

v.31F, no.4-15

WILCOX *v.* BOOKWALTER AND OTHERS.
SAME *v.* ANDERSON AND OTHERS.

Circuit Court, S. D. Ohio, W. D.

April, 1887.

1. PATENTS FOR INVENTIONS—REISSUE NO. 8,868—VEHICLE HUBS.

Complainant's patent, (reissue No. 8,868, August 26, 1879,) for an improvement in vehicle hubs, *held* to be valid and infringed by defendants.

2. SAME—SKILL AND INVENTION—NOVELTY.

The difficulty of drawing the line between skill and invention considered. The standard of skill is being constantly raised, and the standard of invention is, as a necessary consequence, correspondingly raised. The standard of the date of the alleged invention is that by which the test is to be made. "Novelty, "when does it indicate skill, and when invention?"

Suit in Equity. Suit for infringement of letters patent. Hearing upon bill, answer, and proof.

Wood & Boyd, for complainant.

Arthur Stem, for defendants.

SAGE J. The complainant's patent—reissue No. 8,868, August 26, 1879—is for an improvement in vehicle hubs. The specifications set forth that the invention “relates to a wooden hub, having its waist or middle portion compressed and solidified, and provided with surrounding bands of metal; and the invention consists in constructing the hub, in the first instance, with finished ends, an enlarged belt or zone at the middle, and annular grooves adjacent to said belt, and subsequently compressing said belt to its finished size, at the same time compressing into the grooves metal bands, which engage over and hold the ends of the compressed belt, as hereinafter described.”

The specifications proceed:

“The invention also further consists in compressing, with a grooved wooden hub, a metal strengthening band, seated in the groove, and provided with a continuous side lip or flange, arranged to engage over the outside surface of the hub, and prevent the ends of the fiber from rising or working loose adjacent to the band; the peculiarity of my invention in this regard consisting in the fact that the wood is not scarfed down adjacent to the grooves to receive the lip, but, on the contrary, is left intact, and the lip passed over and forced down into the outer surface, so that the ends of the fiber adjoining the grooves are confined and held firmly within or beneath the lip. The invention also consists in a peculiar form of the metal band.”

The hub is first made with its ends finished complete in the usual form, but with an enlarged central belt or zone, and a groove around each end contiguous to the enlarged belt. Two metal bands of iron or other malleable metal are then provided. They are of a sectional form, corresponding to that of the grooves, and each is provided on the inner side with an overhanging lip, adapted to fit upon and encircle the enlarged belt of wood on the hub, and each has an internal vertical shoulder or lace at the inner edge of the overhanging lip.

After placing the bands upon the ends of the hub,—that is, over the grooves above described,—with their lips engaging over the ends of the enlarged belt, the patentee forces, by hydraulic pressure, the hub and bands, first one end of the hub, and afterwards the other end, into a tapering die of such size and form as to compress the wooden belt and the bands to the diameter required for the finished hub, thereby giving the hub the appearance shown in fig. 2 of the drawings; at the same time seating the bands in the grooves, with their lips pressed over and into the ends of the compressed central belt, so as to prevent it from expanding, and so as to confine the ends of its fibers.

The claims are as follows:

“(1) A wooden hub, having the wood left in its natural condition at its ends, and having at the middle a highly-condensed zone or belt, provided with metal confining bands, substantially as described.

“(2) The herein described method of constructing a wooden hub, consisting in first constructing the hub with finished ends and an enlarged central belt, and then applying metal bands to the ends of said belt, and subsequently

reducing the belts and the bands by compression to a size corresponding with the previously finished ends.

“(3) A metal hub-band, having the overhanging lip at its inner side, and the internal vertical, or substantially vertical, shoulder at the inside of said lip, substantially as shown and described; the lip being adapted to confine the spoke-receiving portion of the hub, and the shoulder to abut squarely against the grain of said portion to prevent its displacement.

“(4) The method of preparing banded wooden hubs, consisting in grooving the hub, and applying thereto a band having a body adapted to fill the grooves, and a side lip adapted and arranged, to extend beyond the groove, and engage over the outside surface of the hub, and finally seating said band down firmly within the groove, with its lip overhanging, and covering the ends of the fiber adjacent thereto.

