Case No. 1,521.

BLANCHARD'S GUN-STOCK TURNING FACTORY v. WARNER.

{1 Blatchf. 258;[1] Fish. Pat. Rep. 184}

Circuit Court, D. Connecticut. April Term, 1846.

PATENTS—EXTENSION BY SPECIAL ACT OF CONGRESS—RIGHTS OF CORPORATE ASSIGNEE—SPECIFICATIONS—DEFECTS—INFRINGEMENT—SUBSTITUTION—QUESTIONS FOR JURY—DAMAGES—COSTS.

1. By the proviso in section 1 of the act of congress of February 6th, 1839(6 Stat. 748), extending Blanchard's patent for turning irregular forms, congress intended to give to assignees of the old patent an equally exclusive privilege in the extended term.

2. The power of congress to reserve rights and privileges to assignees, on extending the term of a patent, is incidental to the general power conferred on them by the constitution to secure to inventors, for limited times, lie exclusive right to their discoveries.

{Cited in Jordan v. Dobson, Case No. 7,519.} {See Evans v. Robinson. Case No. 4,571; Blanchard v. Haynes, Id. 1,512; Bloomer v. Stolley, Id. 1,559.}

3. Where a corporation was chartered in Massachusetts, "by the name of 'Blanchard's Gun-Stock Turning Factory' with all the powers and rights vested by law in manufacturing corporations" in that state: *Held,* that the corporation had on the face of its charter, independently of any act referred to therein, power to purchase Blanchard's patent for turning irregular forms, and, among other things, gun-stocks, issued before the incorporation. {Cited in Dorsey Harvester Rake Co. v. Marsh, Case No. 4,014.}

4. By the common law, corporations have a right to purchase and hold property, so far as may be necessary to carry into execution the objects of their creation.

{See New York Dry Dock v. Hicks, Case No. 10,204.}

5. The substitution of one mechanical power for another in a machine, such as a wheel and axle for a screw, does not constitute an invention.

6. In Blanchard's machine, whether the cutter and friction wheels, or the pattern and rough material, have the lateral motion, is immaterial, the relative effect of the parts in acting on each other being the same. The change of motion from the one to the other is not a substantial change.

{Cited in Johnson v. Forty-Second St., M. & St. N. Ave. R. Co., 33 Fed. 502.}

7. So, also, the mode of throwing the machine out of gear, was no part of Blanchard's invention.

8. It is a proper question for a jury whether a departure from the parallelism of the axes of motion of the cutter-wheel and of the rough material, as described in Blanchard's specification, is a material variation from his arrangement.

9. The act of 1839 extending Blanchard's patent did not extend the mere legal right of the patentee, but extended his exclusive right to his invention; and the specification was referred to in the act only to identify the invention.

{Cited in Jordan v. Dobson, Case No. 7,519.}

10. The objection, that the specification of Blanchard's patent claims that any article can he turned from a model by his machine and made larger or smaller than the model, but preserving throughout the same proportions, and that the machine will not do what is thus claimed, is not tenable.

11. Although it is claimed in the specification that the machine will turn any irregular surface or form like the model, and yet it will not turn a square shoulder, that is too remote and extreme a defect to destroy the patent.

{Cited in Dederick v. Cassell, 9 Fed. 312.}

12. In an action for the infringement of a patent, the plaintiff's expenses and counsel fees in prosecuting the action will not be allowed to him as part of his damages.

{See Whittemore v. Cutter, Case No. 17,601; Stimpson v. Railroads, Id. 13,456; Teese v. Huntingdon, 23 How. (04 U. S.) 2. Contra, see Allen v. Blunt, Case No. 217; Boston Manuf'g Co. v. Fisk, Id. 1,681.}

{13. Cited in Perry v. Corning, Case No. 11,004, to the points that the omission to record the assignment of a patent within three months does not render it invalid, as between the parties thereto, and that an unrecorded assignment is of no validity after the expiration of three months, as against a subsequent purchaser from the patentee, for a valuable consideration, acting in good faith, without notice.}

At law. This was an action on the case {Blanchard's Gun-Stock Turning Factory against Norman Warner} for the infringement of letters patent granted to Thomas Blanchard for "a machine for turning and cutting irregular forms." The original patent was granted September 6th, 1819; but, it being deemed inoperative by reason of a

defective specification, a new patent was granted for the invention, on the 20th of January, 1820, for 14 years from the latter day. Afterwards, by an act of congress passed June 30th, 1834 (6 Stat. 589), the sole right was granted to the patentee to make, use and vend the said invention for the term of 14 years from the 12th of January, 1834. This act not being thought to describe the patent with sufficient accuracy, an additional act was passed on the 6th of February, 1839 (6 Stat 748), as follows: "An act to amend, and carry into effect, the intention of an act entitled 'An act to renew the patent of Thomas Blanchard,' approved June thirtieth, eighteen hundred and thirty-four. Be it enacted by the senate and house of representatives of the United States of America in congress assembled, that the rights secured to Thomas Blanchard, a citizen of the United States, by letters patent granted on the sixth of September, eighteen hundred and nineteen, and afterwards on a corrected specification on the twentieth day of January, Anno Domini eighteen hundred and twenty, be granted to the said Blanchard, his heirs and assigns, for the further term of fourteen years from the twentieth of January, eighteen hundred and thirty-four, said invention so secured being described in said last-mentioned letters as an engine for turning or cutting irregular forms out of wood, iron, brass, or other material which can be cut by ordinary-tools: provided, that all rights and privileges heretofore sold or granted by said patentee, to make, construct, use or vend the said invention, and not forfeited by the purchasers or grantees, shall enure to and be enjoyed by such purchasers or grantees respectively, as fully and upon the same conditions during the period hereby granted, as for the term that did exist when such sale or grant was made. Sec. 2. And be it further enacted, that any person who had, bona fide, erected or constructed any manufacture or machine for the purpose of putting said invention into use, in any of its modifications, or was so erecting or constructing any manufacture or machine for the purpose aforesaid, between the period of the expiration of the patent heretofore granted and the thirtieth day of June, one thousand eight hundred and thirty-four, shall have and enjoy the right of using said invention in any such manufacture or machine erected or erecting as aforesaid, in all respects as though this act had not passed: provided, that no person shall be entitled to the right and privilege by this section granted, who has infringed the patent right and privilege heretofore granted, by actually using or vending said machine, before the expiration of said patent, without grant or license from said patentee, or his assigns, to use and vend the same."

