FEHR et al. v. ACTIVATED SLUDGE, Inc.

No. 5727

Circuit Court of Appeals, Seventh Circuit

84 F.2d 948; 1936 U.S. App. LEXIS 4660

June 24, 1936

[*949] Before EVANS, SPARKS, and ALSCHULER, Circuit Judges.

SPARKS, Circuit Judge.

This action for patent infringement grows out of the activities transpiring at the Jones Island sewage plant at Milwaukee, Wisconsin. Appellee owned certain United States letters patent respectively covering a process and an apparatus for purifying sewage and analogous liquids. They, together with their dates of issuance and expiration, are set forth in the margin. [1] Excepting the reissue patents, they will hereinafter be referred to by the last three numerals of their respective numbers.

[Ed. note: 1st 4 of these were adjudicated in the "City" and "Commission" cases]

Number	Subject Matter	Issued	Expiration
1,247,540	Process	Nov. 20, 1917	Nov. 20, 1934
1,247,542	Process	Nov. 20, 1917	Nov. 20, 1934
Reissue			
15,140	Process	July 5, 1921	Nov. 20, 1934
1,282,587	Apparatus	Oct. 22, 1918	Oct. 22, 1935
1,286,017	Process	Nov. 26, 1918	Nov. 26, 1935
1,341,561	Apparatus	May 25, 1920	May 25, 1937
Reissue			
19,577	Apparatus	May 21, 1935	May 25, 1937

[**2] The original Jones Island plant was held to infringe the first four of appellee's patents in the order named above in City of Milwaukee v. Activated Sludge, Inc. (C.C.A.) 69 F.(2d) 577, hereinafter referred to as the City Case. The Sewerage Commission of the City of Milwaukee, a separate municipal corporation, constructed and operated the Jones Island plant, and it was adjudged an infringer of the same four patents. See Sewerage Commission of City of Milwaukee v. Activated Sludge, Inc. (C.C.A.) 69 F.(2d) 594, and also Sewerage Commission v. Activated Sludge, Inc. (C.C.A.) 81 F.(2d) 22.

The action at bar was instituted on June 1, 1934, and originally charged infringement or threatened infringement of all the patents above referred to, except Reissue No. 19,577, which was subsequently substituted for No. '561, of which it was a reissue, as hereinafter set forth. Pursuant to public advertisement of the Sewerage Commission, bids had been submitted for the construction of an extension to the Jones Island sewage plant and, pursuant thereto, various contracts were awarded. The successful bidding contractors were originally made parties to this action. For lack of jurisdiction, service [**3] was quashed as to two, and by permission of the court, the Sewerage Commission was permitted to intervene and file its answer. Prior to the trial, appellee dismissed its bill as to the first three above named patents, and at the opening of the trial the issues were further limited to claim 2 of Reissue Patent No. 19,577, claim 2 of No. '587, and claim 3 of No. '017. At the conclusion of the evidence, appellee, by permission of the court, dismissed its action with prejudice as to all the contractors with respect to the issue of infringement, direct or contributory, of Reissue Patent No. 19,577. ***[Net: Contractors held to infringe cl. 2 of '587 and cl. 3 of '017. Commission held to infringe cl. 2 of '587, cl. 2 of the reissue 19,577, and cl. 3 of '017. Note: same claim 2 of '587 was previously adjudicated against the Commission; but now they had tried to design around it. Thus the claim's validity was contested only by the contractors; infringement of the claim via the design-around was in issue for the Commission.]*** The court found all the claims last referred to valid, and that none of the appellants were possessed of any right or license under any of the patents in suit, and that they were all owned by appellee, who had the right to sue for past infringements thereof; that the appealing contractors had contributorily infringed claim 2 of No. '587, and claim 3 of No. '017 by constructing and by supplying materials and machinery for the construction of the extension to the Jones Island plant; that appellant, the Sewerage Commission, had infringed, and was continuing to infringe, claim 2 of No. '587, and [**4] claim 2 of Reissue No. 19,577 by constructing the extension to the Jones Island plant, and was threatening to infringe claim 3 of No. '017 by its operation of the extension to the Jones Island plant, and had infringed and continued to infringe claim 3 of No. '017 by the operation of the original Jones Island plant. It was held that the appealing contractors should be held harmless and should be indemnified by the Sewerage Commission for any damage found due from them, upon accounting, by reason of their contributory infringement.

