

GUTHARD et al. v. SANITARY DIST. OF CHICAGO**District Court, N.D. Illinois, E.D.****8 F. Supp. 329; 1934 U.S. Dist. LEXIS 1376****October 18, 1934**

[*329] LINDLEY, District Judge.

Plaintiff, Activated Sludge, Inc., being the owner of six patents, No. 1,247,540, issued November 20, 1917, applied for October 9, 1914, No. 1,282,587, issued October 22, 1918, applied for November 7, 1916, No. 1,247,542, issued November 20, 1917, applied for October 18, 1915, reissue No. 15,140, issued July 5, 1921, applied for August 11, 1919, No. 1,286,017, issued November 26, 1918, applied for October 18, 1915, and No. 1,341,561, issued May 25, 1920, applied for August 8, 1919, sues for infringement thereof. The other plaintiffs have no interest in the patents, but are retained in the suit because of a counterclaim made by defendant.

The first mentioned four of said patents were the basis of similar action in *City of Milwaukee v. Activated Sludge, Inc.* (C.C.A.) 69 F.(2d) 577, 586, where they were held valid and infringed. Though the parties defendant in the prior case and in that now before the court lack identity, and there is therefore no binding adjudication, the decision in that cause must control unless the evidence bearing upon validity here is so substantially different as to require a variant finding. Likewise, [**2] if the patents are valid and the acts of the defendant the same as or equivalent to those of defendant in the Milwaukee Case, it would be presumptive upon the part of this court to enter a decree upon the question of infringement at variance with that approved by the Court of Appeals. Not [*330] possessing such temerity, therefore, I have contented myself, so far as these four patents are concerned, with an analysis of the likenesses and differences of the facts in the two records. I have kept in mind, however, the proposition that, if defendant's construction differs substantially from anything before the court in the Milwaukee Case and presents a broader scope of mechanical and scientific development, it is my duty to examine the prior art in order to determine whether the patents heretofore held valid are to be approved now as against such broader scope. In other words, I must determine, despite the previous adjudication, whether I can attribute to the four adjudicated patents an inventive construction broad enough to cover defendant's allegedly different and broader combination.

Defendant in the present case offered as anticipation, proof of the structure and character [**3] of a plant of the Michigan Carbon Company. Such evidence was not in the Milwaukee Case; but, upon examination, I find that the construction and working result of this

structure were identical with that of the Mather and Platt apparatus before the court in the prior case. So, too, the conclusion is inevitable that the testimony here concerning the plant of the Buffalo Union Furnace Company, installed by the Pittsburgh Filter Company, had to do with structures substantially identical with those installed by the Pittsburgh Company at other places, evidence of which was presented in the Milwaukee Case.

Included in the record of the Wisconsin court was the testimony and documentary evidence of the witness Gregory whose deposition was also here. He produced photographs of certain experimental work of allegedly anticipatory character which he had made in England. Bearing upon the same feature, defendant presented here in addition the testimony and documentary evidence of the witness Kendall, but it was not substantially different from the testimony of the witnesses who testified at Milwaukee.

Defendants offered here, as part of the prior art, two British patents, Shone and Ault, No. 2,125 [**4] of 1893, and Beddoes No. 8,722 of 1908, which were not before the court in Wisconsin. Upon analysis, however, I am of the opinion that these patents disclose nothing of anticipatory character. Nor do I find in the fact that the Moore patents, which were before the Wisconsin court as evidence of the state of the art and before this court as evidence of anticipation, anything sufficient to warrant me in concluding that the District Court or the Court of Appeals would have reached any different conclusion, had the said patents been presented in the prior case for the greater purpose.

