Case No. 2,826.

CLARK v. KENNEDY MANUF'G CO. ET AL.

{14 Blatchf. 79;[1] 2 Ban. & A. 479; 11 O. G. 67.}

Circuit Court, D. Connecticut. Jan. 1, 1877.

PATENTS—"MANUFACTURE OF BOLTS"—CONSTRUCTION—INFRINGEMENT.

The invention set forth in reissued letters patent No, 6,291, granted to William J. Clark, February 16th, 1875, for an "improvement in the manufacture of bolts from round rods," consists in the manner in which the inventor applies lateral compression to the manufacture of an angular neck, and in the manner in which he permits the shaping mechanism to become anvil heads upon which the header can operate to form a head upon the bolt. The patent is to be construed as claiming a method or process, which consists in the combination of the operation of swaging the blank laterally by the described dies, or their equivalent, operating in substantially the same way, with the operation of upsetting the end of the bolt upon the anvil ends of the dies, to form the head. It does not claim broadly swaging by suitable dies, combined with upsetting to form a head. Therefore, a machine in which the swaging is produced by dies of a construction radically different from the dies of the patent, does not infringe the patent.

{In equity. Bill by William J. Clark against the Kennedy Manufacturing Company and Edwin Hills to restrain infringement of the second reissue of patent No. 43,669, the first reissue of which was numbered 1,916.}

Charles E. Mitchell and Benjamin F. Thurston, for plaintiff.

Charles R. Ingersoll, for defendants.

SHIPMAN, District Judge. This is a bill in equity to restrain the defendants from an alleged infringement of reissued letters patent of the United States, No. 6,291, granted to the plaintiff and dated February 16th, 1875, for an "improvement in the manufacture of bolts from round rods." The original patent was ante-dated February 2d, 1864, and the first reissue was dated March 2Sth, 1865. The answer alleges that the second reissue was not for the invention which was described in the original patent, and denies that the defendants have infringed the patent and denies that the plaintiff was the first inventor of the patented improvement.

The main question in the case is in regard to infringement and this question involves the precise character and extent of the plaintiff's

invention, and the proper construction of the letters patent. It is necessary to ascertain, in the first place, from the testimony as to the state of the art, and from the original and reissued patents, what was the invention of the patentee. Prior to the date of the plaintiff's invention, angular necked, round stemmed and headed holt blanks had been made from iron whose cross section was square. The round stem, which was to receive the screw thread, was made cylindrical by rolling or hammering, which required expensive machinery and much labor. Angular necked bolt blanks were also made from the round iron of commerce. These blanks were formed in dies, a portion of which was round and a portion was square, but the neck of the bolt was formed wholly by the operation of upsetting or driving the metal into the square fixed matrix of the dies. It was practically impossible by the upsetting process to form a neck whose length would exceed the diameter of the bolt. The average length of the necks of bolts made by "staving up" was somewhat less than the diameter of the bolt The head was formed by the same upsetting operation. It is necessary that the neck should be of considerable length, in order to prevent the bolt from turning around after it is driven into the wood and the nut is screwed upon the shank. The necks of staved up bolts were too short, and the bolts revolved in the wood. It is also desirable that the comers of the neck should be full and angular, so that the bolt may remain firmly imbedded in its place. The plaintiff's invention resulted in making from round iron an angular necked, round stemmed and headed bolt blank, having a neck of sufficient length to meet these mechanical requirements. He succeeded in making a cheap bolt, which has gone into general use, and the validity of his patent has been substantially acknowledged by the manufacturers of the country. His mechanism is described in the original specification as follows: "I construct a pair of dies of cast iron or other metal, making the grooves therein, for a portion of their lengths, of a semi-cylindrical form, and the remaining portion of an angular form. Each die being provided with a groove of this character, will permit the two, when placed together, to present at one end a cylindrical opening corresponding in diameter to that of the cylindrical bolt blank, while the opening at the opposite end, instead of being cylindrical, will be square or angular, but of similar sectional area to the cylindrical end, so that, when the two dies are forced together upon the bolt blank, (which is heated to a proper degree before being placed therein,) that part of the blank lying within the angular portion of the grooves will be swaged out, and forced to take the angular form corresponding to that of the angular portion of the groove, while the part lying within the cylindrical portion of the groove will retain its original shape, and, while the bolt blank is held in the dies, they form an anvil upon which a portion of the blank projecting from the dies, at the end containing the angular grooves, is upset and formed into a head, by any proper machinery."

It will be understood that the process of moulding or shaping hot iron by swaging had long been understood at the date of the original patent, and that the manufacture of bolt

blanks by swaging or lateral compression was also then known. Pound necked bolts from square iron had been made by swaging, and square headed bolts had been made by the same process, but square necked bolts had not been made from round iron by lateral compression, prior to the plaintiff's invention.

The plaintiff, in the first place, insists that his invention consisted in constructing the angular neck mainly by the operation of swaging, supplemented by the operation of staving up, so that the neck of his bolt had all the advantages of swaging, in point of length, and was completed by the necessary result of the action of the header in forming the head, by pressing and forcing the metal into the mould, and that the invention resides in the combination of these two separate operations, which co-operate with each other in forming the bolt. The defendants, while conceding the importance of the invention, insist that it consists in the peculiar character of the dies which are described in the patent.

