

MONCE ET AL. V. ADAMS.

{12 Blatchf. 1; 1 Ban. & A. 126; 7 O. G. 177.}¹

Circuit Court, D. Connecticut. April Term, 1874.

PATENTS—TOOL FOR CUTTING GLASS—ANGLE OF
CUT TO
SURFACE—SPECIFICATION—AMBIGUITY.

1. The invention covered by the letters patent granted to Samuel G. Monce, June 8th, 1869, for an "improved tool for cutting glass," the claims of which are, "(1) The cutter, A, constructed substantially as shown and described, and for the purposes set forth; (2) the combination of the cutter, A, frame, B, and handle, C, substantially as and for the purposes described," consists, so far as the revolving steel cutter is concerned, in the fact that its sides are made parallel and then bevelled towards each other at an angle of about 45° to the axis of the cutter, so as to meet about midway between the same, in a cutting edge, and to be at right angles to each other.
2. The value of a diamond, for cutting glass, depends not merely on its hardness, but on the fact that its surfaces are curved, the meeting of any two of them presenting a curvilinear edge, and that the diamond is so placed that the line of the intended cut is a tangent to this edge, near to its extremity, and that the two surfaces of the diamond laterally adjacent are equally inclined to the surface of the glass, and the cutting edges are at right angles to each other.
3. The conditions necessary to form a glazier's diamond are found in the invention of the patent. The patent is valid.
4. The cutter of the patent was not anticipated by a cutter for cutting glass, made of hardened steel, which made a cut at an angle of 45° to the surface of the glass, the cutter of the patent making the cut at a right angle to such surface.
5. The cutter of the patent was the first successful substitute for the glazier's diamond.
6. The specification of the patent is not ambiguous, in saying, merely, that the cutter is to be "hardened," and in not saying what degree of hardness is to be given to it.

{This was a bill by Samuel G. Monce and Rollin J. Ives against Benjamin F. Adams for an injunction and

an account. The plaintiffs pray that the defendant be restrained from further infringement of letters patent No. 91,150, granted to S. G. Monce, June 8, 1869.]

Charles E. Mitchell, for plaintiffs.

W. Edgar Simonds, for defendant.

SHIPMAN, District Judge. The complainants are the owners of a patent for an alleged new and useful "improved tool for cutting glass," and have brought their bill against the defendant, alleging an infringement by the latter, and praying for an injunction and an account. The patent was granted to Samuel G. Monce, one of the complainants, on the 8th of June, 1869. The defence contained in the answer, and chiefly relied upon, is a denial that said Monce was the first inventor of the patented article. It is also alleged, that the description of the invention set forth in the specification is incomplete and ambiguous.

The patented article was designed to be an economical and effective substitute for a glazier's diamond, in the cutting of glass. The alleged invention is thus described in the specification: "My invention consists in the use or employment of a revolving steel roller, the periphery of which roller is bevelled on both sides, so as to form a cutting edge, and is fitted to revolve in a suitable frame, and attached to a handle for operating the same. The cutter is made from steel, and is turned smooth and round, and afterwards hardened. The sides are parallel, or nearly so, for a short distance, and then bevelled towards each other, so as to meet about midway between the same, thus forming the point or cutting edge. The bevelled portion of the sides should be at an angle of about forty-five degrees to the axis of the cutter, and, consequently, will be at near right angles to each other. It is not necessary that the angles of the bevelled sides should be at exactly right angles to each other, but near that angle, or a very little more obtuse, the cutter is found to operate to the best advantage. The cutter can be

fitted to revolve upon a pin, or on solid journals at each end, which latter mode I prefer, and show the same in drawings. The frame, near one end, is provided with bearings for the journals, which journals should be a little shorter than the thickness of the sides 590 of the frame, in order that, when the sides are placed against a straight edge or other gauge, the end of the journal shall not come in contact with such gauge. The handle, C, can be of any desired form, and secured to the frame in any proper manner. I construct said handle like the handle ordinarily used for a diamond tool. * * * By my invention I produce a tool for cutting glass, which is equally convenient in use as an ordinary diamond, and can be sold at a large profit, for one-tenth of the usual cost of a diamond." The claim is as follows: "I do not claim simply a revolving cutter, but what I claim as new, and desire to secure by letters patent, is: (1) The cutter, A, constructed substantially as shown and described, and for the purposes set forth. (2) The combination of the cutter, A, frame, B, and handle, C, substantially as and for the purposes described."