The only evidence bearing upon the assertion of intervening rights (under patent No. 1,247,542 and reissue No. 15,140), presented here, which was not before the court in Milwaukee, was that of experiments by defendant at its Packingtown plant, ending in March, 1917. It is to be observed that these experiments were abandoned and that the apparatus used was discarded, before the reissue. Defendant ceased to employ them or anything growing out of them prior to the date of plaintiff's reissue patent. As I understand the law governing intervening rights, whether grounded upon estoppel or laches, such experimental [**5] work, ceasing as it did before the date of the reissue, is wholly insufficient to establish such rights. Inasmuch as the Court of Appeals found no basis for intervening rights in the prior case, and inasmuch as the additional evidence offered here upon the same contention is obviously insufficient, it follows that the Court of Appeals' conclusion in this respect is decisive of the issue here.

With regard to the validity of the four patents first above mentioned, then, the record here is not substantially different from that before the District Court in Wisconsin and the Court of Appeals. I feel constrained, therefore, to refrain from any further consideration upon the merits of the contention of invalidity of such four patents. In doing so, I am fully conscious of the proposition that, if the attempted application of the patents by plaintiff in this case would result in a broader construction than that attributed to them by the Court of Appeals in the prior litigation, it would be my duty to decide whether, under such wider construction, the patents are valid. I hope my later discussion will disclose clearly the reasons why, under the evidence herein, even with that proposition [**6] in mind, I believe

validity exists. To such conclusion I feel imperatively impelled by what the Court of Appeals has heretofore said.

Except as to the provision last mentioned, therefore, the ultimate questions submitted to this court for decision then are those, first, of the validity of the two patents No. 1,286,017 and No. 1,341,561, which were not in issue in the Milwaukee Case, and, second, of infringement of all six patents. So far as infringement of the first four patents is concerned, however, the issue is clearly within [*331] those decided in the prior case, to the extent, if any, which the evidence discloses that the structures and processes of defendant are identical with such of those of the city of Milwaukee as to which the Court of Appeals approved a finding of infringement. So far as the questions of validity and infringement of the last two mentioned patents are concerned, however, the adjudications of the District Court and the Court of Appeals are of no help to me here, except as to the reasoning of the two courts in their interpretation, analysis, and definition of the claims and specifications of the first four patents and to the extent that such decision [**7] interprets the invention of Jones growing out of the entire series of patents.

Both parties seem to agree that, in order properly to determine the question of validity of the two patents in issue here for the first time, this court should consider all the facts bearing upon just what Jones invented. This involves the necessity of some review of the history of the activated sludge process, its growth through various steps, and the effect of such evidence upon the validity of the two patents.

I shall not attempt any lengthy dissertation upon the interesting subject-matter of the nitrogen cycle, its working in vegetable and animal life, and the infinite examples of its constant operation in the multitudinous forms of nature in such life. Both the District Court and the Court of Appeals in the Milwaukee Case have made clear its nature, characteristics, and natural results. Suffice it to say, all these patents and the art with which we are concerned have to do with inventions, intended so to hasten nature's process as to bring about purification of sewage, in the course of so short a time as to make the suggested process of valuable practical value to mankind, struggling with sewage [**8] disposal in modern congested centers. The basic key to a successful solution of this problem is aeration, for by the proper use of air, aerobic or purifying bacteria are rapidly developed, and by its absence anaerobic or septic bacteria are fostered. Nature achieves its result through the agency of air, and the search of all who have struggled with the problem here concerned has been for a practical means for bringing about accelerated aeration with resulting increased rapidity of purification. For years bacteriologists experimented. They early recognized that the slime developing upon stones in running streams contained bacteria of aerobic character and might be reproduced in man-made containers under aerobic conditions by aeration. They first conceived the idea that to purify a liquid, therefore, they should insert in tanks, slates or some similar substance of solid character, to which the semisolids containing aerobic bacteria might cling, and then circulate the impure liquid over and among such deposits, and thereby bring it in contact with the aerobic bacteria therein. They learned at a comparatively early date that aerobic conditions were maintained by aeration. Therefore [**9] they purified liq-

uid by circulating the same over their slates covered with aerobic deposits, developed by aeration. These methods never developed beyond the laboratory stage, and from them resulted no practical or commercial values, except as food for further growth of the idea of practical application of nature's law.

