

Case No. 4,916.

FOOTE V. SILSBY ET AL.

1 Blatchf. 445;¹ Merw. Pat. Inv. 564; 1 Fish. Pat. Rep. 268.]

Circuit Court, N. D. New York.

Oct. Term, 1849.²

PATENTS—DISCLAIMER—EVIDENCE—ACT OF MARCH 3, 1837—SCIENTIFIC
WORKS AS EVIDENCE OF WANT OF
NOVELTY—JURY—NONSUIT—COMBINATION.

1. While the plaintiff's counsel in a civil action was opening the case to the jury, one of the jurymen empannelled was taken ill, so as to be unable to serve: *Held*, that it was proper for the court to discharge him, and to direct another jurymen to be drawn from the panel in his stead.

{See note at end of case.}

2. On the trial of a patent suit, the patent on which the action was founded had endorsed upon it what purported to be a disclaimer under section 7 of the act of March 3, 1837 (5 Stat 193). The plaintiff, after putting the patent in evidence, offered a certified copy of the disclaimer, which was excluded on the ground that the patentee did not state in the disclaimer the extent of his interest in the patent, as required by section 7. Afterwards, the defendant offered in evidence the disclaimer endorsed on the patent, (it being, however, only a copy, not in the patentee's handwriting,) not as a disclaimer, but as a confession by the patentee, of the want of novelty of a part of what he had claimed: *Held*, that the paper was inadmissible, for want of proof that it had been executed by the patentee, and that, if admitted at all, the full effect of a disclaimer must be given to it.

{See note at end of case.}

3. The sufficiency of the disclaimer, as to whether or not the patentee stated in it the extent of his interest" in the patent, as required by section 7, considered.

4. A disclaimer must be properly proved, before it can be admitted in evidence, either as an original paper or by a certified copy.

5. On the trial of a cause before a jury, this court has no power to grant a non-suit against the will of the plaintiff.

{See note at end of case.}

6. A notice of defence in a patent suit, under section 15 of the act of July 4, 1836 (5 Stat. 123), specified as a public work to be given in evidence, "Dr. Ure's Dictionary of Arts, Manufactures, and Mines." The book contained 1334 pages, and its subjects were arranged alphabetically. The notice did not specify any particular page or heading in the work: *Held*, that no part of the book could be read in evidence.

{See note at end of case.}

7. Nor is the book admissible under a notice stating that the patentee's invention was previously known to Dr. Ure.

8. In the case of such a defective notice, it is not competent, with a view to read in evidence parts of the "Dictionary," to prove by scientific mechanics or experts, that they could without difficulty, if seeking information concerning the subject matter of the plaintiff's patent, find in the "Dictionary," named, certain parts relating to that subject matter, without having any specific reference to them.

{See note at end of case.}

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9. A public work cannot be read in evidence on the trial of a patent suit, with a view of showing a want of novelty in the patentee's invention, where the only notice given of it was in a special plea, which had, before the trial, been stricken out by the court.
10. On the trial of a patent suit, a juror will not be withdrawn on the defendant's motion, on the ground of surprise, arising out of the exclusion by the court of evidence offered by him under a defective notice of special matter. The granting of such a motion, under any circumstances, is a matter of discretion.
11. The application of a well-known principle to a new and useful purpose, such as the application of the principle of the expansion and contraction of a metallic rod by different degrees of heat, to the regulation of the heat of a common cast or sheet-iron stove, is the subject of a patent
12. Although the principle has before been applied to the regulation of heat, and although the idea of applying it to the regulation of the heat of a stove has before been suggested, the person who first practically applies it, by mechanical contrivances, to that purpose, is entitled to a patent for the application.
13. Where the question as to what constituted a combination as patented was, at the trial, treated by the defendant as a question of fact, and was submitted as such by the court to the jury, the defendant cannot afterwards insist that the court should have determined the extent of the combination, as matter of law, upon the specification.
14. When the effect and operation of mechanical contrivances enter into the question of the extent of a patented combination, it is a mixed question of law and fact, and, therefore, a proper one for the jury to determine under the instruction of the court.

[Cited in *New Process Fermentation Co. v. Maus*, 20 Fed. 731.]

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15. Proper instructions to the jury on the questions of infringement and of damages, considered.
16. Reasons for denying a motion for a new trial on the grounds of surprise and newly discovered evidence.
17. Facts stated which warrant a jury in giving liberal damages in a patent suit, within the rule of the statute as to actual damages.

This was an action on the case for the infringement of a patent, tried before Conkling, District Judge, at Canandaigua, in June, 1848. [Case unreported.] The letters patent [No. 2,636] were granted to the plaintiff, [Elisha Foote], May 26th, 1842, “for an improvement in regulating the draft of stoves.”³

On the letters patent were endorsed what purported to be a disclaimer and memorandum, as follows;

“To the Commissioner of Patents: The petition of Elisha Foote, of Seneca Falls, in the county of Seneca, and state of New-York, respectfully represents, that your petitioner obtained letters patent of the United States for an improvement in regulating the draft of stoves, which letters patent are dated on 26th day of May, 1842; that he has reason to believe that, through inadvertence and mistake, the claim made in the specification of said letters patent, in the following words, to wit: ‘What I claim as my invention and desire to secure by letters patent, is the application of the expansive and contracting

power of a metallic rod by different degrees of heat, to open and close a damper which governs the admission of air into a stove or other structure in which it may be used, by which a more perfect control over the heat is obtained than can be by a damper in the flue, is too broad, including that of which your petitioner was not the first inventor. Your petitioner, therefore, hereby enters his disclaimer to so much of said claim as extends the application of the expansive and contracting power of a metallic rod by different degrees of heat, to any other use or purpose than that of regulating the heat of a stove, in which such rod shall be acted upon directly by the heat of the stove or the fire which it contains; such disclaimer is to operate to the extent of the interest in said letters patent vested in your petitioner, who has paid ten dollars into the treasury of the United States, agreeably to the requirements of the act of congress in that case made and provided. Elisha Foote. “;Witnesses, Morris Newton, Edwin L. Buttrick. (Endorsed on back of patent, the 9th March, 1847.)”

