

## Case No. 13,662.

SWAIN TURBINE &amp; MANUF'G CO. v. LADD.

[2 Ban. & A. 488;<sup>1</sup> 11 O. G. 153.]

Circuit Court, D. Massachusetts.

Jan. 2, 1877.<sup>2</sup>PATENTS—REISSUE—CONFLICTING  
CLAIMS—FUNCTIONAL DIFFERENCES.

1. Swain, the assignor to the complainants, was the inventor of an improved form of that class of water-wheels known as "turbines." The reissue; of his patent was broader in its wording than the original. *Held*, that the claims in the reissue must be construed so as not to embrace any invention broader than that described or substantially indicated in the original patent.

[Cited in *Brainard v. Cramme*, 12 Fed. 624.]

2. No matter how valuable and meritorious an invention may be, a patentee has no right, by reissuing his patent, to gradually widen the scope of his claims so as to keep pace with the progress of invention.
3. A claim, which would be void as merely functional, should be construed in connection with the described means, in the reissue, but so as not to embrace any invention broader in its scope than the original.
4. In cases where mere changes of form become patentable by reason of involving functional differences; it should be left open to subsequent inventors to devise other changes of form involving other functional changes, when the same result is not attained in-substantially the same way.

[This was a bill in equity by the Swain Turbine & Manufacturing Company against James E. Ladd, for the infringement of reissued letters patent No. 5,154, granted to A. M. Swain November 19, 1872, the original letters patent, No. 28,314, having been granted May 15, 1860.]

J. S. Abbott and H. W. Boardman, for complainants.

Brown & Holmes and C. E. Mitchell, for defendant.

SHEPLEY, Circuit Judge. The invention of Swain, the assignor to the complainants, relates to a new and

improved form of that class of water-wheels known as “turbines,” which operate by means of extracting power from the unbalanced pressure of water, which, as it passes through the wheel, has its direction changed by the curved surfaces of the floats, which take and transmit the power of the water impinging upon and passing over their curved surfaces. In all wheels of this class, form is material, substantial and functional, and very slight changes of form and proportion involve functional changes of great importance. Slight modifications and deviations from any prescribed operative forms and proportions may destroy the usefulness or put an end to the identity of the device, or, on the other hand, may effect new and different and better results.

Before the invention of Swain, the turbine wheels in common use were generally classed under two heads, the Fourneyron and the Jonval wheels. The wheels of the Fourneyron type received and discharged the water horizontally. The wheels of the Jonval type received the water vertically from the top and discharged it downwardly. Various modifications had been made, and many patented, of both these forms of the turbine wheel. That Swain made a great improvement, upon any of the turbine water-wheels which preceded his, is very evident, and no testimony in the record, in the opinion of 486 the court, has any tendency to show that he was not the first and original inventor of that which he claimed in his original patent. Valuable and meritorious as that invention was, it entitles him only to a monopoly of that which he really invented, and no inventor has any right to gradually widen the scope of his claims to keep pace with the progress of invention. Especially in cases, where mere changes of form become patentable by reason of involving functional differences, should it be left open to subsequent inventors to devise other changes of form involving other functional changes,

where the same result is not attained in substantially the same way.

In order properly to construe and limit the claims of the reissued patent in this case, so as to give to the patentee the entire monopoly of the invention actually made by him, and at the same time to so limit it as not to cover a field of invention into which the patentee had not entered, it becomes necessary to examine the original patent, and endeavor to determine from that, what was the scope of the invention which was described, indicated, or suggested in the specifications of the original patent. The original patent granted to A. M. Swain, May 15, 1860, for a new and improved wheel, No. 28,314, describes the object of the invention "to obtain a simple and efficient horizontal water-wheel, one that will have all its parts accessible for repairs, and which will give the maximum power of varying heads, with an economical use of water." After describing the devices for raising and lowering the wheel, as desired, without removing the wheel from its proper working position, and without being troubled with the influence or action of the water, the description of the wheel and its floats is as follows:

"The wheel has its floats cast or constructed each of a single piece of metal. The face sides of the floats, where the water impinges, are of paraboloidal form, whose axes are tangent to a circle, to which the guides, hereinafter described, are also tangents, and also to the curve at or near the circumference of the wheel. The bottoms of the floats are formed by revolving the curves on their axes."

A description is then given of the annular chamber, termed the hydrostatic chamber around the wheel, with a series of guides, which, in connection with the top of the chamber and the cylinder connecting the guides at the bottom, form chutes, which direct the water properly to the buckets of the wheel, and an arrangement is provided by means of raising and

lowering them to increase or diminish at will the volume of water admitted to the wheel, thereby regulating the capacity of the wheel as occasion may require.

“When J (the ring or cylinder to which the guides are attached and cast) is lowered, the water strikes the floats with all the force and velocity due to its head, directly under the rim of the wheel, which is so curved as to force the water down rapidly in the lower curved parts or bottoms of the floats, the water not leaving the wheel until its force has been properly expended on it.”