Such was the state of development of this scientific investigation and experimentation when Dr. Fowler, a resident of Manchester, observing in November, 1912, Clark's experiment along these lines at Lawrence, Mass., returned to England in December and advised his assistants Arden and Lockett of what he had seen and instructed them to repeat the experiment. They began their laboratory work in January, 1913, and continued it through parts of 1913 and 1914. In the meantime, Fowler and his associate, Mumford, were experimenting with purification of sewage by mingling with it an aerobic bacillus, known as M-7, and iron salts. These experiments were based upon the proposition that M-7 was the secret to successful purification, and a paper to such effect was written and published August 22, 1913. Considerably later, it was found that M-7 was only one of several aerobic [**10] bacilli and that its activity was part of a larger cycle. A more complete history of the details of this development appears in the opinion of the Court of Appeals and that of the District Court in the Milwaukee Case.

The parties are in substantial accord that this was the stage of development until the summer of 1913. On September 22d of that year Coombs, an engineer, was employed by Jones. He had previously been planning an apparatus for the M-7 process, and from that time on, according to the Court of Appeals, Jones and Coombs worked with the question of purification by practical application of the principles and laws the scientists had uncovered.

It is obvious that no one at that time had a clear and direct conception of everything embraced in these patents or of the activated sludge process as it finally resulted. The [*332] scientist and the engineer knew then that aeration would produce and accelerate purification. They had not yet conceived clearly the theory of the creation of a sludge of aerobic bacilli, circulating in small flocculent particles through sewage, with a complete yet gentle circulation, and had not yet realized that this sludge, now termed activated [**11] sludge, containing aerobic bacilli and thus circulated, would so successfully accelerate the process of aerobic conditions and the purification of sewage as to make the process commercially and practically valuable. So the Court of Appeals has found.

It was at this juncture that Jones came into the picture. As stated by the Court of Appeals, the patents do not purport to cover the discovery of the bacteria or their characteristic activities, but they claim and cover the method and apparatus, by virtue of which conditions were provided under which the aerobic bacilli are encouraged to function to commercial practical advantage. What the scientist had done is described by the Court of Appeals as a biochemical process. What the Court of Appeals credited Jones and his collaborators with was a successful reduction to practice of the operation of scientific principle, brought to light by the discovery and development of suitable apparatus and processes. In the end everybody came to recognize that successful practice of the activated sludge process requires gentle yet complete circulation of flocculent and sponge-like pieces of aerobic sludge,

throughout and in intimate contact with [**12] all parts of the liquid to be treated. Such circulation can be achieved, so far as we know, only by currents of air, conducive to development of proper aerobic condition, furnished to the body of liquid through diffusers and used in tanks of such shape and form as to eradicate unnecessary friction and bring about complete circulation and intimate contact between the different portions of sludge and liquid, without sufficient force or friction to disrupt the balance found proper to be maintained and without leaving portions of the solids out of circulation. Such uncirculated portions, it is recognized, would tend to develop anaerobic or septic conditions. In September, 1913, no one knew that the so-called aerobic sludge could produce purification by the method aforesaid and be used over and over for such purification. Scientists and engineers were struggling, laboring, and experimenting, but no one had, as the Court of Appeals has found, at that time, any clear conception of the complete practical solution of the problem.

