

## BOWERS v. VON SCHMIDT.

(Circuit Court, N. D. California. July 23, 1894.)

No. 10,244.

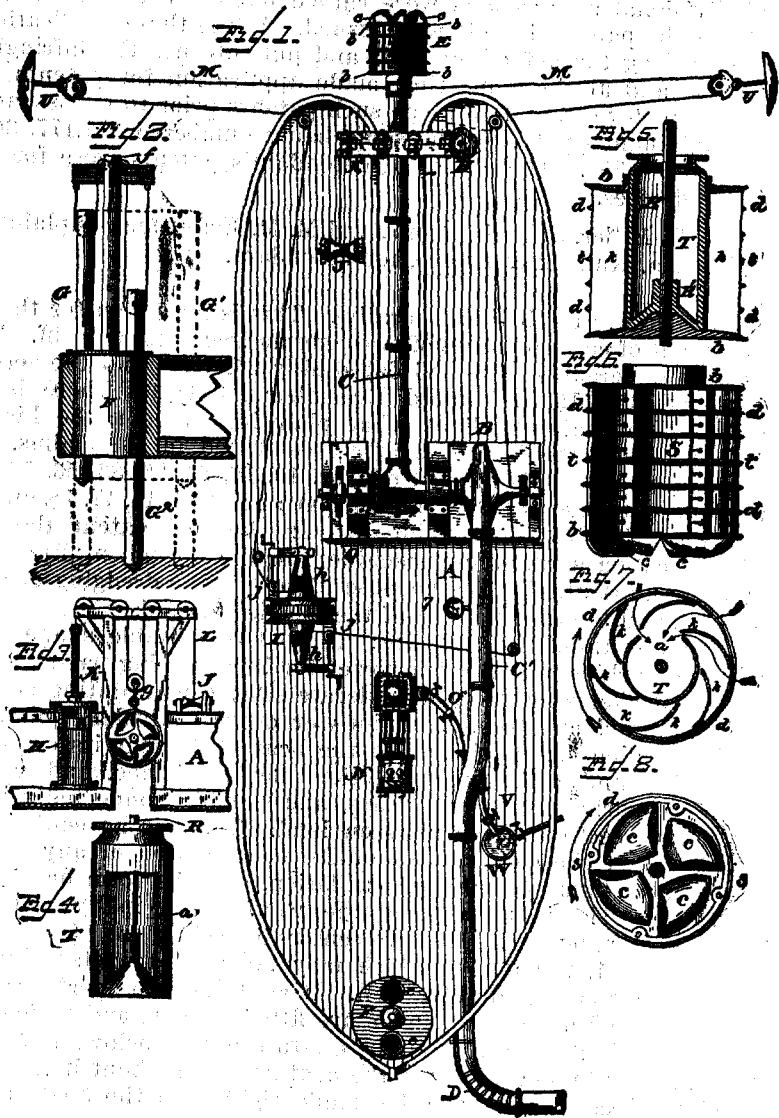
1. **PATENTS—EXTENT OF CLAIMS—PIONEER INVENTION — DREDGING MACHINES.**  
The Bowers patents, No. 318,859, for dredging machine, and No. 355,251, for hydraulic dredging apparatus, are valid, and cover inventions of a pioneer character, and the claims are entitled to a broad construction.
2. **SAME—CENTER OF OSCILLATION.**  
Two forms of centers of oscillation are described in the Bowers patents, viz. one consisting of a turntable rotating in a circular well in combination with two spuds or vertical anchors passing through apertures in the turntable; the other consisting of a single spud when the turntable is made stationary. The claims which specify, as one of the elements, "a center of oscillation," include and cover both forms, and are not limited to the first form, and Bowers was not anticipated in the latter form by Angell or the defendant.
3. **SAME—FUNCTIONAL CLAIMS.**  
The element designated in the Bowers claims as "a rotary excavator with inward delivery" is not functional in form, but means a rotary excavator of such construction as will produce an inward delivery.
4. **SAME—ROTARY EXCAVATOR WITH INWARD DELIVERY.**  
Two forms of rotary excavators with inward delivery are described in the Bowers patents,—one containing an inner chamber or shield, within the cutter head, having an opening in the top for admission of the spoils; the other with said inner chamber or shield cut away until only enough remains to support the excavator and shaft. The claims containing the element, "a rotary excavator with inward delivery," include and cover both forms, and are not limited to the first form.
5. **SAME—AMENDMENT OF SPECIFICATION IN PATENT OFFICE.**  
Where an applicant for a patent is the original and first inventor of a form of device, but his original specification does not sufficiently describe it, so as to entitle it to be claimed therein, it is competent for him to amend his specification so as to include it, at any time prior to issuance of his patent, even though such amendment be made in reference to another patent, applied for and issued prior to the issuance of the applicant's patent, but subsequent to his invention.
6. **SAME—ANTICIPATION—EARLY MODELS AND DRAWINGS.**  
An apparent anticipation may be avoided by a complainant by proving priority of invention over the alleged anticipation, and models or drawings, if sufficiently plain to enable those skilled in the art to understand them, are competent proof of such priority.
7. **SAME—INFRINGEMENT.**  
The excavator shown in the Von Schmidt patents, Nos. 277,177, 300,333, and 306,368, though differing in the mode of mounting and in the shape of the cutting blades, is essentially the same, and operates in substantially the same way, producing the same result, as the Bowers excavator.
8. **SAME—SUBSEQUENT PATENT.**  
A subsequent device may be an infringement of a prior patent notwithstanding the fact that such subsequent device is in itself an invention, and patented.
9. **SAME—AGGREGATION AND COMBINATION.**  
A combination, to be patentable, must produce a different force or effect or result, in the combined forces or processes, from that given by their separate parts. There must be a new result by their union. If not so, it is only an aggregation of separate elements. The Bowers claims bear the test of all the definitions. They are true combinations, and not aggregations.

