Banning & Banning, for complainant.
Paul A. Staky, for defendants.

GROSSCUP, District Judge. The bill is to restrain infringement of letters patent No. 400,319, issued March 25, 1889, to Charles E. Ferreira, and the patent relates to improvements in feed-water heaters and purifiers. The defendants challenge the validity of the patent, and deny infringement. The object of the so-called invention was to provide for the heating and purifying of water, particularly for water intended for use in steam boilers. The general construction of the water heater is described by the patentee as follows:

"In constructing my improved feed-water heater and purifier, I make a metallic shell of any size desired, according to the capacity of the boiler or boilers with which it is to be used. Inside this shell I form chambers for water and steam by means of suitable partitions; these chambers, of course, being sufficiently tight to hold the water and steam, respectively, and to prevent their mingling together except as desired.

"I introduce the water into the water chamber by pumping, or in any other convenient way, through a pipe entering the shell, preferably from the side, and as near the top as possible. This pipe terminates in a sprinkler inside, preferably enlarged so as to distribute the water in a spray or shower. The inflow of water may be regulated by suitable valves, or in any other convenient way; but I prefer to use an ordinary float or butterfly valve for this purpose.

"Connected with the top of the steam chamber—that is, with the partition separating it from the water chamber—is a pipe passing up and down, or making turns through the water chamber; and the steam passing through this pipe, of course, heats the body of the water surrounding, or in contact with it. There may be only one of these pipes used, or as many as desired. I prefer to use several,—as many as possible,—so as to have numerous inlets for the steam, and to secure the greatest possible heating surface in the water. The upper end of each of these pipes is preferably provided with a horizontal nozzle, so that the water dropping or falling from the sprinkler cannot enter the pipes, and thus create back pressure.

"Passing up from the settling chamber to any height desired in the water chamber is a pipe intended to conduct the heated water into the settling chamber; and a pipe for the introduction of live steam may be connected or enter into this water pipe at any convenient point. I prefer to turn the end of this steam pipe, and run it down in the water pipe a short distance, and to have its end closed by plugging or otherwise, and the sides of its turned-down portion perforated to distribute the steam laterally. By means of this pipe, live steam may be introduced directly into the comparatively small quantity of outflowing water, so as to commingle therewith, and thus superheat it or greatly increase its temperature. In this way the water can be heated to any temperature required before or as it enters the settling chamber; and, the temperature being sufficiently high, of course the impurities or scale-forming matter are immediately precipitated in the settling chamber. I prefer and consider it important to have the live steam thus introduced at a temperature sufficiently high to cause the impurities or scale-forming matter to be rapidly and fully precipitated. I also prefer to have this pipe for the outflow of water at the center, and its upper end about half way between the surface and bottom of the water, so as to draw off the water without scum, oil, or other floating matter, and with as little as possible of the heavier impurities. As will be seen, the impurities which can be precipitated at about 214 degrees Fahrenheit are thus caused to remain in the water chamber, and other impurities requiring a higher temperature to precipitate them are arrested in the settling chamber. The heated water drawn into the settling chamber is also allowed to become more fully purified by the settling or precipitating of the impurities therein before the water rises high enough to enter the suction pipe of the feed pump. The perforations in the lower part of the partition in the lower

water chamber, of course, permit the water to come out into the space leading to the suction pipe, where it may still further settle. If desired, such space may be extended upwardly by continuing the partition to any point desired; but I prefer not to extend it higher than the upper end of the pipe which conducts the water from its first chamber to the settling chamber.

"I prefer to have the water level sufficiently high to facilitate the pumping of boiling water, and thus render the elevation of the heater unnecessary. To prevent the water ever rising too high in the water chamber, and as an outlet for the floating matter, I also provide an overflow pipe at the point intended for the highest level.

"I also provide a suitable outlet pipe to permit the escape of the surplus steam; that is, the steam not condensed by coming in contact with the water. I prefer to have this exhaust outlet immediately over the point of water distribution; but it may be elsewhere. When the exhaust steam is used for other purposes, or for any reason it becomes desirable to do so, I introduce live steam in sufficient quantities to heat the water. In such case the live steam is introduced into the steam chamber, and generally takes the place of the exhaust steam. In some cases also, especially where soft water is used, only one kind of steam, either live or exhaust, is necessary; and so I provide for the use of either live steam or exhaust steam, or both together, as circumstances may require. In some cases it may be desirable to use the water formed by the condensation of steam, and caught in tanks, traps, or otherwise; and I then provide for the introduction of such water by a pipe or pipes extending from the vessel containing it, and entering the heater at a point as near as practicable for the exhaust outlet of surplus steam. This arrangement will be found particularly applicable when the heater is used in connection with boilers employed in heating buildings. The sediment or impurities in the water and settling chambers may be washed out from time to time, as necessary, by opening the drain valves from the chambers, and through the manhole in each of said chambers.