Lockett testified as to certain experiments, and defendant contends that these were anticipatory of what Jones did, and that Lockett achieved the inventive result [**13] claimed by Jones in the spring of 1913. Later Lockett's logbook was produced, containing notes of tests of purification of liquids in a large bottle. There are records of fourteen experiments, starting February 28, 1913, the first entry being "Repeat Lawrence experiment" (Clark). Analysis of results was made March 20, 1913, but nothing further was done with these experiments until September 2d or September 4th, when again there was a repetition of the Lawrence experiment. In this experiment sewage was left under aeration until October 10th, 36 days later. Lockett had at that time a "residue" (so termed in the logbook) in the bottom of the bottle. On the 18th day of November, however, for the first time, he designated the same as "sludge," and at that time for the first time he reduced the period of purification to four hours. Previous experiments had required days. He had developed his method of circulation until it was more complete, and then for the first time reduced the period for achievement of a practical purification to a period of from four to six hours. All this time he was experimenting with bottles, and achieved his more complete circulation by placing a small bent [**14] rubber tube on the air pipe through which air was forced. The result was to impart circuitry of action to the current of air and circulation of the liquid.

In the meantime, however, Jones had employed Coombs, and the latter had told Jones about M-7. They discussed it, and from then on we begin to find schemes, plans, sketches, and proposals all tending to or approaching more nearly the same end; that is, the idea of complete circulation by forcing air from the bottom and keeping bacterial matter in the liquid in complete and intimate circulation. Jones and his associate were apparently the first to suggest diffusers and thus to bring about the necessary complete circulation. Thus, for the first time, in the early fall of 1913, after Jones and Coombs began to work upon the solution of the problem, we have foremost the thought that in practical purification there should be circulation of the flocculent pieces of aerobic substance through and in intimate contact with the water, instead of bringing the water to slates or stones or rocks upon which the aerobic deposit rested. Here, for the first time in apparatus and plans suggested by Jones and Coombs, we find a clear conception [**15] [*333] of the idea of circulation of the aerobic substance matter through the liquid. This thought appears in the first of Jones' applications

filed October 11, 1913, almost six weeks before Lockett achieved his satisfactory acceleration of purification in the bottle in a four-hour period.

Jones in his original application made no claim to conception of the underlying scientific principle. He thought he and his collaborators were dealing with M-7 bacteria. But what he did offer was the first presentation of a more or less clear conception of bringing about purification by apparatus and process which injected the air through the diffusers into a tank so constructed as to bring about complete circulation of aerobic material in the sewage.

There was considerable correspondence between Fowler, who was employed by Jones, and the latter, and in this Jones communicated his idea of what the Court of Appeals has said was a new and distinctive process. It is plaintiff's contention that this was communicated by Fowler to his associate Lockett, and that this led to the successful conclusion of Lockett's experiments. However, it seems to me immaterial whether Lockett received this [**16] information from Jones through Fowler or discovered it for himself, after Jones and Coombs disclosed their conception. The Court of Appeals has held the American patent, preceded by this British application, valid, and the correspondence indicates that, before Lockett or anybody else ever had any final clear conception of the practical application of the law of nature to satisfactory practical purification, Jones had applied for the patent which the Court of Appeals held is valid. The content of his application for the first time disclosed the clear conception of complete circulation of aerobic substance through sewage by means of aeration. This significant expression occurred in a letter written by Jones and Atwood December 29, 1913, "to experiment so as to find the necessary velocity to keep sludge suspended."

I have recited somewhat at length these particular facts, because it seems to me they are most material in determining upon just what fact the Court of Appeals held that Jones was the first to grasp this practical application of these laws of nature, and the first to start to work upon apparatus designed to bring about successful application of such principle, resulting [**17] in great practical benefit and value. Whether, as a matter of first instance, I would have come to the same conclusion, is wholly beside the point; the court, in order consistently to attribute priority to Jones over Lockett, must have found the facts to be as they have here been related. Demonstrative of this is the language of the opinion in the prior case, where the court said: "It is true that Lockett's testimony at the trial attempted to create the impression that he alone was the discoverer and inventor as a result of experiments conducted by him in the early part of 1913, yet when later confronted with his dated laboratory notes, he was forced to admit that the experiments to which he referred were conducted in the latter part of that year. None of the witnesses confirmed his claim that he was the inventor, and he was the only one of the experimenters at Davyhulme or Manchester University who questioned Jones' right to that title. * * * This conclusion we think is supported by the following statement of Fowler: 'It was after I met Mr. Walter Jones that real progress took place in the translation from what had been a merely scientific and laboratory discovery into a practical [**18] commercial process; when I say "commercial" I mean one that is capable of being carried out in a practical manner on a large scale.' And again, 'It was only after I had come into touch with Mr. Walter Jones that devices were used which kept the sludge in

a fine state of division, that is to say, prevented large adherent masses accumulating anywhere, which moved it throughout the liquid in a regular path and which prevented any deposit in any part of the containing tank."

