ring in which it is seated in place by its series of pintles; and while it may be said that one pintle would suggest more, if more were needed, I do not think it would suggest a series of pintles to make a sectional ring practically integral. I therefore, though with less confidence than in regard to the other claims, feel constrained to hold this claim also valid.

As to the second point, that defendants do not infringe because they only sell such of these fixtures as each customer may call for, and that they do not infringe unless they sell them all to one customer, it seems enough to say that these four claims are, with some variations in phraseology in the first, second, and fourth, for the sectional ring with its supporting legs and the coal basket cast integral, with flaring ring and the pintles, as separate parts. If defendants sell a sectional ring such as is described in this patent to a customer, they infringe upon the claims which cover this ring. If they sell a coal basket such as is described in the patent, so arranged as to be seated in this ring with pintles to hold the ring together, they infringe on the claim which covers the coal basket; that is, these claims are upon these separate fixtures, the sectional ring and the coal basket, as described in the patent, and the patent is infringed by the making or selling of either of these fixtures covered by these claims, respectively.

As to the argument advanced at the hearing, that a stove must be read into each of these claims to make the fixtures covered by this patent operative, and hence that defendants do not infringe, because they do not make Round Oak stoves, I will only say the patent covers these fixtures specifically, and it is no more necessary to read a stove into these claims than it would be to read a railroad into a patent on a car truck or a locomotive. Of course, we all know that these fixtures are only adapted to certain uses; but the presumption is that, if defendants make and sell them, they do so only that the purchaser may apply them to such uses. The Howe sewing machine needle was only useful in connection with a sewing machine, but that did not make it necessary that a man should make an entire sewing machine in order to infringe the Howe patent. A decree may be prepared, finding that defendants infringe, and for an injunction and accounting. No decree as to individual defendants.

ELLBERT *v.* ST. PAUL GASLIGHT CO.

(*Circuit Court, D. Minnesota.* April 28, 1892.)

1. PATENTS FOR INVENTIONS—NOVELTY—WATER GAS APPARATUS.
Letters patent No. 386,458, to Vincent L. Ellbert, for an improvement in an apparatus for manufacturing water gas, describe, in claim 1, the combination of a combustion chamber, a superheater chamber, an arch located between the two, and provided with a series of legs forming separate passages leading from the combustion chamber to the superheater chamber, and a series of oil pipes opening through the outer wall of the cupola into the separate passages between the legs of the

arch, substantially as described. *Held*, that this claim is void for want of novelty, in view of the prior state of the art, as shown by patents 253,120, 257,100, and 263,984, issued to Theodore G. Springer, January 31, April 25, and September 5, 1882, respectively; and by the "Jumbo Cupola" used by the West-Side Works, at Chicago, from 1883 to 1888.

2. SAME—INFRINGEMENT.

If this claim were held to have any validity, it must be limited to inserting the oil pipes in the passages between the legs at the point specified, namely, "just below the lower brick of the superheater," under the crown of the arch; and it would not be infringed by an apparatus in which the oil was injected into the superheater, and not over the passages, but directly over the solid legs of the arch.

In Equity.

Complainant, Vincent L. Ellbert, filed his bill against the St. Paul Gaslight Company for infringement of letters patent No. 386,458, for improvements in the apparatus for the manufacture of water gas, and prayed an accounting and an injunction. The answer denied infringement, and alleged that the improvements claimed had been in public use in Chicago more than two years before complainant's application for a patent thereon, and had been described in various patents. Bill dismissed.

Paul & Merwin, for complainant.

Flandreau, Squires & Cutcheon, for defendant.

Before SANBORN, Circuit Judge, and NELSON, District Judge.