This was a suit by Alphonzo B. Bowers against Alexey W. Von Schmidt for infringement of two patents on dredging machines. The original application therefor was filed December 9, 1876. Several divisional applications were carved out of it, and upon two of them the patents in suit were issued. While these applications were pending the defendant built and put into use the infringing machine, and at the same time made application for patents for his specific devices, and obtained such patents prior to the issuance of complainant's patents; the same being numbered 277,177, 300,333, and 306,368. The claims of defendant's patents were for his specific devices.

John H. Miller, John L. Boone, and M. M. Estee, for complainant.  
Wheaton, Kallock & Kierce, for defendant.

McKENNA, Circuit Judge (orally). This is an action for the infringement of certain claims of two patents issued to plaintiff. The first is numbered 318,859, and dated May 26, 1885, and the second numbered 355,251, and dated December 28, 1886. There is no claim which contains all of what plaintiff claims to be his invention. Its elements are variously combined in 103 claims. Of these, infringement is alleged of Nos. 10, 16, 25, 26, 33, 53, 54, 59, and 75 of patent No. 318,859 (Exhibit A), and of 13, 14, 17, 18, and 22 of patent No. 355,251 (Exhibit B). In the first patent the machine is called a "dredging machine;" in the second, a "hydraulic dredging apparatus." The purpose of both is the dredging of river bottoms, and the transporting of the "spoils" to land.

The elements of the first are: A boat of suitable shape, with suitable machinery to furnish power for its operating parts; a bottomless bucket excavator, of moderate size; a nonrotating suction pipe, mounted on strong trunnions or other equivalent joints; a discharge pipe flexibly joined to the boat at or near its center of oscillation, and consisting of sections flexibly joined, and resting on or supported by hollow floats, and flexibly connected with a nonflexible section which rests on land. There is no controversy about any of the elements, or of the construction of any, except the form or kind of center of oscillation, and the form or kind of excavator. The issue between the parties principally turns on them. The patent describes two centers of oscillation: One a turntable (Figs. 1, 2, and 10), which may be made to rotate by any suitable means in a circular well. It contains two apertures, into which vertical anchors or spuds are fitted loosely, and which may pass through, as occasion requires, into the mud below, and which hold the turntable stationary, the boat swinging about it from side to side. Second, the turntable made rigid with the boat, and so adjusted that the vertical anchors or spuds are arranged on either side of the central line of the boat, enabling each spud, alternately, as it is dropped into the mud, to act as a pivot upon which the boat may swing.





