

PEARL AND OTHERS *V.* THE APPLETON
COMPANY AND OTHERS.
PEARL AND OTHERS *V.* THE HAMILTON
MANUFACTURING COMPANY AND OTHERS.

Circuit Court, D. Massachusetts. July 17, 1880.

1. PATENT—REISSUE No. 6,036.—The second claim of reissue No. 6,036 for improvements in ring-spinning machines held to be infringed by patent No. 113,575.
2. DRAWING—AMENDMENT—REV. ST. § 4916.—Drawings of a machine patent need not be amended by the model in accordance with section 4916 of the Revised Statutes, where such amendment does not affect the claims of the patent.

In Equity.

LOWELL, C. J. The length of this record of more than 3,000 printed pages, besides the labor involved in its examination, makes it not improbable that I may have overlooked, or forgotten, some evidence which one party or the other may consider important. I have studied it to the best of my ability.

The contest is mainly between the Pearl and the Sawyer spindles, with their bobbins, as patented and used in ring spinning. The former, patented in re-issue No. 6,036, September 1, 1874, was sustained by Judge Shepley in *Pearl v. Ocean Mills*, 11 Off. Gaz. 2. The same learned judge afterwards granted an injunction in *Pearl v. Coventry Company*, in Rhode Island, and a copy of the arguments, with the judge's full running commentary, has been furnished me. From these sources we can discover what a judge of great experience in patent cases, as well as of great natural aptitude for such investigations, thought of the validity and construction of the plaintiffs' patent. The issue of infringement is wholly different from any with which he was concerned.

Pearl's original patent, No. 102,587, May 5, 1870, was entitled an "Improvement in Bobbins for Spinning," which is shown by the specification to be ring spinning, and it describes the old form of bobbins as being made with a single chamber, or bore, extending through the bobbin, with bearings to grasp the spindle, called in the record "adhesive" bearings, at either 154 end. Pearl inserted a bearing in the middle of the bobbin, which enabled him, as he said, to make a bobbin both light and strong, and one which could be employed with a short spindle; because the spindle might be cut off at this central bearing, "thus dispensing with much of the spindle which tends to cause vibration while it may be in revolution." If Pearl retained the old upper and lower bearing, or bushing, of the bobbin, his bobbin would have two chambers; but when his spindle was cut off and came to an end in the middle bearing, the upper bearing became a mere plug to strengthen the bobbin, and had no necessary connection with the spindle, or with any combination of which the spindle was a part.

The state of the art, and the acts of the rival inventors, have been gone into at a very great length.

A ring spindle, though made of one piece of steel, is properly enough described as consisting of two parts, because it has a bearing in the middle. The lower bearing, or step, supports the spindle at its lower end, while it is revolved in an upright position with great rapidity by the pull of the band which is passed round the "whirl," or double ring, which forms part of the "but" of the spindle. The upper bearing is in the "bolster," and tends to keep the spindle firm and steady in its rotation. The part above the upper bearing is called in the record the tip or blade, and that below, the but. The object of both the inventions in controversy here is to obtain a spindle and bobbin which can be run at a maximum of speed by a minimum of power.

Not long after Pearl's patent had been obtained, Sawyer applied for and received one, No. 113,575, April 11, 1871, for improvements in ring-spinning machines. He says that the objects of his invention are—"First, to reduce the weight of, and consequently the power required to drive, the spindles; second, to secure greater steadiness of rotation for the spindle, thus enabling it to run at a higher speed than is customary, or to run more satisfactorily at any speed; and, third, to reduce the cost of constructing the machines." He then says: "The upper bearings of spindles, as now generally 155 constructed, extend but a short distance above the bolster rails in which they are fixed. Now, as this rail must be placed far enough below the lowest point at which the yarn is wound upon the bobbin, to allow the ring rail to pass below that point, a large part of the spindle must necessarily extend upward beyond its upper bearing, and is, consequently, even when made of large size, subject to considerable vibration when running. It is also necessary in the ordinary construction, in order to secure a proper distance between the two bearings of the spindles, to extend the spindle downwards for a considerable distance below where it might otherwise terminate; and this increase in length requires a corresponding increase in diameter beyond what would be required were a shorter spindle used. My improvement consists in certain details of construction and arrangement, whereby I am enabled to remove most of that part of the spindle which ordinarily extends below the whirl, and to leave only a small part of the spindle exposed above its upper bearings, so that it is rendered possible to reduce its diameter, and, consequently, its weight, and at the same time to insure for it greater steadiness of rotation."

He then describes his spindle; the governing principle of which is, that in place of the short bolster below the bobbin, he makes a tubular bolster which

is carried up into the bobbin, which is enlarged, or chambered, at its lower part so as to revolve freely about the tube. Only enough of the spindle remains above the top of the bolster to hold the bobbin firmly in its revolution with the spindle. In consequence of this change, as he says, he may make his spindle with a short "but," and very light throughout.