After the letters patent and specification had been read in evidence, the plaintiff's counsel proposed to read in evidence a duly certified copy from the patent office, of the alleged disclaimer and memorandum, to which the defendants' counsel objected, on the ground that the disclaimer was void as a disclaimer, because the patentee did not state in it the extent of his interest in the patent, as required by section 7 of the act of March 3, 1837 (5. Stat 193). The court sustained the objection, and excluded the disclaimer. Afterwards, and after the plaintiff had gone through with his evidence and rested his case, the defendants [Horace C. Silsby and others], offered to read in evidence the alleged disclaimer so endorsed on the patent, not as a disclaimer, but as a

confession that the plaintiff's invention was not new, and that he was not the original inventor of all that was claimed in his specification. The plaintiff's counsel objected to this, on the grounds that the defendants had caused the alleged disclaimer to be rejected when offered as evidence on the part of the plaintiff, that it must be read as a valid disclaimer if read at all, and that it purported to be only a copy, not in the patentee's handwriting, and was not proved to have been executed by him. The court refused to admit the paper in evidence.

After the plaintiff had concluded his evidence, the defendants moved for a nonsuit on various grounds, but, the plaintiff not consenting, the court overruled the motion.

The defendants had given a notice of special matter in the action, under section 15 of the act of July 4, 1836 (5 Stat. 123), the material parts of which that came in question on the trial were as follows: "That the patentee was not the original inventor or discoverer of the thing patented; that he was not the original and first inventor or discoverer of a substantial and material part thereof claimed as new; that it had been described in a public work called 'Ure's Dictionary of Arts, Manufactures and Mines, anterior to the supposed discovery thereof by the patentee, and also had been in public use and known before that time, and used by Andrew Ure of London.'" In the course of the trial, the defendants offered to read in evidence two articles, one headed "Heat-Regulator,"⁴ on page 643, and the other headed "Thermostat,"⁴ on page 1237, from a public work entitled "A Dictionary of Arts, Manufactures, &c, by Andrew Ure, M. D., &c, London, &c. 1840,—and labelled on the back "Dr. Ure's Dictionary of Arts. Manufactures, &c." The plaintiff objected to the reading of any part of the volume, on the ground that its title was not correctly indicated in the notice of defence, but the court decided that the notice was sufficient in that respect. The plaintiff further objected to the reading of any part of the volume, because the notice of defence did not specify on what page, or under what title or head in the dictionary, the material part of the invention was described, and did not specify what part was described. The court decided that the notice was insufficient, and excluded the volume. They then offered to read the same articles in evidence from the same book, under that part of the notice of defence which stated that a material part of the invention was known to Andrew Ure, of London, but, under the plaintiff's objection, the court excluded the evidence. They then offered to prove by scientific mechanics and by experts in mechanical science and art, that they knew the terms "heat-regulator," and "thermostat," that they were terms in common use among mechanics and experts in mechanical science and art, and that they could, without difficulty, if seeking information concerning heat-regulators, find in the said dictionary the portions so proposed to be read, without having any specific reference to them. This evidence was offered by the defendants for the purpose of renewing their motion to read the said articles in evidence,

but the court excluded the evidence. The defendants then offered to read in evidence several articles from pages 93, 130, 283, and 406 of "The Journal of the Franklin Institute, vol. IX, for 1832," insisting that they were entitled to do so, on the ground that notice thereof had been given in a special plea which was put in in the action, but had been stricken out by the court on the plaintiff's motion. The plea averred, that the plaintiff's invention was not new at the date of the patent, but "substantial parts thereof" had been known and used in divers places, naming them, "and were described in divers public works, to wit, 'The Journal of the Franklin Institute,' &c." The plaintiff objected to the evidence, and the court excluded it, on the ground that no sufficient legal notice of it had been given.

The defendants then offered to read in evidence an affidavit, to be made by themselves, by their attorney, and by the only counsel who had charge of their case, showing that they had confidingly relied on the said notice of matters to be given in evidence, as a fulfillment of the law, and sufficient in all respects to entitle the defendants to read the said portions of said "Dictionary" and of said "Journal" in evidence, that they were taken by surprise, and that the said evidence was material to their defence, and without it they could not safely proceed in the trial of the cause; and, on that state of facts, they moved the court to withdraw a juror, and offered to pay the costs of the trial, and go to trial at the next term. The plaintiff waived the necessity of the affidavits, but insisted that, assuming them to be made to the extent offered, the motion ought not to be granted. It being consented that the motion should be considered as if the affidavits proposed were actually submitted, the court examined the portions proposed to be read from the volumes in question, and refused to grant the motion on the grounds, that if such a power could be exercised by the court at all at the instance of a defendant, it would only be done where it was clear that he must otherwise suffer gross injustice, and that, even if the portions of the volumes offered to be read in evidence were read, it was by no means clear they would constitute a defence.

The stove-regulator manufactured and sold by the defendants, and claimed to be an infringement, was known as "Race's Regulator," and was alleged to be embraced in the claim of letters patent granted to "Washburn Race, April 4th, 1846, for an "improvement in registers for stoves." It was attached, in a perpendicular position, to the outside of the stove, but in contact with it or so near to it as to be readily affected by its heat. An iron sustaining plate, in length equal to the height of the stove, was enlarged in width at the bottom, so as to surround the air-hole of the stove, by a curb, on which the register, when closed, rested. This plate was about an inch and a half wide and a quarter of an inch thick. In the side of this plate next the stove was a longitudinal groove, extending down from within about a quarter of an inch from the top of the sustaining plate to the upper end of a vertical lever. In this groove an expansion slip or rod of brass was suspended

by a regulating screw, which passed through the upper end of the sustaining plate into the groove, and was tapped into the upper end of the brass rod, the head of the screw resting on the top of the sustaining plate. To the lower end of the expansion rod was firmly fastened a piece of iron, about an inch and a half long and half an inch wide and thick, near the lower end of which, on the front side, a sharp hook or barb was made, pointing outward and upward, and falling into the bottom of a niche cut in the upper end of a vertical lever about two inches long, the bottom of the niche being about one-eighth of an inch wide from the fulcrum of the lever, and in a line horizontal with the fulcrum, which was a small pin passing through the lever and through two ears on the sustaining plate. The lever was in effect a lever bent at right angles, the longer end being vertical and the shorter end horizontal, and the fulcrum being in the angle. The lever moved in a slot made through the sustaining plate. The register was a piece of metal made plane and smooth on its lower surface, and when it closed it laid at an angle sufficiently inclined to make it close by its own weight. From the upper part of the register a tail-piece or short lever projected upwards, and behind the lower end of the vertical lever. In the back side of this tail-piece, a niche was cut, which fitted on an edge formed at the lower end of the slot before mentioned, so that the register was sustained by the edge, and turned on it as a fulcrum. A small projection on the inner side of the vertical lever, near its lower end, struck the tail-piece about one-eighth of an inch above the edge, so that when the expansion rod was contracted by cooling, the vertical lever pressed on the tail-piece of the register and opened it, and, when the rod became dilated by heat, the vertical lever permitted the register to close more or less by its own weight, according to the degree of heat. To the screw in the upper end of the sustaining plate was attached an index, under which, and attached to the stove, was a circular plate, marked with numbers, so that, by turning the screw, the register might be caused to open and close at any desired temperature. The sustaining plate had an opening in it along nearly the whole length of the expansion rod, thus exposing the