The operation of dredging, as described in the patent, is as follows:

"The vertical anchors and excavator being raised to allow freedom of motion, the dredger is placed in position, with the turntable in line with the longitudinal axis of the proposed cut. The turntable is then rotated until the vertical anchors are also in line with said axis, and both anchors are dropped into the mud. The discharge pipe is placed in position, the blocks, U, U, anchored at suitable points for swinging the machine, and the dredger swung round until the excavator reaches the side of the proposed cut, as shown in Fig. 10. The lines, M, M, are drawn taut, and the excavator lowered below the surface of the water. The pump, B, is then primed and started, and the excavator set in motion, and lowered, its entire diameter, into the mud. The proper winding drum is then engaged, and the dredger, swinging on the turntable as a pivot or center of oscillation, rapidly cuts its way to the opposite side. To secure a steady side feed, the friction coupling of the unwinding drum may be adjusted to keep the unwinding line sufficiently taut to prevent the veering of the dredger with wind or tide. Upon reaching the opposite side the winding drum is disengaged, the excavator again lowered its full diameter, the side feed reversed, and the dredger cuts back again. This process is repeated until the proper depth is obtained. The excavator is then raised above the bank in front, the anchor, G, raised, as shown in Fig. 2, and the turntable rotated upon the anchor, G<sup>2</sup>, until G is squarely in front of G<sup>2</sup>, in line with the longitudinal axis of the proposed excavation, as indicated by the broken-lined outline, G<sup>2</sup> (Fig. 2). G is then dropped into the mud, and the work proceeds as before; the dredger having been fed forward the distance between the centers of the vertical anchors, which is fixed to correspond with the cut capable of being made by the excavator. This arrangement for feeding forward keeps the center of oscillation of the dredger coincident with that from which the arc to be cut by the excavator should be described. A less perfect forward feed is secured by placing the dredger so that the excavator is at the side, and the turntable is in line with the longitudinal axis of the proposed excavation. The turntable is then rotated until the vertical anchors are in a line parallel with the transverse axis of the dredger, where it is made stationary. This leaves one anchor diagonally in advance of the other, the dredger lying diagonally across one-half of the line of the proposed excavation. The forward anchor is now dropped into the mud to form a pivot, upon which the dredger swings as it cuts to the opposite side. The dredger then lies diagonally across the other half of the line of the proposed excavation, the swing having brought the rear anchor to the front. This anchor in turn is dropped to form a new pivot, and the other anchor is then raised. The dredger swings first upon one and then upon the other anchor, these anchors being alternately raised and lowered for this purpose. As this mode of feeding by swinging alternately upon two different pivots gives a wedge-shaped cut, requiring two full swings to make one full cut, it is equivalent to a loss of one-half of the time, and it is used only to prevent stoppage of work when the apparatus for rotating the turntable is stopped for repairs or other cause, in which case it becomes valuable."

The use of the spuds as centers of oscillation, it will be observed, the patent says, secures a less perfect forward feed than the turntable, and it was not described in the original specification, but was inserted afterwards, and defendant claims, after a patent to one Angell, and plaintiff had seen a dredger constructed by defendant. If so, it was not a part of his original invention, and he must be confined to the turntable as a center of oscillation. That the use of the spuds alone was not described in the original specification is true, but the evidence does not sustain the other contention of defendant, that plaintiff copied from defendant, or was anticipated by Angell. Plaintiff exhibited a drawing made as early as July 13,

1864, in which two spuds are shown as self-contained pivots and centers of oscillation, and in which the turntable is not shown. On the drawing of July 13, 1864, describing the use of the anchors, he said:

"The dredge swings on a vertical anchor, or on two—first on one, and then on the other. But this makes a wedge-shape cut, requiring two full swings to make one full cut. I think I can find some way to get around this."

The anchors, as pivots or centers of oscillation, were also shown in models made prior to Angell's application.

The defendant's counsel, however, seem to urge that the date of an invention cannot be shown by a drawing or a model. I say "seem," because their meaning is not clear. They say:

"Under the law and the facts of this case, the patented invention of Mr. Bowers can only date from the time of the filing of the application for his patent. It has been repeatedly decided that a conception of an invention, even when reduced to drawings or shown in models, does not constitute an invention."