The main object of the patentee was to construct an angular necked bolt blank from "round iron. The blank was, of course, to be headed, for a head is a necessary part of a bolt and it was to be headed by some kind of upsetting machinery theretofore in use; but his inventive skill was directed to the construction of an angular necked bolt which was to be headed by old mechanism of some sort. If the patentee had, supposed that the assistance which the upsetting operation furnished to the swaging operation, in the formation of the neck, was a part of his invention, the second reissue would naturally have distinctly pointed out this feature. The important part of the specification is as follows: "According to my invention, I make an angular necked, round stemmed, headed bolt blank from a round piece of iron, by first forming the neck into an angular shape in cross section by lateral pressure at all sides simultaneously, and then, while the said piece is firmly held in proper position, forming its projecting end into a protuberant head of the desired contour, by upsetting against the dies, as an anvil, by suitable machinery, that acts to upset the metal against the anvil ends of the closed dies, and form the head by a motion in the line of the axis of the bolt blank. * * * The operation of the dies is as follows: A round piece or rod of metal, suitably heated, is placed between the open swaging dies, with a sufficient portion

protruding at the anvil ends thereof to form the head. A lateral pressure is then brought against the dies and they are forced together, giving to the metal substantially the angular shape of the matrix formed by the dies. While the metal remains thus held, the upsetting machinery drives the protuberant end of the rod or piece longitudinally against the anvil ends of the closed dies, thereby forming the bolt head by upsetting the metal against the anvil ends of the dies, which only shape its under surface." It is true, that the patentee says that the lateral pressure gives to the metal "substantially the angular shape of the matrix formed by the dies," but he does not say that the shape is perfected by the upsetting operation, or give any further suggestion that the upsetting machinery performs any other office than that of shaping the head. Neither was there any testimony to the effect that, after the metal had been swaged, the angular shape of the neck was made more perfect and complete by the upsetting operation. It is undoubtedly true, that the portion of the neck under the head is made more full by the upsetting process, but the angularity of the neck is not increased thereby; and in neither of the patents is this fullness claimed as an improvement, or that the formation of the neck by the aid of upsetting is a part of the invention. On the contrary, the patentee says, in his first reissue, that the fullness is not intentional, but is incident to the operation of making the head. Again, the first two claims of the patent, which are the process claims, are as follows: "1. The process, substantially as hereinbefore set forth, of forming from a round piece of metal a headed bolt blank having an angular neck and a round stem, which process consists in subjecting a portion of the length of the round piece of metal to lateral swaging or compression on all sides simultaneously, to form the angular neck, and, while the piece is firmly held with the neck portion inclosed at all sides, upsetting the projecting end of the swaged piece of metal, to form the head of the bolt blank. 2. The process, substantially as hereinafter set forth, of forming the angular neck and protuberant head of a bolt, which consists in subjecting a round piece of metal to lateral swaging between angular grooved dies, the end surfaces of which dies, when closed, form the anvil against which the projecting end of the swaged piece of metal is upset and formed into a head by proper machinery." From the language of each of these claims, it appears to be manifest, that the formation of the neck is claimed to be effected by the swaging dies, before the heading machinery commences the formation of the head; and all that is claimed for the heading machinery is the compression of the head against the anvil ends of the dies.

It is next contended, that the invention consisted in the making a new and useful bolt by a process composed of two operations—the first, that of lateral swaging by dies capable of swaging; and the second, that of upsetting, to form the head—and also consists of a process to produce the result by means of certain described mechanism. It is true, that the bolt is formed by both swaging the neck and upsetting the head, and that the patentee is entitled to claim the upsetting in combination with the swaging operation, because

these operations in combination had not existed in the formation of an angular necked and headed bolt from round iron. The gist of the invention and the inventive skill, however, consisted in making an angular necked blank from round iron, and, irrespective of the claims of the patent, and regarding the state of the art in connection with what was actually done by the patentee, I am of opinion, that his invention, or the new and useful method by which he manufactured bolts, consisted in the manner in which he applied lateral compression to the manufacture of an angular neck, and in the manner in which he permitted the shaping mechanism to become anvil heads upon which the header could operate to form a head upon the bolt. The patentee did not discover that swaging round iron would form an angular neck, and that upsetting would form a head, and that both operations would form a bolt; but he did invent what was previously unknown, the mechanical means by which swaging would form an angular neck from round iron, which mechanism could be used in connection with upsetting. This opinion is confirmed by the description which the patentee gives of his invention in the specification of his reissued patent, which has been quoted, and in which the mode of operation is clearly described.

