

moulds. The several patents of Illingworth and Jones reach the same result as to the variable cavity, but Illingworth has changed and, as we think, improved the mechanism. In the Doyle patent the cavity for one of the moulds is made by the use of an iron or steel slide, and in the Illingworth by two covers—one with a plain or straight surface, and the other recessed. If such a substituted instrumentality of the mechanism is not a mere equivalent for the metal slide of Doyle, the patent may be held good for the improvement, although it is valueless except in combination with Doyle's invention, and can no more be used without his consent than Doyle can use Illingworth's improvement without his consent.

The *first* admission of the defendants is their use of moulds made in conformity to the Jones letters patent. We regard this as a clear infringement of the Doyle patent. Their *second, third, fourth, and fifth* admissions embrace the use of instrumentalities which not only infringe the Doyle invention, but also the improvement of the Illingworth patent. There are differences in construction and mode of operation shown, but these are not radical or independent enough to take them out of the category of mechanical equivalents.

Let a decree be entered in favor of the complainant in both cases for an injunction, and the usual order of reference be made for an account.

HICKS v. OTTO and others.

(Circuit Court, S. D. New York. March 18, 1884.)

1. PATENT—VALIDITY OF REISSUE—CLINICAL THERMOMETER.

The original patent for a clinical thermometer, in place of which reissued letters No. 10,189 were taken out, was broad enough to cover a tube in which the mercurial column is magnified by means of a raised ridge having a sharper curvature than the main shaft, even though the column is not placed beyond the mechanical center of the main tube. The reissue, therefore, more specifically describing this device, is valid.

2. SAME—PRIOR USE—LOCATION OF THE BORE.

The characteristic of this patent is that the bore is back of the mechanical axis of the curved surface through which it is viewed. Prior use of a so-called magnifying tube, with the bore at the center or in front of it, does not defeat the patent.

In Equity.

Frost & Coe, for plaintiff.

Briesen & Steele, for defendants.

WALLACE, J. Infringement is alleged of the first and second claims of reissued letters patent No. 10,189, granted August 29, 1882, to L. Peroni, assignor of James Joseph Hicks, for an improvement in thermometers. The invention of Peroni was patented in England, January 24, 1878, and the original patent here was issued December 9,

1879. It relates to the class of thermometers known as clinical thermometers, in which it is desirable that the bore should be as small as possible in order that the column of mercury may respond rapidly to changes of temperature at the bulb. The employment of a bore almost microscopic in its caliber necessitates the use of a magnifying lens; otherwise it is very difficult to detect the exact point in the bore at which the mercury stands. Peroni's improvement is directed to such a construction of the glass tube surrounding the bore for the mercury column as will increase the lens power of the tube.

The defenses principally relied upon, besides that of non-infringement, are: (1) That the reissue is void, being for that which was abandoned on the application for the original patent, and as enlarging the claim of the original; (2) anticipation by description in prior foreign publications; (3) prior public use.

The specification of the original patent follows *verbatim* that of the English patent. The invention is substantially described as consisting in locating the bore for the mercury in the glass tube beyond the mechanical center or axis of the magnifying curves of the tube. This involves discarding the circular glass tubes commonly used, and employing those in which there is a convex surface so located as to be eccentric to the bore. Several illustrations are given to show how the bore is located when the magnifying surfaces of the tube differ in their form and location, and all of which exhibit how the scientific fact is utilized, that the apparent size of an object is magnified more when it is beyond the mechanical center of the convex face through which it is viewed than when it is located at the center of the arc formed by the convex face. There were two claims in the original: (1) A thermometer tube having its bore out of or beyond the mechanical axis or center, as and for the purposes described. (2) A thermometer tube having its bore out of or beyond the center thereof, and a curved portion or portions for magnifying said bore, substantially as set forth.

It is insisted for the defendants that these claims are intended to emphasize the theory that the invention consisted of a tube, in which the bore was to be outside the center of the tube, and were intended to limit the patent to such an invention, and that this was done in order to obviate the danger that the claims would otherwise be anticipated by the Negretti and Zambra English patent of 1852, although the language of the claims, read without a careful analysis of the specification, would seem to limit them to a tube in which the bore is out of or beyond the center of the tube itself. The first claim is certainly capable of a construction as broad as the invention described in the specification, and, if the case were now here upon that claim, such would be the construction which it would receive. The mechanical axis or center referred to in the claim would be construed to refer to the mechanical axis or center of the convex or curved surface of the tube. There was nothing in the prior state of the art to

require a more limited construction to the claim. The Negretti and Zambra patent merely describes a thermometer with a flat glass tube, instead of a round one. It nowhere suggests the existence of any magnifying effect by reason of the change in the form of the tube or the location of the bore. So far as appears, Peroni was the first to suggest this. A reference to Peroni's English patent shows that in the claim he specifically stated the nature of his invention to consist in making tubes in which the bore is out of or beyond the mechanical axis or center of the magnifying curve. In the specification of his original patent here he describes one form of tube, which has a curved top and perpendicular sides, and another in which the curves are located between the top and the sides, which he states, "by reason of the bore being beyond the mechanical center or axis of such curves act as magnifying curves or lenses, and thus magnify the appearance of the bore more than is the case when the bore is placed in the mechanical center or axis of the tube or of the curved portion of the tube." Again, he represents a different section of tubing, with his invention applied thereto, and states:

"In this case the tube is mainly circular in section, and the bore is in the center of the main portion thereof, but the tube is formed with a curved portion standing up above the general surface of the tube, and, by reason of the bore of the tube being beyond the mechanical axis or center of such raised curved portion, the latter acts as a lens or magnifying curve, and greatly magnifies the appearance of the bore."

