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DAWKINS, District Judge.

Plaintiff, suing as the assignee of Letters Patent No. 1,896,403 issued to Cecil R. Haden, February 7, 1933, covering a process for making lime from oyster shells, charges the defendant with infringement, demands an accounting and finally an injunction.

The defenses are, first, invalidity of the patent, and second, noninfringement.

Validity

The principal object of the patent, as stated in general terms by the specifications, was "to devise a process of treating and calcining oyster shells so as to obtain therefrom a lime containing a minimum amount of impurities."

This was to be accomplished by first cleaning and removing "the impurities in the shells" to the point where they would be "practically free of adhering impurities" and then providing a process for burning the shells whereby the dangers of under-burning and over-burning are materially reduced. These results were to be obtained by a "simple and economical procedure." As originally filed in the Patent Office, the application contained eleven claims, the first four of which, after the usual exchange of communications between the attorney for the applicant and the examiner, were rejected, and then cancelled at the request of the applicant. The Patent Office first rejected claims 1 to 9 and 11 as indistinguishable from the patent to Slicer, No. 213,460, issued March 18, 1879, and as to claim No. 10, advised that it was "merely a list * * * of essential elements necessary to carry out the process."

After making certain changes in the wording, both of the specifications and claims, applicant's attorney argued that Slicer's process contemplated reducing the lime made by burning oyster shells to a "fine powder or flour by grinding and screening through a fine mesh, without regard to cleansing and sizing", whereas Haden's process involved "a very careful and exacting procedure * * * in preparing the shells for the burning operation"; and further, that the "burning operation itself is also carried on under circumstances entirely different from Slicer." It was suggested that the only point of improvement over the old art made by Slicer was "the step of grinding the lime after it has been burned." Applicant emphasized the fact that his process required conditioning and sizing the "shells before they are burned, so that there will be no under-burned or over-burned portions left in the lime." He then stated that "to accomplish this, the maximum thickness of shells is governed by the crusher, and the minimum sizing of the shells is governed by the washer and the screen, so that

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when the shells pass into the kiln, there is a maximum thickness of shell which has to be burned."

The claims were then taken up by the attorney for the applicant and discussed serially in a manner to emphasize the points mentioned above, which it was claimed were absent from Slicer's invention. Nevertheless, in response, the examiner, under date of December 15, 1931, stated that "to wash the shells preliminary to burning is only an obvious expedient, and does not itself represent patentable novelty * * *" and further, that "crushing and screening the raw material and burning such material while being agitated, and with a gaseous fuel is well known to the lime burning art." He cited Mathey, Patent No. 330,603, issued November 17, 1885, and advised Haden that claims "1 to 4, 6 to 9 and 11 are therefore rejected." It was again pointed out that claim 10 constituted "merely a list of elements necessary to carry out the process." The applicant was informed that out of 11, only "claim No. 5 at present, appears allowable."

Thereupon, the applicant requested the cancellation of claim 10 and that four others be added, which he numbered from 11 to 14, inclusive. He called attention to the fact that Slicer's patent dealing with the making of lime from oyster shells, had been granted "over fifty years" earlier, "but that no oyster shell lime has been placed on the market, which was satisfactory for any except crude construction", whereas, the lime produced by the applicant, and which he was then making, "has been adopted by innumerable industrial and chemical corporations and has virtually replaced caustic soda in the refining of oil on the Gulf Coast." As to Mathey, it was urged that this patent dealt with a "process of crushing and burning limestone in a rotary kiln * * *" which "does not erode" during burning even in a rotary kiln, "does not have to have the smaller particles removed and dust does not arise during the burning * * * and interfere with the radiating of the heat." On the other hand, shells are soft "and if finer particles are permitted to enter the Kiln, they coat the larger particles and interfere with the conduction of hert."