At the trial, at New Haven, in April, 1845, before Mr. Justice Nelson, the plaintiffs gave in evidence the patent of January 20th, 1820, and the specification annexed to it; also an act of the legislature of Massachusetts, passed February 21st, 1820, incorporating the plaintiffs by the name of "Blanchard's Gun-Stock Turning Factory;" also an assignment from Blanchard to the plaintiffs, dated June 29th, 1820, under seal, of all his right to the invention covered by the patent, under the said patent, and any other patent issued or to

be issued for the same invention, with all the rights he might have enjoyed; if the assignment had not been made, which assignment was recorded in the patent office October 29th, 1840; and the said act of the 8th of February, 1839. The plaintiffs offered no other proof of their power as a corporation, or of any assignment to them from Blanchard.

The defendant gave in evidence a copy of the original patent granted to Blanchard, September 6th, 1819, and it was admitted that when the patent of January 20th, 1820, was issued, the prior patent was not given up or cancelled, nor was any entry made in any public office or elsewhere purporting to cancel it, and that it had always remained uncancelled. The defendant also offered evidence for the purpose of showing that Blanchard's machine would not perform sundry important functions claimed for it in the specification[2]—as that it would not turn bodies of a different size from the model but preserving the same proportions, and that it would not cut square shoulders in the material operated on. The defendant also offered evidence to show, that allowing Blanchard's patent to be for a combination, there were sundry parts of the combination important in themselves, and others made essential by the specification, which were not used by the defendant; that the lateral motion in Blanchard's machine was produced by a screw, and in the defendant's machine by a wheel and axle; that in the defendant's machine, three motions, namely, the rotary, the vibratory and the lateral or longitudinal were given to the pattern and the rough material, all which three motions were applied to the frame, while in Blanchard's the cutter-wheel and the friction-wheel, and not the pattern and rough material in the frame, had the lateral motion; that the two machines were thrown out of gear in a manner and by a process essentially different; that in the defendant's machine the axes of motion of the cutter-wheel and of the raw material were not parallel, and his machine would not work if they were, whereas by Blanchard's specification it was essential they should be parallel, and they were in fact so in his machine as made; and that in the defendant's machine the form of the periphery of the friction-wheel was essentially different from the form of the periphery of the cutter-wheel as described by the revolution of the cutters, whereas by Blanchard's

specification it was made essential that the form of the two wheels should be the same. The defendant requested the court to decide as matter of law and to instruct the jury, that the plaintiffs had shown no right, as a corporation, to purchase, receive and hold the patent; that under the act of congress and the assignment from Blanchard to the plaintiffs, they took no such legal right as would enable them to prosecute the action in their own name; that if congress had a right, after the expiration of the patent, to grant an exclusive right for a further term to the original patentee, they could not constitutionally make any such grant to his assignees; that the act of the 6th of February, 1839 [6 Stat. *748],* conferred, by its terms, no such right on the assignees, but was designed to confer a favor on the inventor alone, on his application, and that the proviso therein had no other effect than to protect assignees in their enjoyment of the use of the invention during the extended term; that nothing purported to be conveyed by the act except the rights existing under the patent of 1820; that that patent was void because it was for the term of fourteen years' from its date, instead of being for fourteen years from the date of the patent of 1819, because the patent of 1819 had not been given up or cancelled, because Blanchard's machine would not perform the several important functions claimed for it in the specification as before mentioned, because the patent was for a function or principle or mode of operation and not for a machine, and because the patent of 1820 contained other and greater claims than the patent of 1819 as to the powers of the machine; that if. the jury should find that the differences before specified or any of them existed between Blanchard's machine as patented and the defendant's, the latter would be no violation of the patent; that if Blanchard's patent was for a machine, it was merely for a combination of parts, each of which, long before the date of the patent of 1819, was known and used separately and also in combination with one or more of the other parts, and the defendant had not used the whole combination set out in the patent, but only a part of it, and had not used any of the parts before mentioned as being different from his own; and that in case the jury should find for the plaintiffs the rule of damages by which they were to be governed was to give such damages only as the plaintiffs proved they had sustained, which did not exceed the profits on thirty setts of wagon-wheel spokes.

The plaintiffs set up claims on each and all of the aforesaid questions, the opposite of those made by the defendant, and the court charged the jury in conformity with the claims of the plaintiffs and refused to charge as requested by the defendant. On the point of the title of the plaintiffs to sue, the court charged, that the plaintiffs were a corporation and claimed aright to hold an interest in the invention by virtue of their charter, which conferred on them all the powers of manufacturing corporations under the laws of Massachusetts; that, although the defendant claimed that the charter did not confer the power to purchase' the patent, yet the court were of opinion that the general power under the charter was sufficient, and that the plaintiffs took a good title to and interest in the patent,

