

CONSOLIDATED BRAKE-SHOE CO. et al. v. DETROIT STEEL &  
SPRING CO. et al.

(Circuit Court, E. D. Michigan. January 25, 1894.)

No. 3,235.

1. PATENTS—INVENTION—ERROR IN DRAWINGS.

An error in the drawings made by a solicitor can have no weight in disparagement of the invention, where it is such as to suggest, to persons familiar with the art, a practical identity with a prior device, and to warn them that the language of the inventor in the specifications, clearly describing the actual invention, is rather to be followed than the inaccurate drawing.

2. SAME—ANTICIPATION—IDEA NOT EXEMPLIFIED.

In a claim for railway brake shoes, the use of the words, "or otherwise so shaping them as to bear upon the flange and those portions of the tire which are not worn in rolling," cannot operate to shut out subsequent inventors, when the specifications and drawings fail to exemplify, in a practical form, the idea of bearing on the parts not worn by the rail.

3. SAME—INVENTION—WHAT CONSTITUTES.

One who, by overcoming difficulties which for years have baffled all others, perfects a device which satisfactorily supplies a long-existing and imperative need, and supersedes all other appliances, both at home and abroad, proves the exercise of inventive faculty, notwithstanding that the change from existing devices seems comparatively slight.

4. SAME—RAILWAY BRAKE SHOES.

The Ross patent, No. 292,861, for a railway brake shoe, shows patentable invention over the English patent to Steel, No. 1,763, of 1875. 47 Fed. 894, reaffirmed.

**In Equity.** Bill for infringement of a patent. A preliminary injunction was heretofore granted. See 47 Fed. 894. Decree for complainants.

The complainants are the assignees of the Ross Brake-Shoe Company, a New Jersey corporation, to which had been assigned by George P. Ross all his right, title, claim, and interest in letters patent of the United States No. 292,861, for an improvement in railway brake shoes, granted to said Ross February 5, 1884.

The bill of complaint charges that defendants are infringing the right secured by the letters patent, and prays an injunction, an accounting, and decree for profits. The answer asserts the invalidity of the Ross patent, and denies "that George P. Ross was the original or first inventor of the thing patented in said patent, or of any material or substantial part thereof, but says that the same had been, prior to the alleged invention by him, shown and described in the United States patent of George W. Brill, dated February 22, 1876, No. 173,890, and in the English patent of James Steel, dated May 11, 1875, No. 1,763, and in the printed publication, Spon's Dictionary of Engineering, published in London, England, by E. & F. N. Spon, in 1870, in volume 2 of said publication, article 'Brake,' p. 589, and that said Ross patent is therefore wholly null and void." In fact, the defense is based solely on the want of patentable novelty and invention.

The motion for injunction was fully argued before Judge Brown upon affidavits and counter affidavits, and the prior state of the art was discussed by counsel and duly considered by the court. Judge Brown sustained the patent, and granted the injunction. His opinion is reported in 47 Fed. 894.

The case is now here upon pleadings and proofs. It is claimed by the defendants that their proofs make a stronger showing against the validity of the patent than that made upon the argument of the motion for injunction, and are further supplemented by the original drawing of the Ross patent, which was not introduced on the argument of the motion.

In describing his invention, Ross states in his specification: "The object of this invention is to avoid the unequal wearing of the wheels by the track, or, more correctly, to cause them to wear more evenly, and thereby avoid the necessity of sending them so often to the shop to be turned up in the lathe. \* \* \*" His brake shoe is constructed with two grooves, one of which conforms to and fits the flange of the wheel, and the other spans that part of the tread of the wheel which, in the revolution, ordinarily receives the wear of the rail. From the outer side of the ordinary tread of the wheel—that is, from the outer line of rail wear to the outer rim of the wheel—the shoe has a bearing or friction surface upon the portion of the tread or surface of the wheel which is not engaged or brought into contact with the rail. A lug or rib coming down to the wheel between the inside of the flange and the inner line of the rail wear of the tread of the wheel constitutes the second bearing of the shoe. A third bearing or friction is afforded by the groove made to closely fit the flange. The side of the shoe brought into contact with the wheel is a plain surface conformed to the arc or surface of the wheel at the bearing points, and attached to the brake-operating mechanism in the usual way. Ross' invention is limited to this single claim: "A brake shoe provided with the grooves, A', A', and the wearing portions, C, C', the portion or rib, E, projecting down to the wheel, substantially as and for the purposes specified."