Haden again took up his claims seriatim and attempted, in detail, to point out the differences between his process and those of Slicer and Mathey. However, he requested the cancellation of claim No. 6, "not because its patentable subject matter is anticipated", but for the reason that the other remaining claims "cover the applicant's invention * * *". As to the new claims, 11 to 14, inclusive, the applicant stated that they were "all more or less limited to the specific process * * * including all of the essential steps" in a manner to point out the invention. Under date of September 7, 1931, the examiner advised the applicant that claims 1 to 4, inclusive, would be rejected, "as being unpatentable over Seaton (patent issued August 16, 1932), but that claims 5 and 7 to 14 appear allowable." Claim 15 (which corresponded to 14 as numbered by the applicant, No. 10 having previously been cancelled) it was pointed out incorrectly used the word "oxidation" and "decarbonate" was substituted therefor. In requesting the cancellation of claims 1 to 4, the applicant stated that it was done "not because it is believed they are unpatentable over the Seaton reference or any of the other references * * * * but because the allowed claims incorporate the substance of claims 1 to 4, inclusive, and it is to be distinctly understood that by the cancellation of these claims, it is not admitted that the involved subject matter is abandoned, dedicated to the public or anticipated by the

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art of record."

Under date of November 25, 1932, the examiner informed Haden that the application was being passed to issue. As thus amended, it consisted of nine claims, represented by the original Nos. 5, 7, 8 and 9, as amended, while under consideration by the examiner, as well as those added as 11 to 15 under date of February 16, 1932.

Logically, it would seem that the first step in determining the validity of the patent in suit is to ascertain to what extent its travel through the Patent Office, with accompanying amendments and cancellations of claims, served of limit its scope. Admittedly, it is a combination based entirely on old elements, and, in the absence of cancellation or rejection to which the applicant consented, validity would depend upon whether those combinations, as a whole, produced a result previously unknown in such manner as to involve novelty or invention, as distinguished from mechanical skill or experience in this particular field. However, in view of what took place in the Patent Office, we must see what the consequences were as to the claims when finally allowed.

Taking up, first, the patent of Slicer, dated March 18, 1879, it appears that about all he proposed to do was to grind to a fine powder and screen the product resulting from the burning of oyster shells in a kiln without regard to cleaning or sizing. It was suggested by the examiner that no invention was involved in washing or screening the shells before they were burned. The first of these four claims of the application included burning while being "agitated in the presence of heat in the kiln", which meant the use of a rotary kiln, already well known to the art of lime making. The second claim added a detail, by amendment, of "submitting the shells, to scour the adhering substance therefrom, to the action of water" by having it pulsate through them, and "settling off the sediment and smaller particles of shells * * * and burning them in a kiln." The third claim provided for the removing of the smaller particles so that there would be "no over-burning or dust in the final product." The fourth claim added merely "sizing the shells to remove the finer particles."

The patent of Mathey, No. 330,603, dated September 22, 1885, cited by the examiner, also refers to a previous patent to this same inventor, No. 325,259, issued September 1st of the same year. The cited patent refers to the fact that theretofore, limestone of "irregular and uneven size had been burned in vertical kilns, causing a portion of it from each kiln to be of inferior quality." He proposed to have it "crushed or ground to a size such as will pass through a No. 4 or 6 mesh screen" and to burn it in a "revolving furnace." He recited that this "revolving furnace brings all of the crushed particles in to a complete and constant exposure to the heat and consequently produces a uniform burning ***"; and that "in the ordinary methods of burning limestone", there is danger of over-burning and under-burning "caused by non-control of the heat in all parts of the kiln." The Mathey patent had only two claims, which, in substance, provided (1) for the crushing of limestone to a suitable degree of fineness and burning it "in a revolving cylinder ** subjected to constant and uniform heat" and (2) submitting it to "burning under agitation." It will be seen that while Mathey sought to overcome the problem of over-burning and under-burning of limestone, as distinguished from oyster shells in

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the manufacture of lime, by reducing it to uniform sizes and burning it while being agitated in the presence of uniform heat by the use of a revolving furnace or kiln substantially in the same manner as plaintiff does with oyster shells, he says nothing about washing or cleansing the stone. In its natural state, limestone, when removed from the earth, is not surrounded and permeated by the impurities and foreign matter such as exist in oyster reefs, which make washing or cleaning so important. To the extent, therefore, that the four rejected claims involved "sizing" or the removing of the larger particles to prevent under-burning and "agitating" them in the presence of heat in a rotary liln, these were found in Mathey.