as completely as a natural person could have done; that, by their act of incorporation, no express power was conferred on them directly and specifically, except by a reference to the general laws of Massachusetts, prescribing the powers of manufacturing corporations; that the rule of law was, that when an association of individuals was incorporated for a particular purpose, the law conferred, by implication and of necessity, all the powers necessary and reasonable to carry into effect the object of the incorporation, else the act would be nugatory; that the plaintiffs had power enough to purchase an invention which would tend to facilitate the purposes of their incorporation as indicated by their corporate name; and that the machine in question appeared to be useful for them in their contemplated business. As to the effect of the assignment to the plaintiffs, in connection with the act of 1839, in conveying the second term of the patent, the court charged, that although the defendant claimed that the act was unconstitutional and void, because congress were only authorized to secure to inventors the exclusive right to their discoveries, and had no power to grant exclusive privileges to mere assignees of inventors, yet the act in question, on its face, extended the exclusive right to the inventor, and only operated in favor of the plaintiffs by virtue of the reservation which made it enure to the benefit of purchasers; that it was, therefore, an act extending a benefit to the patentee, with conditions, which it was competent for congress to impose on the inventor. As to the point made that the assignment was inoperative and void, because it was not recorded within the three months prescribed by the act of congress, nor until after the passage of the act of 1839 extending the patent, the court charged that the act prescribing the time for the recording of assignments was directory; and that the recording was not necessary to make the transfer operative, nut was only essential to enable the assignee to sue in his own name. On the question of damages, the court charged that the jury were at liberty to consider, besides the actual damages proved, the probable expenses to which the plaintiffs had been subjected in vindicating their rights, but were not at liberty to give vindictive damages by way of punishment[3] The

jury found a verdict for the plaintiffs, and the defendant now moved for a new trial.

Roger S. Baldwin, (with whom was Thomas C. Perkins,) for defendant.

Under the acts of June, 1834, and February, 1839, both of which were passed after the expiration of Blanchard's patent, granting an extension of the exclusive right to Blanchard and his assigns, the plaintiffs acquired no such right, as assignees of the invention, as can enable them to maintain this action.

I. The constitution confers on congress the power"to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."This clause in the constitution is the sole foundation of the power of congress to limit or control the public use of any invention. The power conferred cannot be extended beyond the terms of the grant, or what is necessary to give it effect. It authorizes a grant to inventors to secure to them for limited times the exclusive right to their inventions. It consequently was designed to enable congress to confer on them a property in their inventions, of which they might avail themselves by assignment or otherwise, during the term. In the exercise of the power conferred by the constitution, congress may, without doubt, extend, or make provision by law for the extension of the exclusive privilege to inventors, beyond the term originally limited, if that is deemed too short to afford them an adequate reward or encouragement. As congress is vested with full power to reward inventors, by granting or extending to them for limited times, at its own discretion, the exclusive right to their inventions, it follows that it has the power, in extending such privileges, to make such exceptions out of the grant to the inventor as justice may require. In making a new grant to the inventor, congress may, therefore, unquestionably provide as between him and his assignees, that they shall not be interrupted in the future enjoyment of that which they had purchased of the inventor. The assignees who purchased of the patentee with knowledge of the period when the exclusive privilege conferred by his patent would cease, may well be deemed to have purchased and made their expenditures on their machines, in the full expectation that they would have a right to use them in common with the public at large at the expiration of the term. It would have been unjust to them for congress to grant an exclusive right to the inventor for a new term, without making any exception in favor of his assignees, whose expensive erections would be rendered useless thereby. But justice to them does not require that they shall be secured in the enjoyment of any exclusive privilege beyond the term which they purchased. They could have no claim or well founded expectation of having anything more than the free and common right to use the invention after the expiration of the patent The extension or renewal of the right to the inventor, with liberty to exclude every body else, does no injury to the assignees, so long as they are left at liberty to use the invention. It incidentally benefits them; and it is believed that, in this sense, and for this purpose only, is it provided in the 18th section of the patent act of

1836 [5 Stat. 125, c. 358, § 18] that"the benefit of such renewal shall extend to assignees and grantees of the right to use the thing patented, to the extent of their respective interest therein."But congress have no power, under the constitution, to grant exclusive privileges to any but the inventor. However meritorious may have been the public services of an individual, unless he is an inventor, congress cannot appropriate to him, as a reward, the exclusive right to carry on any particular trade, employment or manufacture. All it can do for assignees, in extending a patent to the inventor, is to save to them the right of using that which they have purchased of the inventor, and from which it would be unjust to allow him to exclude them. The act of 1834, granting the exclusive privilege to Thomas Blanchard and his heirs and assigns for a new term, was not passed until after his patent had expired, and the right to use the invention had become common—as much so as to use any other unpatented machinery in public and common use. If congress could again appropriate this common right to the exclusive use of the inventor, as a further reward for his ingenuity, what warrant is there in the constitution for its appropriation, after his interest had expired and wholly ceased, to the exclusive use of an assignee, to whom he had sold the invention during the existence of the patent, but who had no more property in the invention, at the time of the passage of the act, than the public generally? II. Congress not only had no power to grant an exclusive right to the plaintiffs, as assignees of Thomas Blanchard, but they did not intend to grant any. They meant to protect them against what would otherwise be as to them, as well as to the rest of the public, an exclusive right in the inventor to the use of the invention they had purchased, in conformity with the principle of the proviso to the 18th section of the patent act of 1836. The language used is susceptible of this construction. The grant was made upon the petition of Thomas Blanchard, and, as appears by the report of the committee to whom it was referred, on the ground that he had been inadequately remunerated for his invention. In other words, he had sold his entire interest to "Blanehard's Gun-Stock Turning Factory," for a song, in consequence of which congress granted to him and his assigns a further term. Could it have been the intention of congress, by the proviso in behalf of assignees, to nullify their grant to Thomas Blanchard, by conferring the exclusive right for the extended term on the plaintiffs,

who had paid him inadequately for what they had before received? If not, then the plaintiffs cannot maintain this action.

Seth P. Staples, for plaintiffs.

