

Case No. 10,876.

PEARL ET AL. V. OCEAN MILLS ET AL.

{2 Ban. & A. 469;¹ 11 O. G. 2; Merw. Pat. Inv. 223.}

Circuit Court, D. Massachusetts.

Jan., 1877.

PATENTS—WHAT MAY BE CLAIMED IN
REISSUE—PATENTABILITY—CHANGE OF
FORM—FUNCTIONAL DIFFERENCE.

1. The complainant, Pearl, introduced certain improvements in the ring-spindle and bobbin previously used in spinning-machines, by reducing their weight and thereby diminishing the power necessary to run them. A modified form of the old ring-spindle was combined with a modified form of the old bobbin—the spindle being shortened in the blade and correspondingly lightened in the lower portion—the bobbin being a light shell with an additional central frictional adhesive bushing. A bushing at the top of the bobbin had no function in connection with the spindle, but was merely for purposes of strength, the lower and central bushings sustaining the bobbin. These alterations resulted in a considerable diminution of the power required. Many previous experiments, with the same end in view, had proved unsuccessful: *Held*, that the greatly improved result attending the change, when viewed in connection with the failure of the many experiments previously made to accomplish similar results by mere structural changes, has a great tendency to prove that these changes involve some functional difference beyond mere mechanical perfection and adjustment.
2. Where an inventor, in his original specification, has described a new and useful combination of a number of ingredients performing in combination certain functions less than he has claimed, he may, in the reissue, claim such combination of the less number described, suggested or substantially indicated, as his invention, but not included in the claim.

{Cited in *Dederick v. Cassell*, 9 Fed. 308.}

3. A reissue need not follow the exact language of the original patent, but may contain a fuller description of the invention, previously imperfectly described. *Wells v. Gill* [Case No. 17,393], commented on.

{Cited in *Smith v. Merriam*, 6 Fed. 718.}

4. Mere change of the form of a machine is the work of a constructor, not an inventor, and is not the subject of a patent without showing that some new or materially improved result is obtained.
5. In a claim, the words “the described,” etc., are construed not solely with reference to the words in the specification, but with reference also to the limitations in the context of the claim.
6. Reissued letters patent No. 6,036, granted to the complainants September 18t, 1874, for an “improvement in bobbins and spindles for spinning-machines,” *held* valid.

[Cited in *Pearl v. Appleton Co.*, 3 Fed. 153.]

[This was a bill in equity by Oliver Pearl and others against the Ocean Mills and others, for the infringement of reissued letters patent No. 6,036, granted to complainants Sept. 1, 1874.]

Benjamin F. Thurston, D. Hall. Rice, and Charles E. Pratt, for complainants.

Chauncey Smith, Jas. J. Storrow, and Wm. W. Swan, for defendants.

SHEPLEY, Circuit Judge. Reissued letters patent No. 6,036, were granted to the complainants September 1, 1874, for an “improvement in bobbins and spindles for spinning-machines.” The bill in this case is brought for an alleged infringement of the reissued letters patent The answer of the defendants denies infringement, and alleges that the patent is void on its face, for the reason that the difference between what the specification describes as old and that which it describes as new is not a difference which constitutes an invention patentable under the law; that the patent is void for want of novelty, because, in view of the state of the art existing at the date of the alleged invention, the device described in the specification is not new in the sense of the patent law, nor substantially different from what was previously known and in public use; that the reissue is void because not for the Invention disclosed and intended to be covered by the original patent.