The drawings attached to the specification show that the instrument is a tiny steel revolving cutter or wheel, made as described in the specification, attached to a frame and handle, the whole resembling very much the glazier's diamond ordinarily in use. It is clearly proved that this instrument is exceedingly well adapted to the purpose for which it was designed; that very large quantities have been sold at a cheap rate; that it has superseded the use of all other steel glass-cutters; and that it is an efficient and useful tool, while previous inventions have been failures. A glazier's diamond is sold at from \$3.50 to \$3.00, while this article is sold at fifty cents or less. The use of a tool for glass-cutting is thus brought within the reach of every householder. It is admitted, that the invention does not consist of a revolving cutter; and it is obvious

that it does not consist in a revolving cutter of a high degree or hardness, for, "hardened" steel cutters had been known previously to the date of the patent. The invention, then, so far as the cutter is concerned, must consist in its form—in the fact that the sides are made parallel, and then bevelled towards each other at an angle of about forty-five degrees to the axis of the cutter, so as to meet about midway between the same, in a cutting edge. The sides, at the cutting edge, will, consequently, if they are at an angle of forty-five degrees to the axis of rotation, be at right angles to each other. As has been said, the object of the patentee was to make an economical substitute for the glazier's diamond, which should, if possible, possess the requisites which experience had shown were best adapted to successful glass-cutting.

In order to determine whether the utility and success of this invention depends upon any peculiarities in the form of the cutter, it is desirable to ascertain upon what depends the efficiency of the diamond. While almost any diamond will scratch or tear the surface of glass, it is a fact that the value and efficiency of a diamond to be used for the cutting or severing of glass, depends not merely on the hardness, but upon the form, of the cutting surface. Other gems than the diamond will successfully cut glass, provided they can be shaped into forms similar to those of the diamonds used for this purpose. Dr. Wollaston, in the *Philosophical Transactions* for 1816, thus explains the peculiarities required for the glazier's diamond: "In the natural diamond, there is this peculiarity, in those modifications of the crystals that are chosen for this purpose, that the surfaces are, in general, all curved, and, consequently, the meeting of any two of them presents a curvilinear edge. If the diamond is so placed, that the line of the intended cut is a tangent to this edge, near to its extremity, and if the two surfaces of the diamond laterally adjacent be equally

inclined to the surface of the glass, then the conditions necessary for effecting a cut are complied with. The curvature is not considerable, and, consequently, the limits of inclination are very confined. If the handle be too much or too little elevated, the one extremity of the curve will be made to bear irregularly upon the glass, and will plough a ragged groove, by pressure of its point. But, on the contrary, when the contact is duly formed, a simple fissure is effected, as if by lateral pressure of the adjacent surfaces of the diamond, diverted equally to each side. The effects of inequality in the lateral inclination of the faces of the diamond to the surface of the glass are different according to the degree of inequality. If the difference be very small, the cut may still be clean, but, as the fissure is then not at right angles to the surface, the subsequent fracture is found inclined accordingly. When an attempt is made to cut with an inclination that deviates still more from the perpendicular, the glass is found superficially flawed out on that side to which the greater pressure was diverted, and the cut completely fails.”

Again, from the testimony given in this case it appears, that it is necessary, for practical use, as a glass-cutter, that the sides of the instrument should be bevelled towards each other at about a right angle, for two reasons: 1st. A more acute angle would not be sufficiently durable. 2d. Experience has shown that, in order to cut glass successfully, the cutting edges of the tool, whether of a diamond or of any other cutter, must be at a right angle to each other. This fact is also asserted by the authorities upon the subject. The reason why such an angle is necessary does not seem to be clearly explained. Hence, the requisites of the form of a tool best adapted to glass-cutting, are three-fold: 1st. The cutting edge should be curvilinear. 2d. The cutting edges should be at right angles to each other. 3d. The two surfaces of the diamond which are adjacent to the cutting edge should be 591 equally

inclined to the surface of the glass. The cutter should also be so placed in its frame as most easily to bring the cut which is to be made at right angles with the surface of the glass.

