Tilghman Vs. Proctor

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SooperKanoon Citation : sooperkanoon.com/85975

Court : US Supreme Court

Decided On : Mar-19-1888

Appeal No. : 125 U.S. 136

Appellant : Tilghman

Respondent : Proctor

Judgement :

Tilghman v. Proctor - 125 U.S. 136 (1888)
U.S. Supreme Court Tilghman v. Proctor, 125 U.S. 136 (1888)

Tilghman v. Proctor

Nos. 537, 548

Argued November, 3-5, 1886

Decided March 19, 1888

125 U.S. 136

APPEALS FROM THE CIRCUIT COURT OF THE UNITED

STATES FOR THE SOUTHERN DISTRICT OF OHIO

SYLLABUS

One having an interest in all fees and other sums to be recovered under a patent, but not shown to have any interest, legal or equitable, in the patent itself, need not be made a party to a bill in equity for its infringement.

Upon a bill in equity by the owner against infringers of a patent, the plaintiff, although he has established license fees, is not limited to the amount of such fees, as damages, but may, instead of damages, recover the amount of gains and profits that the defendants have made by the use of his invention, over what they would have had in using other means then open to the public and adequate to enable them to obtain an equally beneficial result.

Upon a bill in equity for infringing a patent, if the defendants have gained an advantage by using the plaintiff's invention, that advantage is the measure of the profits to be accounted for, even if from other causes the business in which the invention was employed by the defendants did not result in profits, and if the use of a patented process produced a definite saving in the cost of manufacture, they must account to the patentee for the amount so saved.

The liability of infringers of a patent to account to the patentee for all the profits, gains, and savings which they have made by the use of his invention during the whole period of their infringement, is not affected by the fact that in the midst of that period, an erroneous decision was made in favor of a distinct infringer in no way connected with these defendants.

The conclusions of a master in chancery, depending upon the weighing of

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conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside unless there clearly appears to have been error or mistake on his part.

In determining the amount of gains and profits derived by infringers of a patent from the use of the invention over what they would have made in using an old process open to the public, the expense of using the new process is to be ascertained by the manner in which they have conducted their business, and not by the manner in which they might have conducted it; but the cost at which they used the old process is not conclusive against them if other manufacturers used that process at less cost.

As a general rule, in taking an account of profits against an infringer of a patent, interest is not to he allowed before the date of the submission of the master's report, but only after that date and upon the amount shown to be due by his report and the accompanying evidence.

The other questions decided were questions of fact.

In equity. These were cross-appeals from the decree entered (on the report of a master) in the execution of the mandate of this Court in the cause reported in 102 U. S. 102 U.S. 707. The case is stated in the opinion of the Court.

MR. JUSTICE GRAY delivered the opinion of the Court.

This was a bill in equity, filed June 26, 1874, by Richard A. Tilghman against William Proctor and four others, co-partners under the name of Proctor & Gamble, praying for an injunction, for an account of profits, and for damages, for the infringement of letters patent, originally granted to Tilghman for 14 years from January 9, 1854, and afterwards extended to January 9, 1875, for the process of manufacturing fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.

"The infringement complained of in this suit was from May 1, 1870, to January 8, 1875. Similar suits by this plaintiff against other defendants had been maintained by the Circuit Courts for the Southern Districts of Ohio and of New York

in 1862 and 1864 respectively. *Tilghman v. Werk,* 2 Fisher Pat.Cas. 229; *Tilghman v. Mitchell,* Fisher Pat.Cas. 518. In the suit in New York, a final decree for an account of profits was entered by the circuit court on September 1, 1871. *Tilghman v. Mitchell,* 9 Blatchford 1, 18, 4 Fisher Pat.Cas. 599, 615. On March 2, 1874, that decree was reversed in this Court by the opinion of four justices against three, two judges not sitting, upon the hypothesis that Tilghman's patent was limited to the apparatus therein described, and that the use of an apparatus similar to that used by the present defendants was not an infringement. *Mitchell v. Tilghman,* 19 Wall. 287, 86 U. S. 419 , iii."

In the case at bar the circuit court, on December 2, 1874, following the decision of this Court in *Mitchell v. Tilghman,* made a decree dismissing the bill. But on appeal from that decree, this Court at October term, 1880, by a unanimous opinion, overruled its decision in *Mitchell v. Tilghman* and adjudged that Tilghman's patent was a valid one for a process, and not merely for the particular apparatus described in the specification; that that apparatus could be operated to produce a beneficial result; that the defendants had infringed the plaintiff's patent, and therefore that the decree of the circuit court be reversed and the case remanded, with directions to enter a decree for the plaintiff in conformity with that opinion. *Tilghman v. Proctor,* 102 U. S. 707 . There is nothing in the record before us to induce any change or modification of the conclusions then announced.

By making a few extracts from that opinion, the questions now before us will be the better understood:

"The patent in question relates to the treatment of fats and oils, and is for a process of separating their component parts so as to render them better adapted to the uses of the arts. It was discovered by Chevreul, an eminent French chemist, as early as 1813 that ordinary fat, tallow, and oil are regular chemical compounds consisting of a base which has been termed glycerine, and of different acids, termed generally fat acids, but specifically stearic, margaric, and oleic acids. These acids, in combination severally with glycerine, form stearine,

margarine and oleine. They are found in different proportions in the various neutral fats and oils, stearine predominating in some, margarine in others, and oleine in others. When separated from their base (glycerine), they take up an equivalent of water, and are called free fat acids. In this state they are in a condition for being utilized in the arts. The stearic and margaric acids form a whitish, semi-transparent, hard substance, resembling spermaceti, which is manufactured into candles. They are separated from the oleic acid, which is a thin oily fluid, by hydrostatic or other powerful pressure,. the oleine being used for manufacturing soap, and other purposes. The base, glycerine, when purified, has come to be quite a desirable article for many uses."

