

Case No. 10,713.

PARHAM v. AMERICAN BUTTONHOLE,
 OVERSEAMING & SEWING-MACH. CO. ET AL.
 [4 Fish. Pat. Cas. 468; 3 Leg. Gaz. 121; 1 Leg. Gaz.
 Rep. 145; Merw. Pat Inv. 671.]¹

Circuit Court, E. D. Pennsylvania. April, 1871.

PATENTS—POWER TO GRANT REISSUE—SHUTTLE
 DRIVER OF SEWING MACHINE—ABANDONED
 EXPERIMENTS—COMBINATION.

1. The power of accepting the surrender of the original patent, and of granting a reissue of it is confided exclusively to the commissioner, and is to be exercised judicially by him.
 2. The presumption is, that he has exercised it lawfully, and that the reasons for which alone its exercise could be invoked have been sufficiently shown to exist.
 3. As a corollary from this, his decision is final, and is to be treated as foreclosing all inquiry into the existence or sufficiency of the facts which are prescribed as necessary to authorize him to grant a reissue.
 4. Fraud, even, will not warrant a re-examination of his decision, at the instance of an alleged infringer.
 5. The only ground on which the allowance of a reissued patent is open to objection is, that the commissioner has exceeded his authority, in granting a reissue for an invention different from the one embraced in the original patent.
 6. If the original and reissued patent are for the same invention, the latter, with the new specification and description, is to be substituted for the old as the evidence of the patentee's title, and of the nature and object of his invention.
 7. Differences in the description and claims of the old and the new specifications are not the tests of substantial diversity, but the description may be varied, and the claim restricted or enlarged, provided the identity of the subject-matter of the original patent is preserved.
- {Cited in *Herring v. Nelson*, Case No. 6,424; *Kerosene Lamp Heater Co. v. Littell*, Id. 7,724.}
8. Nor is the alleged discrepancy to be determined by a reference exclusively to the two specifications; the

drawings and model filed with the original specification are also proper subjects of consideration, and are often of decisive weight.

[Cited in *Reissner v. Anness*, Case No. 11,688.]

9. The omission in a reissued patent of an element of a combination claimed in the original, constitutes no tenable objection to the reissue.

[Cited in *McWilliams Manuf'g Co. v. Blundell*, 11 Fed. 420; *Buffington's Iron Bldg. Co. v. Eustis*, 13 C. C. A. 143, 65 Fed. 806.]

10. A claim in the following words, "so forming and constructing the shuttle-driver of a sewing machine, that while it performs the required duty of driving the shuttle, it serves to maintain the latter in the desired proximity to the plate C," is not a claim for functions in the abstract, but the form and construction of the driver are the gravamen of the claim.

[Cited in *Henderson v. Cleveland Co-operative Stove Co.*, Case No. 6,351.]

11. Rendered with reference to the whole specification and the model, it imports a claim ¹⁰⁹⁷ for a shuttle-driver constructed with a surface upon which the shuttle rests, and is carried with the driver in its oscillation, and formed with a bevel in this surface, whereby the shuttle, by its own weight or gravity, is caused to impinge upon the face-plates.

12. Where there had been no satisfactory trial of prior machines, and the persons interested in them laid them aside for years, and thus indicated a judgment against their practical utility, the court but enforces a logical sequence in assigning them to the category of unsuccessful and abandoned experiments.

[Cited in *Edison Electric Light Co. v. Beacon Vacuum Pump & Electrical Co.*, 54 Fed. 693; *Washburn & Moen Manuf'g Co. v. Beat' Em All Barbed-Wire Co.*, 143 U. S. 275, 12 Sup. Ct. 447.]

13. The reasons given for the opinions of experts are the proper tests of their comparative weight.

14. The evidence must establish clearly the priority of a completed and useful machine over that of the patentee, or it is unavailing—to doubt upon this point is to resolve it in the negative.

[Cited in *Hawes v. Antisdell*, Case No. 6,234; *Miller v. Smith*, 5 Fed. 364. Cited in dissenting opinion in the *Driven Well*

Cases, 16 Fed. 411. Cited in *McDonald v. Whitney*, 24 Fed. 602; *Edison Electric Light Co. v. Beacon Vacuum Pump & Electrical Co.*, 54 Fed. 693.]

15. If the description clearly indicates the method of the use of the thing claimed, and its relations to the other mechanical elements operating with it, a claim for a combination of part of them is good, although it may not embrace some that are essential to the operative efficiency of the combination.
16. Certainly a combination to be valid must have the attribute of practical utility, but this is not to be determined by a reference to the abstract practicability of the elements claimed to compose it. Resort must be had to the whole specification, and if it is therein properly described, its relations to co-operative mechanism indicated and explained, and the method of its use in connection therewith directed, and when so used is practically operative, it is a good combination, and will support a restricted claim for it.
17. Letters patent for "improvement in sewing machines," reissued to Charles Parham, November 3, 1868, examined and sustained.

