

Case No. 17,735. WILLIAMS v. ROME, W. & O. R. CO.
[15 Blatchf. 200;¹ 3 Ban. & A. 413; 15 O. G. 653.]

Circuit Court, N. D. New York.

Aug. 28, 1878.

PATENTS—REISSUES—LOCOMOTIVE LAMPS.

1. The reissued letters patent granted to Irvin A. Williams, December 19th, 1865, for an “improvement in locomotive lamps” (the original

WILLIAMS v. ROME, W. & O. R. CO.

patent having been granted to him April 29th, 1862), are valid.

[Cited in *Strobridge v. Lindsay*, 2 Fed. 695.]

2. The claims of said reissue are for patentable combinations and not for aggregations.

[Cited in *Hoffman v. Young*, 2 Fed. 77.]

3. The present case distinguished from *Hailes v. Van Wormer*, 20 Wall. 87 [U. S.] 353, and *Reckendorfer v. Faber*, 92 U. S. 347.

4. The question of infringement considered.

[This was a bill in equity by Irvin A. Williams against the Home, Watertown & Ogdensburgh Railroad Company for the infringement of letters patent No. 35,122, granted to I. A. Williams April 29, 1862; reissued December 19, 1865, No. 2,133.]

Edmund Wetmore, for plaintiff.

West & Bond, for defendant.

BLATCHFORD, Circuit Judge. This suit is founded on reissued letters patent granted to Irvin A. Williams, December 19th, 1865, for an "improvement in locomotive lamps." The original letters patent were granted to him April 29th, 1862. The specification of the reissue says:

"The object of my invention is to permit coal oil or kerosene to be used in lamps for locomotive head-lights with success and to obtain full advantage of its great light-producing capacity. In locomotive head-lights, it is important that the greatest amount of light should be concentrated, in the smallest practicable space, in order that the light may be as nearly as possible in the focus of the reflector which throws it forward of the locomotive. It is also important, in lamps burning kerosene, that the flame should be protected from irregular currents of air, which tend to produce flickering. The first requirement has been attained to some extent by the use of a tubular wick from which the fluid burns, but the lamps in which such wicks were used did not contain instrumentalities which enable them to burn without smoke all the coal oil which such a wick is capable of supplying. The improvement which constitutes the invention or subject-matter of this patent consists of novel combinations of a circular hollow wick tube, by which I mean a wick tube suitable for holding a tubular wick and admitting air to its interior, with various other instrumentalities, which, when combined as hereinafter described, produce a lamp which is suitable for burning coal oil in a locomotive head-light, and is more efficient for that purpose than any lamp heretofore known, because it furnishes the greatest quantity of light from a wick of a given size, without material flickering. The first of these improvements consists of the combination of a circular hollow wick tube with a perforated air screen to regulate the passage of air to the exterior of the flame, and a cap deflector to form a combustion chamber above the wick, from the orifice of which chamber the flame issues in intimate contact with the exterior and interior currents of air, after it has formed above the wick within its combustion chamber and its carbonaceous constituents have obtained a glowing heat therein. The second improvement consists of the combination of the said

YesWeScan: The FEDERAL CASES

circular hollow wick tube, perforated air screen for the exterior current of air, and cap deflector, with a lateral reservoir for the oil, by which I mean a reservoir so combined and arranged that the head from which the oil is supplied is at one side of the wick tube and above its lower end, whereby the reservoir can be placed outside of the reflector of the head-light, and the oil can nevertheless be supplied by gravitation at a level sufficiently near the burning part of the wick to keep it freely supplied with oil. The third improvement consists of the combination of the said circular hollow wick tube, perforated air screen for the exterior current of air, and cap deflector, with a button arranged above the orifice of the cap deflector, in such manner as to spread the flame after it issues from the orifice of the cap deflector, thereby lessening its height and confining it more nearly to the focus of the head-light. The fourth improvement consists of the combination of the said circular hollow wick tube, perforated air screen for the exterior current of air, and cap deflector, with a thimble wick holder for holding and moving the wick in the circular wick tube. The fifth improvement consists of the combination of the said circular hollow wick tube and lateral reservoir with a perforated air screen to regulate the passage of air to the interior of the flame or wick tube. The sixth improvement consists of the combination of the said circular hollow wick tube, perforated air screen for the interior current of air, and lateral oil reservoir, with the said, cap deflector. The seventh improvement consists of the combination of the said circular hollow wick tube, cap deflector, and perforated air screen for the interior current of air, with a button to spread the flame, above the orifice of the cap deflector. The eighth improvement consists of the combination of the said circular hollow wick tube, cap deflector, lateral oil reservoir, and perforated air screen for the interior current of air, with a button to spread the flame, above the office of the cap deflector. The ninth improvement consists of the combination of the said circular hollow wick tube and cap deflector with perforated air screens for both the exterior and interior currents of air. The tenth improvement consists of the combination of the said circular hollow wick tube, cap deflector, and perforated air screen for the exterior current of air, with a close gallery to support the chimney, by which I mean a gallery combined with the other members in such manner mat direct currents of air are not permitted to pass under the chimney and over the deflector, to cause the flame to flicker when the locomotive is in motion. The last of my improvements consists of the combination in a lamp of the following instrumentalities, viz.: The aforesaid circular hollow wick tube, thimble wick holder,

