

PARKER v. HULME.

{1 Fish. Pat. Cas. 44; 7 West. Law J. 417; Merw.

Pat Inv. 560.}]¹

Circuit Court, E. D. Pennsylvania.

Nov., 1849.

PATENTS—INTERPRETATION OF
 SPECIFICATIONS—NEW
 RESULT—PRIORITY—INFRINGEMENT—DAMAGES—SPECIAL
 VERDICT—NOVELTY.

1. The specification, being an instrument of writing, its interpretation is a matter exclusively for the court, who must explain it.
2. Duplication of parts, producing a new and useful result, may be patentable.

3. The propulsive effect of the vortical motion of water, in a reaction wheel, operating by its centrifugal force, and so directed by mechanism as to operate in the appropriate direction, is patentable.
4. He who first discovers that a law of nature can be applied to produce a particular result, and having devised machinery to make it operative, introduces it to the knowledge of his fellow-men, is a discoverer and inventor of the highest grade. He may assert and establish his property, not only in the formal device, for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes; but in the essential principle which his machine was the first to embody, to exemplify, to illustrate, to make operative, and to announce to mankind. This is not to patent an abstraction, but rather the invention, as the inventor has given it to the world, in its full dimensions and extent.
5. Where a dispute arises as to priority of invention, a patentee is allowed to show the real date of it, and to have his right as fully secured as if he had taken out his patent at that time.
6. It is not enough, in order to defeat a patentee's right, to show that a machine like that patented had been made, but it must also be shown that it was used before the patentee's invention.

7. The question of infringement is one irrespective of motive. The defendant may have infringed without intending, or even knowing it; but he is none the less an infringer.
8. Damages should be compensatory; the criterion is indemnity; but the jury can not include the expenses of litigation in the verdict.
9. Jury requested to find a special verdict as to issue of novelty.

This was an action on the case [by Oliver H. P. Parker against James S. Hulme], tried before KANE, District Judge, and a jury, for the infringement of letters patent, granted to Zebulon and Austin Parker, October 19, 1829, for "a new and useful improvement in hydraulic power," and assigned to plaintiff. The history of the invention was substantially as follows: The patentees, in the year 1827, by observing in a horizontal reaction wheel, with a fixed flume, the operation of a simple stationary guide, discovered—and, by removing and replacing the guide, tested—the utility of applying as a motive power, the pressure, or centrifugal force of water made to revolve within such a wheel, and to pass into and act upon its circumferential buckets, with a circular or vortical motion, coinciding with that of their revolution. In the following year they experimented with both horizontal and vortical reaction wheels, by various adaptations of fixed guides, so formed and adjusted as to produce, maintain and regulate the proper circular currents, and give to them the required direction within the buckets. The vertical wheels were arranged in pairs, and the fixtures were so adapted, that, in several particulars, a single stationary piece of machinery served for two wheels. The patentees, in the prefatory part of their specification, declare that their invention consists of "a new and useful improvement in the application of hydraulic power, by a method of combining percussion with reaction, applied and exemplified in: 1. A compound, vertical, percussion and reaction water-wheel, for saw-mills, and other purposes, with the

method of applying water on the same. 2. An improved horizontal, reaction water-wheel, with the method of combining percussion with reaction on it. 3. A method of combining percussion with reaction, on common reaction wheels, or those already in use.” It is then stated that “the principle upon which this improvement is founded, is that of producing a vortex within reaction wheels, which by its centrifugal force, powerfully accelerates the velocity of the wheel, and adds, proportionately, to its momentum.”

The claims of the patent are as follows:

“The parts of the above-described machinery, claimed as original, and our invention, in all their necessary dimensions and proportions, and for the use of which we seek an exclusive privilege, are as follows:

“1. The compound, vertical, percussion and reaction wheel, for saw-mills and other purposes, with two, four, six, or more wheels on one horizontal shaft. The concentric cylinders, inclosing the shaft, and the manner of supporting them. The spouts which conduct the water into the wheel, from the penstock, with their spiral terminations between the cylinder.

“2. The improvement in the reaction wheel, by making the buckets as thin at both ends as they can safely be made, and the rim no wider than is sufficient to cover them. The inner concentric cylinder. The spout that directs the water into the wheel, and the spiral termination of the spout between the cylinders.