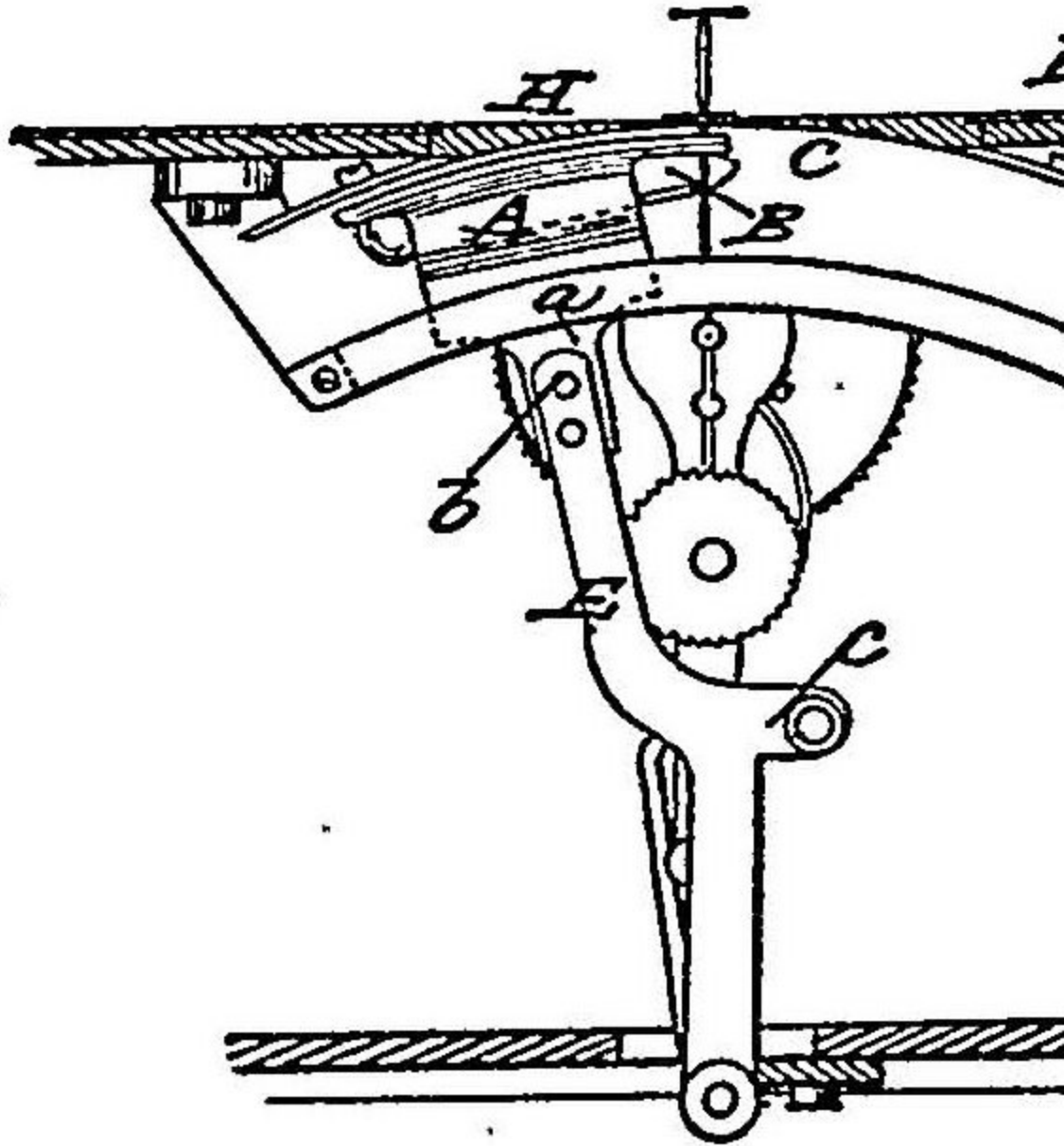
This was a bill in equity, filed [by Charles Parham] to restrain the defendants from infringing letters patent for an "improvement. In sewing machines," granted to complainant November 21, 1854 [No. 11,971], reissued November 3, 1863 [No. 1,562], and extended for seven years from November 21, 1868. The Invention related to improvements in the mechanism for driving the shuttle of a sewing machine, and their nature is well set forth in the claims of the original and reissued patents, which were as follows:

Original patent: "The shuttle carrier and driver A, forming the bearing or seat for the shuttle B, during its travel, as well as the guide for it on that side coming in contact with the thread loop formed by the needle, and freely admitting of the passage of the shuttle through the loop when said carrier is arranged and combined for operation, together with the needle and the guide-plate C, or its equivalent, on the needle side of the shuttle, whereby the shuttle is relieved from all friction

or rubbing, bearing on its thread side of the loop, the thread is prevented from being soiled by lubricating material, and increased freedom of action is given to the shuttle.”

Reissued patent: “(1) So forming and constructing the shuttle-driver of a sewing machine that, while it performs the required duty of driving the shuttle, it serves to maintain the latter in the desired proximity to the plate C, as set forth. (2) The combination of the driver A, shuttle B, and stationary plate C, the whole being formed and arranged substantially as described, so as to retain the shuttle during its flight in its proper position, for the purpose specified.”