William A. Redding, Henry S. Sherman, and James H. Raymond,  
for complainants.

George Payson, for defendants.

SWAN, District Judge, (after stating the facts.) The single question arising upon this record is as to the patentability of the Ross railway brake shoe. The defense admits this to be the only issue, and insists that the prior state of the art and the simplicity of the device both negative the validity of the patent. The proofs taken in the cause since the granting of the injunction by Judge Brown afford no ground for varying the conclusions which he then reached. The drawing of the Ross shoe in the patent office was made by his attorney, and shows that the lug or rib on the inner side of the flange was not carried down to the wheel, as is done in the shoe as constructed. Ross' first application was rejected in the patent office on this, and the further ground that the extension of the inner lug or rib to the wheel was not described in the specification, and therefore the Steel patent answered Ross' claim of invention. The error in the drawing was that of Ross' attorney. The patentee's own drawing showed the projection of the wheel. The examiner, however, was in error in the statement that the extension of the rib, C, to the tread of the wheel, was not described in this specification. This expressly states that "between the grooves in the shoe is a rib, C, which forms a portion of one side of the flanged groove, and projects down to reach that portion of the wheel not worn much by the track." Notwithstanding this error or defect in the drawing, it is plain that this explicit language not only sets forth unmistakably the inventor's idea, but also, in view of the declared purpose of the device,—to produce uniformity of wear in the surface of the wheel,—no mechanic of ordinary skill could have failed to make the device from the specifications alone. The specifications are addressed to those skilled in the kind of appliances described by the inventor. Familiar, presumably, with the

state of the art and the deficiencies of the appliances in use, it would be evident to them at once that the deliberate phraseology of the specification—which, in substance at least, is the inventor's own—was rather to be followed than an inaccurate drawing, which on its face, in the state of the art, suggested its practical identity with the Steel shoe. The drawing, therefore, is entitled to no weight in disparagement of Ross' invention.

His shoe is designed and adapted to get its friction surface only from those portions of the tread of the wheel not worn by the rail, and thus to avoid increasing the rail wear upon the tread proper. The inventor evidently believed, and it is the claim of his original and amended specification, that the wear of the shoe upon the wheel would practically equal, and thus offset, that of the track upon the wheel tread proper. His specifications indicate this, for, after describing the operation of the shoe, he adds, as a result:

"Those portions of the wheel which are not worn by the rail are worn down by the shoe, and the tread is thereby kept longer in its proper shape, as, while the track is wearing down one portion, the shoe is wearing down the other, thereby effecting a large saving in the wear of the wheel itself, and also in the matter of re-turning the tires or wheels."

While there is a marked similarity, which to a casual observer amounts almost to identity, in form and use, in the Ross and Steel devices, there is a substantial difference between them, which not only determined, in the patent office, the patentability of Ross' device, but has caused the former to supersede Steel's both in Great Britain and in this country. The Stilmant and Brill patents which are pleaded in defense may be laid out of consideration altogether. There is nothing anticipatory of Ross' invention in either. The issue is solely between Ross and Steel. The aim of each was to produce a brake shoe which would so operate upon the wheels of railway cars as to obviate, as much as possible, the effect of the rail wear upon the tread of the wheel, and insure its constant profile. Both accepted, as a necessity for reducing the velocity or bringing to rest the moving car, the application of the restraining power or frictional energy directly upon the face or periphery of the wheel, and relied upon the grinding down, by the application of the shoe, of those parts of the tire upon which its pressure was exerted, to equalize the frictional wear of the tread proper by the track. To accomplish this result, Steel gave his device two bearings on the wheel,—one on the outside of the tread, spanning it from its outer edge with a groove or channel which extended to the upper part of the inside of the flange, at which point he formed another groove or channel in the brake block or shoe, which engaged the rim or periphery of the flange, thereby constituting the second bearing of the shoe. Ross' shoe claims three bearings, viz.: one on the outside of the tread, one on the inside, between the tread and the flange, and the third upon the periphery of the flange. The second of these bearings affords the distinctive feature of difference between the two appliances. In Steel's specifications he states expressly that "When the brake block is brought into operation, so as to stop or retard the motion of the train, it does not act upon the part, D, D,

of the tire," (that is, the face of the wheel between the outer bearings and the inside of the flange, as he delineates it in his drawing,) "which is subject to the ordinary wear and tear of rolling, but it acts upon those portions which are not so worn away,—that is to say, the portions opposite the parts B and E of the block," (which are, respectively, B, the face of the wheel outside the tread, and E, the periphery of the flange.) He adds: "Under a modification of my said invention, the brake blocks may be constructed without the longitudinal channel, A," which spans the tread proper in both the Steel and Ross shoes; "that is to say, they are made solid at that part, the channel, E, however, being maintained as shown in the drawings." He states that what he claims as his invention is, "arranging or constructing brake blocks with or without a longitudinal hollow or channel therein, and otherwise so shaping them as to bear upon the flange and those portions of the tire which are not worn in rolling."

