

to another for the same invention, whose claim has passed safely the ordeal of judicial scrutiny. We think, therefore, the court below well held that the patent of Mr. Edison should be protected from invasion *pendente lite*. The order appealed from will be affirmed.

NEW YORK FILTER CO. v. O. H. JEWELL FILTER CO. et al.

(Circuit Court, S. D. New York. June 9, 1894.)

PATENTS—LIMITATION OF CLAIM BY DISCLAIMER—FILTRATION OF WATER.

The Hyatt invention, described in patent No. 293,740, for an improvement in the art of filtering water, defined, and the patent, as limited, sustained. The claim was for the described method of introducing a substance to coagulate or separate impurities sufficiently to facilitate their removal by the filter bed. The specification described the coagulant as a substance such as perchloride or persulphate of iron. From a year after the date of the patent its owners used alum in place of these substances, because more convenient and less expensive. Several years afterwards, they disclaimed a part of the specification which stated that the patentee did not confine himself to the employment of the persulphate or perchloride of iron or permanganate of potassa as a coagulating agent, nor to any particular proportions or quantities of such agent, nor to any particular liquid; thereby restricting the patent to the actual objects and scope of the invention. *Held* that, by this disclaimer, the claim was not so limited as to exclude from the protection of the patent the use of alum or the salts of alumina, which for many years had been well known to be interchangeable as coagulants with the reagents specifically named.

This was a suit by the New York Filter Company against the O. H. Jewell Filter Company and others, for infringement of a patent.

Philipp, Munson & Phelps, for complainant.
Lysander Hill, for defendants.

SHIPMAN, Circuit Judge. This bill in equity is founded upon the alleged infringement of letters patent No. 293,740, dated February 19, 1884, to Isaiah Smith Hyatt, for an improvement in the art of filtering water. The title to the patent has become vested in the complainant. At and prior to the date of the invention, the patentee was connected with a corporation which was endeavoring to introduce to the public filters having a filter bed of sand for the filtration of turbid water, or water which contained suspended impurities. The apparatus was not a success, by reason of its imperfect purification of the water, and the patentee, in his search for an improvement, found a remedy which is the subject of the patent in suit, and the use of which is not limited to any particular mechanical apparatus. The patentee, in his specification, described his invention as follows:

"The invention relates to improvements in the art of filtration; and it consists in the method hereinafter described of arresting and removing the particles of foreign matter liable to pass through the filter bed with the escaping water during an uninterrupted process of filtration, or one in which a stream of water is passed through a bed of filtering material contained in a filter, the filter being a receptacle containing a bed of filtering material, and having a supply pipe for the introduction of the water and a pipe for its passage therefrom, the said supply pipe having another pipe, through which I in-

troduce into the water, simultaneously with its passage into the filter, a substance—such as perchloride or persulphate of iron—for the purpose of sufficiently coagulating the impurities in the water to admit of their arrest by the bed during the passage of the water through the filter. In practicing the invention, some form of mechanical apparatus must be employed; and, while I do not confine myself to any particular construction, I recommend the apparatus described and claimed in letters patent of the United States No. 273,542, granted to John W. Hyatt on the 6th day of March, 1883, which I have used with very satisfactory results."

It further appears from the specification that the particular apparatus which the patentee recommended to be used with his invention consisted, in general, of an upper and lower compartment, separated by a diaphragm. The lower compartment was provided with a supply pipe and a bed of sand, or other suitable filtering agent. The specification proceeds as follows:

"The supply pipe, F, has connected with it a pipe, O, which will pass from any suitable supply of persulphate of iron or perchloride of iron, or other coagulating agent, which, by preference, will be in solution. The filter bed and the persulphate or perchloride of iron, or other coagulating agent, will meet at the juncture of the pipes, F and O, and then pass into the filter together, with the result that the minute particles of foreign matter in the liquid will be sufficiently coagulated to permit their arrestation by the filtering agent. As I have stated, the proportions or quantities of the coagulating agent cannot be accurately defined. It is only necessary that a sufficient quantity be used to effect that degree of coagulation which will admit of the fine impurities being arrested from the water on its passage through the filter bed during a continuous process. It will be understood that in this process the coarse impurities present in the water may be arrested by the filter bed without coagulation. I may mention, as an illustration, that I have successfully purified the water of the Mississippi river at New Orleans by using about one-eighth of a pound of perchloride of iron, of from 50° to 60° Baume, to a thousand gallons of water. I do not confine myself to the employment of persulphate or perchloride of iron or permanganate of potassa, but make use of any other suitable agent which is capable of coagulating the impurities of the liquid, and preventing their passage through the filter bed. Neither do I limit myself to any particular proportions or quantities of the coagulating agent, as they may be varied according to circumstances and the character of the liquid to be treated. Nor do I confine myself to any particular liquid, although I contemplate chiefly the purification of water in large quantities. It is obvious that, by the use of the uninterrupted process hereinbefore described, I entirely dispense with the employment of settling basins or reservoirs, as now commonly employed."

The claim is as follows:

"The method hereinbefore described of arresting and removing the impurities from water during an uninterrupted passage of same from a supply pipe into a filtering apparatus, thence through a filter bed contained therein, and out through a delivery pipe leading therefrom, which method consists in introducing into the water, simultaneously with its passage to or into the filter, a substance which will sufficiently coagulate or separate the impurities to facilitate their arrest and removal by the filter bed, thus obviating the necessity of employing settling basins."

The entire paragraph commencing with the words "I do not confine myself" was disclaimed by the owner of the patent on July 24, 1889. It had long been known that alum and the salts of alumina and the persalts of iron were coagulants which, when placed in a vessel of turbid or impure water, coagulated or collected together the suspended inorganic or organic, but not the dissolved, impuri-

ties which are present in turbid water, and caused or assisted in causing, by a process of sedimentation, these suspended impurities to settle upon the bottom of the vessel. Knowledge of this fact has been utilized in a crude way by travelers, hunters, and soldiers for very many years. In the English patents to Peter Spence, dated May 27, 1882, and March 29, 1882, the use of these two coagulants upon impure water for the purpose of sedimentation, is made very prominent. It has also been known that, in various processes which have been devised for depriving sewage of its deleterious qualities, these chemical substances have been useful, either in the process of sedimentation or at some time prior to the process of filtration. Lime and soda have long been used for "softening" water, or for dissolving mineral matter in water. Hyatt's invention was not a process of mere sedimentation, nor for the softening of hard water, nor for the treatment of sewage. The clarification or purification of turbid waters in streams or rivers, so that they might be made useful in the highest degree for potable or domestic or manufacturing purposes, had become important in this country, and the object of Hyatt was to combine some chemical means in connection with and as a part of filtration, so that filtration might be a success, and the use of large settling basins might be avoided. His discovery was that the use of such a coagulant as a persalt of iron, by mixing it in unexpectedly minute quantities with a stream of turbid water, as it flowed through a sand filter bed, or bed of other suitable material, would arrest and hold in such filter bed a large amount of suspended impurities present in the water, so that the water, as it reached, by percolation, the bottom of the bed, would be pure, although the coagulant and the impurities had deeply penetrated the bed. The salt forms with the flowing water a gelatinous or sticky hydrate, which catches and holds the impurities by reason of its jelly-like character. The action of the filter bed, in connection with the hydrate, in removing the impurities, is described by Prof. Morton as follows:

"The filter bed, in the first place, catches along its tortuous passages minute particles of this gelatinous precipitate formed from the iron salt, and then the passages thus lined with this precipitate further catch and arrest other portions of the same, as well as particles of suspended matter. The filter bed likewise aids in the chemical reaction by which the gelatinous precipitate is formed, so that portions of gelatinous precipitate come into existence or are developed during the passage of the liquid through said filter bed, in consequence of the agitation to which said liquid is subjected in flowing through these tortuous passages, and thus the filter bed has its power of catching and arresting particles of suspended matter still further developed."