{Drawing of reissued patent No. 1,562, granted November 3, 1863, to C. Parham, published from the records of the United States patent office.}



George Harding, for complainant.

Theodore Cuyler and Charles B. Collier, for defendants.

Before STRONG, Circuit Justice, and McKENNAN, Circuit Judge.

McKENNAN, Circuit Judge. The complainant is the grantee in letters patent, dated November 21, 1854, for an improvement in sewing machines, in pursuance of an application filed August 3, 1853. These letters were surrendered and reissued November 3, 1863,

and, November 20, 1868, the reissued patent was extended for seven years from the date of its expiration. Of the reissued and extended patents the respondents are alleged to be infringers, and the complainant, therefore, in his original and supplemental bills, prays for an injunction against them, and for an account.

The respondents set up three grounds of defense: First. That the surrender and reissue of the original letters patent “were not made by reason of, or on account of, any such inadvertency, accident, or mistake, as is contemplated by the acts of congress in that behalf, and that such surrender and reissue were not in accordance with said acts, but in violation thereof, and for the purpose of modifying the description and claim in 1098 the original specification of said letters patent, in a manner, to an extent, and for a purpose contrary to and in violation of the true intent and meaning of said acts in that behalf; and that said reissued patent is not for the same invention intended to be secured by the said original patent.” Second. That the complainant is not the first and original inventor of the improvements claimed by him. Third. That they have not committed any infringement of the complainant’s patent.

1. By the act of congress of 1836 [5 Stat. 117], the commissioner of patents is authorized to accept the surrender of a patent and reissue it for the residue of its unexpired term, when it shall be inoperative or invalid, by reason of a defective or insufficient description or specification, or by reason of the patentee claiming in his specification, as his own invention, more than he had or shall have a right to claim, as new, if the error has or shall have arisen by inadvertency, accident, or mistake, and without any fraudulent or deceptive intention. The power of accepting the surrender of the original patent and of granting a reissue of it is here confided exclusively to

the commissioner, and is to be exercised judicially by him. The presumption then is, that he has exercised it lawfully, and that the reasons for which alone its exercise could be invoked have been sufficiently shown to exist. As a corollary from this his decision is final, and is to be treated as foreclosing all inquiry into the existence or sufficiency of the facts, which are prescribed as necessary to authorize him to grant a reissue. Fraud even will not warrant a re-examination of his decision, at the instance of an alleged infringer. *Railroad v. Stimpson*, 14 Pet. [39 U. S.] 458; *Stimpson v. Railroad*, 4 How. [45 U. S.] 484; *Rubber Co. v. Goodyear*, 9 Wall. [76 U. S.] 797. In *Seymour v. Osborne*, 11 Wall. [78 U. S.] 516, Mr. Justice Clifford, delivering the opinion of the court, says: "When the commissioner accepts a surrender of an original patent and grants a new patent, his decision in the premises, in a suit for infringement, is final and conclusive, and is not re-examinable in such suit in the circuit court, unless it is apparent upon the face of the patent that he has exceeded his authority, that there is such a repugnancy between the old and the new patents that it must be held, as matter of legal construction, that the new patent is not for the same invention as that embraced and secured in the original patent." *Battin v. Taggart*, 17 How. [58 U. S.] 83; *O'Reilly v. Morse*, 15 How. [56 U. S.] 111, 112; *Allen v. Blunt* [Case No. 216].

The only ground, then, on which the allowance of a reissued patent is open to objection is, that the commissioner has exceeded his authority, in granting a reissue for an invention different from the one embraced in the original patent. If both are for the same invention, the decision of the commissioner is unimpeachable, and the reissued patent, with the new specification and description, is to be substituted for the old as the evidence of the patentee's title and of the nature and object of his invention. Differences

in the description and claims of the old and the new specifications are not the tests of substantial diversity, but the description may be varied, and the claim restricted or enlarged, provided the identity of the subject-matter of the original patent is preserved. Within this range, whatever change is required to protect and effectuate the invention is allowable. *Battin v. Taggart*, 17 How. [58 U. S.] 84. Nor is the alleged discrepancy to be determined by a reference exclusively to the two specifications: the drawings and model filed with the original specification are also proper subjects of consideration, and are often of decisive weight *Seymour v. Osborne*, 11 Wall. [78 U. S.] 516.

Testing the patents here by these principles, we are then to inquire what the patentee's invention is. It is generally described as "an improvement in sewing machines." In the specification attached to the original letters patent, it is stated to consist "in the shuttle carrier and driver, constructed substantially as shown and described, and forming the bearing or seat of the shuttle, during its travel, as well as the guide for it on that side coming in contact with the thread loop formed by the needle, and freely admitting of the passage of the shuttle through the loop when the said carrier is arranged and combined for operation, together with the needle and with the guide plate or its equivalent on the needle side of the shuttle essentially as set forth, whereby the shuttle is relieved from all friction or rubbing, bearing on its thread side of the loop, the thread is prevented from being soiled or injured by lubricating material, and increased freedom of action is given to the shuttle as specified." There may be a lack of methodical exactness in this statement of the patentee's invention—although this was a matter for conclusive adjudication by the commissioner—but it is sufficiently definite to indicate his intention to claim, first, a shuttle carrier or driver, so constructed as