NELSON, Circuit Justice. The motion for a new trial in this case was held over for advisement to enable the court to give further consideration to one of the questions presented—that in relation, to the right of the assignees under their assignment from Thomas Blanchard, made prior to the extension of the patent by the acts of congress passed in 1834 [6 Stat. 589] and 1839 [G Stat, 748]. It was insisted by the counsel for the defendant, that they took no interest thereby in the extended term; and the chief ground relied on was, that an act passed for the benefit of the assignees would be unconstitutional, inasmuch as the constitution only authorizes congress to secure, for limited times, to inventors, the exclusive right to their discoveries. The construction claimed by the plaintiffs, it was said, instead of rendering the act of congress extending the patent, beneficial to the inventor, who had been inadequately rewarded by the price which he had received from the assignees for his invention, would be directly injurious to him by depriving him of the right to use his invention during the extended term for which the exclusive privilege was conferred on the original assignee. But the proviso for the benefit of the assignees in the act of 1839, is too explicit in its language to leave any doubt as to its true meaning and intent, After extending the patent for a further term of fourteen years, it is provided "that all rights and privileges heretofore sold or granted by said patentee, to make, construct, use or vend the said invention, and not forfeited by the purchasers or grantees, shall enure to and be enjoyed by such purchasers or grantees respectively, as fully and upon the same conditions during the period hereby granted, as for the term that did exist when such sale or grant was made." It is clear that congress intended to give to assignees of the old patent an equally exclusive privilege in the extended term. We do not think the clause can be construed in any other way consistently with the fair import of the language. And undoubtedly, inasmuch as the constitution confers on congress the power to grant the exclusive privilege only to the inventor, there would seem to be force in the objection, that the grant to assignees does not come within the scope of their authority.

The direct question was not involved in the four cases that were so elaborately argued at the last term of the supreme court. See [Wilson v. Rousseau; Simpson v. Wilson; Wilson v. Turner; Woodworth v. Wilson] 4 How. [45 U. S.] 646-716. But it was very much discussed, and became the subject of consideration, not as necessarily involved, but as connected with the matters in controversy in those cases. The power of congress to reserve these rights and privileges to assignees seemed to be conceded, according to my recollection, as incidental to the general power conferred by the constitution on congress to promote the progress of the useful arts by securing to inventors, for limited times, the exclusive right to their discoveries. The assignees of the original patentee are frequently

most instrumental in putting the invention into general use, and bringing it successfully before the public, by the expenditure of their time and money. More than half, probably, of the useful patented inventions have been thus brought into general public use, the successful results operating, directly or indirectly, for the benefit and interest of patentees. Considerations of this kind may well be taken into account by congress, and weight be given to them in granting extensions. Congress save the respective interests of the patentee and his assignees, by qualifying the new grant, believing that in truth the assignees have expended time and money to a much greater extent than they have received remuneration; and, although this would not authorize them to renew the grant to assignees, as no such power exists in the constitution, still, in exercising the power in favor of the inventor, it would perhaps be going too far to say that they have no right to regard incidentally the interests of the meritorious assignee. Without the power of thus qualifying their grant, congress would be under the necessity, oftentimes, of denying altogether any extension. A just view of the rights of all parties may require that assignees should be protected in their interests, if the patent be renewed.

A question was presented by the counsel for the defendant, as to the charter of incorporation of the plaintiffs. The power of the company under their charter, to purchase any interest in patent rights, is founded on the language of the act of incorporation, namely, "that Isaac Scott and others be and they are hereby incorporated by the name of 'Blanchard's Gun-Stock Turning Factory,' with all the powers and rights vested by law in manufacturing corporations in this commonwealth."So far as regards the right of this corporation to hold personal estate, including the interest in this patent, it is urged that the power is conferred by a general reference to the law regarding manufacturing corporations. We have endeavored to find the law of Massachusetts, that existed at the time of the incorporation of the plaintiffs, and to which the charter has reference for the extent of its powers, but have not' been successful. There is some embarrassment in this part of the case, on account of the omission to give this act in evidence.

But, on the whole, as the corporation is made a body politic by the name of "Blanchard's Gun-Stock Turning Factory," perhaps it is not going too far to say, independently of the production of the act referred to, that inasmuch as the company seems to have been incorporated for the very purpose of carrying on manufactures by means of this invention of turning irregular forms, as its very name imports, it had, at least, power enough to purchase this particular patent. Indeed, by the common law, corporations have a right to purchase and hold property so far as may be necessary to carry into execution the purposes and objects for which they are created. It would seem to be necessary, in order to carry out the purposes of "Blanchard's Gun-Stock Turning Factory," that it should have power to purchase and hold an interest in the patent.

The other objections were mainly questions of fact, which were submitted to the jury under what the court regard as proper instructions.

One was, that the lateral motion in the plaintiff's machine is produced by a screw, and in the defendant's by a wheel and axle. This we consider no part of the invention. It was a mechanical contrivance to operate the machine. The inventor, having struck out his idea, goes to a mechanic to get the mechanical power to put in operation his combination. The mechanic has at his command various modes of producing power. These mere contrivances, such as any mechanic can supply, are no part of the invention.

It was further said that in the defendant's machine, there are three motions given to the pattern and rough material, namely, the rotary, the vibratory, and the lateral or longitudinal, all of which three compound motions are applied to the frame; whereas, in the plaintiffs' machine, the cutter and friction wheels have the lateral motion, and not the pattern and rough material in the frame. The question was put to the jury whether this varied materially or substantially from the plaintiffs' arrangement; whether so materially as to distinguish the defendant's machine from the plaintiffs'; whether, on the contrary, it was not a merely formal alteration; and the jury have passed upon it. The court were bound to submit that question to the jury. Our impression is, that even this is rather a mechanical contrivance, making no substantial change in the machine, whether the lateral motion is given to the one or to the other of these parts. The relative effect of the parts in acting on each other is the same.

It was said also, that the machines are thrown out of gear in a different manner and by a process materially different But that may be done in various ways. We think that forms no part of the invention.

In the defendant's machine the axes of motion of the cutter-wheel and of the rough material are not parallel, and it was said that the machine would not work if they were so; whereas by Blanchard's specification and in his machine, it is made essential that they should be parallel, and the were in fact so made. This was set up as a radical difference between the plaintiffs' and defendants' machines. We think it was a question of fact for

the jury whether this was a substantial variation or not; and it was properly put to them to say, whether the departure in the defendant's machine from a precisely parallel relation of the two axes constituted a material variation from the plaintiffs' arrangement.