That models or drawings will not constitute invention, so as to amount to anticipation, may be true, but models or drawings may constitute invention to avoid anticipation. Walker (section 61) makes the distinction depend upon the statute, as well as the authority of cases; and in *Loom Co. v. Higgins*, 105 U. S. 594, the supreme court say:

"An invention relating to machinery may be exhibited either in a drawing or in a model, so as to lay the foundation of a claim to priority, if it be sufficiently plain to enable those skilled in the art to understand it."

The drawings and models of Bowers comply with the condition, and he was therefore the first inventor of a vertical anchor as a center of oscillation in combination with devices capable of working with a side feed, and a use by others in the combination stated in his claims is an infringement. It is an element of claim 10, combined with devices for swinging and working the boat, a suction pipe, exhausting apparatus, and a rotary excavator. It is an element of no other claim sued on. An excavator is an element, besides of claim 10, of claims 25, 53, 54, and 59. In claims 10 and 25, it is described as rotary only; in claims 53 and 54, it is described as rotary, and as having "inward delivery through said excavator;" and, in claim 59, as rotary, and "with inward delivery."

Two objections are urged to these claims:

(1) That they are functional, or, in the language of defendant's counsel, "they describe the action of a machine, and not the machine itself."

(2) That the excavator of claims 10 and 26 must be considered the same as those of claims 53, 54, and 59, and all confined to particular forms described in the specification and drawings.

The first objection is easily answered. It is met completely by the language of the claims. Assuming, then, for the purpose of the objection, that the excavators mentioned in all of them have inward delivery, it is clear that the claim is for an excavator of such construction as will produce inward delivery, and such construction

is described in the specification with the clearness required by the statute.

The second objection requires more consideration. As has been observed, the excavator mentioned in claims 10 and 25 is described only as rotary; and, it is hence claimed by counsel for plaintiff, "it is unlimited in form and construction,"—it may have either an "inward or an outward delivery." "The essence of this claim," they further say, "is in the self-contained pivot on which the boat swings while the excavator is digging." It was undoubtedly competent to combine the self-contained pivot with an excavator capable of combination with it, but it would seem that the only kind capable of such combination is one with side-cutting edges,—the only kind suitable for working with a side feed,—and this kind is described in the specification as having inward delivery. And it may also be urged that the combination of claim 25 is only useful with a similar excavator. But the view I take of the defendant's excavator makes it unnecessary to decide this point. I may assume that the excavators, in all the claims we are considering, must have inward delivery.

The plaintiff, in describing his invention, says:

"It consists of a rotary bottomless bucket excavator wheel, of moderate size, novel construction, and great capacity, combined with a hydraulic transporting device of equal capacity, by means of which the spoils may be cheaply carried to a distance of several miles over land or water, and across navigable channels, without interruption of navigation, together with novel feeding devices, through which the percentages of earth excavated by the cutting wheel, and of the water therewith delivered, are adjustable to the precise amount of each necessary for most economical working, and by means of which clean work is done; the excavator going twice over no ground, and missing no ground, thus saving much time, and effecting a material reduction in the cost of apparatus, repairs, and cost of dredging and of disposing of the spoils, these being the chief objects of the invention."

The working of the invention and its various parts is elaborately described and illustrated. Of the excavator, he says:

"E is a rotary bucket-wheel excavator, having radiating bottomless buckets, k (Figs. 4, 5, 6, 7), firmly secured at each end to the discal ends, b, b, of said excavator. These buckets may be stiffened, strengthened, and protected by rings or screens, d, passing around, secured to, and preferably projecting beyond, the edges of said buckets (Figs. 1, 5, 6, 7, 8). These rings may be sharp, to cut like the revolving disk cutters of plows, and serve to subdivide the material entering the buckets, and to exclude substance too hard to be cut, and too coarse to pass through the pipe and pump. They serve also as fenders to enable the cutter to ride over obstructions without catching and breaking. The edges of the bucket are sharp, and may be provided with detachable steel knives or cutters, S (Fig. 6), for working in hard material. The outer discal end (Figs. 1, 3, 6, 8) may be provided with cutting edges, lips, or scoops, c, to obviate the danger of breaking from jamming against a hard bank as the dredger heaves in the swell of the sea. In making the necessary openings in the discal end to admit the silt from said scoops, said end plate becomes changed to the form of a spider or series of arms, which may be strengthened by the lower ring, d, which, in turn, may be regarded as forming a series of braces extending between the said arms at or near the outer parts. The several parts of this excavator may be made separate and detachable, or it may be cast in a single piece. I do confine myself to the precise mode described of mounting this wheel, or of freeing it of its contents. It may be of any desired size and proportion of parts, and may dis-