102 U.S. 102 U. S. 708 -709.

The substance of Tilghman's discovery and invention was thus summed up by the court:

"That the fat acids can be separated from glycerine, without injury to the latter, by the single and simple process of subjecting the neutral fat, while in intimate mixture with water, to a high degree of heat under sufficient pressure to prevent the water from being converted into steam, without the employment of any alkali or sulphuric acid or other saponifying agent, the operation, even with the most solid fats, being capable of completion in a very few minutes when the heat applied is equal to that of melting lead, or 612 Fahrenheit; but requiring several hours when it is as low as 350 or 400 Fahrenheit. The only conditions are a constant and intimate commixture of the fat with the water, a high degree of heat, and a pressure sufficiently powerful to resist the conversion of the water into steam. The result is, a decomposition of the fatty body into its elements of glycerine and fat acids, each element taking up the requisite equivalent of water essential to its separate existence, and the glycerine in solution separating itself from the fat acids by setting to the bottom, when the mixed products are allowed to stand and cool. In this process a chemical change takes place in the fat in consequence of the presence of the water and the active influence of the heat and pressure upon the

mixture."

Pp. 102 U. S. 712 -713. The Court spoke of the different forms of apparatus mentioned

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in Tilghman's patent or used by the defendants as follows:

"The apparatus described" in the patent

"consists of a coil of iron pipe, or other metallic tubing, erected in an oven or furnace, where it can be subjected to a high degree of heat, and through this pipe the mixture (of nearly equal parts of fat and water), made into an emulsion in a separate vessel by means of a rapidly vibrating piston or dasher, is impelled by a force pump in a nearly continuous current, with such regulated velocity as to subject it to the heat of the furnace for a proper length of time to produce the desired result, which time, when the furnace is heated to the temperature of 612 Fahrenheit, is only about ten minutes. The fat and water are kept from separating by the vertical position of the tubes, as well as by the constant movement of the current, and are prevented from being converted into steam by weighting the exit valve by which the product is discharged into the receiving vessel, so that none of it can escape except as it is expelled by the pulsations produced by the working of the force pump. Before arriving at the exit valve, the pipe is passed, in a second coil, through an exterior vessel filled with water, by which the temperature of the product is reduced. After the product is discharged into the receiving vessel, it is allowed to stand and cool until the glycerine settles to the bottom and separates itself from the fat acids. The latter are then subjected to washing and hydraulic pressure in the usual way."

Pp. 102 U. S. 718 -719.

"It is evident that the passing of the mixture of fat and water through a heated coil of pipe standing in a furnace is only one of several ways in which the process may be applied. The patentee suggests it as what he conceived to be the best way,

apparently because the result is produced with great rapidity and completeness. But other forms of apparatus, known and in public use at the time, can as well be employed without changing the process. A common digester or boiler can evidently be so used provided proper means are employed to keep up the constant admixture of the water and fat, which is a *sine qua non* in the operation."

Pp. 102 U. S. 719 -720.

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"The defendants use a boiler in which the charge of fat and other materials is placed and heated, and do not mix the fat and water in the manner pointed out in the specification of the patent, but, on the contrary, have inserted in the boiler a pump which forces the water, as it settles to the bottom, upwards to the top of the mass, and pours it upon the upper surface, whence it again finds its way down through the fat, thus keeping up a constant mixture."

P. 102 U. S. 730 .

It was expressly decided that neither the form of the defendants' apparatus nor the addition of lime nor the use of steam nor the applying of a lower degree of heat prevented their process from being an infringement of the plaintiff's patent. P. 102 U. S. 730 -733.

The Court also said:

"It is objected that the particular apparatus described in the patent for carrying the process into effect cannot be operated to produce any useful result. We have examined the evidence on this point, and are satisfied that it shows the objection to be unfounded. A recapitulation of this evidence is not necessary. The testimony of Tilghman himself, of Professor Booth, and of Mr. Wilson, is directly to the point."

P. 102 U. S. 730 .

In accordance with the judgment and mandate of this Court, the circuit court, in February, 1877, entered an interlocutory decree for the plaintiff and referred the case to a master

"to ascertain and tax and state and report to the court an account of the gains, profits, savings, and advantages which the said defendants have received or which have arisen or accrued to them from infringing the said exclusive rights of the said complainant by the use of the process patented in the said letters patent, as well as the damages the said complainant has sustained thereby."

The master filed his report in August, 1884.

As to damages,

"The master finds from the evidence that the complainant has derived no profit from the invention involved in this suit otherwise than by granting licenses to others to use the same. These licenses have been granted to all manufacturers desiring to use his process at a substantially uniform fee of twenty cents for each hundred pounds of fat

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treated, payable monthly. For several years, the respondents held such a license from the complainant, but terminated the same, refusing to pay the stipulated license fees, after May 1, 1870, although continuing to use the process until the expiration of the patent on January 8, 1875."

The master further says:

"The accompanying table, A, shows the quantity of fat treated by the respondents during each month of infringement, the license fees therefor, and interest thereon to October 7th, the first day of October term, 1884, making the whole amount of the complainant's damages herein $79,566.91."