“3. The rim and blocks, or planks, that form the apertures into the wheels, and the manner of forming the apertures. The conical covering on the blocks. The hollow box-gate in any form, either cylindrical, square, or irregular.”

Titus, Campbell & Cadwallader, for plaintiff.

Hazlehurst, Keller & Clarkson, for defendant.

KANE, District Judge (charging jury). The plaintiff, Oliver H. P. Parker, for all the purposes of this suit, is the legal representative of Zebulon and Austin Parker,

the patentees named in certain letters patent, which were issued on the 19th October, 1829, for “a new and useful improvement in hydraulic power”; and the complaint in this suit is, that the defendant has used their patented invention without their authority.

Three questions have been discussed:

1. What is the invention which the letters patent profess to secure to the patentees?

2. Were the patentees the first persons to make and reduce that invention to use?

3. Has the defendant used that invention? And if so, what damages should be recovered against him?

1140 Of these, in their order:

1. The import and extent of the patent.

This is to be derived from, first: The specification made by the patentees, at the time of their application for a patent, in which they set forth the supposed discovery; and secondly: The act of congress, of 21st February, 1793 [1 Stat. 318], under which the patent was issued; upon which the question will be, whether this discovery, or invention, was such that it was possible to secure it under that law.

First, as to the import of the specification. The specification, being an instrument of writing, and the words of which it is made up having a fixed and plain import, its interpretation is a matter exclusively for the court, who must explain it. This part of the case is not for the jury, who, for the purposes of this cause, will adopt and act upon the interpretation given to it by the court. There is great reason and importance for this distribution of the respective duties of the court and the jury. The import of the instrument is purely a question of law. The interpretation of complicated instruments of writing is a special occupation, requiring, like all others, special training and practice. The judge, from his training and discipline, is more likely to give a proper interpretation to such instruments than a jury; and he is, therefore, more

likely to be right, in performing such a duty, than a jury can be expected to be. The action of a judge, in such a case as that of interpreting the specification, is, moreover, open to review and correction, by reconsideration on his part, or by the revisal of a superior, or appellate court, where his reasoning can be tested. This is not so with a jury, who assign no reasons for their opinion, can not be called on, and are not permitted to review or reverse their action; and who, passing upon many questions in their private deliberations, do not declare, by their verdict, upon what particular elements they at last unite in a verdict; and it is impossible for a court to analyze them. The rule is, therefore, established, that on the judge is placed the responsibility; and he must declare the proper interpretation of written instruments.

I therefore proceed to the consideration of the import of the specification. The patentees, in their specification, claim that they have “invented a new and useful improvement in the application of hydraulic power by methods of combining percussion with reaction, applied and exemplified” in three forms of machinery, which they mention. The first of these only is involved in the present controversy; it is, “a compound, vertical, percussion and reaction water-wheel, with the method of applying the water on the same.” The third section of the act of congress, of 21st February, 1793, under which this patent was issued, requires of the inventor, who seeks to obtain a patent for mechanical invention, that “he should fully explain the principle” (involved in his machine), “and the several modes in which he has contemplated the application of that principle or character.” The patentees, in this case, accordingly explain the principle on which their invention is founded. They declare it to be “that of producing a vortex within reaction wheels, which, by its centrifugal force, powerfully accelerates the velocity of the wheel, and

adds proportionably to its momentum.” They next proceed to declare the modes in which they have contemplated the application of this principle or character; and this they do by describing an arrangement of vertical reaction wheels, in pairs, on a horizontal shaft, with certain contrivances for introducing the water into them. The instrument closes with these words:

“The parts of the above-described machinery, claimed as original, and our invention, in all their necessary dimensions and proportions, and for the use of which we seek an exclusive privilege, are as follows, to wit: 1st. The compound, vertical, percussion and reaction wheel, for saw-mills and other purposes, with two, four, six, or more wheels, on one horizontal shaft. The concentric cylinders, inclosing the shaft, and the manner of supporting them. The spouts which conduct the water into the wheels from the penstock, with their spiral termination between the cylinders.”

Such is the instrument which the court is called upon to interpret, so as to ascertain what it was for which the patentees claimed a patent as inventors.

