

state and court, to insist that the question of jurisdiction, upon which it invoked the judgment of the court in which the action was first brought, is again to be litigated and decided. The judgment rendered in the district court in Colorado is in full force. It may be erroneous, but it is not void. If the defendant wished to question the correctness of the ruling, the way was open by appeal to the supreme court of the state. The defendant did not so appeal. The judgment stands in full force. The question of jurisdiction has been once heard and determined, and this court cannot sit as an appellate tribunal to determine the correctness of the judgment of the Colorado court upon that question.

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BROWN v. TRAVER.

(Circuit Court of Appeals, Second Circuit. December 2, 1895.)

PATENTS FOR IMPROVEMENTS—CONSTRUCTION OF CLAIMS—STITCH BREAKERS FOR LOOPED-FABRIC SEWING MACHINES.

The Traver patent, No. 431,957, for a "stitch-breaking and raveling attachment for machines for sewing looped fabrics," shows patentable invention over the previous patent to the same inventor (No. 410,720); but, as it is only for improvements thereon, the claims must be restricted to combinations in which the loop breaker and guide are essentially of the structural character and relative arrangement of parts which differentiate them from those of the earlier patent, and the claims are not infringed by a device which cuts instead of breaks the fabric, and employs a guide plate of a different construction, and having a different function, from that of the patent. 62 Fed. 933, reversed.

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

This was a bill in equity by Adelbert Lee Traver against Engene H. Brown for alleged infringement of letters patent No. 431,957, issued to complainant for a "stitch-breaking and raveling attachment for machines for sewing looped fabrics." In the circuit court the patent was held valid and infringed, and a decree entered for complainant accordingly. 62 Fed. 933. The defendant appeals.

Franklin Scott and Charles E. Mitchell, for appellant.

James H. Lange and Odin B. Roberts, for appellee.

Before WALLACE, LACOMBE, and SHIPMAN, Circuit Judges.

WALLACE, Circuit Judge. The decree of the court below adjudged the validity, and the infringement by the defendant, of claims 1 and 3 of the patent in controversy. In his assignment of errors the appellant has insisted upon the invalidity of these claims, for want of patentable novelty, and there is expert testimony in the record in support of the contention; but the argument at the bar in his behalf has been placed upon the ground that in view of the prior state of the art the claims must be narrowly construed, and, thus construed, have not been infringed.

The patent was granted July 8, 1890, to Adelbert Lee Traver, for a stitch-breaking and raveling attachment for machines for sewing

looped fabrics. These machines are known as "loopers," or "turning-off" machines, and are used for uniting the edges of two pieces of knit fabric. The looper consists of a sewing mechanism, and a circular plate which carries on its periphery a row of radially projecting pins. This plate rotates intermittently under the sewing mechanism, the needle of which reciprocates in and out over the pins. The movement of the needle takes place while the pin plate is at rest. Between each two passages of the needle the pin plate is advanced the space of one pin, so that the needle passes over the pins in succession as they are presented by the intermittent rotation of the plate. In operation the two pieces of knit fabric whose edges are to be united are impaled upon the plate in such manner that a pin passes through each loop of a course of loops in the fabric. The course of loops thus impaled is commonly a few courses from the raw edge of the fabric. The two pieces of fabric lie one over the other, the raw edges projecting, and, except that the surplus edges above the pins are in the way, are ready to be stitched together by the looper needle. In order to prepare the two edges of the fabric for the stitching operation, the surplus edges must be removed and raveled down to the loops impaled upon the pins. The attachment which is the subject of the patent is designed to do this work. Formerly the work was done by hand, the greater part of the surplus being trimmed off with shears. Subsequently automatic attachments were introduced, known as "trimmers," for removing the surplus edges. In these attachments rotary disks or shears were used to cut away the selvage, and some of them contained devices to remove it after it was cut. It was found in practice, however, that these attachments would deliver the fabric to the needle with a ridge of unraveled goods above the pins, thus leaving an unsightly upstanding welt or fringe at the seam. Shortly prior to the grant of the patent in suit, Trayer patented a trimming attachment. Letters patent No. 410,720, dated September 10, 1889. This patent is the first in the prior art which discloses a looper attachment that dispensed with the use of cutting edges in removing the fabric above the pins, and substituted therefor devices for breaking or raveling the threads. It describes a loop-breaking and raveling mechanism supported in a framework which is in the form of a bracket secured to the stationary bed of a looper, and extending out over the periphery of the pin plate so as to support the working parts of such mechanism, which parts mainly operate from a point outside of the periphery of the pin plate inward, towards and over the pins projecting therefrom. This bracket has provision for vertical adjustment, so that the working parts can be raised or lowered with relation to the level of the pins, in order to cause them to operate at the proper height above the pins and the courses of loops or stitches impaled thereon. The raveling mechanism or attachment comprises the stitch pulling or breaking device in duplicate, which duplicate breaking devices are described as "pointed ends 29 and 30." The further elements of mechanism for performing the first operation of preparing the edges of the