Apparatus patent No. 19,577 is a reissue of patent No. 1,341,561. After the institution of the instant action, but prior to the trial, Judge Lindley of the District Court held claims 1, 2 and 3 of the [*950] latter patent invalid. Guthard v. Sanitary District of Chicago, 8 F.Supp. 329. Immediately thereafter, on February 16, 1935, appellee filed a disclaimer of claims 1, 2 and 3 of the original patent, and at the same time filed an application for its reissue, which was granted on May 20, 1935, as Reissue No. 19,577. On the issue day of the instant action, notice of appellee's motion to file a supplemental bill of complaint, claiming infringement [**5] of Reissue No. 19,577, was served on appellants, and the motion was granted on May 20, 1935.

The reissue patent is for apparatus, and discloses and claims a specific form of sewage tank in which the liquid is caused to flow in a helix around and around the tank, and through

it from one end to the other. It is more particularly described in Judge Lindley's opinion, and it is conceded that the aeration tanks of the new extension of the Jones plant infringe claim 2 of the reissue patent, if valid. Claim 2 of the original patent and claim 2 of the reissue patent are set forth in the margin. [2]

2

Claim 2 of original patent:	Reissue claim 2:
"A sewage purification open chamber,	"A relatively long and slender open
	sewage purification chamber,
and an air supplier arranged in said	an air supplier extending throughout
chamber,	the length and along the bottom in
	said chamber and located nearer to
	one than to the other of the vertical
	side walls of said chamber,
the walls of the chamber being rounded	the walls of the chamber being
to direct the circulation of the	rounded to direct the circulation of
sewage in asubstantially	
predetermined path adjacent	the sewage caused by the escape of
the respective walls."	air from said air supplier in a
	substantially predetermined path
	horizontally across the top of the
	chamber, downwardly adjacent the side
	wall farthest from the air supplier,
	and again horizontally across the
	bottom of the chamber toward and over
	the air supplier, the rounded portion
	adjacent the floor of the chamber
	serving also to prevent deposits of
	solid matter, the sewage to be
	treated being admitted to said
	chamber at one end thereof and
	withdrawn from said chamber at the
	opposite end thereof so that
	particles of sewage or solid matter
	are caused to flow generally spirally
	through said chamber from one end to
	the other."

[**6] It was first contended by appellants that the reissue was invalid because there was no evidence before the Commissioner of Patents of such accident, inadvertence or mistake as to entitle appellee to the reissue under Rev. St. § 4916, 35 U.S.C.A. § 64. The statute does not define the words "accident," "inadvertence" and "mistake," and perhaps that was not necessary on account of their general lack of ambiguity, as here used. It is clear, however, that when relied upon as a basis for a reissue, the accident, inadvertence or mistake must be real and in good faith and not simulated. To establish such basis, the statute does not require an oath to support it, and the Commissioner in passing upon the petition may supplement its disclosures with any pertinent information gained from the records in his office.

In support of this contention, appellants rely upon Union Switch & Signal Co. v. Louisville Frog, Switch & Signal Co. (C.C.A.) 73 F.(2d) 550; and Firestone Tire & Rubber Co. v. United States Rubber Co. (C.C.A.) 79 F.(2d) 948, 960. In the first case, the petition merely recited that the error in the original claim arose through inadvertence, accident or mistake, and this statement [**7] was entirely unsupported. In the second case, the petition merely contained the unsupported averment that the failure to present original claims of the scope indicated by the petition for a reissue arose inadvertently through an oversight of the inventor. In each of these cases, the petition for reissue constituted merely an effort to recapture claims which had been rejected earlier, and of course each reissue was properly held invalid. In the Firestone Case, the court said,

[*951] "While the statute is not specific as to that which constitutes inadvertence, accident, or mistake, and the courts have read into it a right to reissue where justified by equitable principles, Keller v. Adams-Campbell Co., 264 U.S. 314, 317, 44 S.Ct. 356, 68 L.Ed. 705, it seems to us clear from the authorities that while great liberality must be accorded the inventor who has failed in his original application to claim his true invention, and that upon substantial showing that he has failed to do so through some error innocently made, the decision of the Commissioner as to his right to a reissue will not be reviewed, yet, where no basis for a conclusion that there was such error is either asserted [**8] or proved, or where the evidence is conclusive that there was none, the reissue is void."