The patent to Seaton, No. 1,872,512, dated August 16, 1932, in rather general terms (see specifications) stated that its object is to produce a high grade of lime by the use of "materials from the shell deposits of San Francisco Bay, California. This material when washed free from initial impurities analyzed on the average, calcium carbonate, 98.10% * * *." Neither the specifications nor the claims describe how the shells are freed from the impurities, but the emphasis of the patent is upon high temperatures, that is, from "around 1400 degrees C. to 1700 degrees C." instead of about 1200 degrees C. of the prior art. To do this, Seaton prescribed "as desirable" the "rotator type of kiln", having a lining of materials highly resistant to heat. This patent, like that of Slicer, deals with the making of lime from shells, as distinguished from limestone in Mathey, and also involves the cleaning of the shells before burning, which is not found in either Slicer or Mathey, but like Mathey, requires the use of a rotary kiln.

The nature of the kiln is not mentioned in the first four claims of the application of the patent in suit, which were disallowed and cancelled at the request of the patentee, under the reservations mentioned above.

While the examiner had first stated that claims 1 to 9 (which included claim No. 5) would be rejected, claim 5 was finally allowed, after the applicant had changed the word "size" in the third line to "thickness." It provided for the passing of the shells through a crusher to limit the maximum thickness, "passing the crushed shell over a screen to limit the minimum size" and burning them in a kiln with a fuel "giving off no solid produce in the combustion * *". This became claim No. 1 of the patent to Haden. It describes a procedure by successive steps, in which the shells (1) pass "through a crusher to limit the maximum thickness"; (2) "passing the crushed shell over a screen"; (3) "washing the screened shells"; and (4) burning them in a rotary kiln (5) with a fuel "giving off no solid product in its combustion."

It thus appears that this first claim of the patent embraces the "washing" of the rejected claims, Nos. 1 and 2, removing the smaller particles of shell in rejected claim No. 3, and the "sizing" of the shells by passing them over a screen to limit the minimum size, embraced in rejected claim No. 4. So that the only additional element or operation to be found in claim No. 1 of the issued patent was the "passing of the shells through a crusher to limit the maximum thickness."

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Claim No. 2 of the patent, likewise included "washing and crushing * * * screening and washing the crushed shell so as to eliminate small particles and to remove deposits of foreign material opened by the crushing." Hence, the washing and sizing in the sense of eliminating the smaller sizes to prevent over-burning, mentioned in the rejected claims Nos. 1 to 4 of the application, were present.

Claim No. 3 of the issued patent again includes washing, crushing and screening for the purpose of reducing "all the pieces to a substantially uniform size" and burning them in a rotary kiln. Each of these steps were found in the four rejected claims, except that of crushing to obtain uniform size.

Claim No. 4 of the issued patent likewise embraces "washing, crushing and screening to substantially uniform sizes" of a "predetermined" minimum and burning them in a rotary kiln, "free from containinating materials." The "predetermined" minimum size was not stated, but evidently was to be controlled by the size of the openings in the screen over which the shells were to pass. The specifications stated that 3/8ths of an inch had been found to be a "satisfactory minimum", but nowhere was the maximum given.

Claim No. 5 of the issued patent directs the "crushing of shells * * * to a uniform size * * * so that they may be subjected to a uniform heat, washing the crushed shells to eliminate * * * foreign material opened by the crushing operation * * * sizing the crushed shells * * * and burning for a predetermined period * * * ". Washing, crushing to a uniform size and washing again are thus included with the added but undefined burning for "a predetermined period." Burning for "a predetermined period" does not appear in any of the four rejected claims or in the preceding ones of the patent, or any where else in either the specifications or claims.

Claim No. 6 of the issued patent embraces "sizing * * * between a predetermined minimum and maximum * * * washing * * * (and) burning in the presence of a non-contaminating heating media", but the word "crushing" is not used. On the other hand, the "sizing" of the four rejected claims and of the preceding five claims of the issued patent is present, which could well include crushing "to a predetermined maximum."