fabric for sewing are actuating mechanism by which these pointed ends are reciprocated or vibrated in and out over the pins of the pin plate at each feed movement of the latter, the inward movement of the pointed ends taking place when the pin plate is at rest between two feed movements, so that the pointed ends enter the fabric at a definite position with relation to the loops lying around the pin at that moment adjacent to the pointed ends, usually entering the loop of the course immediately above the one around the pin; and as the pointed ends move inward they will pull the yarn of the loop entered by them out from its enchainment with the loop below on the pins. The patent also describes two guides located in front of the points, one in front of each, which lie close together under them, adapted to confine the fabric where it is being pierced and severed. These guides have slots through which the points enter the loops and recede from them, "whereby the several portions [of the yarn] are stripped off said points when said points are withdrawn." Gripping jaws to remove the raveled threads are shown as complementary devices. The patent contains a statement that either one of the two points that enter from the opposite sides will accomplish the work of separating the fabric, but that, by having two such points enter simultaneously from opposite sides, there is no possibility, in the event of one or both becoming blunted, of the fabric's being pushed to one side so that it will fail to be pierced. It also contains a statement that, if the loops of the fabric are small in comparison with the body of the point, they will be broken or raveled by the wedge-like action of the point when it enters the fabric; but, to insure the severing of the fabric where the points enter, they are carried away from it in such a direction as to cause them to pull it apart.

Only one machine conforming to the description in this patent was ever built. Traver testifies that it was not practically successful, because the raveling points, while engaged in the loops above those upon the pins, would raise before breaking them, thus causing a strain which would break the loops upon the pins if they were tenderer than those above. He does not claim that it was inoperative, but insists that it would not work satisfactorily, except upon "a very fine piece of work." In experimenting with this machine he conceived the idea that it could be improved by introducing into it a wedge which would break the loops as soon as it entered them, and without any upward movement. Seventeen days after the date of the grant of this patent he filed his application for the patent in suit.

The patent in suit describes an attachment which differs from that in the earlier patent to Traver mainly by the substitution for the duplicate points and guides of a single wedge-shaped bar adapted to penetrate the loops, and a co-operating slotted guide plate. Except for the difference in these two devices, and their arrangement with respect to one another, the various parts in combination are the same, or equivalent devices, in the machines of each patent; and they co-operate in each by the same mode of operation

to present the fabric to the loop-breaking device, and to cause that device to enter the loops. As in the attachment of the earlier patent, the lever connection gives a lifting or upper movement to the loop breaker after it enters the loop; but in the specification of the patent in suit it is pointed out that this is not essential, though not objectionable. It appears that this nonessential feature, the lifting or upward movement given to the loop breaker, was retained in the first 800 machines built after the patent. This patent also describes, as a complementary device, a gripping jaw to remove the raveled threads. The substitute devices are described in the specification as follows:

"The wedge has two vertical and parallel sides, a horizontal lower and an inclined upper edge. These edges are blunt or rounded, so as not to cut the fabric immediately on coming in contact with it, and it is intended that they shall not be of a shape that will co-operate in the manner of a shear with the edges of the opening in the guide on the opposite side of the fabric. The lower edge is horizontal, as is also the direction of motion with which the wedge is pushed into the fabric, so that this edge may lie close to and parallel with the pins on the pin plate, and serve to hold the fabric down on the pins against the upward straining action of the inclined edge. The function of the guide plate, 14, with its slot for the passage of the wedge, 13, is to support the fabric while it is being entered by said wedge. In order to properly afford this support, the slot is made narrow, so that it will be closed on the sides of the parallel sides of the wedge. By introducing this construction I am enabled to dispense with a second wedge entering from the opposite side of the fabric and its complementary actuating mechanism, as illustrated in patent No. 410,720, dated September 10, 1889, issued to me, and effect the severing of the fabric with fewer parts, and in a more satisfactory manner. The action of the wedge on entering a loop of the fabric is to enlarge it until it breaks if both ends of the thread forming the loop are fast in the fabric, and to ravel it if either end has been freed by the breaking of an adjoining loop."

