

## Case No. 11,163.

PIKE V. PROVIDENCE & W. R. CO. ET AL.

{1 Holmes, 445;<sup>1</sup> 1 Ban. & A. Pat. Cas. 560; 6 O. G. 575.}

Circuit Court, D. Rhode Island. Oct. 15, 1874.

PATENTS—INFRINGEMENT—SPARK ARRESTER  
AND CONSUMER.

1. An invention of a spark arrester and consumer for locomotives, which consists in the combination of a blast-pipe with a return-flue, so arranged that the sparks are driven by the blast in a continuous current through the flue from the smoke-pipe back into the fire-chamber without resting, is not anticipated by prior spark arresters which, though in some respects of construction the same, were not practically effectual to produce a continuous current carrying the sparks into the fire-chamber without resting.
2. A patent for a spark arrester and consumer for locomotives, which consists in the combination of a blast-pipe with a return-flue, so arranged that the sparks, &c, are driven by the blast in a continuous current through the flue from the smoke-pipe back into the fire-chamber, is infringed by the use of a spark arrester and consumer consisting of a blast-pipe and two return-flues, so arranged that the sparks are carried by the blast into the fire-chamber in a continuous current through the flues without resting, although the current is accelerated, and the combustion of the returned sparks is aided, by a current of air brought into the return-flues by tin additional device.

{This was a bill in equity by Charles F. Pike against the Providence & Worcester Railroad Company and others, to enjoin the infringement of letters patent No. 120,638, granted to G. H. Griggs, November 7, 1871, reissued September 10, 1872, Nos. 5,050 and 5,051.}

B. F. Thurston, for complainant.

Thomas H. Dodge and W. H. Clifford, for defendants.

SHEPLEY, Circuit Judge. The invention in question in this case relates to improvements in spark-arresters and consumers for locomotive engines.

The complainant is the assignee of letters-patent No. 120,637, granted November 7, 1871, to George H. Griggs, and reissued in two divisions September 10, 1872; division A, No. 5,050, being for the method of controlling, driving, and finally utilizing as fuel the sparks or unconsumed products of combustion, which are driven from a smoke-pipe or smoke-arch by a forced blast discharged therein, by combining a continuous return-flue connecting the smoke-stack with the fire-chamber, with a compound blast-pipe, and by arranging the mouth of the return-flue at the stack adjacent to and coincident with the exit aperture of the blast-pipe, whereby a portion of the compound blast, composed generally of steam, air, gas, smoke, and cinders, may be utilized again as fuel, thus effecting a considerable saving, as a large portion of the material is combustible.

To accomplish this result, Griggs, making use of the compound blast-pipe, which was well known and in common use, places at the exit aperture of the blast-pipe adjacent to, and coincident with it, a bell-shaped mouth of a return-flue, leading downwards and backwards into the fire-chamber, whereby a portion of the compound blast with the sparks is driven into the return-flue, and through that into the fire-chamber, by the force and pressure of succeeding portions of the blast.

The first claim, in division B (No. 5,051), of his patent, is for "the combination of the compound blast-pipe, with a spark or return flue communicating with the fire-chamber, provided with a bell-shaped mouth, which is located above, adjacent to, and coincident with the exit aperture of the blast-pipe, substantially as and for the purpose, specified." There was a barrel-netting connecting the compound blast-pipe with the bell-shaped mouth of the spark-flue, for the necessary escape of the smoke, and a portion of the steam and

gas from the blast-pipe, and this combination is also the subject of a distinct claim in the patent.

From the history of the art, as proved by the evidence in the record in this case, and as stated by Griggs in the disclaimers in his specifications, it is clear that his invention consisted in the combination with the compound blast-pipe of the described bell-mouthed return-flue, operating together in such a manner that the sparks were driven into the mouth of and through said flue in a continuous current without resting, into the fire-chamber 688 chamber, by the force of the continuous action of the blast. The inventions of David Matthews and William Duff, relied upon by the defendants, did not anticipate the invention of Griggs, for the reason, among others, that neither of them was effectual to secure a continuous current, driving the sparks from the blast-pipe to the fire-chamber without resting. In the Duff contrivance many of the sparks were landed in a chamber at the bottom of the smoke-arch, where they remained, and were never driven into the fire-box. The Matthews contrivance, though having some features in common with the Griggs invention, differed from it in precisely those particulars which distinguish an incomplete and practically unsuccessful attempt from a perfected invention. This is the history of the art in relation to most of the important discoveries and inventions of the present day. The want which the discovery or invention is to supply is first felt, and the genius of invention is aroused, and the thoughts and efforts of inventors are directed in a particular channel. When one achieves success, it not infrequently appears that prior inventors have been travelling in the same path, and in the light of his success we look back with wonder at the omission of those who started earlier in the race to take the last short step which separated them from the goal. But it is the last step in the race of discovery or invention that counts, and he who first crosses the dividing line