cap deflector, button, perforated air screen for the exterior and interior currents of air, and lateral oil reservoir.

“The lamp represented in the accompanying drawings embodies all my improvements, being an example of the best mode of embodying the invention known to me at the date of my application for the original patent. It has a circular hollow wick tube, C, composed of an interior cylinder in and an exterior cylinder 1, which are separated by an annular space in which the tubular wick \mathcal{E} is contained, but are connected together at their lower ends so as to retain the oil. This circular hollow wick tube is provided with a thimble wick holder, R, having the form of a short cylinder, to the exterior of which the lower end of the wickets secured, so that the wick may be moved up and down in the wick tube by moving the thimble wick holder, by means of a rack and pinion of the usual construction for such purpose, or by other suitable mechanism. The employment of such a wick holder permits the wick to be gradually exhausted by burning and trimming down to the fag end, which is secured to the thimble, without requiring the wick to be shifted upon the wick holder. The perforated air screen for the exterior current of air is, by preference, made of two cylinders E, F, of the material known as ‘perforated metal,’ although one cylinder only may be used, if deemed expedient. The perforations of this material (‘perforated metal’) are so small that the air is compelled to pass through them slowly in minute streams, which mingle in the space b, within the air screen, so that sudden variations in the pressure of the exterior air do not materially affect the flow within the air screen, and consequently do not cause the flame to flicker materially. This perforated air screen is so combined with the circular hollow wick tube C, and the cap deflector hereinafter described, that the current of air which passes to the exterior of the flame through the cap deflector, is compelled to pass through the perforations of the perforated air screen. The inner cylinder F is sustained by the circular hollow wick tube C. The outer cylinder B is separated from the inner by a space a, but it is sustained by the inner cylinder F. The cap deflector 6 is situated at the upper end of the wick tube C, being supported by the inner perforated cylinder F. It is composed of two parts—the lower, c, cylindrical, and the upper, d, conical, terminating at the orifice from which the flame issues. This cap deflector, as represented in the drawing, extends above the wick C, when the latter is at the highest position it occupies while the lamp is burning, and its interior forms a combustion chamber above the wick, in which the flame is permitted to form before it makes its exit from the orifice of the cap deflector. In these two respects the cap deflector differs from the old cones used to deflect the exterior current of air, in the old camphene or spirit lamps, in which the cone was placed so low that its upper orifice was on a level, or thereabouts, with the upper edge of the wick when in its highest position for burning, so that there was no combustion chamber above the wick, in which the flame could form after leaving the wick. It also differs from the said cones in the respect that it directs

the strongest current of air upon the flame at a considerable distance above the wick, in such manner that the flame is contracted upon, and brought into intimate contact with, the current of air passing up its interior from the hollow wick tube, so that an intense combustion of the carbonaceous matter of the flame is effected after the particles have had time to attain a glowing heat, during their passage through the combustion chamber. The wick tube is connected by a tubular passage, B, with a lateral reservoir, A, for the oil, so that the latter is supplied to the wick by gravitation, without the necessity of employing mechanism to force it up the wick. The lateral reservoir is a matter of great importance in a lamp for a locomotive head-light, because such a reservoir may be placed behind the reflector of the headlight, and still supply the wick freely by gravitation, whereas it would be impracticable to surround the wick tube within the reflector with the reservoir, on account of the space occupied by it. The perforated air screen, L, for the interior current of air, is combined with the wick tube C in such manner that the air that enters the interior passage, S, of the hollow wick tube is compelled to pass through it. This air screen, like the exterior air screen, is formed, by preference, of 'perforated metal,' the holes of which are sufficiently fine to compel the air to enter with a low velocity, and thus prevent material variation in the pressure of the air in the head-light, from the flickering of the flame. In the present example, the air screen for the interior current is secured to the drip cup K, which catches the overflow from the wick tube. This drip cup has an opening at its bottom through which its contents can be withdrawn by removing the screw plug M, which closes the opening. The portion of the drip cup that is within the air screen L is perforated with a number of large openings, h, h, so as to permit the air which enters the air screen to pass freely to the wick tube. In order that the flame of the lamp may be prevented from rising from the orifice of the cap deflector in a cylindrical column of great height compared with its diameter, a button, g, is combined with the other members of the lamp, in such manner as to compel the flame to spread as it rises from the cap deflector. This button is supported upon a stem, f, which is sustained in the centre of the wick tube, C, by perforated diaphragms, H, I, which retain it securely in its position, but do not prevent the interior current of air from supplying the interior of the flame in the requisite quantity to secure perfect combustion. The perforated diaphragms, although not essential, are more useful than simple arms would be, because they not only