The claims in controversy are as follows:

"(1) A fabric stitch-breaking and raveling attachment combining with the pin plate of a turning-off machine a bar having a wedge-shaped end consisting of two parallel sides, a lower edge lying close to and parallel with the pins on said pin plate, and an inclined upper edge of sufficient length and inclination to give to the wedge-shaped part near its rear end sufficient dimension to draw out or break the loops of the fabric, a guide plate lying against and supporting the opposite side of said fabric from said bar and wedge, and having a slot opposite said wedge, mechanism whereby said bar may be reciprocated in the direction of the lower edge of its wedge-shaped end through said slot in said guide plate, and a frame for supporting and guiding said bar, for supporting said guide plate and carrying said mechanism, substantially as and for the purpose set forth."

"(3) A fabric stitch-breaking and raveling attachment combining with the pin plate of a turning-off machine a lever bearing a wedge-shaped end for severing the fabric, and a jaw where it can operate on the fabric between said wedge and the sewing mechanism, a guide plate lying against and supporting the opposite side of said fabric from said wedge and jaw, a slot in said guide plate opposite said wedge, a cam acting on this lever to slide it towards the fabric and then rock the end bearing the wedge and jaw upward from the pin plate, mechanism for revolving said cam, and a frame for supporting and guiding said lever, for supporting said guide plate and carrying said mechanism, substantially as and for the purpose set forth."

It is insisted for the appellant that the alleged infringing machines do not contain the wedge-shaped bar or the slotted guide plate of these claims.

In view of the prior patent to Traver, the novelty in the invention of these claims must be found solely in the changes made in the substituted devices, the loop breaker and guide, and their relative location and arrangement.

It was not invention to dispense with one of the two loop breakers and its guide, because, as Traver pointed out in his prior patent, either one would do the work, although by having two it could be done more reliably. The employment of the devices in duplicate therefore only effected an improvement in degree, and not in kind or function. It may have been invention, however, to change the form and relative adjustment of the loop breaker and its guide, and it becomes necessary to ascertain precisely what these changes were.

In the earlier patent the pointed end was wedge-shaped in form, and its office was that of a wedge. The guide was a slotted guide plate, and its office was to protect the loops upon the pins from the straining action of the wedge. But the form of the wedge was only a pointed end, and the slot in the guide plate was not restricted in form or dimensions. It was only necessary that the wedge and the slot be located in such relation to one another that the wedge could enter the loops through the slot, and upon its upward recessive movement come in contact with the upper edge of the slot. In the present patent the wedge has two vertical and parallel sides, and a horizontal lower and an inclined upper edge. The slot of the guide plate is narrow, "so that it will be closed on the sides by the parallel sides of the wedge." The two devices are so arranged relatively that the wedge does not enter the loops through the slot in the guide plate, but after piercing them enters the slot and closes its sides. By their relative arrangement and the accurate correspondence between the dimensions of the wedge and the slot, it was doubtless intended, as is stated by the expert witness for the appellee, to confine the rupturing strain to the loop at each time operated upon.

There is no reason to doubt that these changes materially increase the efficiency of the raveling mechanism, and it may be that they impart a new mode of operation to the parts, whereby they rupture the loops by a penetrative movement of the wedge, rather than by the upward movement contemplated by the earlier patent. The machines embodying these changes have been highly successful and popular. They ravel the fabric as perfectly as it could be done by hand. We think that the changes were outside of the range of ordinary mechanical ingenuity, and involved invention.

Inasmuch as the claims of the present patent cannot be construed to cover a broader invention than was actually made by Traver in improving the machine of his earlier patent, they must be restricted to combinations in which the loop breaker and the guide are essentially of the structural character and relative arrangement which differentiates them from those of the earlier patent.

In the machines of the appellant the wedge or blade swings in a plane always parallel with the looper pins, and, before it has become dulled or blunted by use, has a cutting edge. When the edge is sharp it does its work by cutting the loops. By use, however, this edge soon becomes dull, and when dull does its work by breaking the loops.