to perform specific functions, and second, this shuttle carrier, a needle, a shuttle, and a guide or face plate, combined so as to accomplish the described effects. This is more clearly illustrated by the mechanism of the complete machine, filed with the original application in 1853. We there find a shuttle carrier constructed to perform the functions of supporting the shuttle and of carrying it backward and forward with the vibrations of the carrier, and with a peculiar conformation of the surface on which the shuttle is borne, to wit, a bevel or inclination of it toward the face plate, by which a gentle impact of the shuttle upon the face plate is caused; a face plate with a vertical groove, in which the needle passes, but without any transverse race or groove to 1099 serve as a support for the shuttle, or a guide for the carrier; and a shuttle adapted to the conformation of its seat. Here there are distinctly shown the constituents of the patentee's alleged invention—the mechanical device, claimed by him as new, and its combination with other elements, constructed and arranged to produce new and useful results.

In the amended specification, upon which the reissue is founded, the patentee's invention is claimed to consist: "Firstly. In so forming and constructing the shuttle driver of a lock-stitch sewing machine, that while it performs the required duty of driving the shuttle, it serves to maintain the latter in the desired proximity to the guide plate, as described hereafter. Secondly. In the combination of a driver, shuttle, and stationary guide plate, the whole being formed and arranged substantially as described, so as to retain the shuttle in its proper position during its flight"

This comparative reference to the old and new specifications is all that is needed to show that the subject-matter of both is the same invention—the same mechanism and combination of mechanical devices, indicated in the "original specification, drawings and

patent office model,” are described in the amended specification; and like functions are attributed to, and the same effects are claimed for both. The amended specification has the merit of greater conciseness and precision in the description of the invention, and in the methodical and separate definition of the patentee’s claims. An amendment of such a character is within the statutory warrant, and has the sanction of express adjudication. In *Carver v. Braintree Manuf’g Co.* [Case No. 2,485], it is held “that a specification may be defective not only in omitting to give a full description of the mode of constructing a machine, but also in omitting to describe fully in the claim the nature and extent and character of the invention itself. Indeed, this latter is the common defect, for which most renewed patents are granted.” And in *Woodworth v. Hall* [Id. 18,016], Mr. Justice Woodbury says: “The amendment is not because the former patent was void, as seems to be the argument, but was defective or doubtful in some particular, which it was expedient to make more clear. But it is still a patent for the same invention.”

It is true that in the original specification the needle is made an element of the combination claimed by the patentee, and that it is no part of the combination described in the second claim of the amended specification. But this omission constitutes no tenable objection to the reissued patent, for the reason stated by Judge Story in *Carver v. Braintree Manuf’g Co.*, supra, “that an inventor is always at liberty, in a renewed patent, to omit a part of his original invention, if he deems it expedient, and to retain that part only of his original invention which he deems fit to retain. No harm is done to the public by giving up a part of what he has actually invented, for the public may then use it; and there is nothing in the policy or terms of the patent act which prohibits such restriction.” *Battin v. Taggert*, supra.

As both patents here were for the same invention, the modification of the description and claims of the original patent does not effect the validity of the reissued patent. In this connection it is proper to consider the argument touching the construction of the first claim of the reissued patent. The counsel for the respondents insisted, that it is to be interpreted as a claim for the abstract functions of the shuttle carrier, and therefore void, or that it is to be treated as only a duplication of the second claim, in which the combination, consisting partly of the carrier, is described.

Undeniably the mere function of a machine is not a patentable subject; but it is just as clear, that a mechanical device, adapted to perform specific functions, is, whether its operative efficiency depends upon its combination with other mechanism or not. The novelty and utility of such device are the tests of its patentable merit. Its possession of these qualities entitles its inventor to the protection of the patent laws, and this can be as effectually secured by making it the subject of a separate claim in a patent for an auxiliary combination also, as by making it the sole subject of a distinct patent. [Hogg v. Emerson] 11 How. [52 U. S.] 587; Root v. Ball [Case No. 12,035]; [Evans v. Eaton] 3 Wheat. [16 U. S.] 517, 518. If the complainant, then, was the inventor of a shuttle carrier, which by its form, or any other mechanical adaptation, is productive of a useful result, he might embody a separate claim for it in his specification, along with another claim for a combination, of which it is an element. Has he done so? We think this can be plainly shown. The specified functions of the carrier are, first, to furnish a bearing surface upon which the shuttle is to be supported and carried or driven along with it in its flight, and second, to keep the shuttle in proper proximity to the face plate. How are these functions to be effectuated? Obviously by the mechanical form and

construction of the carrier. Now is not this what the claim precisely indicates? It is not to be read, "I claim, as my invention, the functions for my carrier of driving the shuttle and maintaining it in the desired proximity to the face plate," as it ought to be, if the functions in the abstract are claimed. But it is to read in its own words, as a claim for so "forming and constructing a shuttle driver," that it will perform the functions specified. The form and construction of the driver are the gravamen of the claim. Rendered with reference to the whole specification and the patent office model, it imports a claim for a shuttle driver constructed 1100 with a surface upon which the shuttle rests, and is carried with the driver in its oscillation, and formed with a bevel in this surface, whereby the shuttle by its own weight or gravity is caused to impinge upon the face plate.