Recurring, now, to the alleged invention, the sides of the cutter are made parallel and then bevelled towards each other at an angle of about forty-five degrees to the axis of the cutter, so as to meet about midway, in a cutting edge. The conditions necessary to form a glazier's diamond are thus complied with; for, by making the two sides of the cutter parallel for a short distance, and then bevelling them towards each other at an angle of forty-five degrees to the axis of rotation, till they meet, "the two surfaces" of the cutting instrument, "laterally adjacent, are equally inclined to the surface of the glass." The frame being attached to the cutter in the precise way in which the handle is attached to the diamond, the inclination of the cut will naturally be at right angles to the surface of the glass, and the lateral pressure of the adjacent surface of the cutter is "diverted equally to each side." Furthermore, the sides, at the cutting edge, being at or near an angle of forty-five degrees to the axis of rotation, will be at or near an angle of ninety degrees to each other.

Having thus ascertained wherein the peculiarity of the cutter consists, is this form a new invention of the patentee, or has it been anticipated by others? The respondent claims that this alleged invention is an instance of double use—the mere application of an old device to a new purpose. He introduces the patents of Charles Wilson, of March 13th, 1847, and April 10th, 1849, of Joseph E. Stanwood, of April 26th, 1859, and of A. H. Hook, of September 13th, 1864, to show, not only that the use of steel cutters for cutting hard substances was well known, but that the cutter in each of these patents was of a similar form with the one in the Monce patent.

The first patent to Charles Wilson was for a mode of cutting stone or other like material, by means of a revolving cutter, operating in a described manner, and was particularly designed for the smoothing and finishing of grindstones. Whether the knives in Wilson's machine are able to cut glass or not is unknown. In either event, the particular form or shape of the knives or cutters was not a part of Wilson's machine, and, whether they were or were not accidentally bevelled at an angle of forty-five degrees, was an unrecognized circumstance, of no value or importance to his discovery.

The second patent of Wilson is entirely immaterial to the present case.

The patent of Stanwood was for a revolving cutter, so operating upon gas or iron pipe, secured in place by a clamp or jaw, as to cut the pipe. Sometimes, one of the cutters, detached from the heavy frame in which it is placed, will cut or tear glass. Ordinarily, however, an instrument intended for cutting pipe cannot be successfully used upon glass. The requisites for successful pipe-cutting are very different from those for successful glass-cutting, and, consequently, it is only in exceptional cases that a gas-pipe cutter can be used upon glass. Such a cutter could never be made a practical substitute for a diamond. But, in this, as in the first Wilson patent, the invention which is the distinctive feature of the Monce patent is unknown and unrecognized. In the Stanwood device, the sides of the cutter may or may not be bevelled towards each other at a particular angle. The angles vary in different specimens of the article, sometimes exceeding, and sometimes being under, forty-five degrees.

The Hook patent is for a paper-cutter. It is sufficient to say, that one of its sides is at right angles to the axis of rotation.

The respondent also introduced the cutter attached to a book-binders' machine for cutting pasteboard, and

claims that it has long been in use, and will cut glass. The pasteboard cutters exhibited upon the trial, did not cut glass readily or easily. The truth probably is, that such a cutter of unusual hardness will also sever glass, but those ordinarily and usually made will not answer this purpose. The sides of the pasteboard cutter are, apparently, but slightly inclined towards each other.

Thus far, the well known principle relied upon by the respondent is inapplicable to the present case, inasmuch as it is untrue, that the distinctive feature of the patented article was used as a part of the cutters previously existing. The alleged invention of Monce was neither a part of the invention of previous patentees, nor was it a part of their machines, unless by accident, and, lastly, the cutters in their machines will not practically perform the office of this cutter, to wit: the cutting of glass for glaziers' purposes. The peculiarity in the form of this cutter has accomplished an effect not before produced, that is, has made a successful glass-cutter.

The respondent also claims, that the alleged invention had been previously anticipated, in every particular, by the patent of O. M. Pike, of December 29th, 1868, and by the harness-leather cutter used and produced by the witness Septimus C. Stokes.