Claim No. 7 of the issued patent also includes "sizing * * * between a predetermined minimum and maximum so that the maximum thickness * * * will be determined * * * burning for a time interval sufficient to insure calcining * * * at least the maximum thickness." The principal additional element of this claim was to prevent under-burning by "sizing", which was at least one of the objects of both the rejected claims and those preceding of the patent.

The eighth claim of the patent likewise involves the sizing of the shells between "predetermined maximum and minimum" and burning them for a period that will "insure calcining * * * of the maximum thickness" without over-burning the minimum "so that the burning is not retarded by any over-burned material eroded from the shells during the burning period."

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The last claim, No. 9, of the patent in suit, embraces the elements of the earlier claims, reiterates "sizing * * * between predetermined limits" to prevent "over-burning and under-burning * * * while agitating" the shells, a sufficient time to properly burn the maximum sizes, and, at the same time, avoid over-burning the minimum sizes.

From this analysis, it would seem that the only elements or steps, not included in the first four claims of the application which were rejected and in the prior patents of Slicer and Mathey, were those of crushing and sizing the shells to sizes between "predetermined maximum and minimum" thickness and washing the foreign matter or impurities therefrom "opened by the crushing operation." It is true that the specifications state some of the steps for cleaning and sizing "may be interchanged", but it is clear that the cleansing of foreign matter from within the body of the shells could not be accomplished until they were crushed. The specifications also stated that the removing of particles of shells "less than 3/8ths of an inch in width is very satisfactory", but the patentee asserts he does not wish to be limited to this size, since it is obvious that varying conditions may determine "the size of the shells to be utilized."

As previously stated, Mathey dealt with limestone instead of shells while Slicer sought to remove objections to lime made from shells by grinding to a powder. Seaton's alleged improvement over the prior art was the making of lime from shells in the restricted area of San Francisco Bay, California, after having washed them to the point where they would produce more than 98% lime by the application of high temperatures. (It does not appear whether the shells in that particular locality were of a character or surrounded by conditions different from other places or not.)

On the question of validity, it should be noted that the patent is one consisting solely of a combination of old elements. The applicant, at the inception, called attention to the fact that it was well known that the shells in existing reefs along the Gulf Coast afforded a large supply of calcium carbonate, and the problem had been to recover and reduce it to lime free from impurities. Rotary kilns were old and shells had been burned in them long before plaintiff's undertaking. He asserted that his purpose was to do what had not been done before, that is, provide a means of freeing the shells from their impurities and burning them in such uniform sizes as would insure a high grade of pure lime for commercial uses. Haden also recognized, and so stated, that the shells had "usually" been removed from the reefs "by mechanical dredging equipment so that a majority of the silt and sand is removed at the time the shells are dredged from the reefs." He added, however, that it "had been found * * * that small deposits of sand and silt are included in the shell structure of the larger shells and upon breaking or crushing * * * these deposits * * * are loosened and will be readily removed by a washing operation." There was nothing new in using a dredge of the type mentioned for removing shells from a reef., neither was the use of a rotary screen for washing them. The dominating idea was that he would cleanse the shells better than anyone else had done, not only by employing these old methods, but further by running them "through a crusher which will govern the maximum and minimum thickness of shells, which will be discharged therefrom", open and expose such impurities as exist in the body of the shells and then "beyond the crusher, the shells will be run

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over a screen to remove the smaller particles which would otherwise be passed to the kiln and be over-burned in the calcining operation."

