line, bound from Liverpool to New York with cargo and mails, and 697 passengers, came near, and the master of the S. applied to her to be towed to Halifax, 280 miles distant. This the R. was not willing to do, but was willing to attempt to tow her to New York, 630 miles distant. An agreement was made between the two masters, by which the R. was to receive £10,000 if she brought the S. to New York, which she proceeded to do, being detained some two days, of which 36 hours were occupied in towing, and bringing the S. to New York by the time the S. was due there. No damage of consequence was sustained by either, beyond the breaking of a hawser belonging to the R. The weather was fair and the sea smooth during all the time. The value of the S., cargo and freight, was $252,500; that of the R., cargo and freight, was $780,000. The owners of the S. were not satisfied to pay the

[1] Reported by R. D. & Wyllys Benedict, of the New York bar.

£10,000, but offered $7,500; the owners of the R. did not insist on the agreement, but considered $25,000 net to be their proper reward. *Held*, that an important salvage service was rendered by the R. in rescuing the S. and her passengers from a position of danger, and enabling her to reach her port of destination without loss of time, for which the R. should receive a salvage compensation of $25,000. Expenditures of the R., amounting to $2,800, were not allowed in addition, as these were taken into consideration in fixing the award; but it was directed that the owners be reimbursed out of the gross amount before its distribution. As no tender was made, costs were allowed libelants. Particular comparison of this case with the circumstances and the award of the English court in the case of *The Silesia and The Vaderland*, L. R. 5 Prob. Div. 177.

In Admiralty.

McDaniel, Wheeler & Souther, for libelants.

Jas. K. Hill, Wing & Shoudy, for claimants.

BENEDICT, J. This action is to recover salvage compensation for services rendered by the steam-ship Republic to the steam-ship Daniel Steinman. In June, 1882, the steam-ship Daniel Steinman, while prosecuting a regular trip from Antwerp to New York, while in latitude 41 deg. 12 min., longitude 58 deg. 50 min., lost her propeller. Owing, as is supposed, to striking something in the water, the propeller shaft broke off just outside the hull, and the propeller dropped into the sea without injury being done to her hull. She was a steamer of 1,790 tons burden, built full forward. She had two masts, and was able to spread about 1,200 yards of canvas, which is not more than one-third the ordinary amount of canvas spread by a sailing vessel of equal size. Her crew consisted of fourteen men all told, so that with one man at the wheel and one man on the lookout she had only a boatswain and two seamen in each watch to handle the sails. She had a general cargo and 335 steerage passengers. Her provisions were sufficient for about four weeks. Upon losing her propeller she set all sail, but made no headway. Towards night of the same day the steam-ship Republic, bound from Liverpool to New York, was discovered approaching. When she came near, the chief officer and afterwards the master of the Daniel Steinman boarded her, and applied to be towed to Halifax, then some 280 miles distant to the northward. The master of the Republic was not willing to go to Halifax with the steamer, but was willing to attempt to tow her to New York. After some negotiation a written agreement was signed by the masters of the two steamers, whereby the Republic was to take the disabled steamer in tow, and in case she was brought to New York in safety the Republic was to receive £10,000 for the service. The agreement, however, contained a provision that in case the amount of £10,000 proved unsatisfactory to the owners of either vessel the case should be sent for settlement to the court of admiralty in London. Thereafter, and at about 9 P. M., the Republic began to tow the steamer towards New York. The weather continued fine, and although the Steinman steered badly the Republic took her along so fast that she was safely moored in the port of New York by the time she was there due, and

thus lost no time by the disaster. The Republic was detained some two days, thirty-six hours having been occupied in towing. No damage of any consequence was sustained by either vessel beyond the breaking of a hawser belonging to the Republic. A difference then arose in regard to the compensation to be paid the Republic for this service. The owners of the Daniel Steinman were not satisfied to pay the £10,000 named in the agreement made by the masters, and consider $7,500 a sufficient compensation. The owners of the Republic do not insist upon the agreement, and consider $25,000 net to be their proper reward.