Under this proposed modification it is argued that no one following out Steel's instructions could help making the Ross shoe, and that Ross' change in the shoe was neither a change in the principle of the invention nor a new idea; and, further, that "the invention was whole and complete as soon as Steel had told us to make a brake shoe that should be so shaped as to wear only on those parts of the wheel not worn by rolling;" and, further, that there is no room, after that, for anything but the ordinary knowledge of the mechanic skilled in this particular art.

It is very doubtful if Steel's specification can be extended beyond the form of brake blocks set forth in his drawing, notwithstanding his claim that they may be constructed "either with or without a longitudinal hollow or channel therein." This suggestion, and its accompaniment,—“otherwise so shaping them as to bear upon the flange and those parts of the tire which are not worn in rolling,”—does not propose the substitution of a solid block extending to the flange, for the obvious reason that such a block must act upon the tread of the tire which is worn by the rail, while his leading idea, as expressed in his specification, is to avoid such contact, and to rely upon the wear of the block on other parts of the tire. How far the solid block should extend is not stated. He suggests no mode or form of "otherwise so shaping the blocks" as to avoid this double wear, and the phrase itself is vague and indefinite, conveying to those skilled in the art no idea of the form of the alternative. His invention should be limited to the device described in his specification. He could not close the field of invention to others by "an all-embracing claim, calculated, by its wide generalization and ambiguous language, to discourage further invention in the same department of industry." *Carlton v. Bokee*, 17 Wall. 472. Nor was the invention complete when Steel proposed to shape the brake block so as to wear only upon those parts of the wheel not worn by rolling. If the idea of such a construction must be credited to him, he failed to exemplify it so as to insure its object,—the even wear of the tire, and the avoidance of the cost of re-turning them. He

evidently had no thought of the bearing upon the face of the wheel next to the flange, and made no provision for reducing its surface at that point to meet the wear of the tread, and thus preserve the normal contour of the wheel. Experience has also demonstrated, as shown by the testimony, that the necessary effect of the Steel shoe is to produce a ridge or shoulder on the inner face and in the throat of the flange. Without quoting at length from the testimony, it is enough to say that the Steel shoe has failed to meet the need of the railroads, both in this country and Great Britain, and has been discarded as impracticable, indeed detrimental, if not dangerous. Starting with the same idea of applying the resistance to the parts of a tire not worn by the track, and after a long practical experience with the ordinary flat shoe and a practical test with the Steel shoe, Ross, in August, 1883, eight years after Steel's patent had been granted, formulated his conception in the device here in issue. It has been adopted on nearly three-fourths of the railroads in the United States, and is also in use in Great Britain. Ross was master mechanic of the New York, Lake Erie & Western Railroad Company at Buffalo from February, 1881, until April, 1885, and as such had charge of all the repairs made on the locomotives of that company at its Buffalo shops. In August, 1882, his attention was called to the excessive wear of the tires of the rear drivers of a locomotive of the Mogul type by the action of the brake shoe with which it was equipped, which necessitated re-turning of the tires about every four months. He then suggested to Mr. Wilder, the superintendent of motive power, the use of a brake shoe which should have its friction surface only upon the outside of the tread and the periphery of the flange. Wilder objected that the proposed change would simply transfer the objectionable wear to the flange of the wheel, and possibly destroy it. In July, 1883, after the tires of this engine had been three times re-turned, he again mentioned to Wilder the rapid destruction of the tire, and consequent injury to the machinery, attributable to the shoe used, and, with Wilder's permission, made and applied substantially the Steel brake shoe. This he tested by use for about a month, but found that it produced a ridge or shoulder upon the flange, and also upon the outside of the tread. By continued experiments and close study of the subject he realized the necessity of a third bearing upon the inside of the tread and the throat of the flange, and this he obtained by extending a lug or projection bearing both upon the wheel and the top and inside of the flange. This obviated the ridge formed in the throat of the flange by the brake shoe then in use, and, preserving the groove of that part of the shoe fitting the flange, he practically equalized the friction surface of the shoe on the flange and the inside of the tread with that on the outer part of the tread, and thus secured the equal wear of those parts. He constructed and put in experimental use on the same locomotive a shoe of this pattern—the present Ross brake shoe—in August, 1883, and it remained in successful operation until he resigned his position on the New York, Lake Erie & Western Railroad, April 1, 1885. Ross'