We understand this to be the rule applicable to such cases, and it is supported by the current of authority. It is worthy of note that most of the judicial expression on this subject involves cases where the original claims were sought to be enlarged by the reissue. See Mahn v. Harwood, 112 U.S. 354, 5 S.Ct. 174, 6 S.Ct. 451, 28 L.Ed. 665; Van Kannel Revolving Door Co. v. Winton Hotel Co. (C.C.A.) 276 F. 234; American Automotoneer Co. v. Porter (C.C.A.) 232 F. 456; Wayne Mfg. Co. v. Coffield Motor Washer Co. (C.C.A.) 227 F. 987; Justi v. Clark (C.C.A.) 108 F. 659.

In the instant case, there was no effort to broaden the original claim or to recapture that which had theretofore been denied. The reissue claim merely sought to narrow the original claim which Judge Lindley had held too broad. These matters were disclosed to the Commissioner at the earliest possible moment after that decision. The patentee had died and the entire history of his various patents was in the Commissioner's possession, with whatever information that may have accorded him. Under these circumstances, the patent was [**9] reissued under the rule which accords to a patentee great liberality, and we do not feel justified in disturbing the action of the Commissioner in this respect.

It is urged by appellants that the original inventor must have intended to claim the subject matter of the reissue claim, and that there is an absence of showing in this respect. The cases relied upon in support of this contention involved reissues which either broadened the original claims, or claimed a different invention from that disclosed by the original patent. Here, however, the original claim included, but was broader than, the reissued claim, and of course the patentee originally intended to claim everything which his original claim included. The fact that he failed to limit his original claim in the manner set forth in the reissue

will not constitute a file wrapper estoppel. Compare Smith v. Snow, 294 U.S. 1, 55 S.Ct. 279, 79 L.Ed. 721.

Appellants further contend that appellee's delay of almost fifteen years in applying for the reissue was unreasonable and unexplained, and for that reason it is invalid and unenforceable. From what has been said, we think there was a reasonable explanation for the delay, and [**10] that the ruling of the District Court was correct in holding claim 2 of the reissue patent valid.

Appellants concede that claim 3 of No. '017 which is a process patent, reads upon the operation of the original Jones Island plant and of its new addition. However, they claim that the patent is invalid for double patenting, and because it was anticipated by the prior art, and they deny infringement because the new addition was never operated prior to the expiration of the patent on November 26, 1935. The record does not disclose whether it was or was not so operated.

The decree was entered September 30, 1935. At that time, the extension plant had been constructed and tested and the evidence was such as to warrant the court in believing that its operation was threatened during the life of the patent. If it was not so used, that part may be shown on the accounting, and appellants' rights no doubt will be fully protected in this respect. The patent having expired and the injunction having been denied, it is not necessary now to determine whether the court erred in finding that there had been a threatened and a test use.

In support of their contention that claim 3 of this patent is [**11] invalid for double patenting, appellants insist that its elements are identical with claim 8 of patentee's prior patent, No. 1,247,542 and claim 2 of his prior patent No. 1,247,543. [*952] For comparison, the three claims are set forth in the margin. [3]

3 Patent 1,286,017, Claim 3.

"The hereindescribed process consisting in treating sewage with air, separating the activated sludge from the liquid, and adding such activated sludge to the first mentioned airtreatment in the treatment of raw sewage, the activated sludge being mixed with the raw sewage during and by such air treatment."

Patent 1,247,542, Claim 8.

"The process of purifying sewage or analogous liquids, consisting in supplying crude sewage or liquid, causing it to flow, aerating or oxidizing and mixing it, depositing sludge or solid matters at a part where the liquid is not being aerated or mixed, removing the liquid from which sludge or solid matter has been deposited at this part, and transferring deposited sludge or solid matters to the liquid at the point where it is being aerated or oxidized."