rod to the air in the room. The whole apparatus was fastened to the stove, so that the air-hole in the sustaining plate coincided with a similar hole in the stove.

After the evidence of the trial had closed, the defendants prayed the court to charge the jury: (1) That the plaintiff's patent was for a combination only, and that, if the defendants did not use all the constituent parts of the combination, the plaintiff could not recover. (2) That it was erroneous to consider as constituent parts of that combination, only those parts which were requisite to the operation of opening or closing the damper of a stove, but that the jury must consider as constituent parts, all the parts of the machine, as described in the specification, by which the regulation of the heat of a stove was effected. (3) That the index was a constituent part of the combination. (4) That the mode of detaching the pendulum, or rod O a, from the damper, was a constituent part (5) That the pendulum was a constituent part (6) That, as it was admitted that the defendants did not use the index, they were entitled to a verdict (7) That, as it was admitted they did not use the mode of detaching the pendulum from the damper, they were entitled to a verdict (8) That if the defendants' apparatus was different in its mechanical action, producing its results in a different way from the plaintiff's, that was a difference in principle, which entitled the defendants to a verdict (9) That the use by them of self-detaching levers, instead of fixed levers, was a difference in mechanical principle. (10) That the use by them of an elastic slip of brass, which operated upon the damper only by contraction, instead of a rigid rod of brass, which operated by pushing and pulling, was a difference in mechanical principle. (11) That the difference in the modes of setting the two regulators was a difference in mechanical principle. (12) That the placing by the defendants of their regulator, and especially of its expanding rod, outside of the stove, made it different in principle from the apparatus of the plaintiff, which was inside of the stove. (13) That the damages which the plaintiff could recover were only so much, as he had lost by the action of the defendants.

The court charged the jury, that the claim set forth by the plaintiff in the first article of the summary at the close of his specification, being for the application of a natural property of metals to the purpose therein mentioned, was not the fit subject of a patent. As to the 1st, 2d, 3d, 4th, and 5th of the instructions prayed, the court charged that it was true that the third article of the summary of the specification, on which alone the plaintiff was entitled to recover, if at all, was for a combination, and that, unless it appeared by the evidence that the defendants had used all the parts of the plaintiff's stove embraced in" such combination, he was not entitled to recover; that the combination claimed in said third article was of such parts of the mechanism described in the specification as were necessary to regulate the heat of the stove, and that, unless it appeared by the evidence that some parts of the mechanism not shown to have been used by the defendants were necessary to perform that office, or that, according to the just construction of the

specification, such parts were intended to be claimed by the plaintiff as a part of such combination, they were not to be considered as embraced within it; that, inasmuch as, by the fourth article of the plaintiff's summary, he made a distinct and separate claim to what had been called the detaching apparatus, there seemed to be good reason to infer that it was not his intention to claim that in the third article, as a part of the combination therein mentioned; that the question relative to the extent of that combination had been treated by the defendants as a question of fact, and the court had no disposition to withdraw it from the consideration of the jury, and therefore submitted it to them to decide from the evidence, whether the parts of the mechanism described in the specification, which were not shown to have been used by the defendants, were necessary to regulate the heat of the stove, and instructed the jury, that if they should so find, the defendants would be entitled to a verdict As to the 6th and 7th propositions of the defendants, the court refused to charge any otherwise than as they had charged in regard to the 1st proposition. As to the 8th, 9th, 10th, 11th, and 12th of the instructions prayed, the court charged that it was a question for the jury to decide upon the evidence, whether the machinery used by the defendants for their regulator was the same in principle as that of the plaintiff; that a mere difference in form or size was not a difference in principle, but that a new application of known mechanical power was, in regard to invention, a new principle. As to the 13th of the instructions prayed, the court charged substantially as therein requested, and instructed the jury that the question of damages was exclusively with them, and that, if they were of opinion that the defendants had unlawfully infringed the plaintiff's patent, they ought to award him such sum as, in their judgment founded upon the evidence, would fully indemnify him for the actual damages he had suffered by reason of such infringement, beyond the taxable costs.

The jury found a verdict of \$1500 for the plaintiff, and the defendants now moved for a new trial, on a case, and also on affidavits, on the grounds of surprise and newly discovered evidence. The surprise alleged was the exclusion of the said articles in "Ure's Dictionary," when so offered in evidence. The newly discovered evidence consisted of the said articles in the "Journal of the Franklin Institute," (whose existence was stated not to have been known by the defendants until within thirty days prior to the said trial, and

after their notice of special matter in this action was given,) and of articles in the London Journal of Arts and Sciences for 1832, page 507, and for 1837, pages 04 and 133, and in the London Repertory of Arts for 1803, page 279, whose existence was averred to have become known to them after said trial. These several articles showed the application, by machinery, of the principle of the unequal expansion and contraction of two different metals under the same given degree of heat, to various purposes, such as, in Dr. Ure's "thermostat," regulating the temperature of an apartment, or of a hot-house, or of a water, oil, acid or alkaline bath, by the contemporaneous admission of warm and discharge of cold air or fluid, effected through the action of the regulator, placed in the medium whose temperature was to be regulated; or as, in Bonnemain's "heat regulator," regulating the temperature of rooms in which (eggs were artificially hatched, and in Cadwallader Evans steam boiler apparatus, regulating the opening of the safety valve, by governing the admission of air to the fire which heated the water of the boiler in which the regulating apparatus was placed; or as, in Ward's ventilator, regulating the ventilation of a room, by governing the admission of air into it.