“(5) A grooved wooden hub, in combination with a seamless metallic band, having a body seated in the groove, and a side lip seated over and upon the outside surface of the hub, adjacent to the groove, said surface being left uncut, or without scarfing, to receive said lip, so that the lip may cover the ends of all the surface fibers.

“(6) The grooved wooden hub, in combination with the continuous metallic band having its body seated in the groove, and the side lip seated flush within the hub, over the outside of the surface, adjacent to the groove, and confining beneath it the ends of the outermost fiber, as described and shown.”

The specifications contain the following disclaimers:

“I am aware that it is old to strengthen wooden hubs by means of metallic bands compressed into grooves therein, and otherwise applied thereto. I am also aware that a machine has been hitherto patented for compressing and banding various wooden bodies enumerated in said patent. I am also aware that it has been proposed to compress metallic bands upon wooden hubs, and at the same time compress the wood more or less adjacent to the band. I am also aware that bands have been heretofore made with thin edges, and a central thickened portion of rounding form, and seated by compression into a groove of like form, the lip being seated in the groove on an inclined or chamfered surface, instead of overhanging the groove, and engaging upon the exterior surface of the hub, as in my case.”

The complainant affirms that he was the first to make a wooden hub, with a waist or spoke-receiving portion compressed throughout, and having a metallic band so applied as to make the compression permanent, by preventing, the wood from overcoming the compression by its constant tendency to expand. This is accomplished by the bands, which are by compression so fitted to their places that the overhanging lips, extending inwardly beyond the edges of the grooves in which they are seated, cover and hold firmly in place the surface fibers of the hub at each end of the waist or spoke-receiving portion.

The groove in which, the band, is seated serves also as an abutment, preventing the lateral displacement of the band by the pressure of the central portion of the hub, or from any other cause. The internal vertical, or substantially vertical, shoulder, at the inside of the lip of the band, confines, the waist or spoke-receiving portion of the hub; the shoulder abutting squarely against the grain of said portion to prevent its displacement. That the results claimed are accomplished, is conceded. The advantages are that the compression of the middle zone of the hub—which is greatest near the surface—closes the pores of the

wood, and riders it practically impervious to moisture, thus preventing expansion and contraction by atmospheric influences. The continued pressure produced by the constant tendency of the compressed wood to expand serves to keep the band tight, and to prevent its circular movement, and causes the wood to bear on all sides, of the spoke tenon, thus assisting the glue in holding it to its place. There are other advantages claimed, which, it is not necessary to specify. The general result is a hub light, shapely, strong, sufficiently elastic, durable, and easily and cheaply manufactured.

The defenses are anticipation, lack of invention, and non-infringement. Of the hubs introduced in evidence as anticipating the complainant's invention, four are specially referred to by defendants' counsel. They are the Bookwalter plain band hub, first made in 1872; the Shute hub, patent No. 156,893, November, 17, 1874, application October 6, 1874, date of invention spring of 1872; the Ford hub, first made in September, 1873, for which a *caveat* was filed, but no patent applied for; and the Olds hub, patent applied for March 4, and granted March 24, 1874, for an invention made in the fall and winter of 1873.

None of these hubs had a compressed central zone. They were all banded, but, for the reason that there was no compressed central zone, the expansion of which was to be prevented, the great object in view was to prevent the splitting, of the hub, either by the driving of the spokes to their places, or by the use of the completed wheel. Accordingly, in the Bookwalter hub, the band was not seated in a groove, but upon a scarfed or chamfered surface, shaped by turning to receive the band, which was of malleable iron and bell-shaped. The band was slipped over the end of the hub, and then the, hub and band were placed in an iron cup or die, and subjected to a screw or hydraulic press; which was used, not to compress the central portion of the hub, but to upset the band against and upon the scarfed or chamfered surface. This operation necessarily compressed the wood of the hub under the band, and immediately adjoining its inner edges. It was unlike the complainant's hub, in that the band had no overhanging lip, nor vertical shoulder, to prevent lateral displacement of the fibers of the central zone of the hub, nor abutment at the outer edge of the band to prevent its slipping off. It does not anticipate the complainant's invention.