As to the profits, gains, savings, and advantages which had accrued to the defendants, the master finds that what was known as "the lime saponification

process," which consisted in the manufacture of the fat into soap by the use of lime, and in the decomposition of that soap into fatty acids and glycerine by the aid of sulphuric acid, was more advantageous than any other process open to public use at the time in question, and reports the defendants' savings in lime and sulphuric acid, their gain in glycerine, their loss in fat acids produced, and their net gains and savings, as follows:

2,798,733 lbs. of lime at $.3526 per hundred . . . . $ 9,868.33

6,880,219 lbs. of sulphuric acid at $2.527 per

hundred. 173,863.13

Amount saved in chemicals. $182,731.46

Amount gained on glycerine water 61,701.77

Total $244,433.23

Deducting loss in fatty acids, being 54 cents per

hundred on 21,294,753 lbs. of fat. $114,991.76

Net gains and savings $129,441.47

In September, 1884, each party filed exceptions to the master's report. The circuit court, in February, 1886, overruled all the exceptions and entered a final decree for the plaintiff for $79,566.91, the amount of damages reported by the master,

with simple interest added upon the license fees from October 7, 1884, to February 4, 1886, making in all $83,275.21 and costs. From this decree both parties appealed to this Court.

At the hearing before the master, a brother of the plaintiff, called as a witness in his behalf, testified on cross-examination that before this suit was brought, the witness had acquired an interest in all license fees and recoveries under the patent. No further question was asked or evidence offered by either party as to the nature or amount of that interest. The defendants contended before the master and at the argument here that the plaintiff could recover in this suit no more than his own share, and, having failed to prove the extent of his interest, was entitled to nominal damages only. It is a sufficient answer to this objection that it is not shown that anyone but the plaintiff has any interest, legal or equitable, by assignment or otherwise, in the patent sued on, and that, as observed by Mr. Justice Strong, sitting in the circuit court,

"an interest in the net proceeds of collections under a patent does not necessarily amount to legal ownership in the patent itself. It is plain, therefore, as the case appears that there has been no want of joinder of the necessary parties."

Jordan v. Dobson, 4 Fisher Pat.Cas. 232, 236.

The principal question of law now presented is as to the general rule that should govern the amount to be recovered. The defendants contend that the plaintiff, having established license fees for the use of his patent, is not entitled to any gains and profits accruing to the defendants in excess of those fees. The plaintiff contends that, as the profits to be accounted for exceed the damages, he has the right, waiving the damages found by the master, to have a decree for profits. In an action at law for the infringement of a patent, the plaintiff can recover a verdict for only the actual damages which he has sustained and the amount of such royalties or license fees as he has been accustomed to receive from third persons for the use of the invention, with interest thereon from the time when they should have been paid by the defendants, is generally, though not always, taken as the measure of his damages, but the court may, whenever the circumstances of

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the case appear to require it, inflict vindictive or punitive damages, by rendering judgment for not more than thrice the amount of the verdict. Acts of July 4, 1836, c. 357, 14, 5 Stat. 123; July 8, 1870, c. 230, 59, 16 Stat. 207; Rev.Stat. 4919; *Seymour v. McCormick,* 16 How. 480, 57 U. S. 489 ; *New York v. Ransom,* 23 How. 487; *Suffolk Co. v. Hayden,* 3 Wall. 315; *Philp v. Nock,* 17 Wall. 460; *Packet Co. v. Sickles,* 19 Wall. 611, 86 U. S. 617 ; *Burdell v. Denig,* 92 U. S. 716 .

But upon a bill in equity by the owner against infringers of a patent, the plaintiff is entitled to recover the amount of gains and profits that the defendants have made by the use of his invention. This rule was established by a series of decisions under the Patent Act of 1836, which simply conferred upon the courts of the United States general equity jurisdiction, with the power to grant injunctions in cases arising under the patent laws. Act of July 4, 1836, c. 357, 17, 5 Stat. 124; *Livingston v. Woodworth,* 15 How. 546; *Dean v. Mason,* 20 How. 198; *Rubber Co. v. Goodyear,* 9 Wall. 788; *Mowry v. Whitney,* 14 Wall. 620; *Littlefield v. Perry,* 21 Wall. 205, 88 U. S. 229 ; *Mason v. Graham,* 23 Wall. 261; *Tremolo Patent,* 23 Wall. 518; *Cawood Patent,* 94 U. S. 695 ; *Mevs v. Conover,* October term, 1876, 11 Pat.Off.Gaz.. 1111 * ; *Elizabeth v. Pavement Co.,* 97 U. S. 126 ; *Root v. Railway Co.,* 105 U. S. 189 .

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The reasons that have led to the adoption of this rule are that it comes nearer than any other to doing complete justice between the parties, that in equity the profits made by the infringer of a patent belong to the patentee and not to the infringer, and that it is inconsistent with the ordinary principles and practice of courts of chancery either on the one hand to permit the wrongdoer to profit by his own wrong

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or on the other hand to make no allowance for the cost and expense of conducting his business, or to undertake to punish him by obliging him to pay more than a fair compensation to the person wronged.

The infringer is liable for actual, not for possible, gains. The profits therefore which he must account for are not those which he might reasonably have made, but those which he did make by the use of the plaintiff's invention, or, in other words, the fruits of the advantage which he derived from the use of that invention over what he would have had in using other means then open to the public and adequate to enable him to obtain an equally beneficial result. If there was no such advantage in his use of the plaintiff's invention, there can be no decree for profits, and the plaintiff's only remedy is by an action at law for damages.