Samuel Stevens, for plaintiff.

William H. Seward and Samuel Blatchford, for defendants.

NELSON, Circuit Justice. This is an action for the infringement of a patent for an improvement in regulating the draft of stoves, in which a verdict was rendered for the plaintiff for \$1500. A motion is now made by the defendants for a new trial.

I. One of the jurymen empannelled was taken ill, while the counsel for the plaintiff was opening the case, so as to be unable further to serve upon the jury, whereupon the court discharged him, and directed another jurymen to be drawn from the panel, in his stead, which was done. This direction of the court was proper and unexceptionable. The propriety of it is too obvious to require remark.

II. The disclaimer endorsed on the back of the patent was properly rejected, when offered in evidence by the defendants, for want of proof that it had been executed by the patentee. And besides, if it had been admitted, the court would have been bound to give it the full effect of a disclaimer under the seventh section of the act of March 3, 1837 (5 Stat 193), upon which view of the effect of the instrument the defendants did not propose or desire to give it in evidence. I am also inclined to think the court erred in excluding the disclaimer when it was offered in evidence by the plaintiff, as it fairly enough imported on its face, as it seems to me, that the patentee was the owner of the entire interest in the patent, and, if so, there was a substantial compliance with the statute in this respect. This error, however, being against the plaintiff, is of no importance in the case. The rejection of the paper, when it was offered by the defendants, raises the only material question, and as to that I think the court was correct for the reason stated. The disclaimer should have

been properly proved before it could be admitted in evidence either as an original paper or by a certified copy.

III. It is a sufficient answer to the objection that the motion for a nonsuit was erroneously refused, that the court had no power to grant it.⁵

IV. Dr. Ure's Dictionary of Arts, Manufactures, &c, was properly rejected for the reasons given at the trial. The book contains 1334 pages, and treats of a great variety of subjects extending through the alphabet. The reference to the work, as given in the notice, was too general and indefinite, within a reasonable construction of the act of congress (5 Stat 123, § 15). The notice should have specified the page or heading in the public work in which the invention had been previously described, so as to enable the patentee to turn to the article without searching through the entire volume. There can be no difficulty in giving a particular reference to the part of the book intended to be relied on, as the defendant is presumed to have examined the article, and to be familiar with it and with the page or heading where it may be found. A general reference to the work is calculated to mislead and embarrass the party, and ought not to be sanctioned, especially as there can be no difficulty in giving a more specific one. These remarks apply also to the offer to read passages in the work, for the purpose of showing that the invention was previously known to Dr. Ure, if there were no other ground for its rejection. The offer to prove, by experts and scientific men, that the terms "thermostat" and "heat-regulator" were well known in mechanical science, with a view to show that the notice was sufficiently explicit and specific, was properly rejected. The question was one for the court; and, besides, the notice should have pointed to the page or heading of the article. The rejection of the volume of "The Journal of the Franklin Institute," which was offered in evidence under the idea that notice of it was contained in a special plea which had been previously stricken out by the court, is so obviously correct as to require no remark.

V. The proposition on the part of the defendants to withdraw a juror, on the ground of surprise arising out of the rulings of the court in respect to the notice and the evidence offered under it, was properly overruled.

The defective notice afforded no foundation for such a proceeding on the part of the defendants; and, under any circumstances, it was a matter resting altogether in the discretion of the court

VI. The invention of the plaintiff, as stated in his patent, is “a new and useful improvement in regulating the draft of stoves;” and, after particularly describing in his specification the mechanical contrivances, and the application of the same to stoves in common use, he sets forth what is claimed as his discovery and not before known, or in public use:

(1) “The application of the expansive and contracting power of a metallic rod, by different degrees of heat, to open and close a damper which governs the admission of air into a stove or other structure in which it may be used, by which a more perfect control over the heat is obtained than can be by a damper in the flue.”

(2) “The mode above described,” (in the specification,) “of setting the heat of a stove at any requisite degree, by which different degrees of expansion are requisite, to open or close the damper.”

(3) “The combination above described, by which the regulation of the heat of a stove or other structure in which it may be used is effected.”

(4) “The mode above described, of connecting the action of the metallic rods with the damper, so that the same may be disconnected when the damper shall have closed, and the heat shall continue to rise, &c.”

The substance of the discovery, as claimed by the plaintiff and secured to him by the patent, is the application of the principle of the contraction and expansion of a metallic rod, by the use of certain mechanical contrivances particularly described and set forth, to the cast or sheet-iron stove in common use, by which means he produces a self-regulating power over the heat of the same, at any given degree of heat that may be desired within the capacity of the stove. This is the thing invented. It is, in a word, the application of a well known principle to a new and useful purpose, and the question is, whether or not the patentee was the first and original inventor, or whether it was before known and in public use. Now, although it is shown, (assuming for the present that we may look into the books not in evidence,) that the principle had before been applied to the regulation of heat, as in the instance of Dr. Ure’s “thermostat.” and Bonne-main’s “heat-regulator,” and some others, yet, for aught that appears from the testimony or from any book that has been produced, the plaintiff was the first person who applied the principle to the regulation of the heat of stoves; and for this he was entitled to a patent, and to be protected in its enjoyment Phil. Pat p. 101, c. 7, § 6. It is not a new use of the principle as previously applied to the regulation of heat, which would not be patentable; but a new application of it, by new mechanical contrivances and apparatus, by means of which a new and beneficial result is produced in the use of the article to which it has been thus applied, namely, the common cast or sheet-iron stove. It is true, that the idea of an application of the prin-

ciple to the regulation of stoves had been before suggested, but no such application had ever been made prior to that of the patentee; and the person who first reduces the idea to practical application and use is entitled to the patent. Looking, then, at the claim of the plaintiff to a discovery in the regulation of the heat of stoves, in the light of the views above stated, I can perceive no well founded objection to the charge of the court under which the verdict was given.

The charge in respect to the first claim was more favorable to the defendants than in my judgment was warranted. The claim is not for a discovery of a natural property of the metallic rod, which, of itself, is not a patentable subject, but for a new application of it by means of mechanical contrivances, which is one of the commonest subjects of a patent. The only criticism to which the claim is liable is that it is too broad, inasmuch as there is an attempt to extend the improvement to other structures besides stoves. This has been corrected by a disclaimer, and properly so, from abundant caution, though I entertain no doubt that the claim beyond the stove, in the summary, is too general and indefinite to be valid or effectual, and should have been regarded as surplusage.