I brush aside all questions of culpability of Jones or any of his associates in using the ideas of others; those questions have been adjudicated adversely to the contentions of defendant.

In view of what the Court of Appeals has attributed to Jones, and in view of its decision that the development of successful application of the scientific principles to practical conditions originated with Jones, and keeping in mind the conception of that court as to the series of patents, it seems to me there is left no ground upon which it can be insisted that patent 1,286,017 is invalid.

The Court of Appeals has held that Ardern and Lockett did not anticipate the later patents, 542 and reissue 140, saying: "We are therefore [**19] constrained to believe that Jones was the rightful inventor of the process and apparatus as described in his British patents, and that Fowler, Ardern, Lockett, Mumford and Coombs and all other collaborators at Davyhulme and the University must be considered as ancillary discoverers." [*334] This conclusion is applicable also as to 017, for, if Ardern and Lockett were ancillary discoverers, they did not anticipate what Jones did, but were active only in collaboration with him. Evidently the Court of Appeals believed that the original conception emanated from Jones and Coombs, was communicated to Fowler, Jones' employee, and through him to Ardern and Lockett, his associates, and that the latter thereupon, having perceived the conception, experimented, with the results set forth in their paper. But for the original discovery and invention the court gave credit to Jones.

Defendant has argued that all three patents '017, '542 and reissue '140 are invalid, in that they were anticipated by the Ardern and Lockett papers, and, were it open to argument that Ardern and Lockett and Jones were totally disconnected and pursued independent research, there would be much force to the contention. [**20] But, in view of the Court of Appeals' holding that Fowler, Ardern, Lockett, and Coombs were all collaborators of Jones, and in fact ancillary discoverers with him, the conclusion is inevitable that what they produced in this relationship cannot be treated as anticipation of Jones' patents, the underlying conception of which the Court of Appeals has found Jones originated.

Defendant contends also that Moore's United States patents anticipate 017. These patents, as has been noted, were before the court in Milwaukee as evidence of the state of the art, but not as evidence of anticipation. The Court of Appeals found patents 542 and 140 valid, in view of the status of the prior art as disclosed by the record in that case, including the Moore patents. If the patents to Moore are of such character as to be anticipative, then they would have disclosed to the Court of Appeals a state of the art that would have prevented that court from attributing to Jones a rightful claim to invention. Though there is considerable force in the position that Moore's apparatus and his specifications disclosed that which Jones achieved in 017, yet, in view of the Court of Appeals' conclusions in this

respect, [**21] I am bound to say that Moore does not anticipate, for that court has held that there is no disclosure in Moore which created a state of art which negated invention upon Jones' part.

The same conclusion results as to the Archbutt-Deeley British patent 19,829 of 1892. This patent was offered as evidence of anticipation in the Milwaukee Case, and there held insufficient to negative invention upon the part of Jones, and must therefore be so treated in this case. I do not consider the issue open for decision by me upon its merits.

Defendant contends that patents No. 1,247,542, No. 1,247,540, No. 1,286,017, No. 1,282,587 are invalid because of inoperativeness. This contention was not upheld by the Court of Appeals as to the patents before it, and the evidence here is not sufficiently convincing to warrant this court to hold otherwise at the present time.