If Haden had simply provided a process by which the shells were to be removed from the reefs with a dredge of the type both he and the defendant used, that is, having a rotating cutter-head and suction pump, washed in a screen on the dredge, and again on shore or at the plant before passing to the kiln, nothing movel or amounting to invention would have been involved. It was obvious that a second washing in a rotary screen would remove more of the impurities, as well as the smaller particles adhering thereto. The washer-woman has known and demonstrated this since time immemorial by the use of a second or even a third tub of water on wash-day. However, it was a different and distinctly new idea to size or crush the shells to a uniform thickness, to expose entrapped impurities, and to wash them again after being crushed, when coupled with the asserted purpose of reducing them to a "predetermined maximum and minimum" size to bring about uniform burning in a kiln with a noncontaminating fuel. I believe, that these last mentioned steps influenced the examiner mainly in concluding the process was patentable, and without them the entire application would have been rejected. The drawings accompanying the specifications illustrate these steps, rather clearly, and tend to confirm the idea that Haden had in mind and the things he intended to do to the shells after they had been dredged in the usual manner from the reefs. Nothing is said in the specifications or shown in the drawings to indicate that washing on the dredge was novel, or that the customary method of handling would constitute the crushing or sizing to which he referred. By accepting the rulings of the examiner, Haden necessarily limited the scope of his patent to things which he claimed and insisted upon. He could not thereafter insist upon an interpretation that would include what had been rejected. I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429, 47 S. Ct. 136, 71 L. Ed. 335, and authorities cited therein. My view is that the patent, within those limits, is valid.

Infringement

The plaintiff operates a plant for making lime from oyster shells, but, admittedly, does not use a crusher more than half the time. Defendant does not and has never used a crusher of the kind described and illustrated by the patent, although its operations otherwise, from the reef to the discharge end of the kiln, are similar to those of plaintiff. However, plaintiff insists that crushing or sizing, within the meaning of the patent, is accomplished substantially in the same manner contemplated by the patent, by the way defendant handles its shells. It recognizes the well settled principle of law, that, in a combination patent, such as this, if the alleged infringer has left out one or more of the important steps, there is no infringement.

There appears to be little or no dispute as to what defendant does to the shells from the reef to the discharge end of the kiln. It uses a dredge of recognized or usual type, having a revolving cutter-head, pressed or held against the reef both by its weight and through controlled power on the dredge, moving at a substantially uniform rate while the blades chop into the shell bank at distances of two inches or less apart. The shells so chopped loose from the reef are sucked through a fourteen inch

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opening into a pipe around which the cutter-head revolves. They are drawn through this pipe and encounter a number of crooks or bends in their course to the pump situated on an upper deck, several feet above the plane in which the cutter-head operates. They also strike the blades of the pump itself, with great force, and are violently discharged into the upper end of the dredge screen washer. Here they are again lifted and dropped by the ribs or baffle plates in the washer, while a strong stream of water, is played upon them. The receiving end of the screen is slightly higher than the discharging end and this causes the shells to work their way through slowly. Such portions as are broken or crushed in the travel from the reef are washed and most of those smaller than the openings in the screen drop through and are eliminated. The shells are then carried by a conveyor belt out over of the barge and dropped a distance of several feet, depending upon how full the barge may be, which serves to cause some further crushing or breaking. Additional crushing or breaking is caused to some extent by the dropping of the bucket or dipper on the shells when unloading from the barge to the hopper on shore at the plant. From this hopper they drop down to conveyor belts leading either to a second screen similar to that on the dredge or to the stock piles. If routed to the stock piles they pass along the conveyor belts, drop upon another belt moving at right angles, and are carried up and over the pile where they again fall several feet. These latter movements likewise serve to cause some breaking or crushing, as is true when they are retrieved from the pile by a heavy bucket or dredge dipper, falling upon the shells and closing around them for depositing in another hopper to reach other conveyor belts. They also drop thereafter a number of feet from one belt to another in the sourse of the journey to the feed hopper at the kiln, which serves to break off additional small portions and to jar loose particles clinging to the larger shells. The extent to which this takes place is clearly illustrated by the accumulation of small particles of shell or fines along the route of the conveyor belts around the hopper, etc., which have been removed and now occupy several acres of ground as waste in a space or field adjoining the plant.