SANBORN, Circuit Judge. The improvements in the apparatus for manufacturing water gas, which the complainant claims he invented and defendant infringes, relate exclusively to the apparatus for introducing liquid hydrocarbon into the cupola used in the manufacture of water gas for illuminating purposes. The claims of the patent are:

"(1) The combination, in an apparatus for the manufacture of illuminating gas, of a combustion chamber, 7, a superheated chamber, an arch located between said combustion chamber and said superheater chamber, and provided with a series of legs forming separate passages leading from said combustion chamber into said superheater chamber, and a series of oil pipes opening through the outer wall of the cupola into said separate passages between the combustion chamber and the superheater, substantially as described. (2) The combination, in an apparatus for the manufacture of illuminating gas, of a combustion chamber, 7, a superheater chamber, a series of passages connecting said combustion chamber with said superheater chamber, and a series of oil pipes opening through the outer wall of the cupola into said passages, with a series of steam pipes extending through said oil pipes, substantially as described, whereby a vaporized crude oil or liquid hydrocarbon may be thrown into the passages, and mingled with the gases after they leave the combustion chamber, and before they reach the superheater, for the purpose set forth. (3) The combination, with the cupola, 2, having the combustion chamber, 7, the superheater chamber arranged above said combustion chamber, and an arch located between said chambers, of an oil pipe, 17, extending around said cupola, and provided with a series of branch pipes, 25, opening through the wall of the cupola into the passages formed by the legs of said arch between said combustion chamber and said superheater, substantially as described, and for the purpose set forth. (4) The combination, with the cupola, 2, having the combustion chamber, 7, the superheater chamber arranged above said combustion chamber, and an arch located between said chambers, of an oil pipe, 17, extending around said cupola, and provided with a series of branch pipes,

25, opening through the wall of the cupola into the passages formed by the legs of said arch between said combustion chamber and said superheater, and the series of steam pipes, 27, extending through said oil pipes, 25, all substantially as described."

The third and fourth claims of this patent are not important here, because, so far as they are not embodied in the first and second claims, they are not infringed by the defendant, inasmuch as it has not made use of the particular arrangement of oil and steam pipes there described, and, if it has not infringed the first and second claims of the patent, it is not liable in this suit. The process of manufacturing water gas for illuminating purposes, and the combination in an apparatus for that purpose of the combustion chamber, superheater chamber, an arch located between said superheater chamber and combustion chamber, with a series of legs forming separate passages leading from the combustion chamber into the superheater chamber, and pipes opening through the outer wall of the cupola, through which the liquid hydrocarbon was introduced, had long been in public use, and described in many patents and publications before complainant applied for this patent. But he claims that no one had ever used or described a series of oil pipes opening into the separate passages between the legs of the arch and between the combustion chamber and the superheater chamber until he discovered and used these pipes in the manner described in his patent, and that by their use in the way there described crude oil can be successfully used in the manufacture of this gas, while it is impracticable to so use it in any other way. Generally speaking, the apparatus to which the complainant applied this improvement consisted, before his improvement, of a cupola made of a casing of metal lined on the interior with fire brick, and divided about midway between its upper and lower ends by an arch consisting of from 4 to 24 legs, as desired. The portion of the cupola above the crown of the arch called the "superheater" or "fixing" chamber was loosely packed with brick, or other indestructible material, capable of being highly heated, and retaining heat while the chamber below the arch, termed the "combustion chamber," was provided with a grate on which the coal or coke might rest, and beneath this grate with an air blast pipe and a steam blast pipe. Pipes for the injection of crude oil, or naphtha, had been let into the cupola in numbers varying from one to six to the cupola, and at various heights from the extreme top, to a point a few feet above the surface of the coal or coke, as the judgment of the engineer dictated; and the cupola was provided with two outlets, one to carry away the products of combustion, and the other to lead out the gas when manufactured, with proper apparatus to close either when desired.