sustain the stem of the button, but also act supplementary to the perforated-air screen L, for the interior current of air, and render the flow of that current still more equable. The equability of the flow of this interior current is increased by the use of a third perforated diaphragm, J, placed at the lower end of the wick tube. The lamp thus described is used in connection with a glass chimney which rests upon a gallery, t, and produces the requisite draught of air through the air screens. The gallery being close, or without openings, prevents currents of air from passing from the exterior of the lamp under the chimney, and over the deflector, to the flame. This feature of the lamp is of great importance in a locomotive head-light, because, when the locomotive is in motion, the head-light is filled with strong currents of air, and, if such currents are permitted to have direct access to the flame above the deflector, they cause it to streak and flicker, and to deposit soot upon the chimney, thereby obstructing the passage of light. When the lamp is in operation, the vapors rising from the wick inflame gradually; and, as the carbonaceous constituents at the lower part of the flame are not sufficiently heated to give out much light, the flame at the wick is mostly blue in color, as seen at figure 1. As, however, the flame extends upward within the combustion chamber formed by the cap deflector, the carbonaceous constituents attain a higher temperature, and, when they reach the orifice of the cap deflector, are at a glowing heat. At the orifice a rapid contraction takes place, the external current of air is driven against the column of flame above the wick at a sharp angle, and the flame itself is forced into the inner current, so that the products of the decomposition of the oil are brought into immediate contact with the air while at a glowing heat. The result is, that intense combustion is produced, the greatest quantity of light is generated from the quantity of oil which the wick is capable of supplying, and, consequently, a most intense light is produced from a wick occupying a comparatively small space within the head-light. The cap deflector thus used by me as a member of some of my combinations must not be confounded with the deflecting chimneys heretofore used with lamps. It constitutes no part of the chimney, but is a distinct instrument, and its construction, as such, permits it to be formed of metal, and to be used with a succession of chimneys, which, being of glass, are frequently broken and require to be replaced. It is an essential feature of my invention, that the perforated air screens of my lamp have free access to the air within the head-light, so that the air may be supplied to them in the requisite quantity to insure combustion of the oil which the wick is capable of supplying; because, the small perforations compel the air to pass through the screen at a low velocity, and, therefore, a large perforated surface must have access to the air, in order that the requisite quantity may pass through, and, if either air screen were so covered as to prevent the free access of air to it, the supply of air would be choked and the efficiency of the lamp would be destroyed.

“Having thus described a lamp embodying my improvements, I wish it to be understood that I do not claim to be the original inventor of any one of the individual instrumentalities or members of which my lamp is composed, as I am aware that such instrumentalities have been used before my invention, but, as such use was in combinations substantially different from those devised by me, I claim as my invention and desire to secure by letters patent: 1st. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, perforated air screen for the exterior current of air, and cap deflector, substantially as set forth. 2d. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, perforated air screen for the exterior current of air, cap deflector, and lateral oil reservoir, substantially as set forth. 3d. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, perforated air screen for the exterior current of air, cap deflector and button, substantially as set forth. 4th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, perforated air screen for the exterior current of air, cap deflector, and thimble wick holder, substantially as described. 5th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, lateral oil reservoir, and perforated air screen for the current of air in the interior of the wick tube, substantially as set forth. 6th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, perforated air screen for the interior current of air, lateral oil reservoir, and cap deflector, substantially as described. 7th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, cap deflector, perforated air screen for the interior current of air, and button, substantially as set forth. 8th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, cap deflector, lateral oil reservoir, perforated air screen for the interior current of air, and button, substantially as set forth. 9th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, cap deflector, and perforated air screens for both the exterior and interior currents of air, substantially as set forth. 10th. The combination, in a lamp, of the following members, viz.: The circular hollow wick tube, cap deflector, perforated air screen for the exterior current of air, and close chimney gallery, substantially as set forth. 11th. The combination, in a lamp, of the following members, viz.: The circular hollow wick

tube, thimble wick holder, cap deflector, button, perforated air screens for the exterior and interior currents of air, and lateral oil reservoir, substantially as set forth.”