The court further charged, that the third claim, on which the plaintiff was entitled to recover, if at all, was for a combination, and that unless it appeared by the evidence that the defendants had used all the parts of the plaintiff's stove embraced in the combination, the verdict must be for the defendants. This instruction covered a great many points made by the defendants at the trial, and very unnecessarily multiplied, by breaking a single proposition, embodying a general principle, into numerous subdivisions, which tended only to embarrassment and confusion. It virtually covered the first seven points, and all of them, so far as any principle of law was involved, were ruled in favor of the defendants. As to the facts, they were questions for the jury.

The court also charged, that unless it appeared by the evidence that some parts of the mechanism not shown to have been used by the defendants were necessary to perform the office of regulating the heat of the stove, or that, according to the proper construction of the specification, such parts were intended to be claimed by the plaintiff as a part of the combination, they were not to be considered as embraced within it; and the court further remarked, that the question as to the extent of the combination had been treated

by the counsel for the defendants as a question of fact, and the court had no disposition to withdraw it from the consideration of the jury. If the court conceded too much to the jury in the view thus submitted, and should have taken upon itself to determine the combination, upon an interpretation of the claim in the summary as matter of law, it is not for the defendants to complain, as their counsel chose to carry the question to the jury. They should have asked the court to settle the combination upon a construction of the specification, and have tried their case upon that assumption, instead of putting the question to the jury. They cannot take advantage of their own error, even conceding that the court acquiesced in it. Besides, the extent of the combination was perhaps, in one aspect, a mixed question of law and fact; the effect and operation of the mechanical contrivances, which were matters of skill, and to be determined by experts, entering into the question. It does not follow as matter of law, that every part of the machinery used constitutes an element of the combination. This may depend on the use and effect of it, and the purpose for which it is employed in the plan devised to complete the improvement.

The instruction as to the similarity or substantial identity of the two contrivances or machinery for regulating the heat was obviously too correct to require any observation, and so was the instruction in respect to the damages. If the defendants desired any further instruction upon the latter point, they should have called the attention of the court to the subject. As far as given, the ruling was unexceptionable, and conformed to the statute.

VII. As respects the motion for a new trial on the grounds of surprise and newly discovered evidence, the views already presented concerning the improvement and discovery of the plaintiff, afford a complete answer. If all the evidence had been admitted, that was offered under the notice, or that has since been discovered, it would not in my judgment, have constituted a defence or varied the result. It fell entirely short of proof that the plaintiff was not the first and original inventor of the improvement claimed by him, or that it was before known and in public use. Notwithstanding all the evidence offered at the trial, and all produced before me on this motion, from books or otherwise, the plaintiff was the first person who applied the expanding and contracting property of the metallic rod to the regulation of heat in the use of the stove, by means of mechanical contrivances. It was his invention and discovery, and was first brought by him into practical use, producing, as it respects the stove, a new and useful result.

The jury have found that the contrivances of the defendants in the construction of their regulator, are substantially the same as those of the plaintiff, and that they have, therefore, been guilty of an infringement. I am not sure that the plaintiff was bound to go to this length in making out a case of infringement. There is some ground for the position that the new application of the principle, by means of mechanical contrivances, constitutes, of itself, a part of his invention; and that any different or improved mode of application is but an improvement upon his discovery, and not available without his consent. It is not

however, necessary to determine this question, as it is not material to the decision of the motion.

It was suggested that the damages in the case were excessive, and that a new trial should be granted on that ground. I think not. The jury were warranted in giving liberal damages, within the limit laid down by the court. The defendants do not stand in a position to entitle themselves to a very favorable consideration, as they entered upon the violation of the plaintiff's patent after having been warned of the consequences, and went on, with their eyes open, disregarding the claims of the patentee, and showing a willingness to avail themselves of the profits of his discovery, and to deprive him of the fruits of his genius, time, and expense, in striking out and bringing to perfection a new and most valuable improvement in the use of an article of the first necessity for the ordinary purposes of life. In my judgment the damages were not excessive or unreasonable.

New trial denied.

{NOTE. For subsequent proceedings, see *Foote v. Silsby*, Cases Nos. 4,917-4,920; *Id.*, 14 How. (55 U. S.) 218, 20 How. (61 U. S.) 290, 3 (8).

{On writ of error this case was taken to the supreme court, where the judgment of the circuit court was affirmed, Mr. Justice Curtis delivering the opinion. It was held:

{1. Upon a trial in New York a juror became ill, and was discharged before any evidence was given, and before the plaintiff's counsel had concluded his opening address. The court ordered another juror to be sworn, and proceeded with the trial. The defendant cannot object to this. It is the practice in New York, and the circuit court had a right to follow it.

{2. The court having erroneously refused to allow the plaintiff to offer a paper in evidence as a disclaimer of part of a patent, afterwards refused to allow the defendants to offer the same paper in evidence for the purpose of prejudicing the plaintiff's rights. This last refusal was correct. The reason given was erroneous, but this is not a sufficient cause for reversing the judgment.

{3. The courts of the United States have not the power to order a nonsuit against the wishes of the plaintiff.

{4. Under a notice given by the defendant that the invention claimed by the plaintiff was described in *Ure's Dictionary of Arts, Manufactures and Mines*, and had been used by Andrew Ure, of London, it was not competent to give in evidence a very large book. The place in the book should have been specified.

{5. Nor, under the notice, was the book competent evidence that Andrew Ure of London, had a prior knowledge of the thing patented. The notice does not state the place where the same was used.

{6. One of the specifications of the patent being for a combination of certain parts of mechanism necessary to produce the desired result, it was proper for the court to instruct the jury that the defendants had not infringed the patent, unless they had used all the parts embraced in the plaintiffs combination; and the jury were to find what those parts were, and whether the defendants had used them.

{7. When a claim does not point out and designate the particular elements which compose a combination, but only declares, as it properly may, that the combination is made up of so much of the described machinery as effects a particular result, it is a question of fact which of the described parts are essential to produce that result; and to this extent, not the construction of the claim, strictly speaking, “but the application of the claim, should be left to the jury.”