In operation the combustion chamber was filled with coal or coke, and, after having been fired, was blasted with the lower or primary blast, until the brickwork lining and superheater were raised to a red heat. The secondary blast was then turned on, which fired the gases formed by the lower blast, which had passed through the incandescent fuel, and formed carbonic oxide. This made an intense heat, and raised the brick

of the superheater to a very high temperature, one witness testified to about 1,500 deg. Fahrenheit. When the proper temperature had been reached in the superheater, and the fire had burned sufficiently, the flue of the superheater and the air blast pipes were closed, and the apparatus was ready for the manufacture of water gas. A blast of steam, under high pressure, was then forced up through the incandescent fuel in the combustion chamber, making a hydrogen and carbonic oxide gas. This gas, if consumed with no addition, would be non-illuminating, and, to make it of any value as an illuminating gas, must be enriched by adding to it hydrocarbon vapor. Oil or naphtha was therefore injected through the casing of the cupola at one or more points above the surface of the fuel, was vaporized by the intense heat or by treatment before its introduction, and this vapor mingled with the gas ascending from the coal, and, as it circulated through the superheater, they became "fixed," or made into a permanent gas for illuminating purposes. This apparatus and this process, it is conceded by the complainant, were old, and had long been used when he made his invention; but the improvement he claims to have invented consists in inserting a number of pipes for the injection of the liquid hydrocarbon in the proper locations relative to the two chambers and the legs of the arch. In his specifications he says:

"If the crude oil is thrown directly into the superheater, it fails to come in contact with the gases in all parts thereof, and no benefit would be obtained from parts of the superheater. If too much oil is thrown into one part of the superheater, the bricks at that part will be cooled, and the oil will be deposited on them in solid carbon. I obviate these objections, and make a practical success in using crude oil for enriching the gas by introducing it in small quantities, preferably in the form of vapor, into separate passages between the combustion chamber and superheater. The hydrocarbon thus comes in contact with all the gases after they leave the combustion chamber, and becomes intimately commingled therewith, and in this condition they pass into the superheater, and then become a fixed gas."

Speaking of the location of these oil pipes, he says:

"These pipes are just below the top of the upper arch, or just below the lower brick of the superheater, and there is preferably one pipe for each space between the legs of the arches."

And, referring to these spaces between the legs of the arches, he claims "a series of oil pipes opening through the outer wall of the cupola into said separate passages, between the combustion chamber and the superheater." And again:

"A series of oil pipes opening through the outer wall of the cupola into said passages, * * * whereby a vaporized crude oil or liquid hydrocarbon may be thrown into the passages, and mingled with the gases after they leave the conbustion chamber, and before they reach the superheater."

The arch shown in the drawings accompanying complainant's patent has eight legs, and an oil pipe is shown in each space between the legs of the arch.

Mr. Ellbert testified that the oil must be injected at some point in the passageways between the combustion chamber and the superheater, in

order to reach the results he wished, and that the improved results of his construction could not be obtained by the injection of the oil into the superheater brick, because the oil would not get into the superheater so as to mingle with the gases, but would strike two or three brick, and form carbon, cool the brick very suddenly, and plug and clog the superheater, so that it would receive no result from the injection. Complainant's witness, H. W. Brown, testified that in complainant's construction there is a perfectly clear space from the injectors to the fire,—an unobstructed space,—and that this is absolutely essential. Looking now specifically at the state of the art of inserting these oil pipes and introducing the liquid hydrocarbon, at the time the complainant made his discovery, we find that the mingling of the hydrocarbon vapor with the gases rising from the incandescent fuel in a passage or passages between the combustion and "fixing" chambers was not new. Theodore G. Springer, in his patent No. 253,120, dated January 31, 1882, shows the two chambers separated by an arch, with a single flue, through which alone the hydrogen and carbonic oxide gases can pass to the fixing chamber, and an oil pipe through which a liquid hydrocarbon is conducted into this passage, and he claims "a cupola or gas generating apparatus having a decomposing chamber wherein steam and solid hydrocarbon may be mutually decomposed, a fixing chamber wherein mixed gases and hydrocarbon vapor may be fixed, and a connecting flue wherein the liquid hydrocarbon and the hydrogen and carbonic oxide gases may be mixed before entering the fixing chamber, and the heat of the cupola thoroughly utilized, the respective chambers being located one above the other." Again, in patent 257,100, April 25, 1882, Mr. Springer shows the introduction of liquid hydrocarbon through pipes into a small chamber located between the combustion chamber and the superheater, through which all the gases and vapors rising from the fuel pass, and says: "As the mixed gases and vapor pass into the chamber above, they are met by an incoming current of hydrocarbon vapor, and the whole then passes into the chamber above."

