NILES TOOL-WORKS *v.* BETTS MACHINE CO.[1]

Circuit Court, D. Delaware. April 1, 1886.

1. PATENTS FOR INVENTIONS—TURNING AND BORING MILLS.

Letters patent No. 113,651, of April 11, 1871, granted to George A. Gray, Jr., for an improvement in turning and boring mills, is not void for want of patentable novelty.

2. SAME—USE OF MACHINE—EVIDENCE OF UTILITY.

Defendant's adoption and use of the patented device in preference to others on the market, *held* a pregnant fact, and strong evidence of the utility of the patented device.

3. SAME—PATENTABLE COMBINATIONS.

A combination is patentable (1) if it produces new and useful results, though all the constituents of the combination were well known and in common use before the combination was made, provided the results are a product of the combination, and not a mere aggregate of several results, each the product of one of the combined elements; (2) if it produces a different force, effect, or result in the combined forces or processes from that given by their separate parts, and a new result is produced by their union; (3) if it either forms a new machine of distinct character or formation, or produces a result which is not a mere aggregate of separate contributions, but is due to the joint and co-operating action of all the elements; (4) when the several elements of which it is composed produce, by their joint action, either a new and useful result, or an old result in a cheaper or otherwise more advantageous way.

4. SAME.

Where the attention of persons skilled in the art had been directed for many years to the discovery of a more convenient and effective contrivance, and patentee was the first to produce it, held, that something more than the mere application of mechanical skill was involved in his production.

In Equity.

Stem & Peck, for complainant.

Benjamin Nields, for defendant.

WALES, J. The bill prays for an injunction, and an account for profits and damages. Letters patent No. 113,651, dated April 11, 1871, were issued to George A. Gray, Jr., for an "improvement in turning and boring mills," and on the fourteenth of April, 1883, were assigned by the said Gray to the complainant. The first claim of the patentee is for "the tool-bar balancing device, consisting of a rope or chain, U, weight, V, and pulleys, R, R, S, T; connected and operating substantially as and for the purpose specified." The nature and objects of the invention are declared to be:

"*First.* In a peculiar device for balancing the tool-bar in any position within its range, in such a way as to keep the weight up against the feed, and thus prevent the bar being forced up by the work when any slack exists in the feed, and permit of the bar being elevated and depressed freely by hand; this balancing device differing from all others for the same purpose in this: that the bar can be moved to any degree of angularity from an upright or other position, and moved with its saddle along the rail horizontally, without changing the location of the weight which balances the bar." 302 That part of the general description referring to the drawings, and specifying the improvement, is as follows:

"A is the bed-plate of the mill; B, B', the housings; C the rail; and D the horizontally sliding saddle, which is snugly fitted to and slides upon the rail; E is the revolving table, operated in the usual way by the large gear-wheel, F, driven (through suitable connections) by the cone pully, G, and 'back gear,' H. The feeding mechanism for giving a horizontal movement to the saddle, and a vertical or inclined movement to the tool-bar, does not differ materially from others for the same purpose, the saddle being moved by the screw, I, and the tool-bar, K, by the rod, L; the connection to the bar, K, being made by a worm, friction-clutch, worm-wheel, and pinion gearing into the rack, M, on the bar.

The down feed can be stopped by the slackening of the wheel, N, which governs the friction-clutch. Both the cross and down feed are driven by the expansible gearing shown, operated by the shaft, O. The rail, C, is designed to be raised and lowered by power; the side screws, P, P‘, and connecting driving shaft on the top rail, being provided for this purpose. The swing, Q, in which the bar, K, slides, is constructed, as usual, in such a way that the bar can be swiveled to any desired angle to enable the machine to bore and turn tapering, etc. In order to balance the weight of the tool-bar in any position, whether inclined or vertical, in a way that will possess none of the faults attributable to devices heretofore existing for this purpose, I have provided the following device: Pulleys, R, R‘, are journaled upon the swing, Q; pulley, S, upon the tool-bar; and pulley, T, upon the end of the rail. A rope, chain, or wire cord, U, fastened at one end upon the rail at C‘, is then passed over the pulley, R, under the pulley, S, over the pulley, R‘, and over the pulley, T, where it supports a weight, Y, which must be slightly heavier than half the weight of the bar, K, only. This device suffices to keep the bar up snugly against the force that feeds it down, so that the tool can never drop when “slack exists in the feed.‘ It also enables the swing, Q, to be moved to a very extreme angle without deranging any of the parts, or materially changing the effect of the weight, Y, upon the bar, or even disturbing the weight itself. * * * The tool-bar slides between the gibs, X, on the swing, carrying, of course, the pulley, S, with it.”