{Mr. Justice McLean dissents. 14 How. (35 U. S.) 218.}

¹ {Reported by Samuel Blatchford, Esq., and here reprinted by permission.}

² {Affirmed in 14 How. (55 U. S.) 218.}

³ The specification was as follows:

“To all whom it may concern: Be it known, that I, Elisha Foote, Junior, of Seneca Falls, in the county of Seneca, and state of New-York, have invented a new and useful mode of regulating the heat of stoves and other structures for fires, and I do hereby declare that the following is a full and exact description.

“My plan makes the stove or other structure in which it may be used, regulate its own heat, and this is effected by applying the expansive and contracting power of a metallic rod by different degrees of heat, to the damper of a stove, by which the admission of air thereto is governed: so that, when the heat shall rise above any required degree the expansion shall close such damper, and when it shall fall below such degree, the contraction shall open it, and thus keep a uniform heat of the requisite intensity.

“Considerable variety may exist in the mode of application, and it may be varied to suit particular circumstances. I have constructed two stoves, and applied the regulator as follows.

“Figure 5 represents a common box stove, the front side of which is supposed to be removed. A B is a brass rod, attached firmly, at A, to the front of the stove by a shoulder on the inside, and a nut and screw on the outside. It is not necessarily of brass, but the use of that metal will probably be found the most practicable. It is best made by rolling sheet brass into a rod, so that it shall have two or three thicknesses, and be from one to three inches in diameter. The end at B is made fiat, and rivetted to the short arm of the lever B C, so as to make a close joint therewith. B. C. is made of iron, and of sufficient strength to be inflexible. It turns on its fulcrum at D, which is made fast to the back of the stove by a nut and screw, and rivetted to B C. C L is another brass rod similar in

its construction to A B, and attached to the long arm of B C in the same manner. The end at L projects through the front of the stove, and is attached by a rivet to another lever E F. G K is the damper by which the admission of air to the stove is governed. It is bent so that the hinge at G may stand out a little in front of the stove, and give room for the play of the stem F G. The hinge is made in the common form, and the stem is merely a projection or extension of the damper. The end of the stem at F is made round, and fits into a hole made in the lever E F. so as to move easily therein. The lever E F should be of sufficient size and strength to be inflexible, and is attached to its fulcrum at E by a rivet, so as to make a joint therewith. H E is an iron rod. It is attached at H to the stove in any manner that will make it firm, and should either have a joint at H, or should be flexible at that point, so that the end E which constitutes the fulcrum to E F may be raised or depressed. At I is a screw, the head of which is made fast to, but turns in the front plate of the stove; the thread of the screw passes through the rod H E, and, by turning the screw, the end of the rod E may be raised or depressed at pleasure. It is manifest that the expansion of the brass rods, pressing against the lever E F, will close the damper, and their contraction will open it. If the fulcrum E be raised, it will require a greater degree of expansion, or in other words a higher degree of heat, to close the damper. If it be depressed, a lower degree will close it. A pointer, I O, is made fast to the head of the screw, so as to turn when the screw turns, and show how much the fulcrum E has been raised or depressed in a half revolution of the screw. And, it having been found by experiment, with a common thermometer, how much the heat of the stove is raised or depressed by moving the pointer a given distance, a scale is made and marked upon the front plate of the stove, as at X O Z, with as many different degrees of heat as it may be desired to vary the temperature of the stove, and the pointer being placed at any particular degree of heat, the stove will maintain the same with great accuracy; for, should the heat arise above the point, the expansion of the brass rods will close the damper and check it, or, should it fall below the point, their contraction will open the damper and let in the full draft of air. It is desirable to make the stove as nearly air-tight as possible, and the door and damper should both closely fit. I usually put into the stove more fuel than would be necessary in an open stove, and have the same constantly held in check by the damper.

“The other and more perfect, although more expensive mode of applying the regulator, is represented by figure 4, which is an external view of the stove, showing the face or scale on which the different degrees of heat are marked, and the pointer at A, and the damper at B, and the door at C. Figures 1, 2 and 3 are different views of the machinery, in which the same letters represent the same parts in each. Fig. 1 is a sectional view, made through the front of the stove. Fig. 2 is a perspective view from the back, and fig. 3 a perspective view from the front of the stove. A B C D E is a frame of cast iron, made to

support the brass rods and other machinery, and to which they are attached. This stove is made of sheet iron, and a more substantial support than that would make for the rods becomes necessary. In a cast iron stove the frame could probably be dispensed with, suitable projections being cast upon the plate to which to attach the machinery. The frame is made fast to the inside of the top of the stove, by screws passing through the top of the stove and entering the frame. The part A B, figs. 2 and 3, is attached to the back part of the stove, immediately under the flue, B C at one of the ends and C D at the front, the whole of sufficient strength to be inflexible. At A a little projection or extra thickness is made, to which the brass rod F G is firmly rivetted; at K another projection is made, which constitutes the fulcrum to the lever G H. A hole is made or left in the projection through which the lever passes, and is held by a rivet, so as to turn easily and yet be perfectly firm. D E, figs. 1, 2 and 3, is a projection of the frame, extending down within one or two inches of the front of the stove. It is bored at L² and holds one end of the shaft L N^{1 2}, the other of which passes through and is held by the front of the stove, as seen in fig. 1. On L N, and at about the middle of it, is a projection I P, fig. 1, from one to three inches in length, with two prongs at the top, within which the brass rod H is held by a pivot, so as to make a close joint with it. The brass rods and the lever G H are made in the same way, and are attached to each other in the same manner as is described in the stove first mentioned. The effect of the expansion and contraction of the brass rods is to move the shaft L N back and forth, by operating on the projection I P, and the ends in which it rests in the frame and in front of the stove are turned, so as to permit it to move easily therein. Attached to the shaft on the outside of the stove is the face Q R, on which the different degrees of heat are marked, seen also in fig. 4 at A. It is made solid with the shaft, or is firmly attached to and turns with it. The shaft is made or bored hollow, as represented in fig. 1, so as to admit to pass through the centre of it the pivot O S, which is turned and made to fit and move easily within the shaft. At the end S is firmly attached the pointer T U, and at the end O is firmly attached the rod O a, which, passing down the front side of the stove and within the same, moves the damper when variations of heat change the lengths of the brass rods. The face may be made of brass or other material to suit the taste of the maker. It is usually made circular, having on the upper side the different degrees of heat found and marked as first described; and on the lower, corresponding with the different degrees, small holes, into which a pin on the pointer at U may be inserted and connect the two. The pointer may be made of steel and polished. Passing through the lower end is a screw at U in fig. 1, on the end of which is the small pin fitted to enter the holes on the face. On the other end of the screw is a knob, which serves as a handle to turn the pointer or to unscrew and detach the pointer from the face. If attached, the brass rods affect and move the damper below; if detached, they have no effect upon it.