Upon a full consideration of all the circumstances, I am of the opinion that an important salvage service was rendered by the Republic to the Steinman on the occasion in question, for which the Republic should receive a salvage compensation of $25,000. In reaching this conclusion I have taken into view the fact that a disabled steamer, having on board 335 passengers, was by the efforts of the Republic rescued from a position of danger, and enabled to make her port of destination without loss of time. It is no doubt true that the Steinman could have turned back, and by means of sails have regained her port of departure without assistance; and, unless the winds were unusually adverse, she could have done this before her provisions would have given out. But such a course would have been attended with some risk, and would have involved a large loss of money to her owners, besides the loss and suffering entailed upon the 335 passengers. It is probable, also, that the Steinman could have reached Halifax by means of her sails without assistance. This course would have subjected her owners to a large loss, and her passengers to no small loss and suffering, and it would have been attended with a very considerable risk. The coast of Nova Scotia is none too safe a place for steamers well equipped, and a disabled steamer cannot approach it without danger.[1] It is possible, also, that the Steinman might, by means of her sails, have reached New York, then 630 miles distant to westward, although upon this point the testimony discloses two opinions. With the wind as it was when she was taken in tow, the Steinman would never have reached New York. With the wind as she had it until her arrival in New York, she would never have reached New York. With some winds, she would have reached New York in the course of three or four weeks; but I recall no instance of a steamer situated as she was, and of her size and rig, making 600 miles to westward under sails alone. It seems, therefore, entirely proper to conclude that the efforts of the Republic relieved the Steinman from a position of danger. I have also taken into consideration the value of the property thus relieved,—the value of the Daniel Steinman, her cargo and freight, amounting in all to $252,500. I have also taken into consideration the fact that although the mas-

[1] Five days after this opinion was handed down, this very steamer went ashore on the coast of Nova Scotia, and became a total wreck, with a loss of 117 lives.

ter of the Steinman, according to his statement, was of the opinion that he was in the track of steamers, and could, therefore, have waited to be assisted by some other steamer than the Republic, and although he believed himself able to reach a port of safety without assistance, still he applied for the services of the Republic. In applying to the Republic he was calling no mean instrument of commerce to his aid. The Republic was a powerful steamer, able, loaded as she was with passengers and freight, to tow the Steinman for 600 miles at as great a rate of speed as the Steinman could steam by her own engines. She was one of the White Star steamers, running in a line where regularity of arrival and departure are considered of the greatest importance. These circumstances were known to the master of the Steinman, and when, having the option to await the coming of a different vessel, he applied for the services of the Republic, it must have been with the understanding that these circumstances would be taken into account in fixing the compensation for those services. This is shown by the fact that he was willing to submit to his owners for their consideration the sum of £10,000, as he did by the agreement. I have also considered the risk incurred by the Republic. It is true that the weather was fair and the sea smooth during the whole time that the Republic had the Steinman in tow, but it is also true that towing a disabled steamer of the size of the Steinman by a steamer of the size of the Republic is always attended with danger. In such a service care and watchfulness will not always prevent disaster. Says Sir ROBERT PHILLIMORE, in deciding the case of *The City of Chester*, 26 Mitch. Mar. Reg. 111:

"It is well known, and the Elder Brethren say, that in all these cases of large steam-ships rendering service to each other there is very great danger, and they will require skillful navigation to avoid it."

It is a service not deemed desirable by owners of steamers, and the increasing importance of encouraging it has called from this court expressions which need not be repeated here. *The Edam*, 13 FED. REP. 135. In *The Rio Lima*, 24 Mitch. Mar. Reg. 628, Sir ROBERT PHILLIMORE says:

"It has been impressed on the minds of the court that there seems to be a growing dislike on the part of owners of ships to allow their vessels to render assistance, even where no jeopardy of life is concerned. That must be met by a liberal allowance on the part of the court whose duty it is to consider all the circumstances of the case."

In this connection, the circumstance is worthy of attention that the agreement made by the masters of these two steamers provided for a submission of the case to an English court of admiralty in the event that their owners should not feel satisfied with the sum mentioned in the agreement. Such a provision can, of course, have no effect to render the decisions of the English admiralty authoritative here, but it may justify a somewhat particular comparison between the case at bar and one heretofore determined by an English court, where the