charge its contents inward through itself into any suitable conduit or receiver. The rings, d, may be omitted in soft mud, free from substances too coarse to pass through the pipes and pump, though always at the risk of the projecting buckets catching upon obstructions and getting broken." "T is an inner chamber or shield, around which the bucket wheel revolves, and into which it discharges. This chamber is provided with a strong flange, by which it is secured to a similar flange on the end of the suction pipe. It is also provided with a large opening, a (Figs. 2, 7), through which the spoils enter from the buckets, and through this opening (Fig. 4) is seen a portion of the driving shaft in the interior of said chamber. This chamber or shield forms a bottom for the buckets, k, until they reach the opening, a, as shown in the cross section of the wheel and chamber (Fig. 7). As the buckets pass this opening, they discharge mud and water into the chamber, as indicated by the inner arrows, the outer arrow showing the direction of rotation. The office, in part, of this chamber or shield, is to prevent too large a percentage of water from entering with the mud; but when the spoils are of a character to require a large percentage of water to carry them up the suction pipe, or to send them through the discharge pipe, as may sometimes be the case, the chamber may be cut away until only enough remains to support the excavator and shaft, R."

No other excavator is described.

The patent, therefore, describes two forms of excavator,—one containing an inner chamber with an opening on top, the sides of the chamber making bottoms to the buckets in their revolutions, except when over the opening in the chamber; and the other form the same as the first, except with the inner chamber cut away until only enough remains to support the excavator and its shaft. The advantage of each is mentioned. The first is to be used when the spoils do not require a large percentage of water to carry them up the suction pipe; the second, when the spoils are of a character to require a large percentage of water. Both have an inward delivery.

With but one remark, attention may be confined to the second form. Counsel for defendant contend that plaintiff should be limited to an excavator with an inner chamber or shield; that this was his original invention, and that the other form was suggested by an excavator which appeared on the Angell dredger in the year 1883; and that his specifications were amended to include and claim it. But this charge is not sustained by the evidence. It is true that he amended his specification, but that he had conceived an excavator with inward delivery without an inner chamber or cylinder is shown by Exhibit N. This model was made in 1868. Model II, made about the same time, also shows the inner cylinder cut away. It was certainly competent for the patent office to permit him to amend his specifications so as to embrace his invention; and it has been held that this may be done even though the change be made in reference to another patent, applied for and issued after his invention. *Western Electric Co. v. Sperry Electric Co.*, 7 C. C. A. 164, 58 Fed. 186.

The second form of excavator will be considered, therefore, as covered by his claims, and the question is, has the defendant so far copied it, and in such combination, as to be guilty of infringement? An answer to this question involves an inquiry into the character and extent of plaintiff's invention.



The evidence is very voluminous as to the state of the art, and anticipating devices, and it would extend this opinion at too great a length to review or comment on them. It is sufficient to state my conclusion from the evidence, which is that plaintiff's excavator is broadly new, and entitled to a liberal rule of equivalents, and, applying such, the defendant's excavator is an infringement of it. There is a difference in the mountings of the two excavators,—differences in the shapes of their cutting blades,—but they are essentially the same, and operate substantially the same way, producing the same result. It may be, as is claimed, that defendant's excavator is the better. It may be, as it appears to be conceded by plaintiff, that it is an invention. But this does not prevent it from being an infringement, under the decision of *Morley Sewing Mach. Co. v. Lancaster*, 9 Sup. Ct. 299, and the cases there cited and reviewed. *Norton v. Jensen*, 1 C. C. A. 452, 49 Fed. 859; *Miller v. Manufacturing Co.*, 151 U. S. 207, 14 Sup. Ct. 310; *Reece Buttonhole Mach. Co. v. Globe Buttonhole Mach. Co.* (decided by the court of appeals for the first circuit April 20, 1894) 61 Fed. 958.