The defendant attacks the plaintiff's patent for want of novelty, and has put in evidence various patents which are claimed to anticipate the plaintiff's inventions. Those patents were granted as follows: English patent to Jeremiah Bynner, December 9th, 1837; English patent to William Young, December 4th, 1843; patent to Stephen J. Gold, July 16th, 1841; patent to William M. Kimball, February 26th, 1856; patent to John Carton, assignee of John Stuber, May 20th, 1856; patent to Jacob Stuber and Frederick Frank, April 23d, 1861; and patent to John G. Webb, October 14th, 1851. The specification of the plaintiff's reissue states distinctly that he does not claim to be the original inventor of any one of the individual members which compose the several combinations claimed by him. He claims that such several combinations were not before united in a lamp. The inquiry, therefore, is, whether such several combinations existed before, each, in its entirety, in any of the earlier patents adduced. An examination of those patents shows that this inquiry cannot be answered in the affirmative.

The Young patent is relied on as containing the three members combined in the plaintiff's first claim. But the cone deflector of Young is not the cap deflector of the plaintiff. The latter extends above the wick when the wick is at the highest point it occupies while the lamp is burning; whereas, the former is, at most, only on about a level with the upper end of the wick when the lamp is burning, and, if the wick of Young should be raised, as it is practically in the lamps of locomotive head-lights, the upper orifice or end of the Young cone would be below the upper end of the wick. Moreover, the plaintiff's cap deflector forms a combustion chamber above the wick, in which the flame is permitted to form before it makes its exit from the orifice of the cap deflector; whereas, no combustion chamber is formed by Young's cone deflector. Again, the plaintiff's cap deflector has a peculiarity not possessed by Young's cone deflector, in that, as set forth in the plaintiff's specification, the former directs the strongest current of air upon the flame at a considerable distance above the wick, in such manner that the flame is contracted upon, and brought into intimate contact with, the current of air passing up its interior from the hollow wick tube, so that an intense combustion of the carbonaceous matter of the dame is effected after the particles have had time to attain a glowing heat during their passage through the combustion chamber. The evidence shows, that, by the use of the plaintiff's cap deflector, as compared with the use of Young's cone deflector, a wick of the same size will produce a flame materially greater in brilliancy and volume, all other conditions being the same. As the plaintiff's cap deflector is a member of all his claims but the fifth, the Young patent is no answer to such claims. As to the fifth claim, the lateral reservoir is a member of it, and there is no lateral reservoir in the Young patent. This disposes of the Young patent.

The Gold patent has no perforated air screen for the exterior current of air and no cap deflector. All of the plaintiff's claims but the fifth embrace one or both of those members. Nor has the Gold patent the combination found in the plaintiff's fifth claim.

The Carton patent has no perforated air screen for the exterior current of air. All of the plaintiff's claims except the fifth, sixth, seventh and eighth embrace this member. Nor is any one of the several combinations of the plaintiff in his fifth, sixth, seventh and eighth claims found in the Carton patent. The same remarks are true of the Bynner patent.

The other patents adduced by the defendant do not any of them contain any of the plaintiff's combinations.