The main issue of the case, both of fact and law, is thus presented, as to whether the crushing or sizing which takes place in defendant's operations during the journey from the reef to the kilns, comes within the fair meaning and intendment of the terms "crushing" and "sizing" as used in the patent, or are the mechanical equivalent of the procedure which it contemplates and describes. It will be remembered that the claims, as well as the specifications, use and emphasize the expressions "predetermined maximum and minimum", "uniform sizes," etc., which are produced by the crushing and sizing intended by the patent. The specifications and drawings accompanying and made part of the application, and finally of the patent, clearly described and illustrate a mechanical crusher, which appears to consist of two rollers between which the shells are to pass and which, undoubtedly, would determine their maximum "thickness", dependent on how far apart those rollers were adjusted. Then the size of the holes or openings in the screens would likewise, in large measure, limit the minimum size. The two operations together, would, therefore, "Predetermine" the maximum thickness and minimum size, but not necessarily the maximum width or length where the shells passed through the crusher in a flat position. The object appears to have been to insure heat penetration, and of course, this would be largely affected by the thickness of the body of the shells rather than the width or length. It would seem that the application of a given temperature to a shell six inches long and three

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inches wide would burn it as quickly as it would one of the same thickness and two inches long and one inch wide. Hence, in so far as sizing was concerned, the main object must have been to reduce the "thickness" (a term which the examiner required to be used) of the large, thick and knuckled end, where the valves are joined together. Of course, the cleansing element for removing silt or impurities, whether entrapped in the "body of the shells" (as expressed in the patent) or not, was equally important, whether the shells were large or small, thick or thin. As previously stated, there would have been nothing new, novel, or patentable in dredging the shells from the reefs with a dredge of the type used, pumping them to a rotary washer, discharging them to the barge, unloading them with a dredge bucket through a hopper on shore to conveyor belts, passing them through another screen washer and conveying them by belts to the stock piles or the kilns. Emphasis of the patent is laid upon cleansing and upon uniformity of the predetermined maximum and minimum sizes or thickness to insure uniform burning. The specimens used by the complainant, as exhibits at the trial, taken both from the barge and feed hopper at the kiln, show a wide variety of lengths and widths, to such extent I do not think it can reasonably be said that there is uniformity in so far as these dimensions are concerned. It also appears that the thick end or knuckle is the hardest and toughest part of the shell, most unlikely to be broken or to have its thickness reduced in the handling or movements used by defendant. In so far as this element or step is concerned, the most effective way to avoid the danger of over-burning is to pass the shells through a crusher of the type illustrated and described in the patent, that is, the two rollers, which would insure a thickness not greater than that which had been "predetermined" and which would permit burning by the same degree of heat as applied to the smaller thicknesses.

It is clear, therefore, that defendant makes no effort to "predetermine" the maximum size of its shells, in so far as thickness is concerned, except to the extent that the breaking, rubbing and scrubbing to which they are subjected by the procedure above described may tend to diminish it. It does, however, limit and control the minimum size by the use of screens which may well be said to come within the patent. It is also true that this procedure likewise serves to open some of the surface laminae and to remove therefrom such impurities as can be reached by washing in the screens. Yet, I think it must be admitted, as stated earlier, that the thickest portions of the shells which the patent intended should be crushed and reduced to predetermined uniform size to insure uniform burning, remain least affected at the end of the journey to the kiln; and, if greater than what has previously been found to burn uniformly with the small parts, will defeat one of the main purposes of the patent, repeatedly emphasized, i.e., complete burning of all while being agitated in the presence of a uniform heat factor. Having omitted this important element without substituting anything else to perform its function, in a substantially equivalent manner, defendant does not infringe.

It is undoubtedly true that the agents and officers of the defendant company were given full opportunity to observe plaintiff's operations and that this was of great value to the former in planning and constructing its plant. This was done with the expectation or hope that plaintiff would be given the contract to reclaim, condition and supply the shells required by defendant in its new plant. However, the latter, for reasons best known to itself, saw fit to employ another. Regardless of

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the morality of such a course, in the present case, we are confined to the duty of determining the legal rights of the parties under well established principles of law, and if the patent is not infringed when tested thereby, there is nothing that the Court can do about it.

I do not think it necessary to enter an extended discussion of the prior art as affected by the disclosures cited by defendant, but sufficient to say that within the limits to which the patent must be restricted, infringement can not be found in the defendant's operation.

Defendant should have judgment rejecting plaintiff's demands at its costs.