Against the conclusion that the defendant's excavator is an infringing copy of the plaintiff's, defendant's counsel urge that plaintiff limited the form of his excavator to avoid an interference with the defendant, and therefore cannot now enlarge it. If the fact is true, there is no doubt about the conclusion. But the fact is not established by the evidence. It is attempted to be established by claiming (1) a resemblance between the excavator which is one of the subjects of this suit and the excavator of a prior patent issued to Von Schmidt; (2) by the admission of plaintiff that the latter is not an infringement, it having no inward delivery; and (3) by a letter of Bowers to the patent office. But the excavators are not alike, and the letter only attempts to show this, expressing no dread of interference, or desire to avoid it. Bowers, it is true, in his testimony, concedes to the second excavator the merit of invention, but claims, nevertheless, its subservience to his.

Besides the claims above mentioned, claim 75 of those asserted to be infringed is the only other one which has for an element a rotary excavator. It is as follows:

"In dredging machines, a nonrotating suction pipe, in combination with a rotary excavator provided with excavating devices arranged to deliver inward to a space in the interior of said excavator."

I am not sure that it can be distinguished from claim 53. It seems like a repetition, but, as it is only urged to cover a contingency of the inner cylinder being held necessary to claim 53, it may be dropped from further consideration.

The other claims of which infringement is charged are 16, 26, and 33. They are as follows:

"(16) A dredge boat and oscillating section of a conduit discharge flexibly joined to a nonoscillating section, to allow said boat to feed forward, and said oscillating section to swing upon the flexible joint connecting said oscillating and nonoscillating sections." "(26) A conduit for transporting earthy and semiliquid substances; said conduit consisting of an outer, rigid, nonoscillating section, flexibly joined to an inner, oscillating section, the inner end of said oscillating section being flexibly joined to a discharging device."

"(33) A submerged discharge pipe, in combination with excavating devices adapted to cut up the mud, and with mud-forcing apparatus."

The elements of 16 are (1) a dredge boat; (2) a floating pipe composed of sections flexibly joined together; (3) a land pipe; (4) a flexible joint between them. The defendant uses these elements in the same combination and hence infringes. The elements of 26 are: (1) land pipe; (2) floating pipe, composed of flexible sections; (3) a flexible joint between them; (4) discharging device; (5) a flexible joint between the floating pipe and the discharging device. The difference between this claim and claim 16 appears to be in words. In the latter the floating pipe is flexibly joined to a dredge boat. In the former it is flexibly joined to a discharging device. Surely, this is what is meant by claim 16. The connection of discharging pipes with a dredge boat would have no purpose, unless the connection was with a discharging device. The new element of claim 33 is a submerged discharge pipe combined with excavating devices and a mud-forcing apparatus. That is a rotary excavator with inward delivery, and a centrifugal pump or other forcing device. I do not think that there is a patentable difference between this and claim 16. It is claim 16, with the pipe, or some portion of it, submerged.

The plaintiff also claims infringement of claims 13, 14, 17, 18, and 22 of patent No. 355,251. The claims are as follows:

"(13) In combination, a dredge boat, exhausting device, telescoping suction pipe, and a rotary excavator provided with detachable cutting edges. (14) In combination, a dredge boat, exhausting device, telescoping suction pipe, and a rotary excavator with inward delivery through itself to said pipe, said excavator being provided with detachable cutting edges." "(17) In combination, a dredge boat, exhausting device, telescoping suction pipe, and a swinging section of discharge pipe, flexibly joined to the boat and to an outer stationary section, to allow said boat to feed forward, and said oscillating pipe to swing on the joint connecting the oscillating and nonoscillating sections. (18) In combination, a dredge boat, exhausting device, telescoping suction pipe, rotary excavator, and a swinging section of discharge pipe, flexibly joined to the boat and to an outer stationary section, to allow said boat to feed forward, and said oscillating pipe to swing on the joint connecting said oscillating and nonoscillating sections." "(22) In combination, a dredge boat, exhausting device, telescoping suction pipe, rotary excavator having cutting edges arranged to work with a side feed, and an oscillating section of discharge pipe, flexibly joined to the boat and to an outer nonoscillating section, to allow the boat to feed forward, and the oscillating section to swing on the joint connecting the oscillating and nonoscillating sections."