There were some other objections founded on the alleged invalidity of the first and second patents which were extended by the act of congress of 1839. It was alleged on the part of the plaintiffs that the first patent was defective and was surrendered, and that a new patent was taken out for the same invention. But it was objected on the part of the defendant that the new patent was issued for the term of fourteen years from its date and not from the date of the former patent, and that the former patent was never in fact surrendered or cancelled; and that, for both of these reasons, the second patent was void, and consequently there were no existing rights to be extended by the act of congress. Assuming this to be so, we do not think that the mere legal right of the patentee under his patent new or old, is the right which was extended to the patentee and his assigns by the act of congress. On the contrary, we hold it to have been the exclusive right to the invention, and that the specification was referred to in the act only to identify what constituted the invention which congress meant to extend.

It was said that the specification claims that any article can be turned from a model by the machine, and made larger or smaller than the model, but preserving throughout the same proportions; and the counsel for the defendant insisted that this claim was unsupported by the evidence. The answer to this objection is that the claim of that power in the specification is a very qualified one, and that the patentee advises a change of the model itself in such cases. It is not put forth as a leading and useful quality of the machine. It was in point of fact proved on the trial that articles could be turned larger or smaller from the same model, but that the capacity of the machine to perform such work was limited.

It was further said that the claim in the specification is, that by this invention any irregular surface or form may be turned like the model, whatever it may be; but that in fact it is incapable of turning a square shoulder. That probably is true; but we think it rather too remote and extreme a defect to seize hold of for the purpose of destroying a patent for an invention so exceedingly ingenious

and useful to the public as this of Mr. Blanchard's. It would be pushing the principle to an unreasonable limit. New trial denied.

NOTE [from original report]. The specification was as follows:

"The schedule referred to in these letters patent, and making part of the same, containing a description, in the words of the said Thomas Blanchard himself, of his improvement, being an engine for turning or cutting irregular forms out of wood, iron, brass, or other material or substance, which can be cut by ordinary tools, called 'Blanchard's Self-Directing Machine.'

"First. The said machine consists of a wooden frame, and of divers parts constructed in brass and iron, with bands to propagate the motion from the power which puts the machine in operation to its several parts.

"The wooden frame consists of the different parts connected together, as in the drawing annexed to, and making part of, this specification, marked fig. 1 and fig. 2.

"The parts marked in both, figure 1 and figure 2, A A, compose the frame, which is about four feet and a half long, and about three feet wide. This is supported on four legs, marked a a, which are. about three feet high. The standards, marked 11, support the cap-piece, marked J, in fig. 1. To these are attached two arms, K, fig. 1. The standards are about three feet high, and the cap-piece about four feet and a half long. The legs, frame, standards, cap-piece and arms, should be of sufficient thickness and substance to give solidity to the machine when in operation; the parts composing these are, in the original machine, of which the drawings are an exact copy, from six to eight inches square. The arms are about eight inches long, and about six inches thick or square.

"The hanging lathe, H H H, in figure 1, is constructed of iron in the original; it is cast in one piece. It hangs on the arms, and swings freely on the iron pivots which pass through holes in the upper ends of the said lathe, and are firmly attached to the arms K K, as represented in figure 1, so that the hanging and swinging lathe may swing freely; and as the cutter, marked E, and the friction wheel, E, are placed under the cap-piece to which the lathe is attached, the pattern, T, which is adjusted in the swinging lathe, bears constantly against the friction wheel, P. This swinging lathe is divided into two equal parts by the cross-piece, O. In this cross-piece is formed a box to receive the round part of the spindle or arbor, which sustains the pattern, T. This spindle is supported at the heel end of the pattern in another box formed in the lathe, so that the pattern, when" the spindle or arbor passes through it, may turn freely upon the ends of the arbor, which are adjusted like gudgeons to said boxes. This spindle, consisting of one piece, passes through the pattern; but it is quite obvious that two gudgeons, having two sharp points at their inner ends, which may penetrate or be driven into the substance of the pattern, may answer in some cases as well as & spindle. On the end of the arbor of the pattern, where it passes through the box in the cross-piece, O, and comes into the division occupied by the rough

material, U; is attached a dog, a piece of iron having a hole through which the end of the arbor passes, and two sharp points, which penetrate the substance of the material to be wrought at one end thereof, while the other end of the rough material is supported by a centre screw, marked b, and used in the common mode of adjusting a rough material in a common lathe, which screw has a square head to adjust the rough material, so that it may be firm in its place; white by its strong connection with the pattern through or by the dog. driven in as aforesaid, it is made to turn with, and upon the same axis as the pattern.

"The sliding carriage C C C, supports the friction wheel and the cutter, and by its horizontal motion, brings these successively in contact with every part of the superficies of the pattern and rough material respectively; j j j, are bars secured to the frame, with smooth upper surfaces, upon which the sliding carriage moves. The sliding carriage consists of five bars joined firmly in a frame, which, as represented in the drawing, fig. 2, is about two feet and a half. long, and two feet wide.

"Upon the three cross-bars are fixed three poppets, which are of sufficient height to sustain the friction wheel and cutters, so that they may turn free of the sliding carriage, and of sufficient strength to preserve them steady in operation. In the centre poppet is a hole to receive a double centre, which is kept in place by a regulating or contrary screw entering the top, the centre poppet at D, fig. 2. In the boxes of the outside poppets, are centre screws. Between this centre poppet and the outside poppets and upon the centres aforesaid, are adjusted the friction wheel and the cutter—the former against the division of the hanging lathe containing the pattern; the latter against the division containing the rough material. The friction wheel turns freely on the centre screws, and takes its motion from the pattern as the pattern turns. The cutter wheel is adjusted in like manner, and it is obvious their centre of motion is exactly the same. To the side of the cutter wheel are firmly attached by screws several cutters of a peculiar shape, each being bent into a semi-circular form. These cutters are so attached, that the curve they or any one of them describes in motion, is precisely the same as the periphery of the friction wheel.