The Shute hub-bands were provided with inwardly projecting spurs, which were pressed into an inclined or chamfered surface of the hub, where the central zone tapers down to the inner line of the ends of the hub. In pressing these bands to place, there was some compression of the parts of the hub under and immediately adjacent to them; but the bands were for a time cast with shoulders at their outer edges, which were pressed into the hub, and intended to prevent the bands slipping off; but also prevented them from being forced further on towards the center of the hub. The shoulder was subsequently omitted. As the record is silent as to the date of the omission, the presumption

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is that it was after the complainant's patent. The forcing of the inner rim or edge of the band to close contact with the hub caused it to hold down the

fibers of the portion of the hub which it pressed upon, but it was not of such form, nor was it so applied, as to serve the purpose accomplished by the use of the complainant's bands.

The Ford hub was first turned to the required size with annular grooves to receive the bands, which were compressed into the grooves, and had their outer faces upon a line with the contiguous portions of the periphery of the hub. No hub of this description was manufactured for use; no wheel with such a hub was ever made. The hubs that were made, were made in the course of experimenting, when Ford thought of applying for a patent. That idea was abandoned, and there is here no anticipation of the complainant's hub. In the Olds patent, too, the bands were set by pressure in grooves, which they filled so as to be flush with the surface of the wood. The wood of the hub adjacent to the bands was compressed during the setting process, but the drawings do not show, nor do the specifications describe, an overhanging lip of the band, anticipating that feature of the complainant's hub.

The next question is whether there was invention in the complainant's improvement. In support of their contention that the skill of a mechanic, trained in the art of wheel-making and wood-working, was all that was required to produce the complainant's hub, they refer, in addition to the patents already cited, to the Woolsey patent, No. 149,623, dated April 14, 1874, for an improvement in hubs, and the Gilman patent, No. 113,644, dated March 22, 1871, for improvement in the methods of banding compressed wood. The outer edge of the band of the Woolsey hub is curved downward, and, pressing into the wood, (there being a groove in the hub to receive it,) formed a shoulder for the curved edge to rest against, and thereby prevent its coming off or getting loose. The bands were put on at each end of the mortises cut to receive the spokes, and the object sought to be obtained was to prevent the ends of the mortises from giving way or crowding up by the pressure of the tenon of the spoke while it was being driven to its place.

The Gilman improvement consisted of a sectional die, provided with recesses for the reception of the bands. This sectional die, with metallic bands in the recesses, was placed upon a platen or follower. A compressing conical die of the same interior diameter at its lower extremity as the sectional die, and recessed to receive the top of the sectional die, was placed in position immediately over the sectional die, and the platen or follower was provided with a corresponding recess, by which the sections of the die were held together. The block to be compressed was placed in position over and with one end within the larger diameter of the conical die, the other end being held by a transverse frame of the machine. The sectional die rested upon the movable piston of an hydraulic pump. The upward motion of the piston forced the block of wood into the conical die. The stroke of the piston was then retracted, lowering the die so that a suitable follower could be placed above the partially compressed block. This done, another upward stroke forced the block

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of wood into the sectional die, and, the two dies and the block being of uniform lengths, the ends of the block were inclosed in the bands previously

placed in the recesses of the sectional die, their interior diameters corresponding to the interior diameter of the sectional die, so that the bands fitted tightly about the block. The sectional die was then released from the machine, and the compressed, banded block taken out.

Now, it is true that, looking back after complainant made his improvement, and after its utility and superiority found recognition in the market, we can find in the Gilman patent a method of compressing wood suggestive of the method employed by complainant. Complainant's method is simpler, and Gilman's method was impracticable for complainant's purpose. We find also in the Woolsey band an exterior abutting shoulder, designed, and apparently effective, to prevent lateral displacement. We find in the drawings of the Ford band, as exhibited in defendants' evidence, an internal vertical shoulder; and it appears that, by pressing some of these bands to their places, their inner edges were made to bear upon, and to some extent compress, the adjacent wood of the central zone of the hub, and hold firmly the fibers of the wood. But not one of these bands, nor of any of the bands offered in evidence by the defendants, will serve the purpose as the complainant's hub. Nothing but his band, or its equivalent, will answer.