Patent 1,247,543, Claim 2.

"The process of purifying sewage or analogous liquids consisting in gradually supplying the crude sewage to a body of bacterial sludge or solid matter, aerating or oxidizing it while so being supplied, then allowing the liquid to remain quiescent for about one to three hours and depositing the sludge, and subsequently removing the purified effluent, and leaving the sludge or solid matter."

[**12] The record discloses that the Activated Sludge process may be practiced in two fundamentally different forms of apparatus referred to as the "fill and draw" and the "continuous sludge return." The "fill and draw" is also divisible into two sub-types, one of which is known as the "continuous flow," and the other as the "intermittent flow." The broadest and simplest apparatus in which the process can be practiced is one in which all of the functions take place in a single chamber. This chamber is first filled with sewage which is then aerated until completely treated. Aeration is then stopped and settlement of the sediment is permitted to take place in the same chamber. The effluent is then drawn from the top of the settled sludge and the process is repeated. In a "continuous sludge return" system, aeration and settlement take place simultaneously in different parts of the treatment plant. In the continuous flow "fill and draw" system, a sufficient number of tanks are provided which function in rotation to permit a continuous flow of raw sewage into the treatment plant, and a continuous flow of effluent out of it.

No. '017 discloses a fill and draw system. Its claims are sufficiently [**13] broad to cover either an "intermittent flow fill and draw" system, a "continuous sludge return" system, or a "continuous flow fill and draw" system. No. '542 discloses a continuous sludge return system. Its claims are sufficiently broad to cover a continuous flow fill and draw system, but they are not broad enough to cover an intermittent fill and draw system. No. '543 discloses and claims a continuous flow fill and draw system wherein sludge is re-aerated and is gradually mixed with raw sewage.

Claim 2 of No. '543 requires a gradual mixture and aeration carried on while the sludge and sewage are being brought together. Claim 8 of No. '542 requires the use of at least two tanks or two parts of one tank, one tank or part in which aeration takes place and another tank or part in which settlement or separation occurs. It does not require gradual mixture of the sludge and raw sewage, nor does it require aeration during the mixture. Claim 3 of No. '017 may be carried on in a single tank either with or without gradual mixture of the sludge and sewage. It may be carried on either with the sludge being aerated during the addition of sludge to sewage, or afterward. It may be carried [**14] on in a single tank wherein settlement takes place in the same tank in which the aeration takes place, or in two tanks in which settlement takes place in a different tank from that in which aeration occurs.

The applications for the three patents which we are now considering were all filed on October 18, 1915. From what has been said, it is obvious that No. '017 is generic in character and contains the broadest claims to the Activated Sludge process. During the prosecution of these co-pending applications, the issuance of a patent containing broad claims to the Activated [*953] Sludge process was vigorously resisted by the chief engineer of appellant Sewerage Commission, which, in some measure at least, contributed to the delay in issuing

No. '017 for one year after the other two patents had issued. The record discloses no action or inaction on the part of the patentee, with respect to the prosecution, which could be considered as a dedication of any of his disclosures.

Amdur, in his "Patent Law and Practice" (1935 Edition), at page 309, states that there are three distinct types of double patenting: (1) Where two patents are for the same invention; (2) where the inventor [**15] claims one form of his invention in one patent, and at a later time claims another form which was disclosed in his earlier application, but not claimed, and where there has been such delay as to amount to a dedication; (3) where the inventor claims his generic invention in one application and a species thereof in another which may or may not have been co-pending.