letters patent bear date February 5, 1884. From October, 1884, until April, 1887, there were sold by the licensees under it 462,110 lbs. of the Ross brake shoe, and since the last date, and during the years 1887, 1888, and 1890, the licensees have sold 11,727,542 lbs. of those shoes, making the total sale since September, 1884, to and including the year 1891, 12,189,652 lbs. The proofs show that 164 of the railroads of the United States made purchases of the Ross shoe in 1890 to a greater or less extent. With the exception of the Chicago, Burlington & Quincy Railroad, which has assumed the defense in this suit, the railroads of this country have acquiesced in the validity of the Ross patent. This shoe has become the standard brake shoe for locomotive driving wheels upon the Pennsylvania Railroad and its leased lines, and is mainly, if not exclusively, used on the Old Colony Road, the Boston & Albany Railroad, the Pittsburgh Railroad, and many of the eastern trunk lines, and also upon the smaller roads of the Union. Seventy-five per cent. of the 30,000 locomotives in this country are equipped with it. The statistics of railroads for 1890 compiled by the interstate commerce commission give the number of general officers of railroads of the United States, in 1889, at 47,039; engineers, 30,217; machinists, 25,214; and other shopmen at 75,959; and the total number of all their employes at 704,743. These figures are, of course, considerably larger than those of previous years, as each successive year exhibits an extension of railway mileage, and consequently a corresponding ratio of increase in the number of employes. Excluding from consideration the total number of railway employes, and assuming that the general officers, as practical men, have studied the problems incident to the maintenance of railroad equipment, and that the engine men, machinists, and other shopmen are mechanics of average skill, and familiar with the rolling stock, its usage, wear, the cost and frequency of its repair, and the causes thereof, it is remarkable that, during the 40 years and more in which the expense of re-turning tires has been so large a factor in the maintenance of the equipment, and "sharp flanges" and defective wheels have caused so many accidents, no one, in these armies of mechanics and experts, has discovered a preventive, or suggested an improvement on known appliances, until Ross had remedied their defects. Conceding that Steel's idea that the brake shoe should be made to bear only on the parts of the tire not worn by the rail is exemplified in the Ross shoe, whether this suggestion be styled a "principle" or an "idea," it was a mere abstraction and unpatentable; not a complete device or machine. *Leroy v. Tatham*, 22 How. 132; *Burr v. Duryee*, 1 Wall. 531; *Fuller v. Yentzer*, 94 U. S. 288.

Long before Bell patented the telephone it was the general belief of scientists that speech could be transmitted by electricity if the requisite electrical effect could be produced. Bell discovered and perfected the apparatus and the process by which this could be done; and, although the previous labors of Reis in the same field had brought him almost to the point of success, he failed to reach his goal. Over 20 years before Bell's invention an eminent scientist