Sawyer's spindle was brought to the notice of manufacturers, and was tried in continuous operation at a mill, some time before he obtained his patent. Soon afterwards Pearl adopted the short but for his spindle, and has always made and sold it in that form. He re-issued his patent with claims intended, perhaps, to cover Sawyer's spindle. The defendants contend that Pearl derived his short but directly or indirectly from Sawyer; and the plaintiffs contend that the idea 156 of lightening the spindle was borrowed by Sawyer from Pearl. The evidence tends to show that spindles of various sizes and weights and lengths had been made and used before either Pearl or Sawyer made theirs; that Sawyer was the first to bring the short but into general use; that he was the first to introduce the raised or tubular bolster in ring spinning, though one had been used in a throstle or flyer frame; that both Pearl and Sawyer have made and sold spindles in large quantities, which have been found valuable.

It is further proved, to my satisfaction, that Pearl believed from the first that by lightening the tip, or upper part, of his spindle he could lighten the lower part, though he unfortunately neglected to mention it in his original specification. His spindle filed as a model was somewhat lightened by diminishing its diameter. This, however, was not obvious on inspection, and is not shown in his drawings. When he had learned the best way of lightening the lower part of the spindle was by shortening it, (whether he learned this from Sawyer or not, I do not need to inquire,) he was of opinion that he might properly, and

within the scope of his original plan, lighten his “but” by shortening it, as well as by diminishing its diameter, and he obtained the re-issue in suit, in which he says:

“By thus dispensing with the length and weight at the top of the spindle above the bolster, while the length of bobbin and traverse of the frame remain as before, I am enabled to lighten the lower part of the spindle and whirl below the bolster, D, 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 power at the same time.”

This statement was not in the original patent. In the drawings of that patent the length of the but is not given, and its diminution in diameter is not shown or referred to

157

In the new drawings he reduced the length of the but; and this is insisted upon by the defendants as a fraud, which renders the issue void. The statute declares that in a machine patent the model, or drawings, shall not be amended, except each by the other, (Rev. St. § 4916,) and it is true that these drawings are not amended by the model, but vary from it in this very important particular. When this fact was called to the attention of Judge Shepley, in the Rhode Island case, he said that it was not illegal to change the drawings in a matter which did not affect the claims. I see no reason to change the ruling of the court upon this point. The modification of the drawings undoubtedly tends to show that the importance of the short but was discovered by the patentee after 1870, and it was, perhaps, morally speaking, objectionable, because the value of his spindle depends very much

upon the short but; but, as that feature was not claimed in the re-issue, the change was held to be, technically speaking, immaterial. As a question of intent, it is mitigated by the consideration that Pearl truly believed that the value of the short but, by whomsoever introduced, was much increased, if, indeed, it was not wholly due to a shortening and lightening of the upper parts of the spindle. Upon this point the opinion in the Ocean Mills case appears to agree with that of the patentee. "Without a knowledge of the results accomplished by these changes," says Judge Shepley, referring to the cutting off of a piece of the blade of the spindle, and placing the upper adhesive bearing at the middle instead of the top of the bobbin, "they might, at first glance, appear to be merely structural changes;" but he adds that the improved results attained by the invention prove it to have a higher character. His meaning is that the proof of invention is found in the improved working of Pearl's spindle, as actually made and sold, shortened below as well as above, and that the shortening below, though not described or claimed, was rendered possible by the shortening above.

It is proved in this case that Pearl was not the first person to make a ring spindle with a short tip. Such an instrument was made and used for years before his time in Middlebury.

So far, therefore, as the possibility of lightening the lower part of a spindle depends upon cutting off a piece of the upper part, it does not flow from any invention of Pearl's. When this fact was shown to Judge Shepley, in the Coventry Mills case, he was still of opinion that Pearl had a combination of sufficient utility to support a patent, and he granted an injunction to restrain the use of a spindle and bobbin which clearly contained the invention. This combination, as I understand it, is of a spindle with a shortened tip,

and a bobbin with a central adhesive bearing, the Middlebury bobbin having such a bearing only at its lower end. From the remarks of the judge when the Ashton spindle, which is somewhat shorter than its bobbin, was produced in court, I should understand that the bobbin of Pearl must have two chambers; that is to say, it must be reamed out above as well as below, so as to make a bobbin at once light and strong. If it has no upper chamber it would seem to be anticipated by the Ashton.