We are convinced that the patents in suit do not fall within either the first or second type, for they do not disclose the same invention, and there could not be a dedication of a portion of the invention not claimed as between two or more applications when they were filed the same day. It is obvious, therefore, that if there be double patenting with respect to the three patents now under discussion, it must fall within the third type. In this type of double patenting, however, Amdur states that the invalidity results from an unlawful extension of the patent monopoly. He here recognizes that invalidity will not result unless the extension is unlawful, and he refers to numerous decisions in which the generic or dominant patent, although issuing later than the specific patent, was held not to be void for double patenting, [**16] because the delay in its issuance until later than the issuance of the specific patent was through no fault of the patentee. This author, with respect to this type, further states, at page 367, "To avoid double patenting under the type being considered the following rule should be followed: The genus or main invention must be claimed in the patent first to issue or in the application first filed. * * * Where the genus or main invention is claimed in the patent first applied for, and such patent is last to issue, the extension of the monopoly of the species or improvement patent is not an unlawful one, inasmuch as it is deemed not the applicant's fault." See Reo Motor Car Co. v. Gear Grinding Machine Co. (C.C.A.) 42 F.(2d) 965; also that court's opinion on denying a petition for rehearing (C.C.A.) 50 F.(2d) 412.

Appellants in this contention rely upon Miller v. Eagle Mfg. Co., 151 U.S. 186, 14 S.Ct. 310, 38 L.Ed. 121; Lion Fastener, Inc., v. Hookless Fastener Co. (C.C.A.) 72 F.(2d) 985, and kindred cases. Those cases, however, relate to the first type of double patenting as discussed by Amdur, and we find nothing therein which is inconsistent with his discussion of the third type. [**17]

It is further contended by appellants that claim 3 of No. '017 is invalid because anticipated by United States Patent to Moore, No. 1,271,926, issued July 9, 1918, upon an application filed October 31, 1914. Both of these patents are for process. Claim 1 of Moore, [4] which is typical, in no way discloses or depends upon the production or employment of activated sludge. The primary object of the patent is the rapid and effective separation of solids, including the bacteria, from the liquid of the sewage. The speed of the separation is increased by accelerating the formation of colloids by agitation of the sewage in the presence of coagulated sewage solids. Another object of the process is to enhance the value of the

sewage solids for fuel purposes by employing coal dust or other fuel solids in the sewage as foreign matter to aid and hasten coagulation and precipitation.

> 4 "1. In a process of the class described, agitating sewage in the presence of previously coagulated sewage solids, drawing off a portion from the agitated mass, returning coagulated solids of the drawn off portion to the mass, and agitating newly supplied sewage in the mass in the presence of the returned coagulated solids."

[**18] It is conceded that Moore had a right to any use to which his invention might be put, regardless of whether or not he was aware of such possible use at the time the patent issued, or subsequently. A study of his claims and specifications, however, is quite persuasive that his process patent did not contemplate, produce, or use activated sludge, nor could it do so. Its primary object was to speedily separate all microbes and solids from the water, and this produced a condition under which [*954] only the anaerobic organisms could thrive, thus resulting in a septic condition which would prevent the production of activated sludge. No chemical action was contemplated or used in the process, and none was available in following his process which would produce activated sludge. He was entitled to the exclusive use of his process and its equivalents, but he had no rights beyond the realm of equivalency. It is true that his process provides for the return of the solids to the stirring operation first contemplated, but a study of the patent unquestionably discloses that this was for the purpose of economy in the use of the coal dust or other foreign substance, and to add speed in [**19] separating the solids and the microbes from the water, and not to aid the propagation of aerobic bacteria. Moore's process patent makes no claim for apparatus, but what has been said about his process applies equally to the apparatus exhibited with the process application by which he practiced his process. It did not and could not produce activated sludge, nor did it teach anything from which mechanical skill could discover it.

It should be noted further that claim 3 of No. '017 was fully disclosed in British Patent No. 729, which was filed on January 10, 1914, and that other drawings containing the same disclosure were made and completed in the drafting-room of patentee on October 19, 1914. they were sent to the British Patent Counsel on October 21, 1914, and copies were delivered to the Davyhulme plant at Manchester, England, on October 28, 1914. The application for the Moore patent was filed October 31, 1914. Therefore, regardless of its content and teachings, it could not have anticipated claim 3 of No. '017, under the provisions of the Nolan Act, 35 U.S.C.A. §§ 80-87, which entitled patentee Jones to carry the date of his invention back to January 10, 1914, or at the latest, [**20] to October 19, 1914. We think the District Court was right in holding this patent valid.