between experiment and success wins the prize over those who, having started earlier in the race, are but a single step behind at the goal. The inventions other than those of Duff and Matthews, set up in the answer as anticipating the invention of Griggs, were but little relied on at the argument.

The proof of infringement relied upon is in the evidence that defendants use locomotives furnished with spark-consumers constructed under the several letters-patent granted to Hawkes and Paine, under which patents they are licensed. The contrivances used by the defendants to arrest and consume the sparks are a compound blast-pipe substantially like the complainant's, and a return-flue communicating with the fire-chamber. Although this return-flue is not provided with the same bell-shaped mouth located above, adjacent to, and coincident with the exit aperture of the blast-pipe, as in the Griggs patent, it has what is a clear equivalent therefor. In the Griggs patent the current from the blast-pipe is received into the bell-shaped mouth, and deflected in one direction only, into a tubular or cylindrical return-flue. In the spark arresters and consumers used by the defendants, the current from the blast-pipe is received on a cone and deflector, making together a bell-shaped deflector, itself deflected so as to deflect the sparks in all directions outward and downward into an annular chamber surrounding the blast-pipe, which annular chamber terminates in two tubes passing through the boiler and connecting with the fire-box. Connected with these tubes are tubes or pipes with a funnel-shaped opening in front of the engine, through which atmospheric air can enter and pass through the return-flue into the firebox, to aid in the combustion of the gases and sparks returned through the flue.

It is apparent from this comparison, that the contrivance of Hawkes and Paine is substantially the same as that described in division A, and in the

first claim of division B, of the Griggs patent, if the sparks, &c, are driven by the former as in the latter, by the force of the continuous action of the blast without resting, through the flue and into the fire-chamber. Defendants contend that in the Hawkes and Paine "sparker" the sparks are not thus driven through the flue by the continuous action of the blast, but that they fall into the annular chamber, and are drawn down the pipes connecting the annular chamber with the return-flue which passes through the boiler by the action of the current created by the force of the air. If the facts sustain this position, it would in law constitute a good defence to the charge of infringement. The fact that in the Griggs invention the sparks are driven in a continuous current, without resting or accumulating on the way from the compound blast-pipe into and through the return-flue to the fire-chamber, constitutes, as we have before seen, an essential element in the Griggs invention. The question reduces itself, therefore, to one of fact, whether they are so driven in the Hawkes and Paine arrester, as we have already seen that the Hawkes and Paine arrester combines all the other elements of the first claim of division B in the Griggs patent.

That the current is assisted and accelerated in the Hawkes and Paine return-flue by the operation of the current of air introduced from the funnel-shaped openings at the front of the smoke-arch is undoubtedly true. Such introduction of atmospheric air into the return current undoubtedly aids in the combustion of the returned gases and sparks in the fire-box. To that extent it is probably an improvement on the Griggs. But if the sparks are also driven by the continuous action of the compound blast, then it possesses all the elements of the Griggs invention and combination, even if a valuable improvement be added thereto. From the evidence in the record of the results of actual experiments made by running locomotives with

the Hawkes and, Paine “sparker” attached, and with the current cut off from the funnel-shaped openings, and from the effect of the abrasion produced by the percussive action of the sparks in that portion of the copper tube in the Hawkes and Paine “sparker” against which the current bearing the sparks downward would strike most forcibly, I think it is clearly demonstrated that the sparks are driven downward and backward in a continuous current through the return-flue, without resting, by the continuous action of the blast from the blast-pipe to the 689 fire-box, and therefore I conclude that the charge of infringement is established. Decree for injunction and account.

<sup>1</sup> [Reported by Jabez S. Holmes, Esq., and here reprinted by permission.]

This volume of American Law was transcribed for use  
on the Internet

through a contribution from [Google](#). 