Did they mean to assert, 1. That they were the first to discover and to avail themselves practically, by mechanism, of the effect of vortical motion, imparted to water, in a reaction wheel, and operating by its centrifugal force to accelerate the wheel's velocity; or 2 (not so expanding their supposed discovery). That they were the first to devise and avail themselves practically, of certain mechanical arrangements, which they have described in their specification, and which exemplify and apply the accelerating effect of this motion; or, 3. That they were the first to do both of these?

And then, as to the mechanical arrangements which they describe—did they mean to assert, 1. That they were the first to devise and apply the combination of them to the particular object; or, 2. That they

were the first to devise and apply them separately, in furtherance of that object; or, 3. That they were the first to devise and apply, as well, the elements of the combination as the combination itself, for the object proposed?

These are questions, some of them, at least, of great nicety, and great interest, and on which if the opinion now to be expressed were, in its consequences final, I should desire time for further consideration, after appropriate argument. But, for the purposes of the occasion, I feel at liberty to instruct you that the patentees claim, in their specification, 1141 to have been the first to discover, devise, and apply to use:

1. The propulsive effect of vortical motion of water in a reaction wheel, operating by its centrifugal force, and so directed by mechanism, as to operate in the appropriate direction; and,

2. The mechanical arrangements for making, guiding, and controlling this vortical motion, as set forth in their specification, both as new mechanical devices, considered separately, in their application to these objects—and as new, in their combination, to produce and effectuate or perfect the same objects.

Passing, then, under the same general head, secondly, to the next subject for the interpretation of the court—the effect of the act of congress of 1793, in reference to the specification, upon the patentees' right—and assuming, for the present, that the patentees were inventors or discoverers of what the court has instructed you that they claimed, could they lawfully obtain an exclusive property in the subject-matter of their claims?

As to the mechanical arrangements and devices, separately or in combination, there is no question that they were patentable. In regard to the arrangement of vertical wheels in pairs, on a horizontal shaft, the mere fact that this was a duplication of the single wheel, does not, of itself alone, invalidate the patent.

Duplication producing a new and useful result, as it was here produced, may be patentable. It is often the material part of a discovery; because it may be that which renders useful what was previously useless. In the case of the paper machine before this court,² it was held, that a number of rollers, acting in pairs for a particular purpose, might be patented, though a single pair could not have been.

As to the greater and more general subject of claim, viz. the propulsive effect of vortical motion of water in a reaction wheel, operating by its centrifugal force—and so directed by mechanism as to operate in the appropriate direction—the court instructs you, not without being aware that the question is one of possible difficulty, that this also is a valid subject of claim, and properly to be secured by letters patent.

The views which lead to this instruction are too elaborate and metaphysical, perhaps, to find a place properly in a charge at bar. They may, however, be made intelligible, by reference to a few simple positions.

All machines may be regarded as merely devices, by the instrumentality of which the laws of nature are made applicable and operative to the production of a particular result. He who first discovers that a law of nature can be so applied, and having devised machinery to make it operative, introduces it in a practical form, to the knowledge of his fellow-men, is a discoverer and inventor of the highest grade—not merely of the mechanism, the combination of iron, brass, and wood, in the form of levers, screws or pulleys—but the force which operates through the mechanical medium—the principle—or, to use the synonym given for this term in the act of 1793—the character of the machine, and this title as a discoverer he may lawfully assert, and secure to himself by letters patent; thus establishing his property, not only in

the formal device for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes—some as good, others better, perhaps all dissimilar, yet all illustrative of the same principle, and depending on it—but in the essential principle which his machine was the first to embody, to exemplify, to illustrate, to make operative, and to announce to mankind.

This is not, in my view, to patent an abstraction, in the sense which this expression has borne in the arguments on this subject. It is rather to patent the invention as the inventor has given it to the world, in its full dimensions and extent; nothing less, but nothing more. It is to patent the invention in the broad and general terms that properly express it, and to secure to the party who has made it, the exclusive right, for a limited time, to precisely that discovery, which he has imparted to the public, and which, when that limited time expires, the public will enjoy as the fruit of his mind.

The Court, therefore, instructs you, as a matter of law, pertinent to the issues of this cause:

1. That the letters patent, under which the plaintiff claims, vest in the patentees an exclusive right to construct and use mechanical devices—whether such as are described in their specification, or equivalents therefor—for producing, directing and applying, as a motive power in reaction wheels, the centrifugal force of water revolving vortically round the shaft, and passing into and acting upon the wheels in the direction of their revolution.