The new element in these claims is a telescoping suction pipe, and what has been said applies, with little change, to these claims. Under the assumption that the excavator of all claims means one with inward delivery, claims 13 and 14 are substantially alike, and claims 18 and 22 are also substantially alike, because side-cutting edges are made a characteristic of excavators with inward delivery. The combination of these claims and claim 17 is used by the defendant.

There are three general defenses urged by the defendant: (1) That the claims are aggregations, not combinations; (2) that the invention was abandoned before application for a patent, or (3) after such application.

The extreme cases of combinations and aggregations are easily distinguished, and, as counsel say, "It is evidently only an aggregation when an additional car is added to a train of cars." The added effect is equal to the added cause, and we are not confused because our purpose could not be accomplished without the additional car. An aggregation thus formed is clearly seen to be, to use the language of Justice Matthews, "the mere adding together of separate contributions." But is this true of the combinations of plaintiff's patents?

Counsel for defendant say (page 257 of their brief), "In this case the action of the transporting device is separate and independent from that of the dredging device, and constitutes but an aggregation," and claiming also that the center of oscillation, whether turntable or vertical anchor, is separate in its action, insist that claims 10, 16, 25, 26, and 33 of the first patent, and 17, 18, and 22 of the second patent, are aggregations. In support of this, on page 261, after some argument, counsel further say:

"Now we ask the court to recognize this well-established rule of law that a combination which does not create a new action that is made up of the commingled actions of the combined devices is not a patentable combination, but is that kind of a combination which comes under what the courts have defined to be aggregations; that, in all cases where the action of each of the combined devices remains its own individual action, there is no patentable combination, no matter how such individual action of each device may act or operate upon the other devices, or how much such separate action of the devices may contribute to the general result; nor is the question affected by the fact that the devices act simultaneously."

And counsel somewhat wearily add, "We have tried very hard, heretofore, to have this principle applied by the courts here." Under one construction of this language, I should feel no wonder that they have failed. If, however, it is but an elaboration of the statement of the supreme court in *Hailes v. Van Wormer*, 20 Wall. 353, that "the result must be a product of the combination, and not a mere aggregate of several results, each the complete product of one of the combined elements," it states the law correctly.

My attention is especially invited to *Hailes v. Van Wormer*, 20 Wall. 353, and *Royer v. Roth*, 132 U. S. 201, 10 Sup. Ct. 58. These cases support each other. The former case is the well-known *Base-Burning Stove Case*, and needs no explanation. In *Royer v. Roth* the claim of the patent was as follows:

"In combination with the drum, A, of a rawhide fulling machine operating to twist the leather alternately in one direction and the other, a shifting device for the purpose of making the operation automatic and continuous, substantially as described."

In both cases there was but the assembling of old devices, without the exercise of invention. And in *Hailes v. Van Wormer*, if not as obviously, fully as surely, as in the illustration of the aggregation by the addition of the car, to quote the language of Justice Gray in *Heating Co. v. Burtis*, 121 U. S. 289, 7 Sup. Ct. 1034, "There was no specific quality of the result which could not be definitely assigned to the independent action of a single element." In *Royer v. Roth*

the court says that there was no invention in the application of the shifting device to a fulling machine.

But, if these cases are at all doubtful, what they mean is determined by other decisions. In *Reckendorfer v. Faber*, 92 U. S. 347, the supreme court say:

"The combination, to be patentable, must produce a different force or effect or result, in the combined forces or processes, from that given by their separate parts. There must be a new result by their union. If not so, it is only an aggregation of separate elements."

The court seemed to feel that this language needed illustration, and illustrations were given. I select one:

"Another illustration," the court say, "may be found in the frame of the sawmill, which advances the log regularly to meet the saw, and the saw which saws the log. The two co-operate, and are simultaneous in their joint action of sawing through the log."

The moving frame performed, of itself, no other office than moving frames do. The saw performed no other office than saws do; but, each performing its particular function, they together "sawed through the log."

It is well settled that the action of the elements need not be simultaneous, and Judge Acheson said in *Stutz v. Armstrong*, 20 Fed. 847:

"It is by no means essential to a patentable combination, as the defendant's argument implies, that the several devices or elements should coast upon each other. It is sufficient if all the devices co-operate with respect to the work to be done, and in furtherance thereof, although each device may perform its own particular function only."