In *Winans v. Denmead*, 15 How. [56 U. S.] 330, a patent for a railroad coal car was sustained, whose distinctive patentable quality was its conical form, the effect of which was to equalize the pressure of the load, etc. Mr. Justice Curtis, in delivering the opinion of the court, says: "Patentable improvements in machinery are almost always made by changing some one or more forms of one or more parts, and thereby introducing some mechanical principle or mode of action not previously existing in the machine, and so securing a new or improved result." So here, if the shuttle carrier was distinguished only by the conformation of the shuttle seat, the complainant would be entitled to a patent for it, and the first claim in the specification would be well supported by it.

2. As to novelty. The complainant's invention is alleged to have been anticipated by several similar inventions, but as the machines devised by E. D. Leavitt and John P. Emswiler were chiefly relied upon in the argument to show this, it is only necessary to notice them. They are three in number, and are

respectively designated as the Fisher, the Fisher-Wickersham, and the Emswiler machines.

The proofs in the case very clearly show, that Parham's invention was perfected about the beginning of the year 1852, and that, for a considerable period before that, he was engaged in getting up his plans. From working drawings, then furnished by him, sewing machines embodying his improvement were constructed, the identity of some of which has been traced down to the hearing; and they were in successful and steady use for many years. The completeness and practical utility of his invention are thus demonstrated. Of these facts there is ample and uncontradicted proof, and in the face of it we can not, on a mere argumentative trial of his invention, adjudge it to be inoperative and valueless.

The Fisher machine (Exhibit No. 1) was made by Fisher in the early part of 1850, and was the model from which the Fisher-Wickersham machine (Exhibit No. 2) was constructed by Wickersham in the latter part of the same year. They are substantially the same in the principle of their operation, the only notable difference between them consisting in this, that in the first the movement of the shuttle is in the arc of a circle, and in the latter in a horizontal line.

Their history is somewhat extraordinary. The first one was made by Fisher, and he never saw it in practical operation. It was made for E. D. Leavitt, and the only use he knew or "thought" was made of it is stated in his answer to the thirty-eighth cross-interrogatory propounded to him: "I think samples were sewed by it, enough to show the working of the principle; but very little." It was delivered to Wickersham, as a model for a duplicate, and remained in his shop at the Mechanic Mills, at Lowell, until 1857, when it was disinterred from the attic of that establishment, and carried to Boston to Martin and Rufus Leavitt, by whom it had been purchased. To

them it belonged when the proofs were taken. At no time, during all this period, was it employed in any operative use, except as stated by E. D. Leavitt.

The Fisher-Wickersham machine was delivered to E. D. Leavitt in October, 1850, and he sewed with it a pair of pants and a jacket for a small boy, and a pair of pants for a larger boy. It was kept most of the time until April, 1857, in a small room up stairs in his house, when it also was sold to Martin and Rufus Leavitt for \$200; but no use was made of it during this time, not even by Leavitt's wife in making clothing for their children. When the Leavitts got it it was boxed up and only taken out to be used in a lawsuit in Baltimore, after which it was returned to the box, and remained there until it was reproduced in this case.

Now what was the operative merit of these machines in the estimation of their inventor, makers, and various owners, as indicated by their conduct, rather than by the less reliable guide of their opinions? At the time when they were made the country had learned the great value of the sewing machine, and inventive skill was stimulated to devise improvements in its mechanism, by which its effectiveness might be increased and popular favor attracted. Is it, then, within the range of probability, that the proprietors of an invention, from which, if successful, large profits might flow, would so soon have cast it aside, if the trial to which it was subjected had proved its practical utility? No further effort was made to test its merits, no patent was applied for, and it was only rescued from entire oblivion for a reason in no wise importing its capability of successful and useful operation. While, therefore, there has been no satisfactory trial of the efficiency of these machines, and the persons interested in them have thus indicated so decided a judgment against their practical utility, we but enforce a logical sequence in assigning them to the category of unsuccessful and abandoned experiments.

But while these machines were thus thrown into disuse, they were carefully preserved by Martin and Rufus Leavitt, on account of their supposed effectiveness as evidence to protect the infringement of analogous inventions. This is the only value the Leavitts attached to them, and so they were kept from 1857, until they were used in a suit at Baltimore and now again in this case. How far they are available for that purpose here, we are now for a moment to consider.

In reference to what are called “race machines,” 1101 in which the shuttle is carried and rests in a grooved channel, it is only necessary to say that they are manifestly essentially different from Parham’s. In Parham’s machine are found a vertical face plate, with no groove for a tongue in the shuttle to move in, a tongueless shuttle sliding in contact with it, supported on the under side by the surface on which it rests and by which it is carried backward and forward, this bearing surface and the under surface of the shuttle having corresponding bevels. These elements are not embodied in the Fisher machines, as the respondents’ expert, Wickersham, testifies, and is plainly shown by an inspection of the machines themselves. Herein then, are important mechanical differences between them; but when the functions to be performed and the effects sought to be accomplished by this mechanism are considered, these differences are shown to be substantial.