In the City Case, claim 2 of No. '587 was held valid, and infringed by the old construction in the Jones Island plant. In that construction, as well as one disclosed in the patent application, the tanks had ridges and furrows in their bottoms which formed a series of hoppers, and the air diffusers were at the low points in the hoppers. For the purpose of avoiding the infringement, the Sewerage Commission changed the type of tank in the extension of the Jones Island plant by making the tank bottom flat, with fillets at one side and a raised dif-

fuser block at the other side. The diffuser block has a triangular toe block at one edge and a fillet next to the wall, thus operating to streamline the flow. It is urged by appellants that these fillets are functionally a part of the wall and act as reinforcements thereto. The evidence, however, in support of such reinforcement was not persuasive.

In construing claim 2 [5] of this patent, appellants contend that patentee's scheme was to furnish sloping bottoms that would permit the material to gravitate back to the diffusers after it had gotten out [**21] of the rising air current. In support of this contention they direct our attention to the following parts of the specifications:

> 5 "2. In an apparatus for purifying sewage, comprising a tank, means for introducing air or oxygen at the lower part of the tank, said tank being of a size above the air-introducing means to provide a material-receiving area above and laterally of such means and beyond the direct influence of the air from such means, the tank being inclined adjacent and laterally of the air introducing means to induce a flow of material to such means from that portion of the tank beyond the influence of such means."

"In apparatus according to this invention, air is supplied at one part or point of a tank or chamber, preferably in the bottom or near it, through air distributing means, such as porous tiles or bodies by which the air is diffused, and whereby the liquid and bacterial sludge are caused to flow upward above the area of air supply; and then above this point or near the top of the liquid, [**22] it is allowed to flow laterally away from same to another point or place away from or beyond the upflowing stream of liquid and air, where the bacterial sludge or solid matters can, in the absence of this stream or current, fall down and pass again to the area or point of air supply, and so be freshly supplied with air, and re-circulated and re-distributed. * * *

"At one or both sides, of, or all around the air suppliers or diffusers * * * inclined or curved surfaces are provided which cause the falling or deposited bacterial [*955] sludge or solid matters to be directed toward or gravitate to this area or place of air supply, and so be reacted upon, and redistributed."

They insist, therefore, that the patent is to be distinguished from the accused extension tanks of the Jones Island plant, in that in the latter the returning sludge is not re-directed to the air diffusers by gravity, but by the fillets and curved portions of the tank directing the flow of the liquid which contains the sludge in suspension, by reason of the conveying velocity. They say that the fillets or curved portions of the tank which are placed at all corners or angles passed by the current of the liquid, [**23] serve to prevent the collection of falling or deposited sludge. This is true both of the accused device and the patent, for without this provision, the corners or angles would be filled with sludge deposits which would become septic, thus preventing a successful operation of the process. They urge, however, that the fillets and curved portions of the extension tanks do not direct the falling or deposited sludge to the air diffusers. We are now speaking of the direction of the flow, rather than the force which causes the flow, and the distinction between the two must be borne in mind.

Appellants admit that the fillets and curved portions of the tank direct the flow of the liquid which contains the sludge in suspension, but they deny that they direct the falling or deposited sludge to the diffusers because the diffusers are higher than the floor of the tank. In this, we think, they are in error. If, as admitted, the fillets and curves direct the flow of the liquid, it is obvious that they direct the contents of the liquid, regardless of whether that direction be downward or upward. When the liquid, with its content, leaves the rising column of air from the diffuser, that part [**24] which is carried by the current toward the wall farthest from the diffusers descends to the bottom of the tank by gravitation which is accentuated by the circulatory motion of the entire content of the tank. At the base of that wall the descending liquid, with its content, contacts the fillet or curve in the corner or angle which serves to prevent the sludge from being deposited, and directs its flow to the bottom of the tank, away from the corner where it is carried by the current toward the diffuser block located on the bottom of the tank at its opposite side.