"In fig. 2, is represented the feeding screw, p p, which is a male screw, sustained at one end by the centre screw, marked h, passing through the wooden frame at the other end, by a box, in which it revolves freely; on the one end is a pulley or band wheel, seen at Q. A. female screw is formed in the inside of holdfast, g, and which opens like pincers, to be applied to the feeding screw, and its handles being secured by a slipping ring, it lays against the inner side of one of the cross bars of the sliding carriage, and thus gives motion to this sliding carriage as the male screw is turned round. The holdfast, in form of pincers, may be removed at pleasure. In both figures the drum, B, is represented. About this a leather band, E, is passed, which passes over the pulley, G, on the cutter wheel arbor. This drum is turned by a… crank, W, as represented in both figures, but may be turned by any power applied in common modes. The drum is two feet long, and

two feet in diameter; and the band R, which passes round it, puts in motion the pulley, C, which is six inches in diameter, and thus drives the cutter wheel with great velocity. On the arbor of the drum near the crank, is a driving pulley, of one and a half inch in diameter, about which passes a band, that passes over and puts in motion the pulley, of ten inches in diameter, which is attached to the feeding screw, as to an axis, and puts this in motion, whereby, as above is mentioned, the holdfast female screw, by pressing against the side of the cross-bar of the sliding carriage, draws or moves the sliding carriage from left to right.

"On the arbor of the drum, at the end furthest from the crank,' is another driving pulley, about which passes a band, which goes round a pulley attached to the back leg of the frame, and then over a pulley eight inches in diameter, which is attached to the standard, L, whose axis is a small pulley, c, of three inches diameter: from this a band passes to a pulley eight inches in diameter, attached to the arbor or spindle of the pattern and rough' material.

"Thus, when the drum is put in motion, the band which passes about it, puts in rapid motion the cutter wheel, while the band which

passes from one of its little pulleys to the feeding screw pulley, puts this in motion, and gives motion to the sliding carriage from left to right, and the other pulley on the drum axis puts in slow movement the pattern wheel and rough material in a direction opposite to that of the cutter. The friction of the pattern against the friction wheel, by the bearing of the hanging lathe against it, puts this in rotation at the same time that this prevents the swinging lathe from bringing the axis of the rough material in the smallest degree nearer to the cutters than is the axis of the pattern from time to time to the periphery of the friction wheel.

"The consequence of which movement is, that the cutter chips away all the substance of the rough material, which is further from its axis than the surface of the pattern is further from the axis of the pattern, and of course forms from the rough material an exact resemblance of the model.

"Secondly. The said Thomas Blanchard explains the principle or character of his machine or engine, which, in the language of the patent law, distinguishes it from all others known or used before.

"It is this. Out of the rough material placed in the engine, there may be turned or formed at one continued operation, by the mode of operation in this second article explained, an exact resemblance in all respects of a model to be imitated; also a resemblance in reverse, as for example, a right foot shoe last, after a left foot shoe last, as the model, or vice versa; and this, however concave, plain, convex, angular or irregular may be the surface of the model, if the said surface be nevertheless such that every the minutest portion thereof that is to be imitated by cutting, can be brought into close contact with the extreme edge of a circular plate, having its semi-diameter equal to the distance between the cutting edge of the cutters used in operation, and the centre of motion of said cutters, and its periphery of the same form and dimensions as the outer side of the cutting edge of the cutters, the said plate being held vertically at right angles to the axis of motion in the model when placed in the engine, and the model being turned round against it.

"Also, a resemblance in form preserving the correspondent proportions with, but differing in dimensions from, the model, either larger or smaller than the model, and this too, however concave, plain, convex, angular or irregular the surface of the model may be, if the surface of the model be, nevertheless, such that every the minutest portion of the said surface can be brought in close contact with the extreme edge of a circular plate, having the form of the edge thereof correspondent to the form of the outer side of the cutting edge of the cutters, but the size or width of said edge smaller than the width of the outer side of the cutting edges of the largest cutter which can be used, in order to cut the excavations in the form, and having a diameter less than the distance between the cutting edges and the centre of motion of the cutters, if the model be smaller than the form to be turned. But if the model be larger than the form to be turned, then the

size or width of the edge of the circular plate must be larger than the outer side of the cutting edges of the largest cutter to be used, in order to cut the excavations in the form, and the semi-diameter of the plate greater than the distance between the centre of motion of the said cutters, and the said outer side of the cutting edges of the said cutters. The said circular plate, in all cases, bearing always the same proportion to the cutter, in respect to its diameter, that the diameter of the model bears to the diameter of the form to be turned; and in respect to the breadth of its edges, the same proportion to the breadth of the cutters, that the narrowest transverse excavation in the model bears to the same excavation in the form to be turned.

"Having thus far explained the principle of the machine, in relation to its products, the said Blanchard explains the mode of operation peculiar to his machine, whereby these products are obtained.

"The rough material must be so placed in the machine, with respect to the cutter wheel, that the axis of motion of the rough material and the axis of the cutter wheel shall always, throughout the operation, be exactly parallel. Hence the movement of the rough material, and the movement of the cutter wheel, must be in opposite or the same direction, the movement of the cutter wheel being greatly the faster. Either the cutter wheel or the rough material must have a slow, gradual movement at right angles to the movement of the cutter wheel and rough material. By these co-operating movements, it is plain, the cutters are made to pass over the whole surface of the rough material, cutting away from it every the smallest portion that comes within reach of the cutters, provided the rotary motion of the rough material and the motion at right angles aforesaid be so timed, that the rough material makes one complete revolution at least while the cutter or the rough material by the motion at right angles aforesaid is carried in the direction parallel with the axis of the rough material only the breadth, or a little less than the breadth, of that part of the cutting edges of the cutters, which cuts the last chip from the rough material in the process of cutting.

"Having thus described the mode of operation by which the cutters are made to pass over the whole surface of the rough material, the said Blanchard explains the mode of operation whereby the cutters are made to cut away, from the rough material, all that part thereof which must be removed, in order to leave the form of the different resemblances of the model, mentioned in the former part of this article as the product of his said engine.