Before the improvement of Pearl, the ring-spindle and bobbin made by the leading spindle-makers, and as used and understood by manufacturers generally, had an established and approved form, size and weight, as represented by the Fig. 2 in the drawing of the original patent. The spindle was constructed to rest and revolve at its lower end in a step in the lower rail of the frame. It was supported by the bolster in the upper rail of the spinning-frame. Between the step on the lower, and the bolster on the upper rail, was attached to the spindle, the whirl, by means of which and its connections, motion was communicated to the spindle. Above the bolster the blade of the spindle projected about six inches, receiving and extending through the bobbin. The usual weight of the spindle was about twelve ounces, the proportion of the weight of the blade above, and the butt below the top of the bolster being about two and one-quarter ounces for the weight of the blade, and nine and three-quarters ounces for the weight of the butt. The wooden bobbin which was used in combination with this spindle was chambered or reamed out so as to leave a bore or central chamber of greater diameter than the spindle, except at the top and foot of the bobbin, where there were frictional adhesive bushings adjusted to keep the bobbin in the same relation to the spindle, and to enable the spindle to carry the bobbin with it in its rotation. This rotation, in practical use in spinning, was at the rate of five or six thousand revolutions per minute. Nearly one-half of the whole power utilized in running the machinery of a cotton-mill was expended in driving the spindles for spinning. Experiments had been made of removing a portion of the metal from the butt end of the spindles below the bolster, in the expectation that by thus reducing the weight of the spindles much less power would be required to drive them. ⁵⁷ These experiments failed. Tested by the dynamometer, the spindles thus rendered lighter

by the removal of some portion of the weight of that part of them below the bolster required more power to drive them than the old and heavier spindles. To overcome the tendency to gyratory motion in the comparatively unsupported blade of the spindle, it appeared requisite that a certain fix-ed proportional relation should be maintained between the respective weights of the blade and the butt of the spindle, and, as one of the conditions of economical spinning, involved, necessarily, the use of a bobbin of or about the length of six inches. Before the invention of Pearl, no substantial advance had been made in the efforts to modify the form of the spindle in common use, so as to effect a material saving of the power requisite to drive it with the required velocity of rotation.

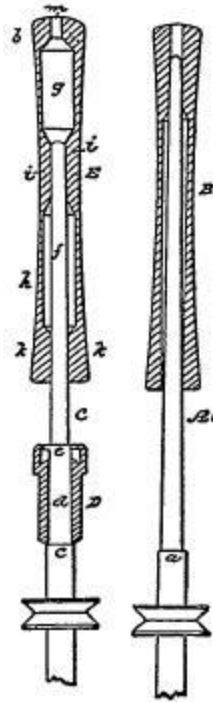
The device of Pearl consists in a combination of a modified form of the ring-spindles with a modified form of the bobbin, having frictional or adhesive bearings, uniting them to the spindles, and carried with it. This modified or improved spindle was shortened in the blade, and, instead of extending, as before, substantially to the upper end of the bobbin, was only made of sufficient length above the bolster to enable an adhesive bearing, which he provided in the centre of the bobbin, to hold the bobbin firmly on the spindle. He correspondingly lightened the lower part of the spindle and whirl below the bolster, without destroying the proper proportional relation of the parts of the spindle to each other, necessary to insure steadiness of rotation. He also modified the form of the bobbin, making it of a light or thin shell, retaining the lower frictional bushing or adhesive bearing at the bottom, and adding a frictional adhesive bushing in the centre of the bobbin, the lower and the central bushings sustaining the bobbin on the spindle, in place of the former mode of sustaining it by adhesive bearings at the top and bottom of the bobbin. He added a plug, re-enforce, or bushing also at the top

of his bobbin, not having apparently any function in combination with the spindle, with which it did not come in contact, but only as one mode of strengthening the bobbin itself.

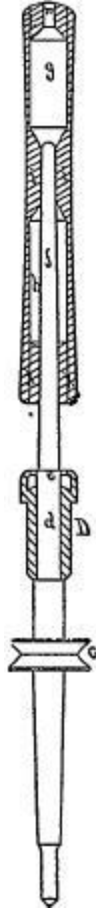
He describes his invention thus: "My invention relates, first, to certain improvements in the construction of bobbins having frictional or adhesive bearings uniting them to the spindle and carried by it, the object of this part of my invention being to make a very light bobbin, and strengthen its various parts so that it will not easily be crushed or broken; second, to an improved construction and combination of both the bobbin and ring-spindle, so that they can be successfully used with greater advantages of length of traverse, speed and steadiness of rotation than heretofore attained, and at the same time be much lighter, the object of this part of my invention being to greatly diminish the amount of power required to drive the spindle at any given speed, and to increase its efficient operation at the same time."