The outer wall of the diffuser block also forms a corner or angle with the bottom of the tank, which, but for the presence of the fillet or curved portion, would permit the sludge to lodge in that corner and become septic. The fillet or curved member, however, acts as a ramp up which the liquid and its contents below the top of the diffuser is swept by the velocity of the current of the liquid into the current of air rising from the top of the diffuser. It is obvious that gravity lends no assistance as the liquid and its content is swept upward from the bottom of the tank to the rising air current. That force is furnished [**25] by the velocity of the general circulatory movement of the content of the tank. It is equally true, however, that the fillet or ramp in the corner at the base of the diffuser directs the falling and depositing sludge at that point to the top of the diffuser where it again contacts the column of air rising from it.

It is not claimed by appellants that the accused device has any advantage over the patent construction which has its air diffuser level with the lowest portions of its hopper-bottomed tank. Indeed, they admit that the only object of their elevated diffusers is to avoid infringement of the patent. It should be noted, however, that in the accused construction, a portion of the returning sludge re-enters the column of air rising from the diffuser by the aid of gravitation. The suspended sludge rising vertically in the column of air from the diffuser falls to both sides. That portion which descends nearest the wall adjacent the diffusers goes toward the corner formed by the top of the diffuser and that side wall. Here is placed another fillet or rounded member which directs the sludge downward into the rising column of air precisely as it is done in the patent construction. [**26] Appellants urge, however, that the amount thus reentering the air from the diffuser is inconsequential. The evidence does not support this contention. The record discloses that the amount is relatively small as compared to the total amount entering the air column, but without the rounded corner on the top of the diffuser the descending sludge at that point would settle in that corner and it would become septic, thus preventing a successful operation of the process.

[*956] It should also be noted that the claim in suit does not refer to gravity as a means to induce the flow of material to the air introducing means. It states that the tank is inclined

adjacent and laterally of the air introducing means, to induce a flow of material to such means. For aught that the claim provides, that inducement may be either upward or downward, and it reads on the accused device. It is true that in the specifications it is stated that the inclined surfaces cause the material to be directed toward, or gravitate to, the place of air supply, and appellants contend that the words "gravitate to" should be construed as synonymous with the words "directed toward." The language employed in the [**27] claim and specifications convinces us that this pioneer patent should not be so narrowly construed. The terms referred to are used in the disjunctive and we think they are not to be construed as synonymous.

Our conclusion in this respect is supported by the history of the prosecution of the application of this patent. It was issued upon an application as a division of the application filed October 9, 1914, for the first patent originally in suit, No. '540. The application for that patent was predicated upon two British patents, No. 22,952 and No. 729, the application for which were respectively dated October 11, 1913 and January 10, 1914. In the City Case it was held that No. '540 was entitled to effective filing dates as of the dates of the applications for the British patents upon which it was predicated. The original application for No. '540, as we understand it, contained both process and apparatus claims. The Examiner required a division between them, and stated that only a single species of invention could be prosecuted under the application, and that if the applicant desired to prosecute claims for apparatus, he should present only claims which read upon a single species [**28] of the invention. Pursuant to that order, a divisional application was filed which contained eleven claims, all of which were for apparatus. This application resulted in the patent in suit, No. '587. Of these claims, only two included the limitation that gravity should aid the return of the sludge to the air diffusers, and they were cancelled from the application before the patent issued, and no comparable claims were inserted. Fig. 4 of the original application for No. '587 disclosed a structure readable on claim 2, in which at least a part of the sludge in circulation recontacted the rising current of air from the diffuser on an upward slant, or against gravity. It is true that the Examiner required the cancellation of that figure during the prosecution, but the fact that the patentee cancelled the only claims which were limited to a downward inclination toward the diffusers convinces us that he did not intend the claims of his patent to be thus limited.

Appellants further contend that the cancelled Fig. 4 incorrectly discloses the direction of the current, and that it does not flow against gravity. We have no doubt that most of the flow to the diffuser is downward, but we [**29] are convinced that a relative portion of it is carried backward against gravity to the adjacent diffuser, and that conclusion is supported by substantial evidence. We think the District Court was right in holding that there was infringement.

Appellants further contend that No. '587 expired, by operation of law, on November 20, 1934, because it was a division of application No. 865,890 which ripened into No. '540 on November 20, 1917. They urge that these two patents are almost identical, and that they are

completely parallel, and differ only in this, that No. '540 is for a process, and No. '587 is for apparatus by which that process was to be performed.