"And first, with respect to the resemblance, which is in exact imitation of the model in all respects. In this case, the axis of motion in the rough material must be kept up from time-to time, throughout the operation, at the same distance from the cutting edge of the cutters as the axis of the model is from the edge of the friction wheel, or friction point. To this end, the axis of each must *be* so connected with each other directly, as in

the drawing annexed; or indirectly, by placing one above another, or otherwise, in such a manner that as the prominent parts of the model revolve against the friction wheel, or friction point, and the axis of the model is thereby made to recede from the said friction point or wheel, the axis of the rough material is also thereby made to recede precisely as much from the cutting edges of the cutters, and so as the less prominent parts revolve against the friction point or wheel, the axis of the rough material is thereby precisely as much approximated to the cutting edges of the cutters; and thereby all that portion of the rough material which lies more distant from the axis of its own motion than the surface of the model in correspondent parts is distant from the axis of motion in the model, is wholly removed, and thus is left, out of the rough material, an exact resemblance of the model in all respects.

"And in the second place, with respect to the resemblance in reverse, the position of the model and of the rough material of the cutter wheel, and the friction point or friction wheel, with respect to each other, and their several and cooperating movements, are the same as last above described, except that the movement of the rough material, or of the cutter wheel at right angles to their movement on their own axis, as above described, is different. In the case where the resemblance produced is the same in all respects, the rough material may have the same lateral or right angle movement, in respect to the cutters, as the model has in respect to the friction point or wheel. But where the resemblance is in reverse, as in the instance

of making a right shoe last after a left shoe last as the model, it is necessary that the cutters should pass over the rough material by a lateral or right angle movement contrary to that by which the model passes over the friction wheel or friction point.

"And in the third place when the resemblance in form, but longer than the model, as above mentioned, is to be turned or wrought, the movement of the rough material, or of the cutters at right angles with their own motion on their own axis, must be faster than the same movement of the model, or of the friction wheel or friction point. But if the imitation is to be shorter, then the movement of the rough material, or of the cutters at right angles with their own motion on their own axis, must be slower than the same movement of the model, or the friction wheel or friction point. The velocity of this lateral or right angle movement aforesaid, of the rough material, in respect to' the cutters, or of the cutter in respect to the rough material, must bear the same proportion to the lateral or right angle movement aforesaid of the model, in respect to the friction wheel or friction point, that the form intended to be produced or wrought will bear to the model to be imitated. As for example, if the imitation is to be twice as long as the length of the model in the direction of the axis, the lateral or right angle movement aforesaid of the rough material, or of the cutters, must be precisely twice as fast as the same movement of the friction wheel or point, or of the model.

"Having thus shown how the form to be produced may be increased or diminished in the direction parallel with its axis, the said Blanchard explains how the form may be increased or diminished in respect to its diameter or dimensions transverse to the axis.

"If the form is to be of greater transverse dimensions than the model, the axis of the rough material must be placed, and kept throughout the operation, at a greater distance from the cutting edges of the cutters than the axis of the model is distant from the friction wheel or friction point.

"But if the form is to be of less transverse dimension than the model, then the axis of the rough material must be placed, and kept throughout the operation, at less distance from the cutting edges of the cutters than is the distance of the axis of the model from the friction wheel or friction point throughout the operation.

"Moreover, the distance between the axis of the rough material from the cutting edge of the cutters, must bear the same proportion to the distance of the axis of the model from the friction wheel or friction point, that the form to be produced bears to the model—greater if the form to be produced is greater, and less if the form to be produced is less.

"Thus, if it be proposed to produce a form of twice the diameter, or transverse dimensions of the model, the axis of the rough material must be placed at twice the distance from the cutting edges of the cutters that the axis of the model is throughout the operation from the friction wheel or friction point; and this proportionate distance must be

preserved throughout the whole operation: whence it is plain that a form of twice the diameter will be produced, and so vice versa. It must, however, be carefully remembered and observed, that_, in turning larger or smaller forms, the friction wheel or friction point must, in all cases where there are small excavations, concavities, or channels in the model, bear the same relation" to the largest cutter that can be used to cut the excavations. concavities and channels in the form, in respect to its semi-diameter, and the form and size of the edge of the periphery, that the model does to the form intended to be produced.

"It is thus by accelerating the lateral movement of the cutters or rough material, and by increasing the distance of the axis of the rough material from the cutters, and by apportioning the friction wheel or point to the largest cutter that can be used in manner aforesaid, that the machine produces a form larger than the model; and by retarding the lateral movement aforesaid, and diminishing the distance of the axis of the rough material from the cutters, and adjusting the proportion of the friction wheel and cutters as aforesaid, that a form smaller than the model will be produced.

"In conclusion of this article, the said Blanchard declares, that as to the mechanical powers by which the movements aforesaid are obtained, he claims none of them as his invention; these movements may be effected by application of various powers indifferently; neither does he claim as his invention the cutter wheel, or cutters, or friction wheel as such, nor the use of a model to guide the cutting instrument, as his invention: all these are common property, and have been so for years; but he claims as his invention the method or mode of operation in the abstract explained in this second article, whereby the infinite variety of forms described in general terms in this article may be turned or wrought.

"Thirdly. The said Blanchard explains and describes the several modes in which he has contemplated the application of the principle of his discovery, invention, or machine.

"This is susceptible of many different modes of application, by placing some or all of its different parts in different positions, and by augmenting the number of them; also, by making some or all of its parts of different forms or dimensions.

"First In order to turn a right last from a left last, or vice versa, there may be two sliding carriages, each having two poppets, the poppets of the one supporting the friction wheel, and the poppets of the other supporting the cutter wheel. These sliding carriages will be made to move from the ends of the wooden frame towards each other, by means of the male screw and two holdfasts. The thread of one-half the screw, say the half in front of the cutter wheel, running in the usual direction, that of the other, in a contrary direction, about the screw axis. The holdfast of the cutter wheel sliding carriage being placed and operating as above described, the holdfast of the friction wheel sliding carriage is placed against the inner side of the bar of this carriage nearest to the cutter wheel carriage, and operates in reverse, thus making the sliding carriages-approach towards each other, and thereby the-whole machine being put in operation, the rough material is formed into a

right last, if the model be a left last, and into a left last if the model be a right last. A new last being thus formed, this may stand in the swinging lathe as a model, and by shifting the cutter wheel and the friction wheel, and placing the rough material in the place of the former model, another last will be formed exactly like the former model; and by this alteration the operationi may successively form a right from a left last, and then a left from a right and right from a left last indefinitely. Instead of a reverse screw and two holdfasts, two racks and two pinions-may be adjusted, and so instead of a screw in the machine as above described, a rack and pinion or any other mechanical power may be-used. So also, instead of pulleys in different parts of the machine, wheels meshing with each other may be used.