It is essential to the operative efficiency of a lock-stitch sewing machine that the shuttle should be so adjusted to the face plate, that it will pass through the loop in the needle thread, and thus, by the engagement of its thread with the loop, the lock-stitch be formed. This effect is produced in Parham’s machine by the beveled form of the upper surface of the carrier and the under surface of the shuttle, and this, co-operating with the weight or gravity of the shuttle, keeps it

in the desired contact with the face plate, along the grooveless surface of which the shuttle is guided.

While the carrier then performs the functions of supporting and carrying the shuttle along with it, its peculiar conformation, and its combination with the shuttle and face plate, produce these effects, viz: the necessary impact of the shuttle on the face plate, the retention of the shuttle in its proper lateral position during its flight, the reduction of the friction of the shuttle upon the face plate, and the avoidance of lubrication by which the thread is soiled.

Now it seems clear to us that these effects, all of which are useful results, even if they are conceded to be produced by the Fisher machines, are accomplished by different mechanical agencies and in different degrees. Their shuttle carrier is constructed with two upright elastic arms, from the inner face of the top of which two pins project, which are inserted in corresponding holes made in the back of the shuttle. Upon these pins the shuttle is supported, and its contact with the face plate is caused by the pressure of the arms upon its back. Tongues are formed on the needle face and at each end of the shuttle, to move in a transverse groove in the face plate, the function of which "is to keep the point of the shuttle in its proper position on the face plate; as it flies back and forth." The carrier here performs the office of carrying the shuttle with it in its flight, and, at the same time, of supporting its vertically—as is done in Parham's machine—although it is not altogether clear that this latter office is not partly performed by the ledge in one and the transverse grooves in both machines. But here the similitude ceases. Distinct and dissimilar mechanical forces are employed to cause and maintain the contact of the shuttle with the face plate. In the one, it is produced by the form of the shuttle seat, cooperating with the gravity of the shuttle; in the others, by the elastic pressure of the supporting arms, exerted

directly upon the back of the shuttle. In the one, the proper position of the shuttle is preserved by the combined form and arrangement of the carrier, shuttle, and face plate; in the others, by a transverse groove or channel, co-operating with the tongues in the shuttle. In the one, only such friction is caused as is due to the mere weight of the shuttle, resting loosely against the face plate; in the others, is the superadded pressure of the elastic arms directly upon the shuttle, causing an attrition of it, which is plainly visible upon its needle face. In the one, the exposure of the thread to soiling is avoided by a grooveless face plate; in the others, it is subjected to the risk of this by the necessity of lubricating the grooves in which the shuttle vibrates. These are notable differences, and they are sufficient, in our judgment, to disprove the identity of these several machines, either in the effects produced by them, or in the principle of their operation.

Like differences, to some extent, distinguish the Emswiler from the Parham machine, although there are more points of resemblance between them. For one who had no practical knowledge of mechanics, and had never seen a sewing machine, as Emswiler says was the case with him, his machine certainly evinces considerable ingenuity, although a patent for it was refused. Its shuttle carrier consists of a single upright elastic arm, to which is attached at the top an oblong bed or cradle, and which is open only on the needle side of it. In this bed the shuttle is confined and rests, and is carried with it in its motion. It has a vertical face plate, without a longitudinal groove. The shuttle carrier here performs the functions of supporting and driving the shuttle, and of placing and maintaining it in contact with the face plate. But the agency employed to produce and preserve this contact is as different from Parham's as in the Fisher machines. In Parham's machine, as already said, it is caused by the form of the shuttle seat, co-operating with the weight of the

shuttle; in the Emswiler, by the direct and continuous pressure of the carrier's arm and the shuttle bed upon the shuttle and face plate. That the friction is greater, where the shuttle bed and shuttle are thus pressed and held against the face plate, than where the shuttle rests loosely by its own weight against it, is plain. Here, then, are not only differences in form, affecting the production and value of results obtained,' but differences in 1102 the forces applied, and in principle of operation.

Wide differences of opinion exist among the expert witnesses as to the practicability of a machine constructed with a shuttle carrier like Emswiler's—the reasons given for these opinions are the proper tests of their comparative weight. Judging them by this standard, the opinion of True, one of complainant's witnesses, is entitled to special consideration. As the contact of the shuttle with the face plate is necessary to make the shuttle take the loop, so there must be sufficient space between the shuttle bed and the shuttle to allow the loop thread to pass freely around the back of the shuttle. No provision is made to secure this contact, except the pressure of the shuttle bed upon the shuttle. One of two results, then, would follow, either the shuttle would not engage the loop, if it was not pressed against the face plate, or, if it was, the loop thread could not pass behind the shuttle, and, as stated by True, it would be broken. However that may be, the working values of the machine ought to be shown by satisfactory proof of its successful use. Such is not the character or effect of the evidence produced here. On the contrary, of the machines which Emswiler says he made, like the model exhibited, and sold for use, no trace could be found of any one of them, after diligent search by both parties, aided by the offer of a liberal reward. If they had proved to be practicable and useful, all knowledge of them would not have been so entirely lost.