Many of those who use the machines are accustomed to sharpen the cutting edge daily. By reason, however, of the plane of movement of the wedge, its breaking action does not involve any appreciable upward strain of the loops upon the pins, and the pins themselves afford a sufficient support against the lateral thrust, and thereby the necessity of a slotted guide plate adapted to support the fabric while it is being entered by the wedge is dispensed with. The function of the guide plate in these machines is not to enable the fabric to resist the thrust of the wedge, but is to guide the fabric into an upright position to the place where it is to be engaged by the wedge. If the guide plate is removed, and the fabric is guided to the wedge by the fingers of the operator, the wedge will do its work completely. The guide plate has no slot, nor anything which is equivalent to the slot of the patent. It is true that the machines of the appellant have, besides a guide plate, a plate which is a companion member to the clearing jaw, and holds the raveled fabric in contact with the jaw, and the wedge plays over the space intervening between these two plates; but the intervening space between these two plates is no more analogous to the slot of the patented guide plate, in function or in detail of construction, than was the slot of the guide plate of Traver's earlier patent. It does not have any appreciable correspondence in width with the width of the wedge, and consequently is not adapted to confine the rupturing strain to the particular loop entered by the wedge. The guide plate terminates before it reaches a point opposite the wedge. The specification of the patent distinctly points out that, to properly support the fabric while it is being entered by the wedge, the slot must be no wider than the width of the wedge. This is equivalent to a statement that in the absence of such a slot the guide plate would be useless. The second claim of the patent makes this functional characteristic an element by express recital. If the specification had treated the narrow dimensions of the slot as a preferential characteristic merely, there would have been a foundation for the difference between the second claim and the other two claims of the patent. But it does not, and what is pointed out as essential in the specification must of necessity be read into each claim.

We are unable to doubt that the machines of the appellant do not infringe the claims in controversy. The gist of the invention of Traver, as disclosed both in his earlier and in the present patent, consisted in discarding the cutting devices which had been used in the former trimmers, and substituting therefor a wedge which would not need sharpening, and would burst, instead of severing, the loops of the fabric. As the wedge could not operate efficiently unless the fabric was supported during the strain of the bursting operation, he proposed to employ a guide plate adapted to receive the wedge while engaged in the fabric, and hold the fabric down upon the pins. In the present patent he proposed to make the guide plate with a narrow opening, of a width corresponding with the width of the wedge. The machines of the defendant employ a cutting device of the class which Traver discarded, together with a guide plate which terminates before it reaches a point opposite the blade, and whose function is to convey the fabric to the cutter. The circumstance that when the cutting

edge is dull, and its normal characteristic has been obliterated, either accidentally or negligently, it will burst the loops, does not constitute it the wedge of the patent.

The test of infringement, when alleged against the manufacturer of a machine, and based solely upon the machine itself, is whether, as made and when offered for sale, it contains the patented invention. If its structure is such that, when used in the manner contemplated by the manufacturer, it has the capacity of appropriating the invention, he can be treated as an infringer by participation with the user. But if its structure is such that it can only acquire that capacity by misuse, whether negligent or intentional, he is not responsible as an infringer.

Accordingly the decree of the circuit court should be reversed, with costs against the appellee, and the cause remanded to the circuit court, with instructions to dismiss the bill, with costs of that court.

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BOYDEN POWER-BRAKE CO. et al. v. WESTINGHOUSE AIR-BRAKE CO. et al.

WESTINGHOUSE AIR-BRAKE CO. et al. v. BOYDEN POWER-BRAKE CO. et al.

(Circuit Court of Appeals, Fourth Circuit. November 11, 1895.)

Nos. 131, 134.

1 PATENTS—CONSTRUCTION OF CLAIMS—"SUBSTANTIALLY AS SET FORTH."

The phrase, "substantially as set forth," used in the claim of a patent, has a technical meaning, and is equivalent to saying, "by the means described in the text of the inventor's application for letters patent, as illustrated by the drawings, diagrams, and models which accompany the application." These words limit the general terms of the specification, which set out the function performed by the invention, and confine the inventor's rights to his own special means of performing that function.

2. SAME—INFRINGEMENT—EVIDENCE—RULINGS OF PATENT OFFICE.

Where the patent office, after full examination, grants a patent for a device which accomplishes the same result as a device previously patented to a different inventor, this is a ruling that the later device does not infringe the earlier patent; and in an infringement suit involving the two devices this ruling is to be regarded as the testimony of experts of the highest experience, skill, and knowledge.

3. SAME—DEFECTIVE CLAIM—AIR BRAKES.

In claim 2 of the Westinghouse air-brake patent, No. 360,070, the description declaring that the piston, "by a further traverse, admits air directly from the main air pipe to the brake cylinder," is fatally defective in claiming only a result, which is public property, and not identifying the specific means by which that result is achieved by the inventor.

4. SAME—MECHANICAL AND FUNCTIONAL EQUIVALENTS.

In determining whether one device employs means equivalent to those of another device, the fact that the invention relates to an agency, such as compressed air, which operates by modes not visible to the senses, does not authorize the court to determine the matter by reference to functional equivalents rather than mechanical equivalents. 66 Fed. 997, reversed. *O'Reilly v. Morse*, 15 How. 62, applied.