{Drawing of Patent No. 102,687, granted May 8, 1870 to O. Pearl, published from the records of the United States Patent Office.}

FIG. 1. FIG. 2.



[Drawing of Reissued Patent No. 6,030. granted Sept. 1.1874. to O. Pearl published from the records of the United States Patent Office.]



After describing the spindles and bobbins in common use, and reciting the difficulties which had attended the attempts theretofore made to reduce the weight of the entire spindle below a certain standard, he proceeds first to describe the bobbin of his improved construction.

“This bobbin is made with a thin and light shell or band of wood, and has a lower adhesive or frictional bearing k, and a middle one, i, and is also bushed at the upper end by a plug, re-enforce or bushing, l, and the bearings k i and bushing l are united to, and combined with the shell of the bobbin, and strengthen it in all directions from being broken. The adhesive or frictional bearings k i are made to sustain the bobbin on the spindle in one position with relation to the latter, and so as to enable the spindle to carry the bobbin with it in its rotation.”

He then describes his improved ring-spindle.

“My improved ring-spindle, instead of extending substantially to the tipper end of the bobbin, as heretofore, is only made long enough above the upper bolster D, to enable the adhesive bearing i at the centre of the bobbin to hold the latter firmly upon it, as shown. I am thus enabled to remove a large portion of the upper part of the blade of the spindle above the bolster, and the tube of the bobbin projecting beyond the shortened blade of the spindle, resting, by its adhesive central bearing, upon the latter, and being both light and rigid, retains its length and the position which it had before the spindle-blade was shortened, while the traverse of the spinning-frame and the length of the bobbin remain as before.

“By thus dispensing with the length and weight at the top of the spindle above the bolster, while the length of the bobbin and traverse of the frame remain as before, relatively, I am enabled to lighten the lower part of the spindle and whirl below the bolster, many times the weight taken from its blade above, without destroying the proper balance of the spindle and its consequent steadiness of rotation, and by these means I accomplish the ultimate effect, which is the purpose of this improvement, of enabling the spindle to be run steadily at high speed with much less power than heretofore, thus diminishing the expense and increasing the production at the same time.”

The claims of the patent are for: “(1) The described ring-spindle, having its blade from the bolster D upward shorter than the bobbin and combined with the bobbin, constructed substantially as described, by means of the adhesive bearings, as and for the purpose set forth. (2) The combination of the bobbin, the intermediate adhesive bearing i, and the blade of the spindle made shorter than the bobbin from the bolster D upward, substantially as described. (3) The described bobbin, provided with the central adhesive

bearing i, the chambers g h, and the adhesive foot-bearing k, substantially as described. (4) The described bobbin, provided with the central adhesive bearing i, the two chambers g h, and the upper and lower end bushings or heads, substantially as described.”

The spindle and bobbin used by the defendants is substantially like the spindle and bobbin described in the Pearl patent, omitting from the bobbin the bushing I at the other end of the bobbin, being the upper bushing referred to in the fourth claim of the reissued patent. It clearly embraces the combinations covered by the first, second and third claims, and as clearly does not embrace the combination in the fourth claim. The construction of the claims contended for by the defendants, which makes the described bobbin in all the claims necessarily require a bobbin which has the lower, central and upper bushings described in the specification, cannot be sustained, in view of the evident intention to describe, in the first claim, a combination of the shortened ring-spindle with a bobbin having the central and lower adhesive bearings described; in the second claim, to describe the combination of the shortened ring-spindle with a bobbin having the central intermediate adhesive bearing; in the third claim, to describe a bobbin having the elements of the central adhesive bearing, the adhesive foot-bearing and the two-chambers above and below the central bushing; and, in the fourth claim, the bobbin having the central adhesive bearings, both the upper and the lower end bushings, and the two chambers.