Such being the character and extent of the invention, the next question is, as to the construction which shall be given to the reissued patent. The first two claims, upon which the controversy mainly turns, have been quoted. The defendants contend that these claims can only be sustained by a construction which shall limit the process to the use of the specified dies, and that, if the claims are broadly for a process, irrespective of the peculiar mechanism, the reissued patent is for an invention which was not indicated in any part of the original patent or in the drawings attached thereto. The claim in the original patent is as follows: "The combination and use of metallic dies for the purpose of giving angular shape to a portion of a cylindrical bolt, by compression laterally, leaving the remaining portion of the bolt in its original form, and which dies, at the same time, serve the purpose of an anvil, upon which the head of a bolt is formed, by upsetting a projecting portion thereof, substantially as set forth;" and the plaintiff insists, that inasmuch as the patentee's process involved both the swaging and upsetting operations and possessed the advantages of each, the reissue was properly allowed.

I am of opinion that the reissue was properly granted, and that the patentee had a right either to claim his invention as a process, within certain limitations, or as a part of a machine. But the patentee cannot, by obtaining a reissue for a process, enlarge his right to a monopoly beyond the actual invention; and, when it is insisted that he invented a new process of using his improved dies or any other dies, "which process consisted in the combination of the operation of swaging the blank laterally, with the operation of upsetting the end of the bolt to form the head," such a proposition is broader than the invention will justify. All that can properly be claimed in behalf of the patentee is, that he has invented a new way of manufacturing bolt blanks by the described swaging dies, to be used in connection with upsetting machinery; and his invention may properly be claimed as a method or process, which process consisted in the combination of the operation of swaging the blank laterally by the described dies, or their equivalent, operating in substantially the same way, with the operation of upsetting the end of the bolt upon the anvil ends of the dies, to form the head. The thing invented and patented was not any mode of swaging combined with upsetting, but it was "the employment of specified means, or their equivalents, for the accomplishment of a desired end." Roberts v. Dickey {Case No. 11,899}. By limiting the first and second claims of the reissued patent to the use substantially of the dies described in the specification, or their equivalents, the patent will not be broader than the invention, and no question can be made that it is not for the same matter which is contained in the original patent But the plaintiff is not limited to the exact form of the dies which is mentioned in the third claim. That form is not particularly relied upon in the specification and is not a material part of the mechanism.

The remaining question is in regard to infringement. The round portion and the square portion of the plaintiff's dies are of similar area, and, by means of this similarity, the swaging operation is performed. The form of the defendants' dies is substantially like that of the dies which were previously used to form bolts by the upsetting operation alone. One of the defendants' dies is solid, the upper part being V-shaped and the lower part cylindrical. The other die is in two separate parts, each portion being the same as the corresponding portion of the solid die. The area of the squaring dies is larger than the area of the round dies, so that there can be no lateral compression by the angular dies until after the intervention of some operation other than the grasping of the iron by the dies. If the ordinary round rod of commerce is placed within the dies, and the two parts of the divided die are placed upon a line with each other, and the dies are brought together, there will be no swaging. Swaging in this machine takes place only after the header has begun to operate. Although the fact that swaging does take place was denied by the defendants, the sharp and well-defined corners of the neck portion of the blank, and the result of the operation, prove that the bolts have been swaged. The swaging must have been effected in one of two ways. Sometimes the separate square part of the necking die

is not set in a line with the round or griping portion, and the griping dies come in position and are locked before the squaring dies-are locked. Meanwhile, the header has partially filled the matrix with hot iron, and, while the header is within a very short distance from the ends of the dies, the angular dies come completely together upon the iron, which has been pressed into the matrix and complete the square by lateral compression Again, when the separate portions of the die are on a line, the separate angular die is held in its place much less firmly than the round die. The round die is held in place by the whole strength of the frame of the machine, while the angular die is so weakly held that it yields or "gives" a little as the iron is being upset by the header. Then, and before the header has completed its movement by about one-eighth of an inch, a second cam comes into action behind the angular die, for the purpose of locking it, and forces the die laterally, whereby the swaging operation is performed.

Is the swaging operation in the two machines effected in substantially the same way? In one, the iron is swaged in dies which me constructed to swage, in which, the different parts of the dies are of similar sectional area. In the other, the angular-neck is substantially made by upsetting the iron into a matrix, and is completed by swaging. In the plaintiff's machine, the necks; are swaged, and the head is formed by upsetting. In the defendants', the necks are formed by upsetting and by swaging. But the material difference is, that the swaging is produced by dies of a construction radically different from the plaintiff's dies, and, unless swaging by suitable dies, combined with upsetting to form a head, is seemed by the plaintiff's patent it will not be contended that the defendants' machine is an infringement.

The vital point in the case is in regard to-the extent of the plaintiff's invention, and the construction to be, therefore, given to his patent In order to constitute infringement, a broad construction must be placed upon the patent so as to include any machine for making bolts from round iron, in which machine the two operations of forming the angular neck by dies which will swage, and forming the head by upsetting, are combined. Such a construction, I have already said, is, in my opinion, broader than the actual invention.

"The general terms, and, sometimes, special

words, in the claims, must receive such a construction as may enlarge or contract the scope of the claim, so as to uphold that invention, and only that invention, which the patentee has actually made and described, where such construction is not absolutely inconsistent with the language of the claim." Estabrook v. Dunbar {Case No. 4,535}.

The bill is dismissed, with costs.

[1] {Reported by Hon. Samuel Blatchford, Circuit Judge, and here reprinted by permission.}