It will thus be seen that the action of the hydrate, in connection with a stream flowing upon a filter bed, was not simply a repetition of the old process of subsidence or sedimentation. The invention thus used in connection with sand or gravel, or crushed-quartz filter beds, has proved to be exceedingly useful. Large quantities of water can be rendered pure with great expedition and economy. The process not only frees water from suspended impurities, but greatly aids in freeing, and it is said to entirely free, it from bacteria or living organisms. It is also extremely useful in clarify-

ing water in large quantities for those manufacturing purposes which demand the use of perfectly clear water. Its patentability has been sharply attacked, by reason of the previous knowledge of the utility of alum and of the salts of iron as a coagulant, and more especially by reason of the use of these chemical substances in various ways in systems for rendering sewage harmless. The fact of the prior use of these reagents is not important upon the question of patentability, for the patentee does not pretend to have discovered that they are coagulants. He invented a method by which their properties can thoroughly, promptly, and economically be made extremely useful for the clarification of water upon a large scale. Much time and space have been occupied with the attempt to prove and disprove the alleged fact that the state of the art in regard to the separation of filth and water in sewage destroyed the patentable character of Hyatt's invention. The object of the defendants in this part of the case was to broaden the complainant's patent, and it therefore insisted that it includes the treatment of water in whatever form or guise it is found, although it is mixed with other substances, so as to be in a partially liquid state, and includes a treatment for any purposes for which water may be used, whether merely for irrigation or for an addition to the current of a stream or for potable purposes; and that, as thus construed, it has for its predecessors all the systems for the purifying treatment of partially liquid material for any purpose whatever. Hyatt's actual invention, as it is made apparent by its history, and by the disclaimer, was to make impure or turbid water, and no other fluid, pure from suspended impurities, and clean for potable, domestic, and manufacturing purposes. His system was not one to make sewage either useful or innocuous, although the present owners of the patent may have endeavored to represent it as such in advertisements. A sand bed, or any filter bed of suitable material for the purposes of the patent, would be worthless for the treatment of such material. The bed would be forthwith clogged, and the attempt to use Hyatt's filter-bed system for the separation from each other of the component parts of the compound which is known as sewage would be useless. The treatment of sewage which does not undertake to make water pure for purposes of personal and domestic use, but to make filth a fertilizer, requires a different process from one which undertakes to make turbid water absolutely free from suspended impurities, and therefore capable of being drunk without injury. No system which had previously been discovered for making sewage beneficial was of value to Hyatt beyond the fact that previous inventions informed him that, in all systems for the separation of suspended impurities from water, salts of iron or salts of alumina perform a prominent part. The process for treating the sewage of the town of Coventry, in England, and the three English patents of Frederick Arthur Paget (sealed April 16, 1875), Peter Jensen (dated November 21, 1882), and Fritz Hille (sealed April 23, 1872), which are thought to have the greatest importance, show complex processes, among which is filtration, for the treatment of sewage, in which the various salts of iron and of alumina are or may be used;

but, for the purposes for which Hyatt wanted to use a reagent, neither process conveyed an idea of material practical importance. He was not informed how to use the reagents in connection with a stream of water flowing upon an ordinary filter bed, for the purpose of freeing the stream from its ordinary impurities, and converting it into water of the purest class. In the course of his experiments, he also ascertained—what was a surprise to scientists—that a remarkably small quantity would successfully accomplish the purification in connection with a sand filtering bed. Having made his invention, he either directed or permitted his draughtsman in his original specification to state his invention in such broad and vague terms as to justify the charge that he was endeavoring to obtain a patent for a method of clarifying any fluid or semifluid, for any purpose, from any impurities or imperfections, however caused, by any coagulant in any quantity. Neither did the well-known use of lime or soda as an agent for the “softening” of water, as it is termed, or for the dissolving of mineral matter, which has been taken up by and contained in water used for domestic or manufacturing purposes, throw such light upon the method in which water could be purified from suspended impurities as to cause the softening process, of which the inventions described in the English patents of 1879 and 1881 to John Henderson Porter are examples, to limit or destroy the patentable character of Hyatt's invention. About a year after the date of the patented invention, the owners of the patent commenced, and have continued, to use alum in place of the persalts of iron, because it could be readily procured anywhere, while the persalts of iron could not be promptly procured, and must be shipped in carboys of glass, which caused its transportation to be expensive. The defendants also use alum, and use the Hyatt invention, if the use of alum is included in the patent.