Boring-mills are large and heavy machines, the tool-bar alone weighing from 200 to upwards of 1,000 pounds. Its tendency, of course, is to slide downwards, and it is therefore desirable, if not absolutely necessary, to counterbalance its weight in order to enable the operator to adjust it easily and safely to different kind of work. Counter-balances for this purpose had been attached to tool-bars by various

devices long before the date of Gray's patent, but none, it is contended by the complainant, with such complete, Useful, and advantageous results as are secured by the latter. The first and most common contrivance was known as the "drill style," consisting of a chain or rope run over a couple of pulleys attached to the ceiling above the machine, one end of the chain being hooked to the top of the tool-bar and the other end to a counterbalancing weight. The objections to this mode are that (1) it requires facilities for overhead attachments involving extraneous supports, and thus prevents the machine from being a self-contained structure; (2) the pull of the balancing rope or chain can be directly upward only so long as the tool-carriage or saddle remains in one and the same position on the 303 rail, for the pulleys being stationary, as the saddle is pushed along the rail either to the right or to the left, the counterbalancing weight produces a resistance to its movement; and (3) when the tool-bar is set at an angle, the pull is no longer in the line of the path of the bar, but sidewise, and the effect of the counter-balance will be to draw the bar back into a vertical position, and thus produce a side friction or binding between the tool-bar and the guides in which it slides. To remedy some of these faults the "trolley style" was designed, in which the chain supporting the counter-balance, instead of passing over a stationary pulley overhead, passes over two pulleys secured in a little traveling carriage, or trolley, which moves on a track secured to the ceiling over the boring-machine. The end of the chain is attached to the ceiling instead of to the tool-bar, and a loop of the chain, hanging down from the trolley, carries a pulley which is fastened to the top of the tool-bar. As the saddle slides along on the rail the trolley overhead moves along its track in the same direction, and so keeps the trolley and pulley directly over the tool-bar, in whatever place the latter may be

on the rail. This is an improvement on the simple "drill style," (although the trolley does not always promptly follow the movement of the saddle on the rail, and has to be dragged along;) but it does not provide for a direct pull in the line of the axis of the tool-bar whenever the latter is changed from a vertical position. Another contrivance is the "Bradley style," in which the pulleys are carried in a bracket projecting upwards from the swing; but the objections to this mode are so serious that it does not appear to have gone into general use, and seems now to be discarded. Its great disadvantages were that it formed an additional load upon the saddle, causing it to move hard upon the rail, and the counterbalancing weight, being within the frame-work of the boring-mill, was often in the way of the operator. Moreover, the weight was hung upon one side of the swing, and when this was loosened on the saddle, in order to adjust the bar at an angle, the weight was apt to turn the swing over suddenly, and cause serious damage.

The defendant in its answer sets up several anticipations, but in the proof relies upon the two just described.

It is very clear from the evidence that Gray's improvement is a decided advance beyond all preceding counterbalancing contrivances in boring-mills, not only in providing greater facilities for the prompt adjustment of the bar in any desired position, but in all its various operations and results. The bar is more safely and easily moved when out of a vertical position and with less friction by this mode than by any other before known; and Mr. Betts, the president of the defendant company, referring to the improvement, frankly admits that "it makes a more complete machine, is easier for the operator, and will make more perfect work, with this device on it." Rev. Ev. 12.

The testimony of the experts is, as usual, contradictory. Mr. Car 304 michael, a witness for the defendant, who has been in the employ of the Harlan & Hollingsworth Company, at Wilmington, since 1850, and who constructed for them the "trolley style" of counter-balance, cannot perceive any appreciable difference in the force necessary to be used on either machine in elevating the bar when the latter is moved out of a vertical position; but it is a pregnant fact that when the company required an additional boring-mill they preferred one with the Gray improvement, and this is held to be strong evidence of utility. *Tyler* v. *Crane,* 7 Fed. Rep. 775.