Pike's patent was for a glass-cutter. His cutter was a small rod of hardened steel, turning, near one end, upon two friction wheels, and, at the other end, in a hardened steel socket in a thumbscrew. The object of the thumbscrew, the friction wheels and the steel socket was to make the friction on the cutter as little as possible. When the instrument is used, the end of the cutter is placed upon the surface of the glass, and the side of the frame drawn along the straight edge or pattern. The instrument is so made that, 592 in order to bring the point of the cutter in contact with the surface of the glass, so as to cut, the cutter must be

placed upon the glass at an angle of forty-five degrees. This article has not proved practically a success, and, by recurring to the quotation heretofore made from Dr. Wollaston, it is not difficult to understand the cause of the failure. The fissure should be made at right angles with the surface, otherwise, if the cut deviates much from the perpendicular, "the glass is found superficially flawed out on that side to which the greater pressure was diverted, and the cut completely fails." As the Pike tool must be held at an angle of forty-five degrees to the glass, the cut is made at an angle of forty-five degrees, instead of being at right angles, to the surface. The cut becomes a sidewise or slanting cut, and, the greater pressure being constantly directed upon one side, the instrument is unevenly worn, and, in a short time, loses its cutting power. The defect in the Pike instrument is remedied in the Monce patent, by making the cutter a wheel instead of a revolving rod. The wheel can then be placed upon the end of the handle, like the handle of an ordinary diamond, instead of at the side of a frame, and can be placed upon the glass so that the lateral pressure of the two sides of the cutter upon the surface will be equal, and, consequently, the cut will be at right angles, and not slanting, to the surface.

The Stokes cutter was originally for cutting leather. It was purchased in 1861 by the owner, who was then a saloon keeper, and used, at first, for cutting newspapers into cigar lighters. Stokes discovered that it would cut glass, and has occasionally used it for that purpose since, for his own convenience or amusement. The wheel was evidently, at one time, much larger than it is now, and has been worn to the present edge by use. The wheel is of great hardness, and will, when ground to a sharp edge, cut glass. That it can be uniformly used for a glass-cutter is not claimed. That such an instrument could not be made practically

available in the market and by householders, as a glass-cutter, is obvious.

The result is, that the respondent has, in my judgment, failed to show that the alleged invention has been anticipated either by a prior patent or by prior use.

There is another fact in this case not unworthy of mention. The small and inexpensive tool which is the subject of controversy has proved to be of great utility, and has achieved success. The energy and research of the respondent and of his counsel has not discovered a successful substitute for the glaziers' diamond, other than the patented article. It has confessedly superseded all prior inventions. Under these circumstances, the language of the court in *Stanley Works v. Sargent* [Case No. 13,289], is not inappropriate: "Utility is not an infallible test of originality. To be new, in the sense of the act, it must be produced of original thought or inventive skill, and not a mere formal and mechanical change of what was old and well known. But, the effect produced by a change is often an appropriate, though not a controlling, consideration, in determining the character of the change itself."

The respondent also insists that the patent is void for ambiguity, both in the specification and in the claims: 1st. Because the specification does not state what degree of hardness is to be given to the cutter. It simply says "hardened." As has been before remarked, the patent was not for a hardened revolving cutter. That was a well known invention. As the term "hardened," among mechanics, implies that it shall be made as hard as can ordinarily be done, and not tempered, it was not necessary for the patentee to set forth in his specification more particularly the degree of hardness to be given to the cutting instrument.

2d. It is claimed that the specification is ambiguous, in that it does not point out what is old, and specify what is new, in the alleged invention. In the claim,

the patentee expressly disclaims a revolving cutter, but does claim a cutter constructed substantially as shown and described, and for the purposes set forth. This claim has reference to the shape, form and angles of the cutter—to the particular construction and peculiar shape of his cutter, which adapted it to the purposes of a glass-cutter. He did not intend to claim, and did not, in my judgment, claim, a hardened roller, or a cutter brought to any particular degree of hardness.

I see no force in the other criticisms upon the ambiguity of the specification, which seems to me to be as exact and accurate as the nature of the subject will permit.

No question is made in regard to the fact of infringement by the respondent He has made and sold an exact imitation of the plaintiffs' invention.

An injunction must, therefore, issue, and a reference be made to a master to take and state an account.

{For another case in which this patent was held invalid, see [Monce v. Woodworth, Case No. 9,706.](#)}

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