All this is quite inconsistent with a construction of the first claim that would limit the invention to one in which the bore is out of or beyond the mechanical axis or center of the tube itself.

In the reissue the specification has been amended so as to express clearly what was plainly suggested, but left to be spelt out by inference in the original. This has been done by a statement of the principle of his invention and a more specific description of the means employed to carry it out. The first claim of the reissue is: "A thermometer having its bore in rear of or beyond the mechanical axis or center of the convex surface through which it is viewed, as and for the purpose described." The second is: "A thermometer having a convex or lens front for magnifying the bore, formed of a smaller curve than that of the body of the thermometer, substantially as set forth." The second claim, as also the third, (which is not involved in this suit,) cover details of construction described in the specification, but the first claim is broadly for the principle and means of producing the magnifying effect as described in the specification. While any uncertainty which existed in the first claim of the original patent is eliminated by the first claim of the reissue, it is not a broader or a different claim, upon a fair and reasonable construction of that claim in the original. What has already been said concerning the Negretti and Zambra patent disposes of any defense of anticipation resting upon that patent.

Reliance is also placed on a printed publication, which was a catalogue circulated by the defendant in 1876, in which he advertised thermometers for sale. One of these, designated as No. 450, is described as one "with an oval back and front." Another (No. 451) is described as one "with flat back, the front made in the form of a lens, so as to magnify the mercurial column." Neither of these descriptions suggest a tube in which the bore is so located as to be beyond the center of the lens or curved surface through which it is to be viewed.

The defense of prior use is not satisfactorily established by the evidence. So far as it rests upon the thermometer of Hicks, sold in this country, those of the class described as No. 450 in his catalogue, and which were made with a flat back and front so that they would not roll off a table when in use, if they magnified the column at all, they did so in a hardly appreciable degree, and were of no practical utility in that behalf. The class described as No. 451 was passed upon by the patent-office before granting the reissue, and held not to show the invention of Peroni. Although they had been described in complainant's catalogue as magnifying the mercurial column, the proofs show the bore to have been located between the lens surface and the center of the arc of the lens, and consequently the magnification was much less than that produced by Peroni, and did not involve his principle. As to the thermometers made and sold by Adolph Bayer, the evidence indicates that although he made half a dozen or a less number on one occasion, they were made experimentally, and the result was not sufficiently encouraging to induce him to repeat the experiment. He was a manufacturer and dealer in the article. The Peroni thermometer was a success as soon as it was introduced to the trade, while Bayer's fell still-born upon the current. The proof is not satisfactory that they were a practical success, but, on the contrary, indicates that they belong to the catalogue of abandoned experiments. The specimen exhibited was made years later, for the purpose of meeting a motion for an injunction in a suit brought upon the complainant's patent. Without considering with particularity the other instances of prior use relied upon, it suffices to say that the defendants' case fails to meet and overthrow the presumption arising from the grant of the patent by such cogent and satisfactory proof as the rule of law applicable to the defense requires.

The more difficult question in the case is as to infringement. The defendant is manufacturing ostensibly under the letters patent granted to Henry Weinhagen October 19, 1880, and reissued January 16, 1883. The claim of the original was for a thermometer tube having a flat bore and a flat back, and sides forming acute angles with said back, and converging towards and joining each other at an acute angle opposite the flat bore, so as to form a prismatic front. The theory of the invention is that the magnifying power is due to the refracting action of the prismatic sides in combination with the flattened bore in a plane at right angles to the line of view. Indeed, it

is insisted by the experts for the defendants that the substantial and practical magnifying effect found in the Peroni thermometer is not due to the lens action of the cylindrical tube, whether the bore of the tube be placed in its axis or beyond that axis, or beyond the axis of curvature of any part of the tube, but is due to the refracting action of the sides; and an attack is made upon the complainant's patent as containing a false and deceptive specification in this regard. A careful consideration of the evidence taken, in connection with the experimental tests made upon the hearing, has led to the conclusion that the theory of the defendants' experts is not correct. In his original specification, Weinhausen states "that his tube is made as sharp as possible at its junction, and forms a prismatic portion or front," and "that the prismatic sides join each other at an acute angle opposite the bore." If the defendants' thermometer tubes were in fact of this description they would not infringe the complainant's patent. The magnifying curve, which is the convex surface of Peroni's, would be absent, and the two inventions would not involve the same principle. But it is believed that Weinhausen found it necessary to adopt the principle of Peroni's invention. In his reissue the feature of the acute angle in front of the bore, formed by making the tube as sharp as possible at its junction, is modified by a description of the mode of making the tube which results in the angles remaining "slightly rounded." This configuration of the angle appears quite clearly in the photographic representations of a section of his tubes. These present a "slightly rounded" angle or lens surface, which is substantially the same as is shown in figure 2 of the drawings of complainant's patent. The bore is located beyond the center of the magnifying curve. It is therefore held that the defendants infringe.

A decree is ordered for the complainant.

SHAW RELIEF VALVE CO. v. CITY OF NEW BEDFORD

(Circuit Court, D. Massachusetts. March 12, 1884.)

PATENTS HELD PERSONAL PROPERTY.

A patent-right is personal property, and goes to the executor. Section 4884 of the Revised Statutes, providing for the grant of a patent to the patentee, "his heirs and assigns," does not change the law by which executors and administrators take the title to a patent on the death of the owner: as appears by other sections of the same chapter.

In Equity.

Chas. H. Drew, for complainant.

C. J. Hunt, for defendant.

LOWELL, J. This bill is brought upon two patents, and the demurrer of the city of New Bedford raises several objections, all but