“The damper is made in the common form of two plates moving one upon the other, with orifices in each, so that in one position both shall be closed and in another both opened. The inside plate is represented by b e, seen wholly in fig. 2, and partly in fig. 3. It is made thicker near the centre, and is bored through, as is represented in fig. 1, to admit and hold the stem to the outside plate; d e represents the outside plate, seen wholly in fig. 3, partly closed. At f g is its stem, attached to its centre and passing through the inside plate. The faces to both should be ground or turned, as well as the stem, so as to move easily and closely one on the other. On the end of the stem, at g, is made or firmly attached the projection g a, which ends in two prongs, as is shown in fig. 2. The end of the rod O a terminates, as is seen at a in figs. 1 and 2, in a circular plate of from one to two inches in diameter, and fitted to move easily and closely within the two prongs to the stem of the damper. The object of this arrangement is, that if for instance the closing of the damper should fail to check the heat, the rod would be disconnected from the damper and pass on without injury to the machinery, and when it returns it would catch the upper prong, and connect itself again with the damper; or, should a high heat be desired, the damper may be set open, and the rod at some distance from it, so that it shall require a great degree of expansion before the rod would reach the damper to close it; or, should it be desired to change from a high to a low degree of heat, the damper may be closed, and the rod set so that a great contraction will have to take place before it will reach the damper to open it. The rod O a should have sufficient width and strength to be inflexible. The stove governs its heat the same as the one first described.

“What I claim as my invention, and desire to secure by letters patent, is the application of the expansive and contracting power of a metallic rod by different degrees of heat, to open and close a damper which governs the admission of air into a stove or other structure in which it may be used, by which a more perfect control over the heat is obtained than can be by a damper in the flue.

“I also claim as my invention the mode above described of setting the heat of a stove at any requisite degree, by which different degrees of expansion are requisite to open or close the damper.

“I also claim the combination above described by which the regulation of the heat of a stove or other structure in which it may be used is effected.

“And I also claim as my invention the mode above described of connecting the action of the metallic rods with the damper, so that the same may be disconnected when the damper shall have closed and the heat shall continue to rise, &c.”

⁴ These articles were as follows: “Heat-Regulator. The name given by M. Bonnemain to an ingenious apparatus for regulating the temperature of his incubating stove rooms. (See ‘Incubation, Artificial,’ for the manner of applying the heat-regulator.)

“The construction of the regulator is founded upon the unequal dilatation of different

metals by the same degree of heat. A rod of iron x, fig. 549, is tapped at its lower end into a brass nut y, enclosed in a leaden box or tube, terminated above by a brass collet z. This tube is plunged into the water of the boiler, alongside of the smokepipe. (Fig. 549 is a bird's-eye view of the dial, &c.) The expansion of the lead being more than the iron for a like degree of temperature, and the rod enclosed within the tube being less easily warmed, whenever the heat rises to the desired pitch, the elongation of the tube outs the collet z, in contact with the heel a, of the bent lever a, b, d; thence the slightest increase of heat lengthens the tube anew, and the collet lifting the heel of the lever depresses its other end d through a much greater space, on account of the relative length of its legs. This movement operates near the axis of a balance bar e, sinks one end of this, and thereby increases the extent of the movement which is transmitted directly to the iron skewer v. This pushing down a swing register diminishes or cuts off the access of air to the fireplace. The combustion is thereby obstructed, and the temperature falling by degrees, the tube shrinks and disengages the heel of the lever. The counterpoise g, fixed to the balance beam e, raises the other extremity of this beam, by raising the end d of the lever as much as is necessary to make the heel bear upon the collet of the tube. The swing register acted upon by this means, presents a greater section to the passage of the air; whence the combustion is increased. To counterbalance the effect of atmospheric changes, the iron stem which supports the regulator is terminated by a dial disc, round the shaft of the needle above h, fig. 549; on turning this needle the stem below it turns, as well as a screw at its under end, which raises or lowers the leaden tube. In the first case, the heel falls, and opens the swing register, whence a higher temperature is required to shut it, by the expansion of the tube. We may thus obtain a regularly higher temperature. If, on the contrary, we raise the tube by turning the needle in the other direction, the register presents a smaller opening, and shuts at a lower temperature; in this case, we obtain a regularly lower temperature. It is therefore easy, says M. Bonnemain, to determine a priori the degree of temperature to be given to the water circulating in the stove pipes. In order to facilitate the regulation of the apparatus, he graduated the disc dial, and inscribed upon its top and bottom the words, Strong and Weak heat. See "Thermostat, for another heat-regulator." Pages 643 and 644.

"Thermostat, is the name of an apparatus for regulating temperature, in vaporization, distillation, heating baths or hot-houses, and ventilating apartments, &c.; for which I obtained a patent in the year 1831. It operates upon the physical principle, that when two thin metallic bars of different expansibilities are riveted or soldered facewise together, any change of temperature in them will cause a sensible movement of flexure in the compound bar, to one side or other; which movement may be made to operate, by the intervention of levers, &c, in any desired degree, upon valves, stop-cocks, stove-registers, air-ventilators, &c; so as to regulate the temperature of the media in which the said compound bars are

placed. Two long rulers, one of steel, and one of hard hammered brass, rivetted together, answer very well; the object being not simply to indicate, but to control or modify temperature. The following diagrams will illustrate a few out of the numerous applications of this instrument.

“Fig. 1130, a b, is a single thermostatic bar, consisting of two or more bars or rulers of differently expansible solids (of which, in certain cases, wood may be one): these bars or rulers are firmly riveted or soldered together, face to face. One end of the compound bar is fixed by bolts at a, to the interior of the containing cistern, boiler, or apartment, a, l, m, b, whereof the temperature has to be regulated, and the other end of the compound bar at b, is left free to move down towards c, by the flexure which will take place when its temperature is raised.