2. That the same letters patent vest in the patentees a similar exclusive right to employ vertical reaction wheels, having two or more wheels arranged in pairs, on the some horizontal shaft.

I pass then to the second leading question in the cause:

Were the patentees the first persons to make and reduce these inventions to use? If they were not, then so far as their claim is in this respect unfounded, their patent is void. The evidence on this question is for the jury exclusively to consider. You will decide upon its effect, giving to the advice and review of the facts, by the court, such 1142 weight and influence as in your judgment they may deserve, but remembering always that the responsibility of the decision is altogether your own.

On behalf of the plaintiff the evidence is:

1. The patent itself, issued upon the oath of the patentees. This is *prima facie* evidence; that is to say, it stands until opposed by other proof; but as this patent was issued under an act which did not require a scrutiny by the patent office, as the law now does, it should be regarded as evidence of the lowest grade. But, having been renewed by the commissioners in 1843, after public notice and full examination, it rises in the scale of evidence on this point. Still, though it is *prima facie* evidence of a higher character, it is *prima facie* evidence only.

2. The testimony given here by one of the inventors, Zebulon Parker, who details clearly, simply, modestly, and (I think I may add, without the hazard of differing from you), as every man who heard the testimony must say, truly, the history of the invention.

3. The testimony of his brother, who witnessed the whole course of the invention, and of numerous neighbors, who also watched its progress. They fully confirm Mr. Parker, and fix the date of the invention, as perfected and reduced to successful use, as early as the month of September, 1828.

This date is important; for, by the rules of law, when a dispute arises as to the priority of an invention, a patentee is allowed to show the real date of it, and have his rights as fully secured as if he had taken out his patent—unless, indeed, he delayed his

application in a manner and with views which are not imputed here. The date, therefore, with which we are to compare the testimony in settling the claim of priority in invention, is, for this case, September, 1828.³

These three heads embrace what may be termed the positive proof on behalf of the patentees on the question of originality.

4. But, besides this, you have a negative proof of a very high order, in the fact that the patent is now more than twenty years old, and that it has not been declared void, under either the 6th or 10th section of the patent act of 1793. When the subject of a patent is of the importance and value that must be ascribed to this, and the patent has had the additional publicity of a renewal, the fact that it has, during the twenty years, withstood all attacks upon it, is a strong proof of its genuineness.

5. Other negative proof is to be found in the circumstance, that with all the scientific libraries of the country at their command, the defendant, and the very learned and ingenious gentlemen who represent him as counsel, have found no one printed book in which anything like this invention is described.⁴

This is almost anomalous in the history of patent causes. I have scarcely ever seen one tried, in which there was any question upon the originality of an invention, that numerous works were not produced, each of which exhibited some similitude to the thing patented.

6. That as to the major subject of claim, the direction and effect of the vortex under given circumstances, the practical men who were examined here as experts on the behalf of the defendant, strange to say, denied their existence altogether; thus showing, that even to this day, they did not know or believe that

the discovery in question has been made. This is, to my mind, negative proof of the very strongest kind.

Against all this, you have the evidence of Mr. Holmes and Mr. Seymour. They speak of things of ancient date, of very ancient date, some of which occurred in their boyhood; which, if they ever were known, are now forgotten, as the neighbors testify, in the places which knew them. To my mind, they are evidently confounding other wheels, acting on different principles from those invented by the patentees. I can not imagine that any thing so meritorious, so useful, so important to our great community, should have been forgotten and lost, if it ever existed. A patent case is never tried, or a verdict recorded in favor of a patentee, without his encountering a mass of just such testimony as that of these two witnesses. I do not impute to either of them the wish to misrepresent; but memory plays us sad tricks when we attempt to speak of the precise angles of the buckets of a wheel which we may have seen while fishing by the side of a mill stream, when we were children. Subsequent observation and information mingle themselves curiously with the impressions of early life; and men are prone to believe that they have seen that of which they have subsequently read, or have heard from others. A highly respectable gentlemen in this city, testing the strength of his ancient recollections, once recurred successively to by-gone transactions that he had witnessed, until he described an occurrence which he, himself, a moment afterward, discovered to have taken place 1143 before his birth. You will determine upon the effect to be attributed to the testimony of these witnesses.