There is no difficulty in understanding the elements of the combination claimed in each one of these claims, and the words “the described bobbin” must be construed, not solely with reference to the words in the specification, but with reference also to the limitations in the context of the claims.

A careful comparison of the reissued patent in this case with the original fails to show that the reissued patent embraces, in its description or claims, anything which was not suggested and substantially indicated in the original. Nor is any combination claimed in the claims of the reissue of fewer elements than in the original, where such combination is not clearly described as the invention of the patentee in his original specification. The upper bushing 1 is not described in the original patent as an essential element in the combination, but only as a re-enforce to strengthen the bobbin to avoid the danger of breaking or crushing it in the operation of putting it on or taking it off the spindle, and its connection with the other elements which go to make up the combination (either of the elements of the improved bobbin or the combined improved bobbin and improved spindle) may be regarded rather as an aggregation than a combination, as the re-enforce 1 has no part in the combined function of those other elements, the combination of which constitutes the invention described alike in the original and the reissue. When in the specification of the original patent the inventor describes a new and useful combination of a number of ingredients, performing in combination certain functions less than he has claimed, he may in the reissue claim such combination of the less number which he has described, suggested or substantially indicated as his invention, but failed to include in his claims, and the reissue need not describe it in the exact language of the original, but may contain a more full and exact description of the same invention, imperfectly described in the original. There is nothing in the decision in *Wells v. Gill* [Case No. 17,393] in conflict ⁵⁹ with this statement of the principle of patent law.

The positions taken by the defendants in this case, that the difference between what is described in the

specification as old and what is described as new, is not a difference which constitutes a patentable invention, and that the device set forth in the specification, in view of the state of the art, is not new in the sense of the patent law, have been very elaborately and ably presented to the court in arguments embodying a very careful analysis of all the elements and ingredients of the old and the new devices and combinations.

Considering first the difference between what is described as old and what is described as new in the specification, it is contended that these differences consist only in changing the location of the upper adhesive bearing from the top to the central portion of the bobbin, and that when this change of location is made, the shortening of the spindle by cutting off the superfluous part above the bearing, which performs no function, is one of mere mechanical skill, obvious to any mechanic, and not requiring invention. Mere change of the form of a machine is the work of a constructor, not an inventor; such a change cannot be deemed an invention. *Winans v. Denmead*, 15 How. [56 U. S.] 340. Mere changes of form or location in a mechanical structure are not the subject of a patent, without showing that some new or materially improved result is obtained. *Sargent v. Larned* [Case No. 12,364].

No more difficult task is imposed upon the court in patent causes than that of determining what constitutes invention, and of drawing the line of distinction between the work of the inventor and the constructor. The change from the old structure to the new may be one which one inventor would devise with the expenditure of but little thought and labor, and another would fail to accomplish after long and patient effort. It may be one, which one whose mind is fertile in invention will suggest almost instantaneously, when the skilled hand of the constructor will fail

to reach the apparently simple result by the long and toilsome process of experiment. It may be one which, viewed in the light of the accomplished result, may seem so simple as to be obvious almost to an unskilled operative, and yet the proof may show that this apparently simple and obvious change has produced a result which has for years baffled the skill of the mechanical expert, eluded the search of the discoverer, and set at defiance the speculations of inventive genius. The change described in the specification of Pearl is a change in the form of the spindle and a change in the form of the bobbin, it involves in the case of the bobbin a change of the location of the upper adhesive bearing from the top to about the centre of the bobbin. Without a knowledge of the results accomplished by these changes they might, at first glance, appear to be merely structural changes. Nothing has a greater tendency to prove that these changes involve some functional difference, beyond mere mechanical perfection and adjustment, than the greatly improved result attending the change when viewed in connection with the failure of the many experiments previously made to accomplish similar results by mere structural changes like those, for example, of diminishing the weight of the spindle in all its parts. It does seem impossible to reconcile the greatly improved results attained by the invention of Pearl with the theory that no functional, but only a mere structural, change was effected. Even if Pearl fails to describe accurately the precise law which governs the proper relations and proportions of the parts of the spindle as affected by the elements of leverage, gravity, friction, centrifugal force, and the transverse strain in one direction upon the spindle, yet if he has obtained the practical result, and taught others how to accomplish it, he has made a patentable invention, however imperfectly he may understand the philosophy of it. And the defendants have none the