Nor was the idea or practice of introducing the volume desired through a number of small pipes, rather than through one large pipe, new. Mr. Springer, in patent No. 263,984, September 5, 1882, shows several pipes for use on one cupola, conducting the liquid hydrocarbon into the fixing chamber, one of which is at the same relative height above the arch as are defendant's oil pipes, and says: "The letter 'H' indicates the pipes by means of which the hydrocarbon fluid is admitted to the fixing chamber, a series of any desired number being employed, so as to admit the hydrocarbon at different points;" and the proofs in this case conclusively show that in the West-Side Works at Chicago, Ill., from 1883 until 1888, a cupola called the "Jumbo Cupola" was in open public use, for the manufacture of water gas, which was provided with six injection pipes for oil, each of which entered the cupola between two of the legs of a spider-leg arch at least eighteen inches above the spring of the arch, and not more than two or three feet below the crown of the arch through which the crude oil and naphtha were alternately and suc-

cessfully used in making water gas for illuminating purposes. These six pipes were inserted in that cupola at points relatively not more than four feet below the points where complainant inserted his pipes. It therefore conclusively appears that there was no novelty in many pipes instead of one; no novelty in inserting them at different points in the superheater; no novelty in inserting them between the legs of the arch; no novelty in inserting them in the passageway between the combustion chamber and superheater; no novelty in inserting them between the combustion chamber and superheater, between the legs of the arch, two feet below its crown, (for at this point they were inserted and used five years in Chicago;) and the claim of the complainant, which is material in the suit at bar, is narrowed to this: that he has discovered that, if one raises the oil pipes used on the Jumbo cupola from two to four feet higher, they will use heavy oil more satisfactorily. His own expert, Mr. Bates, testifies that, disregarding the points at which the oil is introduced, everything shown in complainant's patent is in the Jumbo.

The patents in evidence not referred to above show that the liquid hydrocarbon had been introduced into the superheater at the top, midway between the arch and the top, just over the arch, and at nearly every point in the superheater, so that the insertions of the pipes at any point above the arch was a common device. Complainant's witness, Harvey W. Brown, who had occupied all positions from the coal pile to the president's chair, and who was general manager of the Minneapolis Gaslight Company at the time complainant first constructed his improvements, well states in the present tense what the proofs in this case show was equally true at the time the complainant conceived and constructed the improvements he claims. He says:

"There are all sorts of devices or contrivances for the purpose of feeding oil into cupolas. Some have put it through the lower course of brick of the superheater, and let it run through and drop down; others have made part of the arch brick in a hollow form, and sent it through there; others have put a pipe over the whole cupola, and let it in at the top, and had side feeds at the top of the superheater. I will say that when our oil is injected into the cupola from the injector there is a perfectly clear space from there to the fire. I regard it as absolutely essential for the successful and economic working of the process that such should be the case."

To increase the six injection pipes used in the Jumbo cupola, and there inserted between the legs of the arch, eighteen inches above the spring of the arch, to eight, and insert them relatively two or four feet higher, "just below the lower brick of the superheater," under the crown of the arch, is not invention. Mr. Ellbert was trying to improve a cupola in which the oil was introduced through a single pipe entering near the surface of the incandescent fuel. The heavy oil, introduced in large volume on one side of the superheater, was not well mingled with the rising gases in all parts of the superheater, and fell upon and ran down through the coal before it was sufficiently vaporized to be carried up into the superheater. If heavy oil introduced near the surface of the incandescent coal fell upon and ran down through the coal