"Second. The cutter wheel may be placed above or below the friction wheel, and the rough material may be placed in the lathe above or below the model, in which case there will be only two poppets on the sliding carriage, but these must be high enough to receive both the friction wheel and the cutter wheel; and the divisions in the swinging lathe, instead of being placed beside each other horizontally, must be one above the other, and the rough material be placed opposite the cutter wheel, and the model opposite the friction wheel.

"Third. The number of the lathes may be

augmented thus: on the opposite of the friction wheel and the cutter wheel may be suspended a swinging lathe of like form as above described, and bearing in like manner against the said opposite side of the friction wheel and cutter wheel respectively. Also, a lathe of similar construction may be made to lay upon the upper side of the friction wheel and the cutter wheel, and another maybe made to bear up by a weight and cord passing over a pulley against the under side, and thus four lasts or other articles be turned at the same time; so the number of cutter wheels may be increased, and the lathe indefinitely extended.

"Fourth. The friction wheel may be fixed in the lathe, and be stationary, and the model and rough material placed upon the sliding carriage. Also, the rough material and model may be alternately shifted in the manner in which the friction wheel and cutter wheel may be shifted alternately, as above described.

"Fifth. To turn an article which is long, as a gun-stock for example, the frame may be lengthened, or the rough material placed above or below the model, and the cutter wheel placed above or below the friction wheel, or the lathes may be augmented in number as above described. Here the said Blanchard would state, that in making a gun-stock, the stock is turned in full size, and the hollow place where the gun-barrel lays in the stock, is cut out by another machine not described in this specification.

"Sixth. An article may be formed of larger dimensions than the model, by placing the axis of the rough material at a greater distance from the cutter wheel than the model is from the friction wheel, which will make the article bigger round, and by giving to the cutter wheel sliding carriage a more rapid horizontal movement than the friction wheel, which will make the article longer. But the said Blanchard thinks this mode of application not so perfect as the one above described; because it may be always easier to use a model of full size than to make the alterations in the lathe or in the cutter wheel carriage or poppets, which in this case would be necessary.

"Seventh. It is obvious that, by this discovery, and the machinery aforesaid, any form, however irregular, may be exactly imitated, provided every part and portion of the model can be brought in contact with the periphery of the friction and cutter wheels; whence it results, that in cutting an article which is concave, as a tray, or other like hollow wooden ware, the diameter of the friction wheel and of the cutter wheel, as per second article, must be diminished so that both can operate freely within the cavity proposed to be formed.

"E ghth. Instead of the friction wheel as described above, a fixed circular plate of the same or proportionate diameter as the cutter wheel may be used, or a segment of a like circle so fixed that its periphery or extremity will be in contact with the model, or a square piece of iron or steel or other material may be so placed that the edge of it may come in contact with the model in like manner as the friction wheel. But the said Blanchard

prefers the friction wheel because it opposes less resistance to the movement of the model.

"Ninth. The cutters maybe formed and attached to the cutter wheel in various modes besides that above described; they may be formed and set in the cutter wheel like plane irons, as is used in the English machine for scoring blocks, described in the Edinburgh Encyclopedia; they may be formed like circular saws, and two, three, or more adjusted to the cutter wheel, so that one of them on one side or the other of the cutter wheel, or in the midst of them all, shall project the most, and the others receding towards the center of the cutter wheel, operate only on the part of the rough material which is more prominent than that on which the most projecting cutter operates. But the said Blanchard prefers the form of cutter above described, and makes no claim to any form of cutter as his invention.

"Moreover, the cutters above described may be made sharp on both edges, and the cutter wheel be made to turn a quarter of a circle, or less, backward and forward, and so the cutters be made to cut by both edges. But the continued circular movement is believed to be preferable to any other.

"The said Blanchard, in explaining and describing the different modes in which he contemplates the application of the principle or character of his said machine or invention, does this in compliance with the requirements of the law, and not by way of extending his claim for discovery or invention. This invention is described and explained in the second article of this specification, to which reference is hereby made for information of that which constitutes the principle or character of his machine or invention, and distinguishes it, as he verily believes, from all other machines, discoveries, or inventions known or used before.

"From which it is apparent that the principle of his machine or invention is different from the last making machine made and used in Waterbury, in Connecticut, and the card handle machine used for a long time past in Boston; and also from the machinery described in the Edinburgh Encyclopedia for making ships' blocks and dead-eyes, and from the modes of turning irregular surfaces described in the French Encyclopedia."

{NOTE. This patent was originally granted to T. Blanchard, September 6, 1819. For other cases involving this patent, see Blanchard v. Beers, Case No. 1,50b; Blanchard v. Sprague, Id. 1,517, Id. 1,518; Blanchard v. Whitney, Id. 1,519; Blanchard v. Eldridge, Id. 1,510; Blanchard's Gun-Stock Turning Factory v. Jacobs, Id. 1,520, and note at end of Blanchard v. Reeves, Case No. 1,515}.

[1] {Reported by William Henry Clifford, Esq., and here reprinted by permission.}

[2] {For specification, see note at end of case.}

[3] Subsequently to the trial of this case, Mr. Justice Nelson was informed that Mr. Justice Thompson had confined juries in patent cases to the actual damages sustained, and had refused to allow to plaintiffs their expenses or counsel fees in suits, and, concurring himself in this view, he has since disallowed those items as a part of the damages.