steam-ship Silesia, having broken her propeller shaft, was towed to a port of safety by the steam-ship Vaderland. L. R. 5 Prob. Div. 177. In that case, the salving vessel, the steam-ship Vaderland, was bound from Antwerp to Philadelphia with general cargo, 274 passengers, and mails. In the present case, the salving vessel was the steam-ship Republic, bound from Liverpool to New York with cargo, 697 passengers, and mails. The Vaderland's crew numbered 76, the Republic's, 135. The Vaderland's cargo and freight were valued at £72,000. The Republic's cargo and freight are valued at $780,000. The Silesia, towed by the Vaderland, was valued, cargo and freight, at £108,000. The Steinman, towed by the Republic, is valued, with cargo and freight, at $252,500. The Silesia was bound to Hamburg. The Steinman was bound to New York. The Silesia was towed 340 miles by the Vaderland. The Steinman was towed 630 miles by the Republic. The time occupied in towing the Silesia was three days. The time occupied in towing the Steinman was thirty-six hours. The Vaderland turned back from her voyage and went to Queenstown, and her loss of time by performing the service was six days. The Republic did not turn back, and by performing the service lost only two days. In the case of *The Silesia*, the masters made an agreement for a compensation of £15,000. In this case, the agreement provided for £10,000. In the case of *The Silesia*, the English court of admiralty awarded £7,000; and it would seem, from this comparison, that the English court of admiralty, in a case like the present, would give no smaller reward than $25,000.

In view of the considerations I have now alluded to, it seems to me proper to fix $25,000 as the proper salvage reward for the service in question. I have been urged in behalf of the libelant to allow, in addition, the cost of the provisions for the passengers on the Republic for two days, the cost of extra coal used, the cost of extra work, and the injury to the hawser, amounting in all, it is said, to $2,800. These expenditures I have taken into consideration in fixing the reward at $25,000. That sum I consider to be sufficient without further allowance; but, in the distribution of the salvage, the amount of money expended by the owners in performing the service may be shown, and they may be reimbursed for that expenditure out of the gross reward before distribution. As no tender was made, the libelants must recover their costs.

Let a decree be entered in accordance with this opinion.

THE LAHAINA.[1]

(*District Court, E. D. New York.* March 15, 1884.)

SALVAGE—AMOUNT—ALL THE CARGO AND HALF THE VESSEL ALLOWED.

The steam-ship C., valued at $180,000, the day after leaving New York, found the schooner L. in the trough of the sea, without steerage-way, a large hole in her side, and seriously damaged forward. The L.'s crew announced their intention to abandon her in case the C. declined to take her in tow The C. towed the L. back to New York, losing thereby three days' time, breaking a steel hawser, and paying pilotage and towage, amounting to $279. The schooner and cargo were sold, the net proceeds being $3,514.25. The proof showed that the cargo of the L., from its nature, would have been wholly lost if the L. had not been taken in tow by the C. No one appeared to claim the cargo. The court allowed the whole of the proceeds of the cargo—not a large sum—and one-half the net proceeds of the vessel, to be paid the salvors for salvage, and, in addition, the above expenses of the steamship and $200 for damages to hawsers, to be first deducted from the proceeds and also costs.

In Admiralty.

Jas. K. Hill, Wing & Shoudy, for libelants.

Goodrich, Deady & Platt, for claimants.

BENEDICT, J. This is an action for salvage services rendered by the steam-ship Caledonia to the schooner Lahaina and her cargo. The Caledonia was an iron steam-ship, engaged in the Mediterranean trade, and bound from New York to Glasgow with a general cargo, including 300 cattle. The day after leaving New York, when Shinnecock bore N. W. about 25 miles distant, she sighted the three-masted schooner Lahaina flying a signal of distress. The schooner was six to eight miles distant, some three points on the port bow. The steamer bore away for the schooner, and, coming along-side, found her in the trough of the sea, without steerage-way, a large hole in her side, and seriously damaged forward. The crew of the schooner asked to be taken to a harbor of safety, and announced their intention to abandon their vessel in case the steam-ship declined to take her in tow. The master of the steam-ship concluded to endeavor to take the schooner to New York, the nearest port of safety, and, having made fast to her by a four-inch steel hawser, started back for his port of departure. The swell was heavy, and the steel hawser parted. Then a thirteen-inch hemp hawser was put on, which held. The next morning they were off Sandy Hook, and that day the wreck was left safe in harbor at New York. The steam-ship lost three days' time, and she paid pilotage and tow-boat expenses amounting to $279. The value of the steam-ship was $180,000. The schooner and her cargo were sold in this proceeding, and the net proceeds, after paying all expenses, amount to $3,514.25. The proof shows that the cargo, from its nature, would have been wholly lost if the wreck had not been taken in tow by the Caledonia, and it seems to

[1] Reported by R. D. & Wyllys Benedict, of the New York bar.