But if the defendant gained an advantage by using the plaintiff's invention, that advantage is the measure of the profits to be accounted for, even if from other causes the business in which that invention was employed by the defendant did not result in profits. If, for example, the unauthorized use by the defendant of a patented process produced a definite saving in the cost of manufacture, he must account to the patentee for the amount so saved. This application or corollary of the general rule is as well established as the rule itself. For instance, in the case of *The Cawood Patent* for an improvement in a machine for repairing the crushed and exfoliated ends of railroad iron, Mr. Justice Strong, in delivering judgment, said:

"It has been argued that it would have been better for these defendants if, instead of repairing the crushed and exfoliated ends of the rails, they had cut off the ends and relaid the sound parts, or caused the rails to be re-rolled. Experience, it is said, has proved that repairing worn-out ends of rails is not true economy, and hence it is inferred that the defendants have derived no profits from the use of the plaintiff's invention. This argument is plausible, but it is unsound. Assuming that experience has demonstrated what is claimed, the defendants undertook to repair their injured rails. They had the choice of repairing them on the common

anvil or on the complainant's machine. By selecting the latter, they saved a large part of what they must have expended in the use of the former. To that extent, they had a positive advantage growing out of their invasion of the complainant's patent. If their general business was unprofitable, it was the less so in consequence of their use of the plaintiff's property. They gained, therefore, to the extent that they saved themselves from loss. In settling an account between a patentee and an infringer of the patent, the question is not what profits the latter has made in his business, or from his manner of conducting it, but what advantage has he derived from his use of the patented invention."

94 U.S. 94 U. S. 710 .

In *Mevs v. Conover,* where the patent was for an improved machine for splitting kindling wood, the same justice, delivering the opinion of the court, said:

"It is urged, however, that the Green machine, in which the defendant used the plaintiff's invention, was old and defective, and that no profits were actually received from such an use. But if such be the fact, if the defendant was a loser by splitting wood with the Green machine, his loss was less, to the extent of seventy-five cents on each cord split, than it would have been had he not used the patented invention. Such a result was equivalent to an equal gain, and it was rightly estimated as a part of the profits for which the infringer was responsible."

11 Pat.Off.Gaz. 1112, *ante,* 125 U. S. 145 , note.

In *Elizabeth v. Pavement Co.,* MR. JUSTICE BRADLEY stated, as a general proposition that would hardly admit of dispute:

"It is also clear that a patentee is entitled to recover the profits that have been actually realized from the use of his invention, although, from other causes, the general business of the defendant, in which the invention is employed, may not have resulted in profits -- as where it is shown that the use of his invention produced a definite saving in the process of a manufacture."

97 U.S. 97 U. S. 138 -139. In *Root v. Railway Co.,* that statement was repeated. And in *Thomson v. Wooster,* 114 U. S. 104 , in which the patent was for an improved folding guide for sewing machines, MR. JUSTICE BRADLEY said:

"It might have been a better financial operation to

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have bought of others, or employed others to make the folded strips which they required, just as, in the case of *The Cawood Patent,* the railroad company would have done better not to have mended the ends of their battered rails, but to have had them cut off; but as they chose to perform the operation, they became responsible to the patentee for the advantage derived from using his machine."

114 U.S. 114 U. S. 118 .

The general rule has been sometimes said to be based upon the theory that the infringer is converted into a trustee for the owner of the patent as regards the profits made by the use of his invention. But as has been recently declared by this Court upon an elaborate review of the cases in this country and in England, it is more strictly accurate to say that a court of equity, which has acquired, upon some equitable ground, jurisdiction of a suit for the infringement of a patent will not send the plaintiff to a court of law to recover damages, but will itself administer full relief by awarding, as an equivalent or a substitute for legal damages, a compensation computed and measured by the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property for his own advantage. *Root v. Railway Co.,* 105 U. S. 189 , 105 U. S. 214 -215.

The rule in equity of requiring an infringer to account for the gains and profits which he has made from the use of a patented invention, instead of limiting the recovery to the amount of royalties paid to the patentee by third persons, has been constantly upheld under the provision of the patent act of 1870, embodied in the Revised Statutes, which, beside, reenacting the grant of general equity jurisdiction in patent cases, further enacts that

"Upon a decree's being rendered in any such case for an infringement, the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby, and the court shall assess the same or cause the same to be assessed under its direction, and the court shall have the same powers to increase the same in its discretion that are given by this act to increase the damages found by verdicts in actions upon the case,"

and thus expressly affirms the defendant's

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liability to account for profits as well as authorizes the court sitting in equity to award and to treble any damages that the plaintiff has sustained in excess of the defendant's profits. Act of July 8, 1870, c. 230, 55, 16 Stat. 206; Rev.Stat. 4921; *Birdsall v. Coolidge,* 93 U. S. 64 , 93 U. S. 69 ; *Marsh v. Seymour,* 97 U. S. 348 ; *Root v. Railway Co.,* above cited; *Manufacturing Co. v. Cowing,* 105 U. S. 253 ; *Garretson v. Clark,* 111 U. S. 120 ; *Black v. Thorne,* 111 U. S. 122 ; *Birdsell v. Shaliol,* 112 U. S. 485 , 112 U. S. 488 ; *Thomson v. Wooster,* 114 U. S. 104 .

It was argued for the defendants that the limited construction given to Tilghman's patent by the decision of this *Court in Mitchell v. Tilghman,* 19 Wall. 287, became a restriction upon the scope of the patent, and so remained until revoked, and therefore that the defendants in this suit should not be held liable for infringement for the time between the date of that decision and the expiration of the patent -- that is to say for the last ten months and six days of the period of more than four years and eight months during which the infringement lasted.

But the injustice done to a patentee by an erroneous decision in a suit against one infringer will not justify a repetition of the injustice in another suit against distinct infringers in no way connected with the first one. The decision against Tilghman in his suit against Mitchell was binding as between those parties only, and having been directly overruled by this Court on full consideration in 102 U. S. 102 U.S.

707, when the present case was first brought before it, affords no ground for not holding these defendants to account to Tilghman for all the profits, gains, and savings which they have made from the use of his invention during the whole period of their infringement.