“The end b, is connected by a link, b, d, with a lever d, e, which is moved by the flexure into the dotted position b, g, causing the turning-valve, air-ventilator, or register, o, n, to revolve with a corresponding angular motion, whereby the lever will raise the equi-posed slide-damper k, i, which is suspended by a link from the end e, of the lever e, d, into the position k, h. Thus a hot-house or a water-bath may have its temperature regulated by the contemporaneous admission of warm, and discharge of cold air, or water.

“Fig. 1131, a, b, c, is a thermostatic hoop, immersed horizontally beneath the surface of the water-bath of a still. The hoop is fixed at a, and the two ends b, c, are connected by two links b, d, c, d, with a straight sliding rod d, h, to which the hoop will give an endwise motion, when its temperature is altered; e, is an adjusting screw-nut on the rod d, h, for setting the lever f, g, which is fixed on the axis of the turning-valve or cock f, at any desired position, so that the valve may be opened or shut at any desired temperature, corresponding to the widening of the points b, c, and the consentaneous retraction of the point d, towards the circumference a, b, c, of the hoop, g, h is an arc graduated by a thermometer, after the screw piece e has been adjusted. Through a hole at h, the guide-rod passes, i, is the cold-water cistern; i, f, k, the pipe to admit cold water; l, the overflow pipe, at which the excess of hot water runs off.

“Fig. 1132 shows a pair of thermostatic bars, bolted fast together at the ends a. The free ends b, c, are of unequal length, so as to act by the cross links d, f, on the stop-cock e. The links are jointed to the handle of the turning plug of the cock, on opposite sides of its centre; whereby that plug will be turned round in proportion to the widening of the points b, c, h, g, is the pipe communicating with the stopcock.

“Suppose that, for certain purposes in pharmacy, dyeing or any other chemical art, a water bath is required to be maintained steadily at a temperature of 150 F.; let the combined thermostatic bars hinged together at e f, fig. 1133, be placed in the bath, between the outer and the inner vessels a, b, c, d, being bolted fast to the inner vessel at g, and have their sliding rod k, connected by a link with a lever fixed upon the turning plug of the

stop-cock *i*, which introduces cold water from a cistern *m*, through a pipe *m i n*, into the bottom part of the bath. The length of the link must be so adjusted that the flexure of the bars, when they are at a temperature of 150, will open the said stop-cock, and admit cold water to pass into the bottom of the bath through the pipe *i n*, whereby hot water will be displaced at the top of the bath through an open overflow pipe at *q*. An oil bath may be regulated on the same plan, the hot oil overflowing from *q* into a refrigeratory worm, from which it may be restored to the cistern *m*. When a water bath is heated by the distribution of a tortuous steam pipe through it, as *i n o p*, it will be necessary to connect the link of the thermostatic bars with the lever of the turning plug of the steam-cock or of the throttle valve *i*, in order that the bars by their flexure may shut or open the steam passage more or less, according as the temperature of the water in the bath shall tend more or less to deviate from the pitch to which the apparatus has been adjusted. The water of the condensed steam will pass off from the sloping winding pipe *i n o p*, through the sloping orifice *p*. A saline, acid or alkaline bath has a boiling temperature proportional to its degree of concentration, and may, therefore, have its heat regulated by immersing a thermostat in it, and connecting the working part of the instrument with a stopcock *i*, which will admit water to dilute the bath, whenever by evaporation it has become concentrated and has acquired a higher boiling point. The space for the bath between the outer and inner pans should communicate by one pipe with the water cistern *m*, and by another pipe with a safety cistern *r*, into which the bath may be allowed to overflow during any sudden excess of ebullition.

“Fig. 1136 is a thermostatic apparatus, composed of three pairs of bars *d d d*, which are represented in a state of flexure by heat, but they become nearly straight and parallel when cold; *a b c* is a guide rod, fixed at one end, by an-adjusting screw *e*, in the strong frame *f e*, having deep guide grooves at the sides, *f g* is the working rod, which moves endways, when the bars *d d d* operate by heat or cold. A square register plate *h g*, may be affixed to the rod *f g*, so as to be moved backwards and forwards thereby, according to the variations of temperature; or, the rod *f g* may cause the circular turning air register *i* to revolve by rack and wheel-work, or by a chain and pulley. The register plate *h g*, or turning register *i*, is situated at the ceiling or upper part of the chamber, and serves to let out hot air; *k* is a pulley, over which a cord runs, to raise or lower a hot air register *l*, which may be situated near the floor of the apartment or hot house, to admit hot air into the room; *c* is a milled head for adjusting the thermostat by means of the screw at *e*, in order that it may regulate the temperature to any degree.

“Fig. 1137 represents a chimney, furnished with a pyrostat *a b c*, acting by the links *b d, e c*, on a damper *f h g*. The more expansible metal is in the present example supposed to be on the outside. The plane of the damperplate will in this case be turned more directly into the passage of the draught through the chimney by increase of temperature.

“Fig. 1135 represents a circular turning register, such as is used for a stove or stove grate, or for ventilating apartments; it is furnished with a series of spiral thermostatic bars, each bar being fixed fast at the circumference of the circle b c of the fixed plate of the air register, and all the bars act in concert at the centre a of the twining part of the register, by their ends being inserted between the teeth of a small pinion, or by being jointed to the centre part of the turning plate by small pins.

“Fig. 1134 represents another arrangement of my thermostatic apparatus, applied to a circular turning register, like the preceding, for ventilating apartments. Two pairs of compound bars are applied, so as to act in concert, by means of the links a e, b c, on the opposite ends of a short lever, which is fixed in the central part of the turning plate of the air register. The two pairs of compound bars a, b, are fastened to the circumference of the fixed plate of the turning register, by two sliding rods, a d, b e, which are furnished with adjusting screws. Their motion or flexure is transmitted by the links a c and b c to the turning plate, about its centre, for the purpose of shutting or opening the ventilating sectorial apertures more or less, according to the temperature of the air which surrounds the thermostatic turning register. By adjusting the screws a d and b c, the turning register is made to close all its apertures at any desired degree of temperature; but, whenever the air is above that temperature, the flexure of the compound bars, will open the apertures.”
Pages 1237, 1238, 1239.

⁵ The courts of the United States have no authority to order a peremptory nonsuit against the will of the plaintiff, on the trial of a cause before a jury. *Doe v. Grymes*, 1 Pet [26 U. S.] 469; *D'Wolf v. Rabaud*, Id. 476; *Crane v. Morris*, 6 Pet. [31 U. S.] 598.