See, also, *Yale Lock Manuf'g Co. v. Norwich Nat. Bank*, 6 Fed. 394.

Other cases but repeat and illustrate in various ways these views. To make a combination there must be a patentable relation between the elements (*Bussey v. Manufacturing Co.*, 110 U. S. 146, 4 Sup. Ct. 38); that one element must qualify or modify the other (*Double-Pointed Tack Co. v. Two Rivers Manuf'g Co.*, 109 U. S. 121, 3 Sup. Ct. 105; *Stephenson v. Railroad Co.*, 114 U. S. 158, 5 Sup. Ct. 777); that there must be more than a juxtaposition of parts (*Reckendorfer v. Faber*, 92 U. S. 347); that they must co-operate in one result,—each must influence or affect the action of the other. If each fulfills its office, and nothing more, it is not a combination (*Beecher Manuf'g Co. v. Atwater Manuf'g Co.*, 114 U. S. 524, 5 Sup. Ct. 1007).

But further quotations would be tiresome, and I have made these, not because they are necessary to define the law, but because counsel feel or feign despair of having the cases they cite read or applied.

Applying the principle of law counsel advance, and which I have quoted, counsel, on page 264 of their brief, say:

"Now, in the *Bowers Case*, the action of the dredge in using the rotary suction pump, the excavator, the suction pipe, and all that portion of the discharge pipe which is upon the dredger, is precisely the same, whether there is an additional extension of that discharge pipe by means of flexible joints or not."

Of course not, if we disregard the office of the flexible joints, and the office of flexibly joining the discharge pipe to the dredge. But this office cannot be disregarded. It enables the action of the dredging machine to be continuous as it swings on a side feed and excavates. This is the essence of the invention, the new result which was not accomplished before, and bears the test of all the definitions of combinations to which I have been cited. The same remarks are applicable to the turntable or vertical anchors, whichever be used. Counsel say, "If any other holding is substituted for the turntable and spuds, the dredge does its work just the same." It would only do some work "just the same," and besides the turntable or spuds have other offices than "holding." It permits swinging as well,—work on a side feed, work on a forward feed. This is ignored by counsel.

The length of this opinion makes it impossible to consider at length the defenses of the abandonment of the invention or of the application. I think the evidence shows sufficient excuse for delay. For the same reason,—that is, it would make this opinion too long,—I have refrained from a detailed comparison of plaintiff's apparatus and devices with those which defendant asserts anticipate or limit them. Such a comparison, to be sufficient or satisfactory, would necessarily have to be very long.

I have assimilated claims 16 and 26 of patent No. 318,859; 13 and 14, 18 and 22, of patent No. 355,251,—and between claims 16 and 33 I find no patentable difference.

Decree will be entered holding infringement of claims 10, 16, 25, 53, 54, and 59 of patent No. 318,859, and 13, 17, and 18 of patent No. 355,251

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SIMONDS MANUF'G CO. et al. v. E. C. ATKINS & CO.

(Circuit Court, D. Indiana. October 5, 1894.)

No. 8,667.

1. PATENTS—CONSTRUCTION OF CLAIMS—INFRINGEMENT—CROSS CUT SAWS.

The Simonds patent No. 269,728, for a cross-cut saw, as an article of manufacture, if valid at all, is limited to a saw formed by curvilinear grinding along lines parallel with its cutting edge, so as to be of substantially the same thickness throughout the length of its curved cutting edge, and of gradually diminishing thickness in the direction of its width from cutting edge to back; and the patent is not infringed by a saw having a curved cutting edge and straight back, and made from a plate of steel rolled so as to have a gradually diminishing thickness from cutting edge to back, and ground on straight lines, so that it has a slightly greater thickness along the central part of the cutting edge than at the ends, and a uniform thickness along the back from end to end.

2. SAME—PATENTABLE INVENTION—CHANGE IN SIZE.

It would seem that a patent for a special form of cross-cut saw as an article of manufacture cannot be sustained when it appears that there previously existed a small saw for cutting fire wood, of substantially the same form; for the change is one merely of size or proportion, which is not patentable.