It is contended for the defendant, that all of the claims of the plaintiff's patent except the eleventh are claims for aggregations and not for patentable combinations, and the doctrines of the cases of *Hailes v. Van Wormer*, 20 Wall. [87 U. S.] 353, and *Reckendorfer v. Faber*, 2 Otto [92 U. S.] 347, are adduced to show the invalidity of those claims. As all the individual members of each of the plaintiff's combinations are old, and each of such members is found in some pre-existing lamp, it is urged that each of such members had, in the prior lamp, the same office and the same operation which it has in the plaintiff's lamp, and that the plaintiff has only aggregated or assembled the detached parts or members, with change of position, and has not made any patentable combination. It is contended that no new, improved or useful result is produced by any aggregation claimed by the plaintiff. For instance, as to the first claim of the plaintiff's patent—the combination, in a lamp, of the circular hollow wick tube, perforated air screen for the exterior current of air, and cap deflector—it is contended that these parts do not co-operate to effect any definite result; that the aggregation of those three parts does not make a complete lamp; that the circular hollow wick tube does not co-operate with said perforated air screen, or modify in any manner the action of said air screen; that said air screen does not modify the action of said wick tube; that said air screen would operate in the same manner with a flat wick tube and without any wick tube; that the plaintiff's wick tube would operate in the same manner without said air screen; and that the action of neither of those two members is modified by the cap deflector. It is also urged, that there is no relation between the cap deflector and the lateral oil reservoir;

and none between the cap deflector and the perforated air screen for the exterior current of air; and none between said air screen and the button; and none between the said air screen and the thimble wick holder; and none between the lateral oil reservoir and the perforated air screen for the interior current of air; and none between those two parts unitedly and the circular hollow wick tube.

The doctrine of *Hailes v. Van Wormer* [supra] is, that a new combination, if it produces new and useful results, is patentable, though all the constituents of the combination were well known and in common use before the combination was made; that the results, however, must be a product of the combination, and not a mere aggregate of several results, each the complete product of one of the combined elements; that, merely-bringing old devices into juxtaposition and there allowing each to work out its own effect, without the production of something novel, is not invention; and that no one, by bringing together several old devices, without producing a new and useful result, the joint product of the elements of the combination, and something more than an aggregate of old results, can acquire a right to prevent others from using the same devices, either singly or in other combinations. The same doctrine was affirmed and applied in *Reckendorfer v. Faber* [supra]. In *Hailes v. Van Wormer* the patent was for improvements in self-feeding stoves. It claimed combinations of devices all of which singly were old. It was held, that the use of revertible flues in the same stove with a flaring fire pot, and a supply reservoir with a contracted discharge end, and openings for illumination, was a mere aggregation of devices, and not invention; that no new operation was given to the revertible flues by their use in combination with the other devices, different from that which they had when not used in such combination; that the operation of such flues, in both cases, was to conduct the products of combustion into the exit flue; that such effect had no relation to the combination of such flues with the other devices, and could not be called the product of the combination; and that revertible flues had no more to do with a stove supplied by a feeder than with a stove supplied by hand. In *Reckendorfer v. Faber*, a lead pencil was old and the use of India rubber for erasure was old, and the patent claimed, as a combination, the application of a piece of India rubber to one end of the same piece of wood which made the lead pencil. The combination was held not to be patentable, because no new result was produced by the union of the two, and there was no joint operation of the two, each performing the same operation and in the same manner as if the other were not present, and there was no relation between the two in the performance of their several functions, and no reciprocal action. These doctrines are not applicable to the present case. The flame of the lamp, and its illuminating character, as to brilliancy, steadiness, size and position, is the result to which all the devices used contribute. They all co-operate to effect and modify such illuminating character of the flame of the lamp. A locomotive head-light must be large, brilliant, steady, easy of adjustment as to the position

of its wick, concentrated as nearly as possible in the focus of the reflector, and supplied freely with oil without interfering with the projection of the light forward, and without pumping mechanism. The circular hollow wick tube enables the light to be concentrated near the focus of the reflector. The perforated air screen for the exterior current of air promotes the steadiness of the flame. The cap deflector increases the volume and brilliancy of the flame. The lateral oil reservoir, supplying the oil by gravitation, enables the light to be projected forward without interference, and also enables a wick of a given size and a chimney of a given height to ensure the consumption of the maximum quantity of oil and the production of the maximum quantity of flame. The button gives such shape to the flame that it is concentrated more nearly in the focus of the reflector. The thimble wick holder enables the flame to be readily adjusted by raising or lowering the wick. The perforated air screen for the interior current of air contributes to the steadiness of the flame, and so does the close chimney gallery.

Three forms of head-lights are produced as having been used by the defendant on its locomotives, known in the case as No. 3, No. 4, and No. 5.

No. 3 infringes the first, second, third, fourth and tenth claims of the plaintiff's patent. It has substantially the plaintiff's circular hollow wick tube, exterior air screen, cap deflector, lateral reservoir, button, thimble wick holder and close chimney gallery. It makes no difference, that, in No. 3, the perforations for the exterior current of air are narrow horizontal slits. Their operation compels the air to pass through them slowly, in thin streams which mingle inside so that the flow of air inside is not materially affected by variations in the pressure of the air outside. The cap deflector in No. 3 extends above the wick when the latter is in the highest position it occupies while burning, and its interior forms a combustion chamber above the wick, in which the flame is permitted to form before it issues from the orifice of the deflector.