We are then brought to a consideration of the exceptions taken to the master's report in matters of fact, affecting the accuracy of his conclusions in respect to the amount of those profits, gains, and savings. In dealing with these exceptions, the conclusions of the master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside or modified unless

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there clearly appears to have been error or mistake on his part. *Medsker v. Bonebrake,* 108 U. S. 66 ; *Donnell v. Columbia Ins. Co.,* 2 Sum. 366, 371; *Mason v. Crosby,* 3 Woodb. & Min. 258, 269; *Paddock v. Commercial Ins. Co.,* 104 Mass. 521, 531; *Richards v. Todd,* 127 Mass. 167, 172.

The master, as already stated, reports the amount of chemicals that the defendants have saved by using the plaintiff's invention as $9,868.33 in lime and $173,863.13 in sulphuric acid. If each of these two items is correct, he has made a mistake of $1,000 against the plaintiff in adding them together. But the plaintiff contends that a comparison of the report with the evidence shows that the actual saving in either item was greater.

The facts upon which the master bases his estimates of the savings in chemicals are stated in his report as follows:

After stating that at the time of the infringement by the defendants of the plaintiff's patent, "the lime saponification process was more advantageous than any other then in public use," he says:

"By that process, the neutral fat was converted into lime soap by boiling it in open tubs with lime. The water was then run off containing the glycerine, and the lime

soap was treated with sulphuric acid, which combined with the lime, forming sulphate of lime, and released the fatty acids. Theoretically, 9 1/2 lbs. of lime and double that quantity of sulphuric acid for each hundred pounds of fat treated were sufficient to effect these results; but in practical operation, manufacturers used from 12 to 14 lbs. of lime per hundred, and from 2 to 3 lbs. of acid for each pound of lime, to insure perfect decomposition. The respondents, during the period of infringement, treated the fat with water in closed digesters, adding one percent of lime and heating with steam at a pressure of 225 lbs. for about nine and a half hours. Then they precipitated the lime by using 3 lbs. of sulphuric acid for each pound of lime. As compared with the average amount of each employed in the old process, they saved 12 lbs. of lime and 29 1/2 lbs. of sulphuric acid for each hundred pounds of fat treated. "

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"Their books show that they thus treated 23,322,777 lbs. of fat during the period in question, saving 2,798,733 lbs. of lime and 6,880,219 lbs. of sulphuric acid upon the basis above mentioned. The testimony shows the average cost of lime to have been $.3526 per hundred pounds, and the average cost of the acid $2.527 per hundred."

It appears by the testimony of the defendants themselves that when they manufactured by the old process, they used 14 pounds of lime to each hundred pounds of fat treated, and 3 pounds of sulphuric acid to each pound of lime. It is contended by the plaintiff that that process, as used by the defendants, should be the standard of comparison in this suit, and that, according to the preponderance of evidence, the amount of lime, at least, so used by them was a necessity in that process. But the plaintiff has the burden of proving the amount of profits that the defendants have made by the use of his invention. *Blake v. Robertson,* 94 U. S. 728 ; *Elizabeth v. Pavement Co.,* 97 U. S. 126 , 97 U. S. 139 ; *Dobson v. Hartford Carpet Co.,* 114 U. S. 439 , 114 U. S. 444 -445. And the question to be determined is, as stated by Mr. Justice Strong in delivering judgment in *Mowry v. Whitney,*

"what advantage did the defendant derive from using the complainant's invention over what he had in using other processes then open to the public and adequate to enable him to obtain an equally beneficial result"

81 U. S. 14 Wall. 620, 81 U. S. 651 . In determining that question, the expense of using the new process is doubtless to be ascertained by the manner in which the defendants have in fact conducted their business, and not by the manner in which they might have conducted it. But as to the comparative expense of the old process, the cost at which they used that process, if they did once use it, although strong evidence against them, because they may be presumed to have used it as economically as they could, is not conclusive evidence that the old process could not have been used at a less cost. To hold otherwise would be to hold infringers of a patent for a new process, who had ever used the old process, to a different measure of accounting from those who had never used the old process at all. In the former opinion, the Court assumed as the result

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of the evidence that the saponifying process required twelve or fourteen percent of lime. 102 U.S. 102 U. S. 731 . There being evidence that such was the amount of lime used by some manufacturers under the old process, as well as that the average use of sulphuric acid under that process was 2 1/2 pounds to each pound of lime, we cannot say that the conclusion of the master ought to be set aside or modified as to either of these items.

The master finds that no material economy in operation has been secured by the change of process, and the testimony introduced by the plaintiff is not clear and decisive enough to overthrow his conclusion in this respect.

That part of the master's report which relates to the amount saved in glycerine water is as follows:

"It appears from the evidence that the average density of glycerine water obtained in the old lime saponification process was only 3/4 Baume, while that obtained from the digesters was from 3 to 3 1/4. It also appears that the concentration of the

latter to 15 cost $1.55 per barrel at the respondents' factory."

"Assuming the cost of concentration to be in like proportion for each degree, it is claimed that concentration from 3/4 to 3 1/4 would cost nearly $.94 per barrel, and the cost of such concentration is an item of gain and saving realized by the respondents, by reason of the greater density of the glycerine water obtained from the digesters, for which they should be charged in this accounting. But there is no testimony establishing that the cost of concentration is in proportion to its degree, nor is it reasonable to assume such to be the fact; indeed, it is apparent that the cost of concentrating a single degree would be much greater in proportion than a more extensive operation, while an additional degree of concentration in an extensive operation would affect the cost but little."

"It appears in evidence that glycerine water was sold in the market at so much per barrel for each degree of density, and that the respondents sold it at the market price as it came from the digesters. It, however, required considerable concentration to prepare if for use, and they boiled it down to 15 for

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the purchasers, charging the cost thereof to them. Provided as they were with facilities for such work, the additional cost of concentration from a still lower degree could not be great. The only witness whose testimony is directly in point says it would not be material. Besides, if paid by the purchaser, it would not affect the profits of the respondents."

