missible. This was not the elasticity which the patentee stated in his specification when he said that a solution of rubber which saturated the core imparted elasticity,—in other words, made an elastic core. The other witnesses for the complainant added nothing to the general stock of knowledge in regard to the ability of a starch sizing to impart elasticity to a rope. In our opinion, a sizing made of starch, to cause the asbestus strands to stick to the central core, is not the equivalent of a solution of India rubber which saturates the core to make it elastic. The decree of the circuit court is affirmed, with costs of this court.

AMERICAN PNEUMATIC TOOL CO. v. BIGELOW CO.

(Circuit Court of Appeals, Second Circuit. January 7, 1897.)

PATENTS—PRELIMINARY INJUNCTION—PNEUMATIC DRILLING TOOL.

The Bates patent, No. 364,081, for a pneumatic drilling tool, analyzed, and compared with an alleged infringing tool made under the Boyer patent, No. 549,102; and *held*, on appeal, that infringement was so doubtful as to require the dissolution of a preliminary injunction granted by the court below.

Appeal from the Circuit Court of the United States for the District of Connecticut.

This was a suit in equity by the American Pneumatic Tool Company against the Bigelow Company for alleged infringement of a patent for a pneumatic drilling tool. The defendant has appealed from an order of the circuit court granting a preliminary injunction.

Edward Rector, for appellant.

Leonard E. Curtis, for appellee.

Before LACOMBE and SHIPMAN, Circuit Judges.

SHIPMAN, Circuit Judge. This is an appeal from an order of the circuit court for the district of Connecticut, which granted an injunction pendente lite against the infringement of the third claim of letters patent No. 364,081, to Albert J. Bates, dated May 31, 1889, for a pneumatic drilling tool. The validity of this claim of the patent had been sustained by the decision of this court in the case of the present complainant against Robert C. Fisher et al. (18 C. C. A. 235, 71 Fed. 523). The infringing device in that case was known as the "Drawbaugh Tool," and is described in letters patent No. 472,495, dated April 5, 1892, to Daniel Drawbaugh. The alleged infringing tool in this case is described in letters patent No. 549,102, dated November 5, 1895, to Joseph Boyer. The facts in this case illustrate the difficulty which often arises in the decision of a motion for temporary injunction which is based upon an adjudication upon a different state of facts with respect to infringement. While the questions in regard to validity remain unaltered, the question in regard to infringement often requires an examination of a portion of the claim which in the first case was not adverted to, because infringement was palpable. In the Fisher Case, infringement being

manifest, the validity of the claim was in issue; while in this case, infringement being more remote, the question is whether the claim is broad enough to include the new device. It appears from the opinion in the Fisher Case that a pneumatic drilling tool is a mechanical hammer, which is moved by the direct action of compressed air, and that, in the tool of McCoy which immediately preceded the invention of Bates, "this hammer consisted of a cylinder, which was held in the right hand of the workman, the cylinder containing a piston caused to be moved forward and backward by air pressure, with great rapidity, and to deliver a blow at each downward stroke upon the upper end of the chisel. A valve in a valve chamber transversely through the piston controlled a series of air ports, which caused the air to be alternately directed against the upper and lower faces of the piston, and to be in like manner exhausted from the upper and lower ends of the cylinder." The improvement of Bates "consisted in placing the valve in a separate chamber in the upper end of the cylinder, instead of placing it in a chamber in the piston. This change permitted the hammer to be a stronger piece of metal, lessened the tendency of the valve to wear away the sides of the cylinder, gave more force to the blow, and made a more efficient tool for work upon granite." It thus appears that the Bates tool was a hand tool, of moderate size, in which the hammer, disconnected from the chisel holder, was to be moved by the direct action of the air, and in which the valve which controlled the series of air ports was in a chamber in the upper end of the cylinder, which held both valve and piston; so that the length of the air passages should be within very moderate limits, but separate from the piston. The pre-existing patents which were introduced by the defendant upon this motion, but were not in the record in the Fisher Case, do not throw new light upon the question of the patentable character of the invention described in the third claim, which is as follows:

"In the pneumatic drilling tool described, and in combination with the case having an inlet and exhaust port, the cylinder, D, having a piston chamber and a valve chamber arranged separate from each other, and connected by means of ports and air passages, the piston, B, and valve, J, for controlling said piston through the medium of said ports and air passages, substantially as and for the purpose set forth."

The defendant's tool contains in its method of construction or of operation three minor differences from that of the complainant's device. The valve chamber is a separate piece of metal, but is closely secured to the piston chamber by means of a coupling sleeve, which engages a flange upon the rear end of the cylinder, and is screwed at its opposite end upon a head block upon the rear side of the valve block. The cylinder is, in effect, a single cylinder. The claim describes a cylinder and case. The cylinder is grooved externally, and thus the air channels are entirely formed upon its outer surface. In the defendant's tool the valve chamber is inclosed by a case, which does not inclose the cylinder, and the grooves or air passages are cut in the solid metal of the cylinder. The cylinder and case are thus combined, and the internally grooved cylinder is an

equivalent of cylinder and case. A difference in the method of operation is that "in Bates' patent the piston controls the admission and exhaust at both ends of the valve, * * * whereas in the defendant's apparatus the piston operates to open and close the inlet and exhaust ports at one end of the valve only, the movement of the latter in one direction being produced by pressure constantly applied to one end of the valve." This difference is immaterial.

A far more serious question respecting infringement depends upon the construction which shall be given to the word "controlling," in claim 3. In the Bates machine, the valve directly operates to cause the return stroke of the piston by means of live-air passages leading from the valve chamber to the opposite end of the piston chamber, which alternately admit live air to and exhaust it from the piston chamber. The defendant further says that in its machine there are no similar air passages from the valve, but the return movement is created or is started by the piston, which itself opens and closes the air passages in the lower end of the cylinder. The defendant's further position is that the specification of the Bates patent demands that its valve shall be so connected with ports and passages as to be the direct means of admitting air at each end of the cylinder, by the assertion that the precise location of the valve is not important "only so it is separate from the piston, B, and operates to admit air at either end of the cylinder, as set forth." The conclusion of the defendant is that claim 3, in regard to the controlling action of the valve, should be construed to require that air must be admitted at each end of the cylinder by the action of the valve. It is true that the piston of the Boyer tool is driven downward by the action of the valve, and that, when it has reached a certain point, its stem moves in front of and closes an exhaust port communicating with the lower part of the piston chamber, and at the same time uncovers an inlet port. Thus, the piston alone, having been driven downward by the initial action of the valve, opens and closes the live-air and exhaust ports at the lower end of the cylinder, an action which is necessary in order to enable it to make its return stroke.

The complainant's reply to this part of the defense of noninfringement is threefold:

First. That the stem of the Boyer piston is a supplemental valve or a relay valve, and that the alteration separated the Bates valve into two parts, which co-act with and by means of each other. It is true that the stem of the Boyer piston is itself a valve, and may be called a relay or subsidiary valve, but it is also a part of the piston, and the objection to a construction of the claim which shall permit a part of the piston to be a part of the valve is that the specification and the claim insist upon the absolute separation of one from the other.

The second reply is that the valve of the Boyer tool does indirectly control the opening and closing of the ports at the lower end of the cylinder, because the initial action of the valve sends the piston upon its downward stroke, and thus the prior movement of the valve makes the piston effective, and causes the introduction of