But did Emswiler himself treat his machine as practically complete, and its shuttle carrier as anything more than an experiment, when his first model was filed? The distinct import of his correspondence with the patent office is, that he did not. And when he made his final appeal for a patent, it was upon the basis of a new model, showing his abandonment of the movable shuttle carrier, and the substitution for it of a race. The shuttle carrier was not, then, a determinate feature of his first machine.

The time when Emswiler embodied his ideas in the concrete form of a machine, adapted to actual use, the proofs leave us to fix by indeterminate probabilities. That he was engaged in experiments for several years is sufficiently proved, but that his "speculations had been reduced to practice, and a machine had been produced" by him before 1852, when Parham's invention was complete, would be an unsafe deduction from the testimony of witnesses, whose statements are not consistent, and whose recollection of dates especially is necessarily indefinite and unreliable, after the lapse of eighteen years. The evidence must establish clearly the priority of a completed and useful machine over the complainant's, or it is unavailing—to doubt upon this point is to resolve it in the negative.

3. Are the respondents infringers of the complainant's patent? If this question were to be answered by the testimony of the witnesses on both sides alone, we would be bound to say that the preponderance of it is against the respondents. For while all the experts examined for the complainant positively affirm it, they are substantially corroborated by several of the respondents' experts.

But an analysis of the disputed parts of the respondents' machine will strengthen this conclusion. They embody a shuttle carrier with a bevel in its surface where the point of the shuttle is intended to rest, constructed to support the shuttle from its

under side, and so that it will be carried backward and forward by the surface on which it rests; a shuttle with a corresponding bevel on its under side at its point; and a vertical grooveless face plate. Now these are a counterpart of Parham's invention, and if they were all, there could hardly be a question about infringement. But it is claimed that the mechanism of Parham's and the respondents' machines is unlike in other essential particulars, and it was sought to show this by an argument of much logical ingenuity and acuteness. These features are said to consist: (1) Of a spring attached to the back of the carrier and operating upon" the heel of the shuttle. (2) Of an upper clutch on the carrier, just over the top of the point of the shuttle, with its side surface inclining inwardly. (3) Of a latch attached movably to the carrier, and passing over the top of the shuttle and holding it down.

Of these in their order: First. It is necessary, to insure the passage of the shuttle through the loop, that the shuttle at its point should be in contact with the face plate. This is accomplished in Parham's carrier by the beveled bottom of its bearing surface cooperating with the beveled bottom of the shuttle. Does the back spring produce this effect, or is it the essential agent in producing it? If it is, the method is not Parham's, because the forces employed are altogether different. The spring operates upon the back end of the shuttle and so presses it forward. But in what precise direction? In a line exactly parallel with the face plate. If the surface of the carrier were level, then it is obvious that the pressure of the spring would not cause the shuttle to incline toward the face plate. But the shuttle presses upon the face plate. How, then, is this caused, if not by the spring? By the peculiar bevels of the carrier and the shuttle; and they are, therefore, the instrumental forces in producing the specific result. The spring, then, does not perform the function which the beveled form of Parham's carrier is adapted to

effectuate. It is not a substitute for the bevel, and so its employment does not discriminate the means used by the respondents from those used by Parham to produce the effect aimed at by both.

The fundamental infirmity of the argument is in assuming that Parham's patent is only for a combination; and this characterizes it throughout. But it has been before shown 1103 that his patent embraces a claim for a carrier, adapted by its form and construction to produce a certain effect, to wit: the "proximity" of the shuttle to the face plate. It is the essential mechanical instrumentality in the production of this effect. It is not the co-operative efficiency of the weight of the shuttle—and this is all that the spring is claimed to supply—that constitutes the patentable quality of the carrier, but it is its mechanical adaptation to produce the prescribed effect. As the spring does not furnish the force thus made available, it can not be regarded as varying the principle of operation.

It is said, though, that the spring serves to keep the shuttle in a proper position to make the bevels effective. That may be so, but it is only then auxiliary to the bevels, not essential to their specific efficacy. And if a better result is thus obtained, it is an improvement on Parham's carrier, in substituting an elastic for a non-elastic back, by which the shuttle is confined and upon which it impinges. But this improvement can give the respondents no right to use what the complainant invented.

These deductions are fully supported by the evidence on both sides. Singer, a witness for the respondents, describes the spring as keeping "the shuttle in position by holding it forward against the forward part of the carrier, so as to cause the shuttle, owing to the peculiar bevels of the shuttle and the carrier, to press toward the face plate; that is, to give the shuttle an inclination toward the face plate"—and that "it acts as a kind of cushion to receive the

pressure of the shuttle in drawing in the stitch, which I believe is better than if the shuttle struck solidly against the back of the carrier.” He also testifies that the respondents’ machines have been used for as long as two months with the spring inoperative, but that they could not do good work with any certainty in that condition. And such is the substantial import of the testimony of other witnesses of the respondents. Chabot, a witness for the complainant, states the function and effect of the bevels substantially as Singer does, but he goes further, and says that he has worked the respondents’ machine with the spring inoperative, and so successfully that he would dispense with it altogether.