One portion of Mr. Holmes' testimony calls for the remark that it is not enough for the defendant to show that wheels like the patented ones were made, but that he must also show that they were used, before the plaintiff's invention. This is the test of

what is required to defeat the title of a patentee of an improved machine. In the present case, moreover, the mere proof of use of such wheels would not suffice, unless it was also proved that water was also introduced into the wheel with the proper direction given to it, as otherwise it could not have involved the principle of the improvement patented. This is illustrated by the accidental circumstance which led to Mr. Parker's discovery.

On this question of originality, however, the case is before you; and you are the judges upon the evidence. You will inquire:

1. Were Zebulon and Austin Parker the first persons to discover, and by mechanical devices to apply to use, as a motive power, the reaction wheels, the centrifugal force of water revolving vortically around the shaft, and passing into, and acting upon, the wheels, in the direction of their revolution?

2. Were they the first persons to invent and apply to use vertical reaction wheels, having two or more wheels arranged in pairs on the same horizontal shaft?

For purposes connected not only with this cause in its ulterior stages, but with other causes pending in this court, I beg the favor of you, when you shall announce your verdict, to certify to me your united opinion, if you shall have formed one, on each of these two questions. By so doing, you will, moreover, confer a favor on both of the parties to this litigation, by defining for them what, in the opinion formed by a highly intelligent jury, after a most full and well-directed examination, are their respective rights.

3. If you shall have determined either of these questions in the affirmative, the next question, which is also for your consideration, upon the evidence, is: Has the defendant infringed the patent right now held by the plaintiff?

This question is one irrespective of motive. The defendant may have infringed without intending, or

even knowing it; but he is not, on that account, the less an infringer. His motives and knowledge may affect the question of damages, to swell or reduce them; but the immediate question is the simple one, has he infringed?

1. Has he constructed, or used mechanical devices, such as are described in the specification, or equivalents therefor, for applying, as a motive power in reaction wheels, the centrifugal force of water revolving vortically around the shaft, and passing into and acting upon the wheels in the direction of their revolution?

2. Has he constructed or used vertical reaction wheels, having two or more wheels arranged in pairs on the same horizontal shaft?

As to the second of these questions; if you shall have determined that this part of the patent is valid, you will have no difficulty in arriving at a conclusion. Indeed, the use of such wheels is admitted.

As to the first of them; if you shall have determined that this part of the patent is valid, you will, perhaps, have a less easy task; but I can not believe that it will embarrass you much.

It is often difficult for those of us who are not educated in the higher branches of mechanical science, to receive with implicit faith, the deductions which the learned make with confidence from the truths with which they are familiar; and this difficulty is often not a little increased by the directness of appugnation which these deductions encounter from those who call themselves practical men, as contradistinguished from men of theoretic science.

We have great reason, in this case, to be grateful to the ingenious and well-instructed gentlemen, who have enabled us, by direct experiment, to test the relative value of scientific deduction and empirical experience. I do not know how the working of that little glass-faced machine affected your minds, but I am free to

say, for myself, that I have never witnessed a more beautiful and convincing illustration of the truth and value of scientific deduction. Professor Cresson, who was examined as one familiar with all the learning in the books, was asked what would be the course of water falling into a case of different forms, in different ways, passing in different angles, according to different arrangements of the gates and sluice. In reply, his opinion was given, as deduced from scientific principles, once, only, resting upon the observation of an experiment he had made or seen. This alone was stated as "fact," and not as a matter of deduction. The rest was a mere lecture, as from the professor's chair, informing us what the water would do, if the laws of science were really truths of nature. Professor Frazer, who took the stand afterward, and who had not heard more than a small part of the examination of Professor Cresson, answered only from theories and principles, and coincided with him in all his answers. Next came the little machine and its whirling pellets; confirming absolutely everything that these gentlemen had previously set before us in theory; marking out every current, every disturbance, every counter-current, however eccentric; indicating their direction, indicating their relative forces, with the gate in every position, without the gate, with the inclined plane, and without it, just as these men of science had so decidedly, 1144 yet so modestly, declared that their theories had taught them. I repeat, gentlemen, that I have never known scientific truth more beautifully illustrated than it was by that machine. Now these witnesses swear, and have demonstrated, that the devices of the defendant are equivalents involving the same principle as those of the patentees' specification, and differing only in the degree of its application. If you place confidence in them, and think that the experiment made in your presence confirms them; and believe that the machines act in obedience to the same laws,

guided by the same mechanical principle; though the mechanism may be changed, though the proportions may vary, though they differ in the extent to which the common purpose is accomplished, the court instruct you, as matter of law, that the defendant has infringed upon the right secured by the plaintiff's patent. The question, however, is for the jury, and if they entertain doubts, they should operate in the defendant's favor; for it is the plaintiff's duty to prove the infraction of his rights.