less availed themselves of his invention, although by adding another change (whether structural merely or functional) by bringing the upper bolster nearer to the bobbin, they have still further improved upon the old device.

Whether, in view of the state of the art as developed by the evidence, as distinguished from the devices described as old in the specification, there was anything patentable in the device described as new by the patentee, will now be considered in connection with the evidence introduced to prove anticipation.

Defendants set up prior knowledge and use by Richard Garsed, at Frankford, Pennsylvania; H. N. Gambrill & Sons, at Melvak, Maryland; J. & W. Slater, at Jewett, Connecticut; William P. Green & Sons, at Norwich, Connecticut; Russell Chace, at Washington Village, Rhode Island; and Hugh Bone, of Ellicott City, Maryland. All of these six different devices, admitting for them all that is claimed, were bobbins without any of the adhesive bearings described in the patent of complainants, but rested loosely on the spindle-blade, being driven with it by means of pins projecting from a button or collar attached to the spindle. Neither one of these devices embraced the combination described or claimed in either claim of the reissued patent. There is a mass of testimony on both sides in relation to a bobbin assumed to have been used by Amasa Houghton, at the Attawaugan Mill, in Killingly, Connecticut, and at Wauregan, Connecticut. Within the reasonable compass 60 of an opinion, it would not be possible, without great prolixity, to give an analysis of all the conflicting testimony in relation to the Houghton bobbin. All that can be conveniently stated are the conclusions to which, upon such analysis, the court has arrived. They are, first, that no such bobbins as are described by Houghton were used, otherwise than experimentally, at the Attawaugan Mill, and that

whatever use there was at the Wauregan Mill of the Houghton bobbin, was subsequent to June, 1868, the date when Pearl is proved to have perfected his invention. These conclusions render unnecessary any discussion as to the question of their effect, if they had antedated the invention of Pearl.

There remains to be noticed only the Winchendon spindle and bobbin, in which I do not find either separately or in combination any of the elements of the Pearl invention. The spindle was not shortened, neither was any central adhesive bearing provided in the working part of the Winchendon bobbin. The Winchendon bobbin had a bulb or head added above the top of the old Whitin spindle to the old Whitin bobbin, above the old upper adhesive bearing, which bulb or head was not made to receive and did not receive the yarn or constitute a working-part of the bobbin. No yarn was laid upon this head, and the proof is clear that this addition of a chambered head above the top of the spindle and above the upper adhesive bearing did not diminish but increased the quantum of power requisite to drive the spindle. It is claimed that the same relation of the spindle to the bobbin is attained in the Winchendon device by adding to the length of the bobbin, as in the Pearl device, by shortening the spindle. But the fact that in one case there is involved an increased, and in the other a diminished expenditure of requisite power, and that this difference grows out of a greater or less tendency to gyratory motion in one case or the other, proves that in one case the change from the old Whitin spindle was functional, and in the other merely structural, and, as before remarked, the relation of the operative parts of the Winchendon spindle and bobbin remained the same substantially as in the old Whitin spindle and bobbin in common use.

The conclusion is, that the defendants have infringed the first, second, and third claims of the

complainants' patent, and a decree is to be entered, in favor of the complainants, for an injunction and account, as prayed for in the bill.

{For another case involving this patent, see [Pearl v. Appleton Co.](#), 3 Fed. 153.}

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