"But the evidence does show a larger yield of glycerine by the new process. While the old lime saponification process was in use, glycerine had no market value; consequently no effort was made to secure it, and there is no direct testimony as to the best results that could be secured by careful treatment, but the testimony shows that the average density of the glycerine which ran to waste was 3/4, and that it was about equal in volume to the fat."

It is claimed that the same volume of glycerine water was drawn from the digesters, while its density was much greater. But the master finds from the

evidence that the respondents used two charges of water, each half the bulk of the fat, the first charge drawn from the digesters being the glycerine water sold by them. There was consequently double the volume of glycerine water in the former process, which accounts in part for difference in density, but the comparison still shows considerable loss due to various causes, which is further increased by the additional concentration required, the average result of tests made in various degrees of concentration indicating that it requires about 4 4/5 barrels of 3/4 to make one of 3.

"The accompanying table B shows the quantity and value of glycerine water obtained by the respondents from the digesters, and also the number of barrels, concentrated to 3, that could be obtained from the fat treated by lime saponification, and the value thereof at market prices, the difference being the amount gained by reason of the greater yield of glycerine from the digesters, *viz.,* $61,701.77."

As, according to the master's report and the whole evidence, the glycerine obtained by either process must, in order to be sold, be concentrated to 15, and it is not shown how much, if anything, more it would cost to concentrate from 3/4 to 15 than from 3 1/4 to 15, and the purchaser in either case pays the cost

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of concentration to 15, the plaintiff fails to show that anything should have been allowed for the cost of concentration.

But the finding of the master that, in the new process, "the respondents used two charges of water, each half the bulk of the fat, the first charge drawn from the digesters being the glycerine water sold by them," and "there was consequently double the volume of glycerine water in the former process," as well as the corresponding statement in his table, B, that the amount of glycerine water obtained by the new process was 65,312 barrels, while the amount that would have been obtained under the old process would have been 130,624 (misprinted in the record 134,624) barrels, is quite inconsistent with the sworn answer to the

bill, and with the testimony of the defendants.

The answer states that in the tank were placed fat and water in equal quantities, and that during the operation, the first charge of water was drawn off and a second charge of water introduced.

The defendant James N Gamble testified that the barrels of glycerine obtained under the new process were 40-gallon barrels containing, as he estimated, 330 pounds, and to the question, "Can you state what amount of water was used in each charge in the process as carried on from 1870 to 1875?", answered:

"I cannot state positively from recollection of what was absolutely used. My recollection was, however, that it was in each charge about fifty percent of the fat, and this recollection is confirmed by the amount of glycerine water obtained."

The amount of glycerine water obtained, as stated by the master from the defendants' books, was 65,312 barrels, which at 330 pounds each, is 21,552,960 pounds. This is not half, but 92.4 percent of 23,322,777, the number of pounds of fat treated by the defendants, as ascertained by the master from their books, and perhaps a somewhat, but not much, less proportion in bulk. As to the old process, the defendant William A. Proctor, who was a member of the firm while they were using it, testified as follows:

"64. The saponifying tubs were large enough to contain about double the quantity of fat you put in them, I understand?"

" *Ans.* They were."

"65. About how much water was put into these tubs, along with the fat?"

" *Ans.* A little less than the volume of the fat, so that the vats were almost full. It was calculated that the condensed steam would supply water enough to keep them full."

"66. When the cooking of the mass in the saponifying tubs was completed, the tubs were about full of lime soap and water, I understand?"

" *Ans.* They were not full, there being space enough to allow for the boiling of the water without excessive flashing out; that was all. The water in the vat, when the operation was through, was about equal to the bulk of the fat that had been put in."

Upon this testimony, as the whole of the glycerine could hardly have been separated from the mass of lime soap by merely drawing off, it may safely be concluded that the amount of glycerine water, obtained under the old process, which the witness speaks of as "about equal to the bulk of the fat that had been put in," was not more than 90 percent of the fat treated, and that there was no substantial difference in this particular between the results of the two processes.

It is therefore clear that the old process would produce only one-half the amount of glycerine reported by the master and stated in table B, and that the sum of $61,701.77 at which the master has arrived by deducting from $103,143.03, the value of 65,312 barrels of glycerine water obtained under the new process, $41,441.26, the value of 130,624 barrels, as obtainable under the old process, must be increased by adding half of the amount deducted, or $20,720.63.

The findings of the master, upon which he bases his conclusion of the amount of loss of fatty acids in using the plaintiff's invention as compared with the old process, are shown by the following extracts from his report:

"It does not appear that saponification by water alone in such digesters" as the defendants used "had been regularly employed by anyone; but the testimony shows that" those

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who tried to do so, under licenses from the plaintiff,

"all became satisfied that a satisfactory result could not be secured by that process alone, and found it necessary to employ some additional agency to secure complete saponification at safe pressures within reasonable time."

"During the period of this accounting, the respondents used one percent of lime and a second charge of water, completing the process in about nine and a half hours at a pressure of about 225 pounds. With these two modifications, both of which are shown by the evidence to be efficient, a good quality of fatty acids was obtained, though not fully equal to that obtained by lime saponification."

"The fatty acid product obtained by the respondents, operating in their digesters for nine and a half hours at an average pressure of 225 pounds, by the action of water alone, was inferior in value to the product of lime saponification."

"The experiments made pending the hearing before the master at 225 pounds pressure, without lime or change of water, yielded products containing an average of 92.5 percent of fatty acids."