The fact of infringement depends upon the question whether the owner, by its disclaimer, so limited the claim as to exclude the use of alum or the salts of alumina from the protection of the patent. All the terms of the disclaimer are not easily to be understood. The patentee had given no formula of proportions or quantities of the reagent, but had said that a sufficient quantity was to be used, and, by way of illustration, mentioned that a very small quantity, one which would naturally create surprise, was sufficient for the purification of the turbid water of the Mississippi. The disclaimer struck out the clause which stated that the patent was not limited to particular proportions or quantities, but, as there was nothing in the patent which created a limitation, that part of the disclaimer simply brings into prominence the fact that, in the opinion of the patentees, small quantities only would be requisite for the purposes of the invention. The disclaimer also specified, what should never have been in doubt, that water was the only liquid to be purified, but it properly did not say that the purification was for potable purposes only, nor that sand, or its equivalent granular material, made the only filtering bed suitable to be used. It is the natural, and probably the best, material to be used for the purposes of the invention. The patent was intended, before the disclaimer, to include any sub-

stance which could accomplish the broad scope which the patentee was willing should be included in his patent. This is indicated by his inclusion in the disclaimed paragraph of permanganate of potash, which is not a coagulant of impurities, but oxidizes or burns those impurities which are of an organic character. The intent of the disclaimer was to confine the scope of the patent to the actual character and extent of the invention as it has been heretofore described, but it was not to limit the patent to those reagents only which were specifically named. The defendants insist that the owner of the patent disclaimed not only reagents which could perform any work of coagulation or separation, not only of suspended, but of dissolved, impurities, for any purpose, such as for irrigation, but that all equivalents of the persalts of iron were also excluded. The argument that no line can be drawn between equivalents, but that, if one set of coagulants is excluded, all chemical substances which perform like work must be excluded also, has a certain force, but the argument does not adapt itself closely to the facts of the case, which are that alum had been for scores of years a well-known interchangeable article with persalts of iron for the coagulation of suspended impurities in turbid water, especially for the purpose of slaking thirst; that the invention was a method of using reagents "such as" persalts of iron, so as to clarify turbid water in large quantities; that by the disclaimer the patent had been restricted to the actual objects and scope of the invention; and that the owners of the patent had themselves used alum for four years before the disclaimer. It would be unnatural to suppose that the disclaimer was intended to exclude the article which the owners were using, and the use of which by others they were continually asserting to be an infringement, especially when, if it was excluded, the patent became worthless. Before the disclaimer, the idea of the use of any coagulant or reagent ran through the specification and the claim, and was not confined to the disclaimed paragraph. By the disclaimer, the patent is made to say: I do not claim the use of any reagent which may turn out to be a coagulant. My invention was for a more limited purpose, and was for the use of reagents which, in connection with a running stream of water upon a filter bed, became hydrates, and I claim reagents "such as"—of the same kind or class as—persalts of iron, or of that well-known kind of which persalts are an example. Such a construction includes, with persalts of iron, their interchangeable chemical substance, the salts of alumina. A more limited and technical construction would seem to contain an element of unfairness. Let there be a decree for an injunction and an accounting.

BROWNING v. COLORADO TELEPHONE CO.

(Circuit Court of Appeals, Eighth Circuit. May 21, 1894.)

No. 359.

1. PATENTS—NOVELTY—TERRA-COTTA WIRE CONDUIT PIPE.

A patent claiming a rectangular terra-cotta wire conduit pipe having rectangular partitions made in one integral piece by forcing the material,