"Some of the advantages of my invention are that it provides for heating and purifying water by the use of either live steam or exhaust steam; that it also provides for the heating and purifying water by the use of both live steam and exhaust steam; that it also provides for an unusually large heating surface in and under the water; that it also provides for drawing off the heated water without taking any of the floating impurities or many of the precipitated impurities; that it also provides for introducing live steam directly into the outflowing water, so as to superheat it or greatly increase its temperature, and thus cause the remaining impurities, which require a higher degree of heat, to be precipitated in the settling chamber; that it also provides for a water level high enough to facilitate the pumping of boiling water, and thus to obviate the necessity of elevating the heater; and, generally, that it is simple, efficient, and economical, both in construction and use.

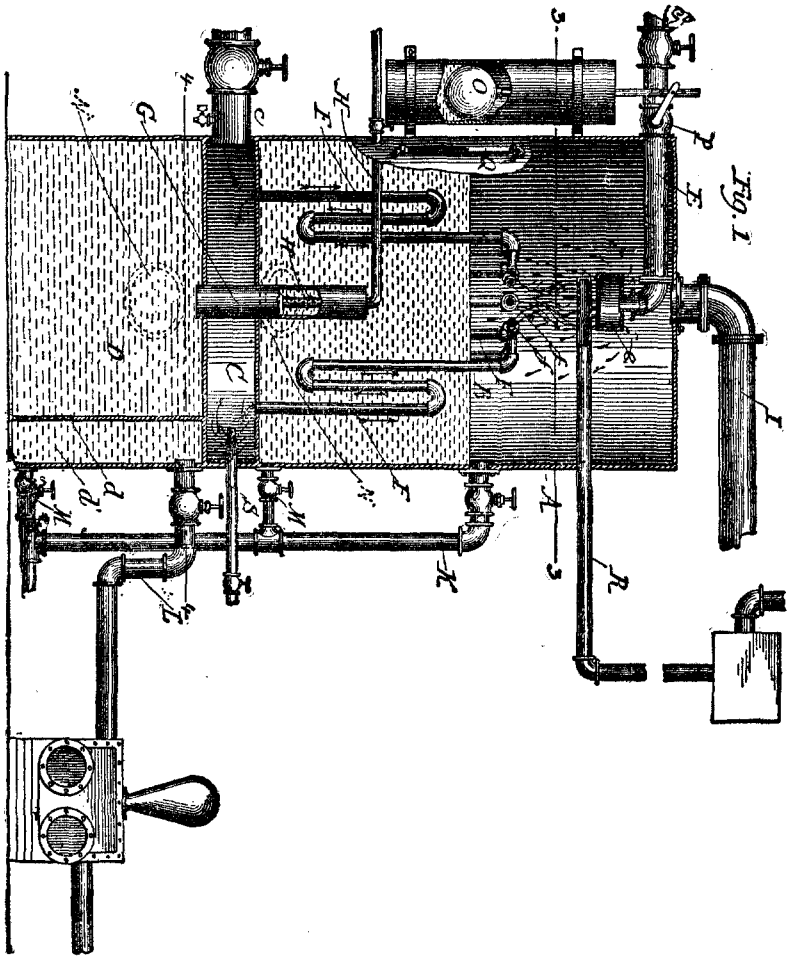
"Although my invention is thus capable of producing many important results, it will, of course, be understood that I do not intend to limit myself to a construction in which all of them or any particular number of them are obtained; nor do I wish to be understood as limiting myself to minor features or details of construction, or to the particular way or mode of operation described."

The drawing accompanying the patent is set out on the opposite page.

The claims relied upon are as follows:

"In a feed-water heater, the combination of a water chamber provided with a water inlet, a steam chamber provided with a steam inlet, a pipe communicating with the steam chamber, and extending to the water chamber, for conducting steam through the water, a settling chamber, a pipe communicating between the water chamber and the settling chamber, for conducting the water into the settling chamber, and an outlet for drawing off the water, substantially as described.