The result of this evidence clearly is, that the spring exerts no essential agency in pressing the shuttle upon the face plate, but that this effect is caused by the bevels, and that at most the employment of the spring only improves the effectiveness of the bevels.

Second. As before stated, the respondents’ carrier has a bevel in its surface, just under the point of the shuttle, and a corresponding bevel in the under surface of the shuttle. What were they put there for? We must assume that it was for some practical purpose. Their specific operation is to incline the shuttle toward the face plate. We must therefore conclude that they were intended to perform this function, as the only one appropriately pertaining to them. Now, this is the same mechanical adaptation employed by Parham; in other words, it is the same mechanical force used by him, applied in the same way, and to produce the same effect.

But the clutch at the top of the carrier has an incline inwardly in its upper side surface, and the shuttle has a corresponding incline in its surface coming in contact with the carrier. Incline is only another name for bevel, and the avowed design of these bevels is to direct the shuttle toward the face plate. They co-

operate with the bevels in the under surface of the carrier and shuttle in performing this function, and they are therefore only auxiliary to the latter. In the Parham invention, the force of the bevel is applied at the bottom of the shuttle, but as the effect produced is the same, it is immaterial whether the force is applied at the top or the bottom of the shuttle. The identity of the mechanical instrumentalities used, and of the principle of operation, is thereby unaffected.

Third. The second claim in the complainant's specification is for a combination of the driver, shuttle, and face plate, "the whole being formed and arranged substantially as described, so as to retain the shuttle during its flight in its proper position, for the purpose specified." In the body of the specification it is stated that the shuttle "is confined in front by the plate C, at the back by the driver A, above by the arched plate H, and below by the ledge x of the driver."

It is insisted that, by reference to the description, the arched top plate is to be incorporated in the claim as an element of the combination, for the alleged reason that it is necessary to the action of the combination described; and when it is so incorporated, that the respondents are not infringers, because they use a latch instead of a top plate to hold the shuttle down.

The law imposes upon an inventor the duty of describing his invention in such full, clear, and exact terms, that any one skilled in the art can make and use it. The reason of this requirement is obvious. It is, that the exact character and purpose of the invention may be understood, and that the public may be enabled to construct and use it, after the expiration of the patent. Hence, where an entire machine is claimed, it is necessary to describe all the parts essential to its practical working and use. But where an addition to an existing machine, which is an improvement merely, is claimed, it is necessary only to describe the elements

composing the improvement, with their relations to the other parts of the machine. And this is true of a combination, as well as of a single mechanical device. An inventor may define his invention in his claim as he thinks proper, but it must be capable of operation, when reduced to practice, as he proposes to use it. If the description clearly indicates the method of its use, and its relations to the other mechanical elements operating with it, a claim for a 1104 combination of part of them is good, although it may not embrace some that are essential to the operative efficiency of the combination. In *Forbush v. Cook* [Case No. 4,931], Mr. Justice Curtis thus concisely states the law: "Nor is it requisite to include in the claim for a combination, as elements thereof, all parts of the machine which are necessary to its action, save as they may be understood as entering into the mode of combining and arranging the elements of the combination. If inclined wires are necessary to the action of the combination specified, so are many other parts of the machine, and all parts necessary to the action and combination specified might be said to enter into the mode of combining and arranging the elements of the combination, but need not be and ought not to be included in the combination claimed."

Certainly a combination to be valid must have the attribute of practical utility, but this is not to be determined by a reference to the abstract practicability of the elements claimed to compose it. Resort must be had to the whole specification, and if it is therein properly described, its relations to co-operative mechanism indicated and explained, and the method of its use in connection therewith directed, and, when so used, is practically operative, it is a good combination, and will support a restricted claim for it. All this the complainant has done. He has embodied in his second claim only the three elements before stated. In the body of his specification he has

described them particularly, and has fully explained how they are to be used, in connection with other well-known parts of the sewing-machine, among them the top plate. And when so used, he has shown that they are practically operative. He has thus fulfilled the prescribed office of the specification, and has demonstrated, by actual and thorough trial, the utility of his invention as claimed. It is true the top plate is necessary to the successful operation of the combination. But it is not more so than is either the eye-pointed needle, the presser foot, or the feed wheel. As none of these, however, "enter into the mode of combining and arranging the elements of the combination," but are only auxiliary to its action, no one of them is to be interpolated in the claim, and so treated as an essential element of the combination. The complainant's combination, thus regarded, the respondents are shown to have used, and so they are infringers.

Upon the whole ease, we are of opinion: That the letters patent reissued to the complainant are valid. That, so far as appears or is shown in this ease, the complainant is the first and original inventor of the improvements described in the first and second claims of said patent. That the respondents have committed infringement of both said claims.

A decree will, therefore, be entered for an Injunction and an account, as prayed for.

¹ {Reported by Samuel S. Fisher, Esq., and here reprinted by permission. Merw. Pat. Inv. 671, contains only a partial report.}

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