before it could be vaporized, it was certainly well known to those skilled in the art that this oil would be more completely vaporized if it was introduced further above the coal, and was subjected to the action of the intense heat and rising gases for a longer time, and while passing through a greater space before reaching the fire surface. If, when introduced in one volume through a single pipe, the oil was not properly mingled with the rising gases in all parts of the chamber, it was certainly well known to any mechanic skilled in the art that, if the same volume was divided and introduced through several smaller pipes at different points equally distant around the circumference of the cupola, the oil would be more completely mingled with the rising gases and more completely vaporized. To arrive at these conclusions required no invention,—no discovery. They would surely occur to any mechanic, skilled in the art, seeking to obviate the difficulties referred to, and could be embodied in the form of an apparatus or machine to inject the oil directly under the superheater, and between the legs of the arch, by the common mechanic. They had occurred to Mr. Frederick Egner in 1883, who constructed the Jumbo cupola, and had them embodied in an apparatus which the proofs show obviated all the difficulties the complainant was seeking to avoid, and differed from his construction only in the number of injection pipes and the height of their insertion. We do not consider or determine the validity of those claims of complainant's patent which relate to the particular arrangement of the main oil pipe and its branches around the cupola, or the extension of steam pipes through the oil pipes, as shown in his patent to vaporize the oil, because it is conceded that defendant uses the common steam injection pipes which were in use long before complainant's patent, and does not use the steam pipes extending through the oil pipes, or the arrangement of the main and branch pipes shown in complainant's patent; but we hold that complainant's claim for inserting a series of oil pipes opening through the outer wall of the cupola into separate passages between the legs of the arch between the superheater and the combustion chamber cannot be sustained for want of novelty, in view of the state of the art. *Atlantic Works* v. *Brady*, 107 U. S. 192, 199, 2 Sup. Ct. Rep. 225; *Vinton* v. *Hamilton*, 104 U. S. 485, 491; *Slawson* v. *Railroad Co.*, 107 U. S. 649, 653, 2 Sup. Ct. Rep. 663.

Turning now to the machine constructed and used by the defendant, we find that in that machine are four legs to the arch, each constructed of two courses of brick laid solidly together; that the oil is injected into the checker work or loose brick of the superheater by common steam injectors at four points, one directly over each of these four solid legs, above the third row of brick in the superheater, and 18 or 20 inches above the crown of the arch. There is a channel in the checker work of the superheater opposite the point of insertion of each of these injection pipes, two inches wide, extending from the casing of the superheater to its center. In operation the oil is not heated or vaporized, but thrown in cold, strikes against the brick in the superheater, and so clogs and plugs up the superheater that the defendant is obliged to remove the

brick and clean the superheater after from four to six months of continuous use. If the first claim of complainant's patent could be sustained for the improvement of inserting oil pipes in the passages between the legs of the arch, and just beneath the superheater, (and certainly no broader claim could be sustained in view of the Jumbo cupola and the general state of the art,) the apparatus of the defendant does not infringe it. The complainant is not the original inventor of this apparatus for the manufacture of water gas, and, if his first claim was sustained, would be the inventor of but a slight improvement upon it, and his position under the law applicable to infringement would be entirely different from that of the original inventor. The difference in their positions is clearly stated by Mr. Justice GRIER in *McCormick* v. *Talcott*, 20 How. 405. He says:

"If he be the original inventor of the device or machine called the 'divider,' he will have a right to treat as infringers all who make dividers operating on the same principle, and performing the same functions, by analogous or equivalent combinations, even though the infringing machine may be an improvement of the original, and patentable as such. But if the invention claimed be itself but an improvement on a known machine by a mere change of form or combination of parts, the patentee cannot treat another as an infringer who has improved the original machine by one of a different form or combination, performing the same functions. The inventor of the first improvement cannot invoke the doctrine of equivalents to suppress all other improvements which are not mere colorable invasions of the first."