"In a feed-water heater, the combination of a water chamber provided with a water inlet, a steam chamber under the water chamber provided with a

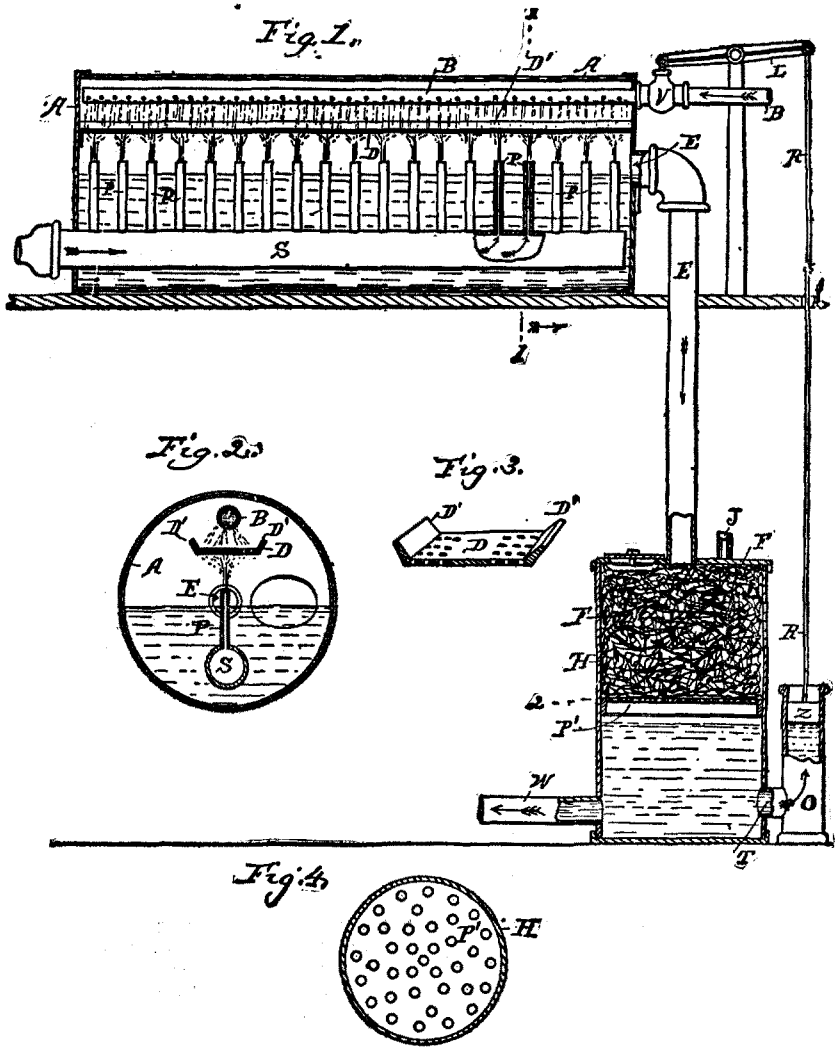


steam inlet, a pipe communicating with the steam chamber, and extending into the water chamber, for conducting steam through the water, a settling chamber under the steam chamber, a pipe communicating between the water chamber and the settling chamber for conducting the water into the settling chamber, and an outlet for drawing off the water, substantially as described.

"In a feed-water heater, a combination of a water chamber provided with a water inlet, a steam chamber provided with a steam inlet, a pipe communicating with the steam chamber, and extending into the water chamber for conducting steam through the water, a settling chamber under the steam chamber, provided with a vertical partition, perforated in its lower portion, a pipe communicating between the water chamber and the settling chamber, terminating at its upper end at a point in the water chamber, between the surface and the bottom of the water, and an outlet for drawing off the water, substantially as described."

The water heater and purifier in question is of the class known as "open water heaters," or those in which the steam comes in direct contact with the water, as distinguished from closed heaters. The previous art in the matter of open heaters is best illustrated by pat-

ent No. 385,769, issued July 10, 1888, to James Miller, the drawing of which follows:



The counsel for the defendants admit that the Miller heater is the nearest approach to the one under consideration that the previous art discloses.