had said, in reference to the mode of transmitting speech by electricity: "Reproduce precisely these vibrations," to wit, the vibrations made by the human voice in uttering syllables, "and you will produce precisely the syllables;" yet Bourseul neither claimed nor invented the telephone. Like Bourseul, Steel told what to do, but not how to do it. His conception of counteracting the rail wear by the shoe friction was meritorious, but not inventive. Its crude expression in his brake block not only failed to meet its purpose, but added to the defects caused by the rail wear equally prolific sources of danger in the "sharp flange," and the failure to equalize the friction area of the shoe upon the flange with that on the tread. These defects not only caused its supersedure by the Ross shoe, but condemned its usefulness and safety. Ross' device, though but slightly varied in form from that of Steel's, has not only demonstrated its utility in years of use by prolonging the life of the tire, and obviating the great expense of frequent re-turning and the loss of use of the locomotive during such repairs, but has promoted the safety of railway travel by conserving the efficiency and contour of the wheel. Now that 10 years of successful use have established its merits, and since it has practically supplanted all others, and has been accepted in Great Britain, the home of the Steel patent, and after the skill of the mechanics and railway employes of both countries had been challenged in vain for eight years by the defects of the Steel shoe to the need of an effective device, it is too late either to refer the merits of this appliance to the suggestions of its imperfect predecessor, or to declare it merely the work of a mechanic of ordinary skill. Without essaying to define the line between the skill of the mechanic and the ingenuity of the inventor, it may be safely affirmed that one who perfects a device of confessed utility, which satisfactorily supplies a long-existing and imperative need of any branch of industry, and which excels in operation and results other existing appliances, superseding them at home and abroad, and by its structure overcoming difficulties and objections which have for years baffled the ingenuity of his fellow craftsmen the world over, including Steel himself, for whose conception so much breadth is claimed, has proved beyond cavil that average mechanical skill was not equal to what he has accomplished. His success is his individual achievement, the product of his inventive faculty, not merely that of his training or vocation. The merit and originality of his device is not to be determined by the application of a measure to its parts, or the extent of the difference of form between it and a contrivance which fails to answer the same purpose, when that difference, as in this case, not only produces a desired local effect, but insures the proper operation of the entire device. The lug or projection in Ross' shoe bearing upon the wheel upon the flange and the inner side of the tread performs a double function. It preserves the normal shape of that part of the wheel and flange, and aids to equalize the friction surface of the shoe on each side of the tread. It also prevents the lateral vibration of the shoe. It is essential to the success of the device, and is lacking

in the Steel brake block, which has no compensating feature. The difference between these contrasted devices is therefore not merely in form, but in their mechanical and economic results. This test, and the considerations above adverted to, establish the originality of Ross' shoe, and sustain its patentability.

Examples of patented inventions which have been upheld by the courts, although they differed very little in form, mechanism, or operation from other appliances, are numerous. *Kremetz v. S. Cottle Co.*, 148 U. S. 556, 13 Sup. Ct. 719; *Loom Co. v. Higgins*, 105 U. S. 580; *Consolidated Safety-Valve Co. v. Crosby Steam Gauge & Valve Co.*, 113 U. S. 157, 5 Sup. Ct. 513; *Magowan v. Packing Co.*, 141 U. S. 332, 12 Sup. Ct. 71; *The Barbed Wire Patent*, 143 U. S. 275, 12 Sup. Ct. 443, 450; *Gandy v. Belting Co.*, 143 U. S. 587-594, 12 Sup. Ct. 598; *Topliff v. Topliff*, 145 U. S. 156-163, 12 Sup. Ct. 825.

For the reasons given, and those mentioned by Mr. Justice Brown in awarding the injunction in this cause, there must be a decree for complainants, with a reference to a master to ascertain damages; and the injunction is made perpetual.

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PUTNAM NAIL CO. v. AUSABLE HORSE NAIL CO.

(Circuit Court of Appeals, Second Circuit. February 27, 1894.)

No. 40.

Appeal from the Circuit Court of the United States for the Southern District of New York.

Frederick P. Bellamy, for appellant.

Livingston Gifford, for appellee.

Before WALLACE, LACOMBE, and SHIPMAN, Circuit Judges.

Affirmed on opinion of court below. See *Putnam Nail Co. v. Ausable Horsenail Co.*, 53 Fed. 390.

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MISTER v. BROWN et al.

(District Court, D. Maryland. February 16, 1894.)

FISHERIES—STATE OYSTER NAVY—SHOOTING BY OFFICER—LIABILITY FOR.

Code Md. art. 72, which regulates the oyster fishery in the waters of the state, provides for the maintenance of vessels to guard the waters, directs their commanders to arrest all violators of the law and seize offending vessels, and authorizes them to use arms, in their discretion, for the enforcement of the law. Section 25 directs the board of public works to furnish the necessary arms and ammunition for the several vessels; and Act Md. 1886, c. 296, vests in it the appointment of a commander in chief and deputy commanders for the state fishery force, and the supervision of the commander in chief in his control of the force. *Held*, that the action of the board in appointing officers and furnishing ammunition is purely official and ministerial, and its members are not personally liable for the abuse by a deputy commander of the discretion vested in him by statute in the matter of using such arms.

In Admiralty. On exception to libel. Libel by Jacob Mister against Frank Brown, Marion De K. Smith, Spencer C. Jones, Thomas C. B. Howard, and Waters Ford. Exception sustained.