I do not venture to reverse the decision of Judge Shepley, in upholding the patent of Pearl, as thus understood; a decision which he assures us was arrived at after very careful consideration. The spindle and bobbin of Sawyer do not infringe this combination. The theory of Sawyer's improvement was that a saving of power would be best obtained by a change in the bearings of the old spindle. The disturbing forces, according to his view, are the pull of the belt on the whirl, the pull of the yarn on the bobbin, and the centrifugal force of the whirling structure, which includes the spindle, the bobbin, and the yarn on the bobbin. Sawyer's opinion is that the obstructing force of the pull of the belt is diminished by shortening the but; that the other two forces are diminished by shortening the bobbin and spindle together, and very slightly, if at all, by shortening the spindle within the bobbin; that the shortening below is made practicable by a change in the bearing or bearings above; that the true relation between these parts, above and below, is one of length between bearings, and not of weights. This theory I believe to be true in the main. The evidence seems to me to prove that there is not such a close relation between the weight of 159 the spindle above the bolster, and its weight below, as the patent of Pearl assumes, though there may be a little; and that there is substantially such a relation between the length of

the bearings as Sawyer assumes. While, therefore, I am not prepared to say that there is no value in Pearl's combination, and am sure that the Pearl spindle, as made and sold, and the Sawyer spindle, as made and sold, are both valuable, I have no occasion to ascertain their relative value, because I find them to be distinct structures, and to occupy independent positions in the art.

The first of Pearl's claims is: "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." This claim is not infringed, among other reasons, because the Sawyer bobbin has not the two adhesive bearings described in the Pearl patent. The commissioner of patents, in dissolving the interference between Pearl and Sawyer, said: "How the invention of a bobbin, with an intermediate bearing and an upper bushing, can be held to include a bobbin having intermediate and upper bearings, is a problem I am unable to solve." I find a similar difficulty because the upper bushing of Pearl is merely a plug, and has no true part in the combination, and his lower bearing is not the equivalent of Sawyer's upper bearing. The principal argument has been addressed to the second claim: "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."

The Sawyer contrivance may infringe this claim in words, but it does not in fact. The combination of bobbin, bolster, and spindle is essentially different in the two. The true meaning of the claim, construed by what Pearl did, is that the bobbin projects beyond the tip of the spindle. With a bobbin thus projecting, no advantage is gained in resisting the pull of the yarn, because that pull is against the outside of the bobbin,

which is as high as ever; and the gain in diminished 160 vibration is very small, if any. Sawyer's spindle goes to the top of his bobbin, and his advantage is gained by elevating the bearing of his bolster, which affects both the outside and the inside of the bobbin; and whatever advantage Pearl had was a different one, and was made. on a different theory, that of lightening the spindle with the bobbin. The blade of the Sawyer spindle is not shortened, except upon the assumption that carrying up the bolster is the same thing as cutting off a piece of the spindle, which, perhaps, it might be if Pearl had cut off his bobbin, too; as Judge Shepley said to the defendants in the Coventry case, "Cut off your bobbin, and you will not infringe," or to that effect. But the organization of Pearl would not admit of this change.

The plaintiffs argue, and, indeed, rest their case upon the argument, that the tubular bolster of Sawyer was well known in 1870, and may, therefore, be substituted in Pearl's combination by mere construction, leaving it the same as before. There is no doubt that such a form of bolster and bobbin was known before in some other kinds of spinning, but it is not proved that it had ever been used in a ring-frame; that it could be so used without invention; that any such bobbin had been made with adhesive bearings; or that it was so well known that it had become a mere question of construction which form should be adopted. Indeed, the contrary of all this may be fairly inferred from the evidence. Therefore, when the plaintiff's invention has been reduced to the narrow combination, which is all that the evidence now permits, they cannot fairly claim to embrace, as a known substitute, a bolster and bobbin so different from their own. I am much inclined to consider this combination a different one, mechanically speaking, however well known the Sawyer bolster and bobbin may have been; but this need not be decided. While

I am thus of opinion with the defendants in the most important part of their cases, it seems to me that they have added the Pearl combination to that of Sawyer in the use of certain spindles and bobbins, which the evidence declares them to have used to a greater or less extent. The bobbins, in the instances referred to, have a chamber of some substantial 161 length above the upper end of the spindle, so that the combination of Pearl's second claim appears to be present, of the bobbin with two chambers, the intermediate adhesive bearing, and the blade of the spindle made shorter than the bobbin. These bobbins are represented by the exhibits H, I, J, and M, and are said to have been used with a spindle substantially like exhibit G.

Upon the best consideration I have been able to give to the contradictory evidence in respect to the Wauregan bobbin, I am of opinion that Atwood did ream out the top of his bobbins before the date of Pearl's invention. I agree with the plaintiffs' counsel that this fact only affects the third claim, and does not prevent a recovery for infringing the second. It may eventually have a bearing on the taxation of costs.

Interlocutory decree for the complainants.

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