"As compared with the result of lime saponification, the experiments at 225 pounds pressure show a loss of 6 pounds of free fatty acids for each hundred pounds of fat treated, and an admixture of undecomposed fat seriously affecting the value of the product. . . . The fatty acids were worth at least 9 cents per pound, making the direct loss of fatty acids not less than 54 cents upon each hundred pounds of fat treated."

"There is no testimony from which the master can determine to what extent the value of fatty acids actually obtained was affected by the admixture of undecomposed fat, and no allowance has been made therefor."

"During the period of infringement, the respondents treated 23,322,777 pounds of fat in their digesters with one percent of lime. The evidence shows that 11 1/2 pounds of lime completely saponify 100 pounds of fat, in close digesters, under pressure;"

and

"in the process employed by the respondents, 2,028,024 pounds of the fat treated by them were converted into lime soap by the action of lime, and 21,294,753 pounds

were converted into a fatty acid mixture, containing 92.5 percent of free fatty acids, by the action of water, the further decomposition of such mixture being effected by modifications of the complainant's process."

Upon comparing the master's report with the evidence, we are unable to accept his conclusion upon this part of the case.

Much of the testimony on which he chiefly relies was in the record upon which the case had been previously heard before this Court, having been introduced to support the objection that the particular apparatus described in the plaintiff's patent for carrying the process into effect could not be operated to produce any useful result, of which the court then said: "We have examined the evidence on this point, and are satisfied that is shows the objection to be unfounded." 102 U.S. 102 U. S. 730 . Under these circumstances, the master appears to us to have given too much weight to this, as contrasted with the other testimony in the original record, although it is quite true, as argued by the defendants, that the question of the practical economy of the patented process, as compared either with older processes or with the subsequent modifications used by the defendants, is distinct from the questions of utility and infringement heretofore determined.

The testimony of experts since taken, and the tables of experiments made by them pending the hearing before the master, are quite unsatisfactory, for reasons fully set forth in the brief for the plaintiff, which it would take too much space to recapitulate.

Apart from these considerations, and even assuming that the master is right in reporting that the modifications of using one percent of lime and two charges of water, made by the defendants in the plaintiff's process, are shown to have been efficient, and that the defendants, in accounting with the plaintiff for the profits made by them from the use of his invention, are entitled to be allowed for the effect of such modifications, the evidence wholly fails to support the master's conclusion that in the use of the plaintiff's process, without addition of lime or

change of water, as compared with the lime saponification process, there is a loss of 6 pounds of free fatty acids for each

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hundred pounds of fat treated, or to show that there has been any loss of free fatty acids which affects the value of the product.

The master's conclusion is based upon the finding that the product of the patented process, without modification, contains only 92 1/2 percent of free fatty acids, and upon the hypothesis that the product of the old process contained 98 1/2 percent.

But there is no proof whatever that there was any such difference in the result of the two processes, or that the product of the old process contained 98 1/2 percent of fatty acid. No chemical analysis of the product of the old process appears to have been made. The defendants' own experts testify that the highest possible amount of fat acid in mure tallow is only 95 and a fraction percent. And two of the defendants, as well as Ropes, one of the witnesses on whom the master relies, and Verdin, a partner of Mitchell, testify that in using the old process, the whole average product was 95 percent of the amount of fat treated.

The testimony of one of the defendants, James Gamble, who had been forty years in the business and was examined as a witness in their behalf, clearly exhibits his general impression as a practical manufacturer not only that the product of the old process was not more than 95 percent of fatty acid, but also that there was no comparative loss of fatty acid by Tilghman's process. On cross-examination, he testified as follows:

"14. Was there more or less fatty acid obtained by the old process used by you prior to 1858 than by the process used by you since 1870?"

" *Ans.* I think there would be no difference if the fatty acid from the tank in the new process is well settled, but it won't settle as well as in the old. In actual practice, there is more weight in the product of the new process, as it contains more sediment than from the old; but I think the amount of fatty acids in each is

the same."

Upon the direct examination's being resumed, he further testified:

"16. Do you know how many pounds of fatty acids were practically produced from 100 pounds of fat treated by the old saponification process used by you prior to 1858?"

" *Ans.* We

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always made a calculation of 95 pounds, but I cannot say more than that."

"17. Do you know how many pounds of fatty acids were practically produced from 100 pounds of fat treated by the process used by you from 1870 to 1875?"

" *Ans.* We calculated the same."

"18. Was this calculation or estimate founded upon any tests made by your firm or under their direction?"

" *Ans.* No, sir. I do not think a test practicable; it is no more than guesswork."

"19. So far as you have any actual knowledge, there may have been a difference in the weight of fatty acids produced from 100 pounds of fat treated by the old saponification process, and the process as used by you from 1870 to 1875, may there not?"

" *Ans.* I think when we have examined and find the lime all clear of the acids, the product in each case must be the same, except as to the sediment remaining in the tank stock."

The great preponderance of the evidence is to the effect that the product of the plaintiff's process, using water alone and all at one time, would contain as much as 95 percent of free fatty acids. Even the defendants' principal expert, in an experiment testified to by him and stated in his table, obtained that proportion by

the use of equal quantities of water and of fat, without lime or change of water, under a treatment for nine hours at 225 pounds of pressure.

Moreover, the real question is not of the exact quantity of fatty acid, as proved by chemical tests, contained in the two products, but whether the one is as good as the other for use in the manufacture of candles. The defendants' testimony shows that manufacturers always test the fitness of the product for that use by pressure with the thumb, and never by chemical analysis, and upon all the evidence, there can be no doubt that a difference between 95 and 92 1/2 percent in the proportion of fatty acids does not affect the commercial or practical value of the product.