No. 4 infringes the fifth, sixth, seventh and eighth claims of the plaintiff's patent. It has substantially the plaintiff's circular hollow wick tube, lateral reservoir, cap deflector, button and interior air screen. The cap deflector in No. 4 has the peculiarity pointed out as the peculiarity in the cap deflector of No. 3. The perforated air screen for the interior current of air, in No. 4, is so arranged that the air which enters the interior

passage of the hollow wick tube must pass through such air screen, and its perforations operate substantially as in the plaintiff's lamp, to compel the air to enter with a low velocity.

No. 5 infringes all the eleven claims of the plaintiff's patent, and contains each one of the eight members which enter into those claims. The perforated air screen for the exterior current of air in No. 5 is so arranged that the air passes through its perforations in minute streams which mingle inside, and the current of air which passes to the exterior of the flame through the cap deflector must pass through the perforations in such air screen. The cap deflector in No. 5 has the peculiarity pointed out as the peculiarity in the cap deflector of No. 3. The perforated air screen for the interior current of air in No. 5 has the peculiarity pointed out as the peculiarity of the perforated air screen for the interior current of air in No. 4. The close chimney gallery in No. 5 is situated at the base of the cap deflector and at the head of the perforated air screen for the exterior current of air. This close gallery has no openings, and, therefore, prevents currents of air from passing from the exterior of the lamp under the chimney and over the deflector to the flame.

In No. 3 the screen for the exterior current of air is not composed of two parts, one surrounding the other, and each perforated, with a space between the two, the air passing in succession through the perforations of both. In respect to this, the plaintiff's specification says, that such screen is, by preference, made of two cylinders, of the material known as "perforated metal," but that "one cylinder only may be used, if deemed expedient." So, too, in No. 3 the perforations in the exterior screen are horizontal slits and not circular holes. But it is entirely clear that a single perforated cylinder may be a substantial mechanical equivalent for two perforated cylinders, to regulate the flow of the air to the exterior of the flame, and that the shape of the perforations is immaterial. The essential point is, that the screen should be perforated with openings relatively so small as to compel the air to pass slowly through them in small streams, which mingle in the space inside of the ultimate perforations, in such manner that sudden variations in the pressure of the external air do not materially affect the flow of the air inside of the ultimate perforations.

In No. 3 there is a ring of small orifices through the body of the cap deflector, which orifices permit currents of air to pass through the deflector from the interior of it to the space between the deflector and the glass chimney, and to operate to cool the chimney. But these orifices do not admit air from the outside to pass under the chimney and over the deflector to the flame. Notwithstanding such orifices the chimney gallery in No. 3 is the close chimney gallery of the plaintiff. Such orifices may be an addition or improvement, but the plaintiff's lamp burns successfully without them. These remarks apply to No. 4 and No. 5, also. In No. 4 the air current to the interior is only once obstructed by a perforated screen, which is at the bottom, and is not obstructed by perforated diaphragms

in the interior of the wick tube. But this makes no material difference. The plaintiff states, in his specification, that the perforated diaphragms are “not essential.”

There can be no doubt that the combinations made by the plaintiff were the results of invention and were patentable. The evidence shows that they were the results of careful and patient investigation and experiment. His lamp was the first one which successfully burned kerosene oil in a locomotive head-light. He was successful in becoming able to employ the great brilliancy of an oil rich in carbon, under the peculiar and disadvantageous circumstances of burning it in a lamp in rapid motion and subject to great vibrations. The merit of his lamp is generally acknowledged. It has superseded those previously in use and it is used on nearly all the railroads in the United States. No prior invention is adduced as anticipating him except such as are found in pre-existing patents. They were considered by the patent office on the granting of the reissue, and held to be of no effect, and the critical examination to which they have now been subjected confirms that conclusion.

The plaintiff is entitled to a decree for an injunction and an account of profits and an ascertainment of damages, in accordance with the prayer of the bill.

[For bearing on exceptions to master's report, see 2 Fed. 702. For another case involving this patent see [Williams v. Boston & Albany R. Co., Case No. 17,716.](#)]

¹ [Reported by Hon. Samuel Blatchford, Circuit Judge, and here reprinted by permission.]