Tanks constructed according to patents No. 1,247,542 and No. 1,286,017 were constructed in Worcester, England, around 1915 or 1916, and continued in operation at the time beyond the date when the witness Balsom entered the employ of the Activated Sludge, Limited, in 1919. This, it seems, is a complete answer to defendant's contention [**22] with regard to this apparatus, which is based upon failure of the sludge in the long channels to settle away from the top surface of the liquid. The witness Barnebey likewise testified concerning his experiments with these structures and to his complete successful operation thereof. Defendant's contentions in this respect, it seems to me, are fully answered, in view of the prior holding of the Court of Appeals, by the testimony of Barnebey and Balsom and the apparatus offered in evidence. I conclude, therefore, that patent '017 is valid.

The claims in suit (1, 2 and 3) of patent No. 1,341,561 are for particular kinds of tanks. They have been spoken of in argument as streamline tanks. The desirability of such form of structure obviously arises from the fact that it is desirable to produce as nearly as possible frictionless circulation. Rounded corners and streamline construction tend to such end and to promote complete general circulation. Caink, No. 105,654 in 1916, exhibited the same idea when he provided a baffle wall which produced frictionless circulation. Briant, 7,131, discloses curved walls on each side of diffusers to cause less friction in circulation. And the teaching [**23] of Jones' prior patents was such as to indicate the necessity of frictionless circulation. As long as Jones claims to have conceived that it was desirable to have gentle but complete circulation without friction or without force sufficient to disrupt the flocculent material, it would seem that any one who followed his teaching would provide the sort of container which would most readily lend itself to the desired end.

[*335] My conclusion is that everything that is claimed in claims 1, 2 and 3 of this patent [561] is merely the application of ordinary mechanical skill to the problem confronting a builder who understands the purpose for which he builds and has in the prior art specific instances of applications of mechanical means to achieve the desired end. Such application of mechanical principles, with such teaching, is not invention. I conclude, therefore, that claims 1, 2 and 3 of the last-mentioned patent are not valid.

Some of the questions regarding infringement are easily disposed of. The Des Plaines plant and the Calumet plant are not substantially to be distinguished from the Milwaukee structure heretofore found to infringe. So classified, they must be held to infringe [**24] to the same extent and degree as the Milwaukee structure. In addition, the Calumet plant infringes patent No. 1,286,017. Analyze as I may, I cannot escape the conclusion that the process of this patent includes the element utilized at Calumet of separating the sludge from the liquid so that clear purified effluent, free of sludge, is carried away in one channel, wholly separate from the channel through which the surplus activated sludge passes off. The Des Plaines plant likewise infringes this patent. The fact that it is closed now relieves the court of any necessity of considering the prayer for injunction as to this plant, but does not affect the question of accrued damages.

The north side plant came into operation after the original bill was filed, but before the supplemental bill in the nature of an original bill was presented, and has been in operation continuously since. We find there a chamber for the removal of foreign material, settling chambers for the preliminary settling of such solids as will by the force of gravity fall to the bottom in a comparatively brief period of retention, three batteries of aeration tanks, the same of settling tanks and channels for the [**25] return of sludge and for removal of clarified affluent.

The sewage to be treated, passing from the elementary settlement through a mixing channel, is there augmented by the introduction of activated sludge, and then proceeds eventually to the aeration chamber, being retained in the mixing channel for perhaps two minutes. The mixture is retained and treated in the aeration chamber for about six hours. Each of these chambers in cross-section is substantially the same as that of chamber No. 4 at Des Plaines, after the modification there in 1924, containing, however, two rows of diffuser plates instead of one. At the end of the tank, the mixture, after treatment as aforesaid, passes over weirs into a settling tank, which is provided with a partially hopped bottom to cause the sludge as it settles to drift toward the center of the bottom of the tank. Thence, by gravity, the sludge moves to aerated channels adjoining the operating galleries, where it remains and is aerated for about two minutes and is thereby greatly revived. Thence it is carried by gravity back to the main building and there elevated by pumps to a point from which it flows by gravity back to the place where it [**26] again intermingles with raw sewage. This, in brief, is the cycle.