From these considerations, it follows that nothing is to be deducted for a loss in fatty acids, and that to the amount of

$182,731.46, saved in chemicals, and $61,701.77, gained in glycerine water, as reported by the master, there is to be added $1,000 for his mistake in adding up the items of chemicals, and $20,720.63 for his error in computing the amount of glycerine water, making a total amount of $266,153.86.

This result is arrived at by taking the amount of savings in chemicals, as found by the master, which the defendants produced no evidence to control, and which is less than such savings if computed by the standard of their own use under the two processes; then adding the amount gained in glycerine water, as appearing by the facts stated in the master's report or testified to by the defendants themselves, correcting only a clear error in the master's computation, and rejecting the deduction made by the master on account of a supposed loss of fatty acids in using the plaintiff's invention as compared with the old process, because the evidence returned with the master's report is quite inconsistent with the theory that there was any loss in this respect.

The only exception of any importance not disposed of or rendered immaterial by what has been already said is the exception of the plaintiff to the refusal of the master to allow interest on profits before the date of his report.

If the question thus presented were a new one, it would require grave consideration. But by a uniform current of decisions of this Court, beginning thirty years ago, the profits allowed in equity for the injury that a patentee has sustained by the infringement of his patent have been considered as a measure of unliquidated damages which, as a general rule, and in the absence of special circumstances, do not bear interest until after their amount has been judicially ascertained, and the provision introduced in the patent act of 1870, regulating the subject of profits and damages, made no mention of interest, and has not been understood to affect the rule as previously announced. *Silsby v. Foote,* 20 How. 378, 61 U. S. 387 ; *Mowry v. Whitney,* 14 Wall. 620, 81 U. S. 651 ; *Littlefield v. Perry,* 21 Wall. 205, 88 U. S. 229 ; Act of July 8, 1870, c. 230, 55, 16 Stat. 206; Rev.Stat. 4921; *Parks v. Booth,* 102 U. S. 96 , 102 U. S. 106 ; *Root v. Railway Co.,* 105 U. S. 189 , 105 U. S. 198 , 105 U. S. 200 , 105 U. S. 204 ; *Illinois Central Railroad*

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v. Turrill, 110 U. S. 301 , 110 U. S. 303 . Nothing is shown to take this case out of the general rule. At the time of the infringement, the fundamental questions of the validity and extent of Tilghman's patent were in earnest controversy and of uncertain issue. Interest should therefore be allowed, as in *Illinois Central Railroad v. Turrill,* just cited, only from the day we n the master's report was submitted to the court (which appears by the terms of his report and of the decree below to have been October 7, 1884), upon the amount shown to be due by that report and the accompanying evidence.

Decree reversed, and case remanded to the circuit court, with directions to enter a decree for the plaintiff for the sum of $266,153.86, with interest from October 7, 1884, and costs.

MR. CHIEF JUSTICE WAITE dissented.

MATTHEWS, J., did not sit in this case or take any part in the decision.

* In *Mevs v. Conover,* which came from the Circuit Court of the United States for the Southern District of New York and is reported at different stages below in 3 Fisher Pat.Cas. 380, 6 Fisher Pat.Cas. 506, and 11 Blatchford 197, the opinion of this court, not published in its official reports but printed in the edition of the Lawyers' Cooperative Publishing Company, Bk. 23, p. 1008, appears of record to have been delivered on March 13, 1877, by Mr. Justice Strong, as follows:

"The only errors assigned in this case are to the confirmation of the master's report, and they relate to the ascertainment of the profits which the defendant had made by his unauthorized use of the plaintiff's invention. That the machine employed by the defendant in splitting wood was an infringement of the plaintiff's patent is established by the decree which sent the case to the master, and no complaint is made of that, but it is contended the master erred in reporting 'there was saved to the defendant seventy-five cents per cord in the wood split by him and made into bundles.'"

"In the ascertainment of profits made by an infringer of a patented invention, the rule is a plain one. The profits are not all he made in the business in which he used the invention, but they are the worth of the advantage he obtained by such use, or in other words, they are the fruits of that advantage. *Mowry v. Whitney,* 14 Wall. 651. We are not convinced that the rule declared in that case was not followed in this. The patented invention infringed by the defendant was a new and improved machine for splitting kindling wood, and a distinguishing feature of it -- perhaps the principal feature -- was a device for the automatic feeding of the wood to the reciprocating splitting knives or cutters by a movable platform or apron carried forward by an endless chain. That device the defendant used, though it is said he used it in another machine known as Green's. The evidence is full and uncontradicted that an advantage is gained in splitting kindling wood by a machine with that device of at least seventy-five cents a cord over splitting it by hand or without that device. It was in harmony with this evidence the master reported and the court decreed."

"It is urged, however, that the Green machine, in which the defendant used the plaintiff s invention, was old and defective, and that no profits were actually

received from such an use. But if such be the fact, if the defendant was a loser by splitting wood with the Green machine, his loss was less to the extent of seventy-five cents on each cord split than it would have been had he not used the patented invention. Such a result was equivalent to an equal gain, and it was rightly estimated as a part of the profits for which the infringer was responsible."

"These observations are sufficient for the present case. We notice, however, a suggestion made on behalf of the appellant that since the decree in the circuit court, the patentee has surrendered the patent upon which the decree was founded and obtained a reissue. This does not appear in the record, and if it did, it would be immaterial. We have held that the surrender of a patent extinguishes it, and that after its surrender, pending suits founded upon it fall with its extinguishment. The patent must remain unsurrendered not only when a suit upon it is commenced, but at the time of trial and judgment. But a surrender after final judgment or decree can have no effect upon a right passed previously into judgment. After that, there is nothing open for litigation. The right of the patentee then rests on his judgment or decree, and not on his patent. The suggestion, therefore, cannot avail the appellant, and the decree of the Circuit Court must be affirmed."

" *Decree affirmed.* "