Thirdly. If you shall find that the defendant has infringed, the next question for you to consider will be the amount of the plaintiff's damages.

Your verdict, if for the plaintiff, must be for the damages he has actually sustained; of course not for vindictive damages. There is nothing in the case to call for them; and such damages are out of place in verdicts in patent cases.

The damages to be assessed should be compensatory. The criterion is indemnity. You may take into consideration the loss sustained by the plaintiff, as you may, likewise, the profit made by the defendant. In estimating the loss to the plaintiff, from the defendant's unauthorized use of the machine, the price of a license is sometimes a fair guide; but not always. Sometimes a trifle from every one may well content the patentee, as in the case of a medicine, where a license to use is thrown in to all who will pay for the dose. So in the case of machines; in some of which, as for example, an improved pocket-knife or comb, where a half cent, singly, might amply compensate a patentee in the sale of a license, but would be no criterion of damage in case of infringement. It is so with every other invention which depends, for its value, on a general use by the community, and is, from policy, sold cheap. You are therefore to give compensatory damages, such as may indemnify the plaintiff for the injuries he has directly

sustained; but, according to the directions heretofore given in this court, you will not include his expenses of litigation in the amount of your verdict. Yet, upon the whole, the question of damages being one of compensation, of which it is always, in such cases, difficult to fix a standard, much must depend upon the discretion of the jury, who may sometimes properly take the conduct and motives of a defendant into consideration. I may add that, with the limitations and qualifications which I have stated, your verdict may be founded upon a full and liberal measure of the plaintiff's actual damages. But it will be a great advantage to him if you should, by your verdict, establish his patent; and I can not perceive any thing in the conduct of the defendant to call for more than a moderate rate of damage, so far as this inquiry may be involved in your deliberations.

In conclusion, I again ask the jury to consider the two questions upon each of which I have suggested that it may be useful that their finding should be specially certified; and I can not take leave of them without repeating the sincere thanks of the court for their assiduous attention and patience throughout the case. [The verdict and judgment are set forth in the docket entries above inserted.]⁵

The verdict was in favor of the plaintiff, and the jury certified in his favor both the points upon which they had been requested to find specially. On the motion for a new trial, the judge stated that so far as he had, upon the trial, suggested any doubt concerning the interpretation and effect of the specification of the plaintiff's patent, though he would be pleased to hear any argument on the subject, he did not wish any longer to be understood as inviting it, in order to remove or satisfy any doubt of his own, for he no longer entertained any. Upon this intimation, the

motion was not pressed [and the court entered a final judgment upon the verdict].⁵

[For other cases involving this patent, see note to *Parker v. Hatfield*, Case No. 10,736.]

¹ [Reported by Samuel S. Fisher, Esq., and here reprinted by permission. Merw. Pat Inv. 560, contains only a partial report.]

² *Knight v. Gavit* [Case No. 7,884]. When successive pairs of rollers gave a capacity for the combined graduation of pressure and regulation or temperature, as applied to the damp sheet during the drying process. [From 7 West Law J. 422.]

³ Note by the Reporter. In the previous year, 1827, the patentees, according to the testimony, had discovered, and practically ascertained, that to direct the water into a reaction wheel, so as to give it a circular motion within the wheel in the direction of its rotation, would increase the useful effect. If, therefore, the difference of time had in this case been material, as it was not the discovery of the more important part of the patented improvements would have been referred to the date of 1827. The particular application of it which was then successful, was to a horizontal wheel. Its application in the vertical wheels was successfully made in September, 1828, as stated in the text. (From 7 West. Law J. 424.)

⁴ The judge here referred to the Dictionary of Arts and Sciences, in the manner mentioned above. (From 7 West. Law J. 424.)

⁵ [From 7 West. Law J. 429.]

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