The superiority of Gray's contrivance over all others is, as claimed by the complainant, that (1) it dispenses with all overhead attachments requiring outside supports; (2) the counterbalancing pull is always directly in the line of the axis of the bar, there being no side pull on the bar or swing, and the bar never binds against its gibs; (3) the bar is easily handled, and perfectly safe for the operator; (4) it is cheap and simple, and permits of the addition of a second toolbar without duplicating the chain that carries the weight. The "Bradley style," it is true, effected the first two of these results with measurable success, but by an arrangement of pulleys entirely different from, and not suggestive of, the Gray device, and in a way that was cumbersome and dangerous to the machine and to the operator. The "trolley style" is also plainly inferior in almost every point touching the movements of the bar, particularly in producing a side strain on the bar when the latter is moved out of a vertical position. The patentee has invented or formed a new combination of pulleys or sheaves on the bar, swing, and rail which was before unknown, which produces admittedly useful and advantageous results in a way excelling all former contrivances for the same purposes; and the only question is whether it is of

such a novel and useful character in its arrangements, operations, and effects as to merit the protection of letters patent. The defendant's counsel says:

" In this case Mr. Gray simply transferred the two pulleys from the trolley to the swing, and dispensed with the trolley and the track; and further simply attached one end of his rope or chain to an arm of the machine instead of attaching it to the wall, or some other object not connected with the machine, and transferred pulley, T, to an arm carried by the machine. This is simply a substitution of equivalents,—no more, no less; and the device does substantially the same thing, in the same way, by substantially the same means."

In support of his contention he cites *Smith* v. *Nichols,* 21 Wall. 112, in which a patent for the manufacture of a textile fabric was held to be void because the article manufactured was of superior excellence in degree only, and not in kind; a fabric substantially the same in structure, and possessing virtually the same properties, having been known and used before. But the court, by Mr. Justice CLIFFORD, said in that case:

"A patentable invention is a mental result. It must be new, and shown to be of practical utility. Everything within the domain of the conception 305 belongs to him who conceived it. The machine, process, or product is but its material reflex and embodiment. A new idea may be ingrafted upon an old invention, be distinct from the conception which preceded it, and be an improvement. In such case it is patentable."

It has also been declared by the supreme court that "the application of an old process or machine to a similar or analogous subject, with no change in the manner of applying it, and no result substantially distinct in its nature, will not support a patent, even if the new form of result has not been before contemplated." *Pennsylvania R. Co.* v. *Locomotive*

Engine Safety Track Co., 110 D. S. 490; S. C. 4 Sup. Ct. Rep. 220; and to the same effect is Morris v. McMillin, 112 U. S. 244; S. C. 5 Sup. Ct. Rep. 218. But the same court had already declared, and has since reaffirmed, the doctrine that when a patentee has produced new, useful, or improved results by a new combination of old constituents he will be protected. *Hailes* v. *Van Wormer, 20 Wall, 353; Reckendorfer* v. *Faber,* 92 U. S. 347; *Pickering* v. *McCullough,* 104 U. S. 310; *Stephenson* v. *Brooklyn* R. Co. 114 U. S. 157; S. C. 5 Sup. Ct. Rep. 777.

The propositions established by these cases are that a combination is patentable (1) if it produces new and useful results, though all the constituents of the combination were well known and in common use before the combination was made, provided the results are a product of the combination, and not a mere aggregate of several results, each the product of one of the combined elements; (2) if it produces a different force, effect, or result in the combined forces or processes from that given by their separate parts, and a new result is produced by their union; (3) if it either forms a new machine of distinct character or formation, or produces a result which is not the mere aggregate of separate contributions, but is due to the joint and co-operating action of all the elements; (4) when the several elements of which it is composed produce, by their joint action, *either a new and useful result, or an old result in a cheaper or otherwise more advantageous way.* See, also, Merwin, Inv. § 135 *et seq.*

These are but varied expressions of the same doctrine.

Here the patentee has undoubtedly produced, if not a new, an improved, result, in a new way, and in doing so has exercised the faculty of invention. The attention of skilled mechanics and engineers had been directed for many years to the discovery of a more convenient

and effective contrivance for counterbalancing in boring-mills, and it was reserved for this man to invent a combination which has wrought beneficial results in many ways. This is something more than the mere application of mechanical skill to a change of form, and not of substance, though it may be difficult to distinguish broadly between skill and invention. *Pennsylvania R. Co.* v. *Locomotive Track Co.* and *Morris v. McMillin, supra,* are fair illustrations of the application of old contrivances to analogous results without 306 the invention of new combination, or the production of new or improved results.

In this case, the patentee has invented a new combination which produces, in a new and better way, new and improved results. In the words of Justice CLIFFORD: "It is a new idea ingrafted upon an old invention, distinct from the conception that preceded it."

Let a decree be entered for the complainant.

[1] Edited by Charles C. Linthicum, Esq., of the Chicago bar.