When an earlier and a later patent issue to the same patentee for the same invention, the later one is void because it would prolong the monopoly beyond the period allowed by law. Miller v. Eagle Manufacturing Co., 151 U.S. 186, 14 S.Ct. 310, 38 L.Ed. 121. That case, however, held that where a second patent covers matter described in the prior patent essentially distinct and separable, and distinct from the patent covered thereby, and distinct from claims thereunder, its validity may be sustained. It further held that "a single [**30] invention may include both the machine and the manufacture it creates, and in such cases, if the inventions are really separable, the inventor may be entitled to a monopoly of each." The carrying on of the process disclosed in No. '540 is not limited to the apparatus disclosed in No. '587. Indeed, the process may be carried on in many different types of structures which do not infringe [*957] it, and upon the expiration of No. '540 on November 20, 1934, anyone was free to practice the process, so far as patent No. '587 was concerned, in any structure which did not infringe it. It is obvious, therefore, that the apparatus patent did not expire with the expiration of the process patent, because the monopoly of the process was not thereby continued.

In support of appellants' contention that both patents expired at the earlier date, they rely upon Wirebounds Patents Co. v. Saranac Automatic Machine Corporation (C.C.A.) 65 F.(2d) 904, 906; and Remington Rand Business Service, Inc., v. Acme Card System Co. (C.C.A.) 71 F.(2d) 628. In the Wirebounds Case, which was the second of two suits filed by the appellant therein, the court said,

"There is a further principle, perhaps announced [**31] by the Supreme Court for the first time in its decision of this case in 282 U.S. 704, 51 S.Ct. 232, 75 L.Ed. 634, or at least clearly deducible from that opinion, which in our opinion must control the present case, and that is that although an inventive concept may be susceptible to embodiment in more than one type of invention (machine, product, or method), when the inventor accepts a patent for one embodiment of this concept which in effect gives him a monopoly of the others, he thereby loses his right to a subsequent patent upon any other embodiments, because to grant him such right would be to extend the monopoly given by law."

In this Wirebounds Case the process claims were presented in a divisional application filed more than seven years after an application for the apparatus by which the process could be carried out. The court held that where the invention is unitary in nature, the right to a patent is exhausted except as claimed in the first patent issued, and that if the inventor intentionally, or through culpable neglect, is guilty of actions unduly postponing the time when the public would be entitled to the free use of the invention, and thus attempts to defeat the policy [**32] of the law, his right to a patent is lost. The first Wirebounds decision referred to in that opinion merely held that the entire invention in issue lay in the method and product patent, and that the machine patent granted ten years later was invalid for lack of invention.

The Remington Rand Case did not involve the matter of method and apparatus claims. It was merely a question of two patents to the same inventor, the subject matter of which was not patentably distinguishable. Neither of the cases relied upon by appellants holds that an apparatus issued later than a process patent is invalid, or that it expires with the expiration date of the process patent. True, there are instances where the concept of both such patents was unitary, and the first fully disclosed all that was disclosed by the subsequent patent, and in such cases the second patent was not permitted to extend the monopoly of the first. We are convinced, however, that patents No. '540 and No. '587 are not unitary in concept, for it is obvious that the mere process does not disclose the many methods by which it has been or may be practiced, nor does the apparatus in question extend the monopoly of the process beyond [**33] the scope of the patent. That there was invention involved in the claim in suit was determined by this court in the City Case, and there was not that purposeful delay in the application which was the subject of condemnation by the Court of Appeals for the Sixth Circuit in the Wirebounds Case. We think the District Court correctly ruled that this patent did not expire until October 22, 1935; that appellants had infringed it; and that the Sewerage Commission was continuing to infringe it at the time of the decree.

We further hold that the contracting appellants supplied their respective materials and work with respect to the extension plant, with knowledge, and with intent to aid the Sewerage Commission in committing its acts of infringement, and they must be held as contributory infringers, except that if the referee finds that the extension plant was not operated until after the expiration of Patent No. '017, then there could have been no infringement of that patent.

Decree affirmed.