Defendant's construction is not a mere colorable invasion of complainant's improvement. That improvement consisted in inserting the oil pipes below the first course of brick of the superheater, so that the oil would not strike the brick of the superheater, cool them, and plug and clog the checker work. Defendant inserts them above the third course of brick of the superheater, and throws the oil directly into the checker work, where it does strike the bricks and clog the superheater. Complainant's improvement consisted in inserting these oil pipes between the legs of the arch, and below the superheater, so that there would be a free and unobstructed space between the points of insertion and the incandescent coal below, and deemed this essential to the attainment of the result he desired. Defendant inserts his oil pipes in the superheater directly over the solid legs of the arches, at the very points where there is the greatest obstruction between the points of insertion and the incandescent coal, and at the only points where there are solid brick walls, consisting of two courses of brick, between the superheater and the combustion chamber. Complainant's improvement consists in inserting the oil pipes in the passages between the legs of the arch, through which the ascending gases and vapors pass from the combustion chamber to the superheater, passages divided from each other and made by the legs of the arch, and by these alone. Defendant inserts its pipes directly over the legs of these arches, and hence between these passages. The defendant has not appropriated or used any of the improvements claimed by the complainant, and the oil injection pipes inserted in the superheater above the legs of the arch, as they are used in defendant's apparatus, perform no function that can be attributed to complainant's im-

provements,—no functions not performed by the oil injection pipes, shown to have been described in patents or known and in public use in this country more than two years before complainant's application for a patent. The bill must be dismissed. Let a decree be entered accordingly.

AMERICAN AUTOMATON WEIGHING MACH. CO. *et al.* *v.* BLAUVELT.

(*Circuit Court, E. D. New York.* April 29, 1892.)

1. PATENTS FOR INVENTIONS—OPERATIVE DEVICE—AUTOMATIC WEIGHING MACHINE.
   Letters patent No. 336,042, issued February 9, 1886, to Percival Everett, claims: "A weighing machine, having an aperture for receiving a coin, a weighted lever, a dial, and index hand, and intermediate mechanism connected with the same, and whereby the coin, when deposited in the receiver, shall operate the lever, and cause the hand to indicate the weight of the person or body being weighed." *Held*, that the claim is for the machine as a whole, having the parts mentioned, and, as the patent refers to all parts necessary to make it complete and operative, the claim is to be read with reference to such known and described parts, and therefore covers an operative machine.
2. SAME—INVENTION—NOVELTY.
   The patent possesses both invention and novelty, for, although a weighted lever, operated by a coin put through a slot, had been used for various other purposes, these elements had never been combined with mechanism to form a weighing machine.
3. SAME—INFRINGEMENT—EQUIVALENTS.
   The patent is infringed by a weighing machine having the elements claimed, even though the intermediate mechanism by which the weighted lever operates the index is very different from that of the patent, since, both being old, one is merely the equivalent of the other.

In Equity. Bill by the American Automaton Weighing Machine Company and the National Weighing Machine Company against James M. S. Blauvelt, for infringement of a patent. Decree for complainant.

Edwin H. Brown, for complainant.

Theron G. Strong and *Charles F. Mathewson*, for defendant.

WHEELER, District Judge. This suit is brought for infringement of the first claim of letters patent No. 336,042, granted February 9, 1886, to Percival Everett, for a weighing machine that will indicate weight on a dial, only when a coin is put into a slot, and falls upon a weighted lever, and by intervening mechanism carries an index over the dial until it is stopped by the weighing mechanism, where it will indicate the weight. This claim is for—

"A weighing machine, having an aperture for receiving a coin, a weighted lever, a dial, and index hand, and intermediate mechanism connected with the same, and whereby the coin, when deposited in the receiver, shall operate the lever, and cause the hand to indicate the weight of the person or body being weighed."

The defenses, in substance, are lack of patentable invention, want of novelty, and noninfringement. The patent is not for any weighing apparatus, nor for the slot, or weighted lever, or dial and index, or