When we examine this specification in connection with the drawings to which it refers (leaving out of view, for the purpose of this examination, the annular chamber with the guides and chutes, and the devices for raising and lowering the wheel), we find the essential elements of the wheel to be, first, floats whose face sides where the water impinges are of paraboloidal form, whose axes are tangent to a circle to which the guides are also tangent, and also to the curve at the outer circumference of the wheel. We find the upper edge of the floats not to be horizontal to the axes of the wheel, but curving downward inwardly diagonally, so as to conform to the rim of the wheel to which the floats are attached, which is so curved inwardly and downwardly. We find these floats with a discharge-line curving over their inner edges from the curved crown to the lower outer edge of the wheel, the float thus narrowing almost to a point at the lower band or rim of the wheel. This form of float, acting in combination with the curved part of the crown, and the hub inside of the inner edges of the floats, discharges the water neither horizontally nor vertically with reference to the axis of the wheel, but in diagonally-curved lines; secondly, we find, as one of the elements of this wheel, a rim, or crown, “which is so curved as to

force the water down rapidly in the lower curved parts or bottoms of the floats.” This downward and inward curvature of the crown is not described as an alternative or preferable construction, but as one having an important function in combination with the floats. As correctly stated by Mr. Renwick, one of the experts examined by the defendant, if there had been any intention of discharging the water in nearly horizontal lines, the lower side of the rim or crown would not have been bent downward, so as to force the water down, and the space in the centre of the wheel, into which the horizontally flowing water would escape, and which would be necessary for its escape, would not have been stopped up by the hub and the downward prolongation of the crown after it extends inward beyond the inner edges of the buckets. And if it had been intended that any considerable portion of the discharge should have been downward vertical, as, in the Jonval wheel, then the delivery-edges of the buckets would not have been curved, as before described. This view of the office and function of the downward curved crown is further confirmed by the arrangement of the chutes in the Swain device in such a manner as that the water at part-gate is admitted directly under the curved rim of the wheel.

The reissued patent, No. 5,154, dated November 19, 1872, has its first, second, third and fifth claims so worded, as in their broad and literal construction, without any limitation to the invention described in the specifications of the original and the reissued patent, to claim any form of “water-wheel having an effective inward flow and discharge of part of the water, and an effective downward flow and discharge of part of the water simultaneously in one wheel, whereby the effective area of discharge is increased without increasing the diameter of the wheel.” This is the exact language of the fifth claim, which would be void as a claim merely functional, unless this claim

be construed as must also the first, second and third claims, as including the described means of effecting the result. To uphold these claims they must not only be construed in connection with the described means in the reissue, but so construed as not to embrace any invention broader in its scope than the invention described, or substantially suggested or indicated in the original. However meritorious and original the invention of Swain was (and of its originality and merit as an advance in the state of the art at the date of Swain's invention, the court does not entertain any doubt), nevertheless, its great merit and utility will not justify such broad claims in a reissue as shall effectually interpose a barrier in the path of subsequent inventors, and arrest the progress of invention. The broad language of these claims, liberally construed, eliminates from the combination in the reissue, the downward and inward curvature of the crown which forms an essential functional element of the combination in the original. Such a literal construction of these claims, with the scope contended for by the complainants, would render the issue void, according to the decisions in *Gill v. Wells* [22 Wall. (89 U. S.) 1], and many other cases decided by the supreme court of the United States, including *Seymour v. Osborne* [11 Wall. (78 U. S.) 516]. In this connection the court can only repeat the language of the opinion in *Forsyth v. Clapp* [Case No. 4,949].

“The court will look beyond the mere form of words in the claim of a reissued patent into the specifications, in both the original and reissued patents; and even if on the face of the reissued patent it does not embrace anything not described or suggested in the original, nevertheless, the court will ascertain whether there is any substantive invention adequate to support a claim ingeniously worded, not so much for the purpose of describing what the patentee really invented, as of grasping within its terms, some contrivance not

within the knowledge or contemplation of the patentee, and for that reason, not by reason of inadvertence or mistake, not embraced in the claims of the original patent.”

Giving to these claims the construction which we have indicated, the word “crown” in the first three claims will refer to and include in the combination such a crown as is described in the original patent and represented in the drawings of the original and the reissue, and the fifth claim will be limited in its scope to water-wheels possessing such elements as we have hereinbefore recited as the described essential component parts of the turbine-wheel described in the specifications and drawings of the original patent. Giving this construction to the claims, the defendant does not infringe, and the bill must be dismissed.

{On appeal to the supreme court, this decree was affirmed. 102 U. S. 408.}

<sup>1</sup> {Reported by Hubert A. Banning, Esq., and Henry Arden, Esq., and here reprinted by permission.}

<sup>2</sup> {Affirmed in 102 U. S. 408.}

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