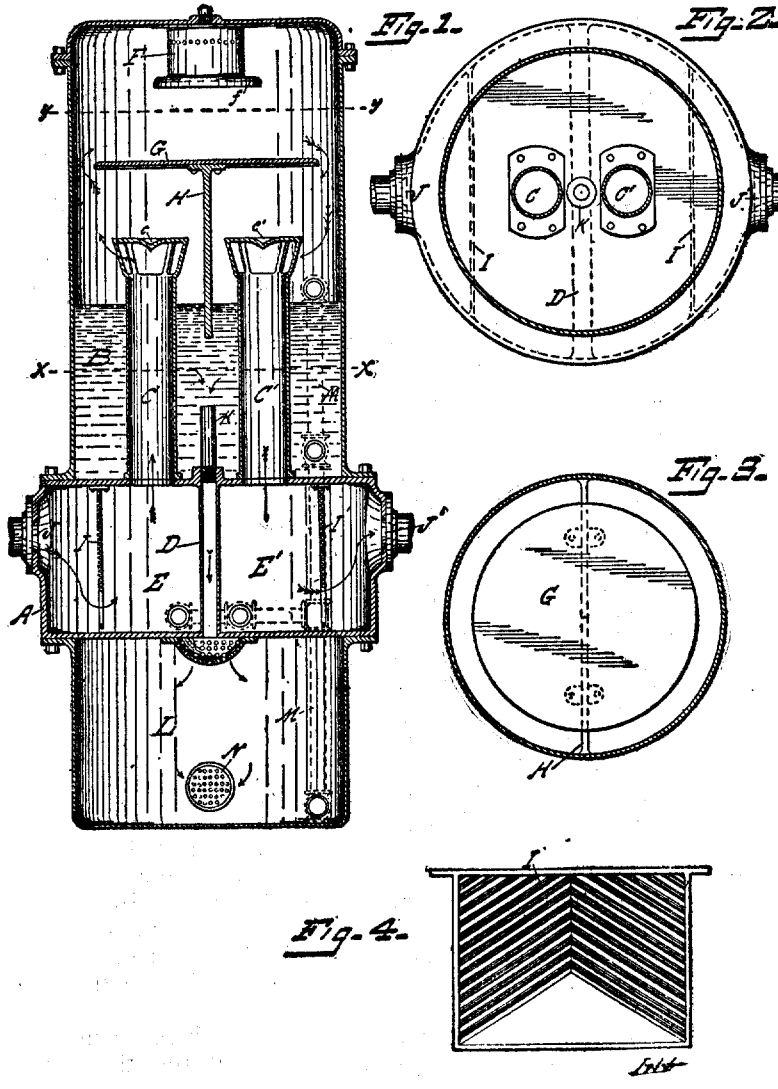
It will be observed that in the Ferreira heater the exhaust steam is introduced into chamber C,—a chamber large enough to permit of great expansion to the steam. In the heater actually built by the patentee (and he expressly disclaims limiting himself to the dimensions set forth in the drawing), the cubic space of this chamber is nearly one-half that of the superimposed water chamber. If constructed ac-

cording to the drawings, the cubic quantity of the chamber would be, at least, one-eighth that of the water chamber. Reference to the Miller device shows that the steam chamber into which the steam is first introduced is only a pipe extending laterally throughout the water cylinder, and having water on all sides of it. Reference to Fig. 2 of the Miller patent will show that the cubic quantity of this pipe was only a small fraction of the cubic quantity of the entire surroundings of the water space. In the Miller patent no considerable room was afforded for expansion before the steam was forced through the vertical pipes into contact with the water. Large space for steam expansion after it comes into the steam chamber, and before it is forced again into actual contact with the water, is a feature of the Ferreira device wholly wanting to the Miller device, and to any of the open heaters of the prior art. It is claimed by the experts that this feature is just what makes the Ferreira device a successful heater, and that its absence prevented all predecessors in that class from being successful. Among the reasons urged are (1) that the expansion of the steam in the steam chamber has the effect of separating the steam from the oil, thus driving the steam, purified, into contact with the water; and (2) that the room for expansion in this chamber permits of a freer exhaust from the steam pipes; the expansion destroying its compactness, there is no tendency to drive back or impede the steam from the exhaust pipe. This particularization of advantages is, of course, strenuously contested by the counsel, and the experts, for the defendants. The theory advanced seems plausible, but I am not prepared to say with any degree of certainty that it is sound. It may be that the complainant's expert has not put his finger upon the exact reason why a large steam chamber between the steam pipe and water contact, affording space for expansion, is desirable. But that such chamber is, in fact, desirable,—indeed, necessary to a successful heater,—is, I think, clearly proven by the record in this case. Neither the Miller heater, nor any of the open heaters of the previous art, ever obtained a foothold in the public favor. For some reason or other, they were rejected in favor of the closed heaters. The Ferreira heater, on the contrary, has established itself as a practically successful device. In Chicago alone, it has obtained a place in the heating apparatuses in connection with the Masonic Temple, the Chamber of Commerce, the Ashland Block, the Chicago Athletic Club, the Montauk, the Willoughby Building, Montgomery, Ward & Co. Building, the Hartford, the Y. M. C. A. Building, the Kimball, Sprague, Warner & Co. Building, the Leland Hotel, the Chicago Beach Hotel, the Chicago Public Library, the Rookery Building, and many others of similar size; and in other cities its success seems to have been no less marked. Success like this proves, by the best evidence at hand, that the heater in question made a great advance, in some of its features, upon its unsuccessful predecessors. I am strongly impressed with the belief that the cause of such success resides in the introduction of a steam chamber giving large space for expansion before the steam comes in contact with the water.