It is sometimes difficult to draw the line between skill and invention, and every year it becomes more difficult. The standard of skill in mechanics, as in the professions, is being constantly raised. The workman who employs the best skill of his craft of 30 or even 10 years ago, and only that, may be properly discharged as incompetent, as the physician who treats his patient with nothing better than the best methods and remedies known 30 or even 10 years ago may be guilty of malpractice. The standard of invention is, as a necessary consequence, correspondingly raised. As Justice MATTHEWS said in *Hollister v. Benedict Manuf'g Co.*, 113 U. S. 73, 5 Sup. Ct. Rep. 717, there must be "something more than the expected skill of the calling;" but when we come to determine what that is, or rather what it was at the date of the alleged invention,—for the standard of that date is the test,—we must, if we proceed intelligently, consider what those engaged in that calling were seeking to accomplish, and what they were, by their skill, actually accomplishing. That is, after all, a good practical test of what skill can accomplish. It is not always a complete and certain test. Two or more persons, each acting independently and of his own knowledge alone, may arrive at the same result—undoubtedly invention—at so nearly the same time as to make it as difficult to decide who is entitled to priority, as when two or more astronomers almost simultaneously discover a new comet; and yet if there were, under such circumstances, a score of rival applicants for letters patent, that fact would not negative invention, for it is clear that it is invention, and the only question is, who first made it? On the other hand, an improvement in any department of manufacture or of the useful arts may be made, shortly after the necessity or occasion for it arises, by one person alone. It may be novel and ingenious, and yet, to one familiar with the state of the art, and

the handicraft of those engaged in it, it may be clear that skill only, and not invention, is displayed;

and the fact that no other one had, at or about the same time, produced the same result, by substantially the same or by any means, would not make it invention. But when for years skill is unsuccessfully reaching out in all directions for a desired result, and finally some one, by a new device or new process, which no one else had thought of, accomplishes it, that fact is strongly indicative of invention, and it may be conclusive; for skill had long sought it in vain, and therefore the law may recognize it as a discovery, or as the embodiment, novel and useful, of a mental conception; that is, as an invention.

How is it in this case? As early as 1851 it was common to apply metal bands to hubs. They were pressed on while hot, and then suddenly cooled with water, so that they shrank and compressed the adjacent fibers of the wood. Then followed hubs with shell bands. After 1870 there was a considerable demand for banded hubs. What everybody in the trade was striving for was a hub light, elastic, and strong. The complainant was the first to compress, and at the same time band, the central zone of the hub. This was nearly five years after the revival of the demand for banded hubs, for the complainant fixes the date of his invention in the summer of 1875. The application for his original patent was November 19, 1875, and up to that date nothing embodying the features of his improvement was manufactured or on the market. The advantages resulting have already been referred to. It was a greater improvement than had been made by any of his predecessors. If it was not invention, why had it not been wrought out by the skill of some one at least of the thousands of workmen in hubs and wheels throughout the United States constantly doing their best to make improvements in the very line of his improvement? The conclusion of the court is that it was invention, and that his patent is valid.

Without referring to the claims in detail, it is sufficient to say that, excepting the second, which was upon the hearing withdrawn, they are sustained, and that the objections to the reissued letters are not well taken.

Upon the question of infringement it is not necessary to enter upon details. The grooves of the hubs manufactured by defendants, and introduced in evidence by the complainant, are not identical in shape with those in complainant's hubs, nor are the bands, but they are equivalents. The inner sides of the grooves are not vertical, but they are substantially so, within the fair construction of complainant's patent.

The bands are not made with lips, but they are of such shape as, when compressed into the grooves, to overlap and confine the outer fibers of the central zone of the hub as do the bands of the complainant's hubs, and they abut against the central portion of the hub, which is compressed by pressure, so as to prevent its displacement; the outer edges of the bands hearing against the outer sides of the grooves, substantially as in the complainant's hubs.

The decree will be for complainant.