This process I believe infringes claims 2, 3, 7, 11, and 13 of patent 1,247,540. The double row of diffusers brings the activity within claims 11 and 13, for there is a progression of mixed sewage and sludge from the effect of one diffuser to that of another. This progression occurs both in a lengthwise direction of the channel and in a cross-circulation, whereby the movement is from the central point of the channel toward the side and back again toward the center. As a result of the arrangement of diffusers in the tank, there is eventually a circulation current upwardly along the channel, downwardly along the opposite side of the channel, laterally across the bottom, and upwardly over the group of diffusers in the next compartment down stream in the channel. This results from the arrangement of the diffusers

in sets of nine included in each of the series of concrete compartments. The elements of each of the mentioned claims appear in that process, and the specific operation reads upon claim 11. Defendant contends that, though the words of the claims read technically upon defendant's construction, there is no [**27] resemblance, but it seems to me that there is a very substantial likeness.

The bottoms of the channels at the north side plant are not substantially different from these of channel No. 4 of the Des Plaines plant as modified. Apparently, from the Court of Appeals' conclusions as to validity of that patent and infringement, therefore, this construction infringes claims 2 and 8 of patent No. 1,282,587. As said by defendant's counsel, the essence of the invention in this patent, held valid by the Court of Appeals, is the sloping construction of the floor. It is insisted, therefore, that, inasmuch as defendant's floors at the north side plant have substantial portions of flat character, they do not read upon the claim. They are partially inclined, partially of hopper character. The difference, I believe, is one only [*336] of degree, and not of such degree as to avoid infringement.

As we have seen, the sewage and activated sludge are first intermingled in channels leading from a central position to the complete aeration chambers, and are there retained about two minutes, and during that time subjected to preliminary aeration produced through diffusers located down the middle [**28] of the channel. This, though not final aeration, is a part of the treatment by air mentioned in claims 1, 2, and 3 of patent No. 1,286,017 and infringes same.

Claim 3 of reissue patent No. 15,140 has to do with a process wherein the crude sewage is supplied "gradually" to bacterial sludge, being aerated while being supplied. After aeration and settling, the purified liquid is gradually drawn off. Claims 7, 8, 9, and 10 relate to the re-aeration of activated sludge after it has been standing without air in the settlement chambers for some time and before it is mixed with raw sewage. The "gradual introduction" of claim 3 takes place at the points of entrance of the mixture into the aeration chamber.

Though it is claimed that the aeration in the channel where the sewage and sludge first come together is for the purpose of preventing settlement in this channel, provocative of septic conditions, it is significant that in other channels carrying sludge back to the main building such prevention is achieved by the use of gravity. No good reason is offered why the same means could not be utilized here with less expense. Rather it is believed this partial preliminary aeration is of [**29] some practical advantage. At any rate, it is a fact that the sludge is to some extent thus re-aerated. Accordingly, I believe claim 3 is infringed by gradual introduction of sewage, and claims 7, 8, 9, and 10 by re-aeration in the channels just ahead of the main re-aeration chambers. The only differences between the practice of defendant in this respect and the claims of the patent are again one of degree only.

Plaintiff's bill prays an injunction against the defendant. The language of the Circuit Court of Appeals in *City of Milwaukee v. Activated Sludge*, 69 F.(2d) 577, is decisive of this question. There the court held that no injunction shall be granted where the effect on the health and lives of the people of the community served by the infringing devices will be

of the serious character indicated by the record here. Accordingly the prayer for injunction will be denied.

There will be a decree finding claims and patents valid and infringed as heretofore indicated and finding patent No. 1,341,561 invalid. The decree will provide for a reference to the master in accord with the practice.

The court has not attempted to include herein all of the detailed findings of fact [**30] and conclusions of law adopted and filed of even date herewith. The same are hereby incorporated herein by way of reference and made a part hereof. Proper decree may be submitted.