It is insisted that the functions of the steam chamber now particularly pointed out—such as separation of the oil from the steam—

were not mentioned in the letters patent. But, assuming that they were not, the patent is not thereby invalidated. The patentee is entitled to protection for any substantial advances made in the art, evincing inventiveness, irrespective of whether such particular advantage was incidental merely, or the main purpose in view. The court looks to the result, not to the inventor's process of reasoning, or his expectations. Ferreira obtained a new result by the introduction of a hitherto untried feature, and is entitled to a property right in what his labors and good fortune have thus brought forth.

The drawing of the defendants' device is as follows:



It will be seen that it embodies the complainant's conception with a few variations. One of these is that the steam chamber extends only half way horizontally through the heater; but the space thus lost is made up in its increased vertical dimensions. At any rate, it introduces into the heater a steam chamber, offering large space for the expansion of steam before it rises to the water. The defendant, likewise, uses straight pipes, instead of coiled pipes shown in the Ferreira patent; but I do not find that Ferreira intended to limit himself to coiled pipes. The pipes in the defendants' device perform the same function as do those in the Ferreira device. On the whole case, therefore, I find for the complainant, and against the defendants, and the usual decree for an injunction and an accounting may be entered.

A. B. DICK CO. v. WICHELMAN.

(Circuit Court, S. D. New York. August 11, 1898.)

PATENTS—SUIT FOR INFRINGEMENT—VIOLATION OF INJUNCTION.

A defendant is in contempt for violating a preliminary injunction, in the usual form, against his "making, using, or vending for use" the article in controversy, where he sells such article to a customer after service of the injunction, though it was made previously.

Motion to Punish for Contempt for Violating Injunction.

Samuel O. Edmonds, for the motion.
Frederick A. Wichelman, in pro. per.

LACOMBE, Circuit Judge. On April 9, 1895, this cause came up for final hearing before Judge Wheeler on pleadings and proofs, and was decided adversely to defendant. 74 Fed. 799. Injunction was issued in the usual form, and served personally upon defendant. These facts are conceded. It is asserted in the moving papers, upon the oath of one Frederick B. Canode, that on May 10, 1898, he called at the factory of defendant, No. 253 Washington street, New York City, and told him that he wanted to purchase five quires of typewriter stencil paper, and that two days later he (Canode) paid defendant four dollars, and received from defendant five quires of paper, a sample of which is annexed to the moving papers, and which is apparently the same as that which was held by Judge Wheeler to be an infrifigement. An expert who has examined this sample testifies that it "is composed of sheets of Yoshino provided with a soft coating of wax or wax composition, capable of being expressed from the body of the sheet by the blow of the typewriter, while leaving the fibers sufficiently intact or unbroken to hold the interior of loop letters in place." This makes out a prima facie case of violation of injunction, and careful examination of the answering affidavits fails to disclose any substantial contradiction of complainant's witness. One Marks, in the employ of defendant, testifies that he was "present in May, 1898, when a young man called at Wichelman's place of business, and said he was from Chicago, and wanted to buy some waxed paper; that deponent heard defendant tell the party that he was not making any waxed